Title
Tracing the Vestiges of Childhood: Investigations of Subadult Burial Customs for Early and Middle Period Chumash Mortuary Contexts in the Santa Barbara Channel Region

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Tracing the Vestiges of Childhood: Investigations of Subadult Burial Customs for Early and Middle Period Chumash Mortuary Contexts in the Santa Barbara Channel Region

A dissertation submitted in partial satisfaction of the

requirements for the degree Doctor of Philosophy

in Anthropology

by

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December 2019

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This dissertation is dedicated to the memory of my beloved sister, Katherine Ann Bornemann;

non est ad astra mollis e terris via.

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VITA OF ERIN ELISABETH BORNEMANN

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2016 Bornemann Erin E., and Stuart Tyson Smith. "Liminal Deities in the Borderlands: Bes and Pataikos in Ancient Nubia." Demon Things Conference, Swansea, Wales. *Presented by*: Erin Bornemann

ABSTRACT

Tracing the Vestiges of Childhood: Investigations of Subadult Burial Customs for Early and Middle Period Chumash Mortuary Contexts in the Santa Barbara Channel Region

by

Erin Elisabeth Bornemann

This study applies aspects of childhood theory to prehistoric Chumash mortuary sites in the Santa Barbara Channel region of California. While the activities of subadults are often difficult to assess from archaeological contexts alone, the mortuary record provides an ideal avenue in which cultural treatment of different subadult age groups can be observed. Previous mortuary studies conducted in the region have done much to further the collective knowledge of Chumash mortuary customs over time, however, the explicit study of subadults on a broad regional and temporal level was identified as an area in which additional research would greatly enhance our understanding of the prehistoric past. The focus on subadults in this study allows for a nuanced comparison of mortuary treatment in prehistoric Chumash contexts, by both comparing the treatment of subadults (0–17.9 years old) to those of adults (> 18 years old), as well as among the subadult age group, by comparing the treatment of infant (< 3 years old), child (3–9.9 years old), and adolescent (10–17.9 years old) burials. The implementation of childhood theory is a useful framework with which to examine prehistoric burial practice, as it allows for an approach that can be used to connect social and biological aspects of subadults. By focusing on the treatment of subadults in mortuary contexts, this age group can be considered in light of their respective communities, which provides a way to assess aspects of their social

identities and can further highlight ways in which subadults would have been active participants in society in regard to economic, social, political, and religious aspects.

The area in the vicinity of the Santa Barbara Channel comprises the study's general geographic setting, which is located within California's Southern coast region. More specifically, the study area is defined as the area of the mainland stretching roughly between Arroyo Grande in San Luis Obispo county to Ojai in Ventura county, and extending approximately 15 miles inland from the coast, as well as including both Santa Cruz and Santa Rosa islands in the chain of Northern Channel Islands. The study data are drawn from 16 sites dating to the Early (ca. 6000–1400 BC) and Middle (ca. 1400 BC–AD 1150) periods, which resulted in a dataset of nearly 1,000 burials. The mortuary data that comprise this study dataset are drawn from published sources, as well as unpublished site reports, field notes, excavation records, and collections inventories, which resulted from previously conducted excavations. In order to encompass the broadest number of mortuary categories across the different excavations, 15 variable categories were established to record aspects of the burial context that related to the physical body of the deceased, and also those that related to the objects associated with the body of the deceased. Descriptive, univariate, and bivariate statistical techniques are employed in this study's analyses to examine the relationships between age, time period, and geographic context for the study's 15 mortuary variables. The primary statistical tests employed in this study are the Chi-squared and Fischer's Exact test for nominal variables, and the Mann-Whitney *U* and Kruskal-Wallis tests for ordinal variables.

This study's statistical analyses revealed patterns between subadult and adult burials that are believed to indicate aspects of the overall incorporation of subadults into their communities (personhood), as well as aspects of sociopolitical organization (hierarchical and heterarchical), and religious organization (rites of passage). Non-single interment patterns, the presence of grave goods, and number of material types for grave goods provide support for the idea that subadults throughout Chumash prehistory were attributed personhood in their respective communities, given the many shared aspects and overall similarities in burial ritual between subadults and adults. Patterns in ornament grave goods and grave depth appear to have the strongest potential within the study variables to indicate aspects of hierarchical social organization, which were generally more pronounced in the Middle period sample. The body's overall disposition in the grave (position, side, and orientation), as well as the presence of grave features and burial pigmentation, resulted in patterns that suggest that aspects of heterarchical organization were in operation throughout the Early and Middle periods, however, hierarchical organization appears to have operated more strongly as an organizing factor in the Middle period. Lastly, patterns in presence of ceremonial paraphernalia indicated that both Early and Middle period adolescent burials had the highest frequency of receiving such objects, compared to infant and child burials, which may indicate the relative timing at which religious initiations or rites of passage were undertaken in society.

Based on the different material and non-material aspects of burial practices analyzed in this study, it is evident that the prehistoric Chumash had a high value of human life and also very likely a complex conception of the afterlife. In the majority of the study analyses, subadult burials often revealed similar patterns to adults or even had treatment exceeding that which was commonly seen in adult burials. While there were many temporally specific patterns observed between subadult and adult burials for aspects of prehistoric Chumash burial treatment, the increased homogeneity in many aspects of burial practice evident in the Middle period sample is likely significant at the wider, regional level, revealing patterns in shared cultural practices. The patterns observed diachronically for the treatment of subadult and adult burials support the idea that a fairly complex sociopolitical organization with a degree of centralization was present at least by the Middle period, that aspects of heterarchical organization likely were concurring throughout the Early and Middle periods, and that through all periods of Chumash history subadults were attributed personhood.

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CHAPTER 1
Introduction

Synopsis of Research and Theoretical Implications

The research presented herein comprises mortuary data collected for 941 burials from 16 Early and Middle period Chumash sites in the Santa Barbara Channel region. These data are all drawn from previously conducted archaeological excavations, which took place in both mainland and island contexts. The primary analytical aim is to bring the study of subadults to the forefront of a regional analysis of Chumash burial practices, both by comparing their treatment to that of adults, and also by considering treatment for infant, child, and adolescent burials within the subadult age group. The framework of this study, grounded in childhood theory, provides an innovative perspective to the long history of mortuary studies in the greater Chumash region. Previous mortuary studies (see Corbett 2007; Gamble 2017; Gamble et al. 2001; Green 1999; Hollimon 1990; C. King 1990; L. King 1969, 1982; Lambert 1994; Lambert and Walker 1991; Martz 1984; Sholts 2010; Stickel 1968; Tainter 1971) in the region have done much to further the collective knowledge on Chumash mortuary customs through applications of varying theoretical perspectives. These differing perspectives have further enhanced the understanding of the past greatly, however, a focus on pre-contact mortuary contexts from a perspective of childhood theory was an area in which more research was sorely needed. The primary goal of this study is to provide a broad analysis of Early and Middle period Chumash subadult burial practices so that a baseline for pre-contact practices can be established and built upon by the research of future scholars.

At the most basic level, the goal is to assess whether burial treatment of subadults is similar or different to that of adults. When subadults are found to have similar treatment to adults, this is indicating, at a broader social level, that both subadults and adults were subject to the same set of cultural practices regarding burial treatment. In cases where subadults are treated differently than adults, two potential scenarios arise; in one scenario subadults receive treatment above and beyond that seen for adult burials, and in the second scenario subadults receive significantly less effort to no discerned effort in contrast to adult mortuary treatment. In situations where comparisons between subadult and adult mortuary ritual includes significant differences (perceived comparatively as "greater" or "less" effort than adults), this indicates that subadults have a status that is removed from the majority of adults, which either results in receiving significantly less to no effort in mortuary treatment, or receiving burial treatment that exceeds what is common for adults. In either case, the noticeable difference in treatment provides some nuanced details about the placement of children in the overall social hierarchy.

While comparisons between the two primary age groups (subadults and adults) are useful in assessing the differences between adults who, for the most part, are expected to be fully integrated members of society, and subadults, who may or may not be considered fully integrated societal members, it is also necessary to examine patterns *within* the subadult group. Cross-cultural studies (e.g., Cerezo-Román 2013, 2015; Ingvarsson-Sundström 2004; Whittlesey 1978) have drawn attention to the importance of not making assumptions that subadults of all ages were considered full members of society, as the ages and circumstances in which subadults were incorporated into their greater social communities was based in culturally determined practices. By separating the subadult sample into three age groups (infant, child, and adolescent), it is possible to identify similarities and differences between the three subadult age categories, as well as assessing if certain subadult age groups are more or less similar to mortuary patterns established for adults. An analysis operating at this level of comparison provides additional nuance to understanding the mortuary treatment of subadults in the prehistoric past, which subsequently may offer avenues that further contextualize the placement of subadults of different ages within the prevalent social norms operating for adults. This argument is of course simplified to illustrate the most basic scenarios, however, given the lack of written records of prehistoric Chumash childhood or depictions of what daily life would have been like, comparative analysis of mortuary remains continues to be one of the best ways to understand the treatment of prehistoric subadults at a broad anthropological level.

Background to Research Questions

While mortuary studies in the Santa Barbara Channel region are not uncommon academic endeavors, the scope of these analyses are generally focused on a specific site, sub-region, or time period. Altogether, these past mortuary studies have incorporated subadults in varying degrees, with a limited number of analyses examining subadults in multi-site or regional analyses. The two arguably most extensive studies in the region to date are those conducted by Chester King (1990) and Raymond Corbett (2007). C. King's (1990) study is the more broadly comprehensive of the two investigations, establishing a detailed chronology based upon burial lots for both prehistoric and historic period burials, while Corbett's analysis is restricted to prehistoric burials only and focuses significantly on burial treatment as well as grave goods. Unfortunately, C. King's analysis did not focus on subadult populations specifically, and while Corbett addressed some subadult data in his mortuary analyses, his analytical treatment of subadult burial practices was largely limited to trends in body position and orientation.

While C. King and Corbett's respective studies comprised regional analyses, other studies (e.g., Tainter 1971; Stickel 1968; Gamble 2017) have focused on the analysis of a single site, albeit from differing theoretical perspectives. The investigations of Joseph Tainter (1971) at the Rincon site and Gary Stickel (1968) at the Fowler site were heavily influenced by the dominant theoretical paradigm at the time, with both authors aimed at making assessments on the sociopolitical structure of their respective sites based on mortuary data. More recently, Lynn Gamble (2017) has examined the cemetery data at *El Montón* on Santa Cruz Island, assessing the degree of inequality present in burials based upon associated grave goods. Her analysis includes the burials of subadults, which she observed were frequently buried with large numbers of grave good and denote special treatment not available to the entirety of the burial population (Gamble 2017:440). While these analyses provide useful assessments of Chumash burial programs, they are by nature limited in geographic and temporal scope.

In addition, there have been many productive studies conducted in the Santa Barbara Channel region regarding a diverse number of aspects focusing on osteological analyses. For example, scholars have conducted research projects on phenotypic variation and degrees of relatedness (Sholts 2010), physical markers relating to social complexity (Lambert and Walker 1991), the evolution of treponemal disease (Walker et al. 2005), traumatic injuries and violent conflict (Lambert 1994; Walker 1989), differential preservation of human skeletal remains (Walker et al. 1988), as well as examinations of health and diet stress (Hollimon 1990; Lambert 1993; Walker 1986; Walker and DeNiro 1986; Walker and Erlandson 1986; Walker and Lambert 1989). While these studies have been incredibly constructive in further understanding the prehistoric past, the degree to which subadult data have been included differs widely, and none of these studies have subadults in the forefront of their analytical aims.

That is not to say that important research including subadults has not been conducted previously, as Linda King (1969, 1982), Patricia Martz (1984), Terisa Green (1999), Lynn Gamble and colleagues (2001), and Erin Bornemann and Lynn Gamble (2018) have paid specific attention to subadults in their respective mortuary studies, however, these investigations are generally centered around sites in the greater Santa Monica Mountains sub-region. These studies also differed in their temporal distribution, with Middle period cemeteries drawn from the sites of Malibu (Bornemann and Gamble 2018; Gamble et al. 2001; Green 1999; Martz 1984), Simomo, and Trancas Canyon (Martz 1984), a Late period cemetery from Medea Creek (Green 1999; L. King 1969, 1982; Martz 1984), and a Historic period cemetery also from the Malibu site (Bornemann and Gamble 2018; Gamble et al. 2001; Martz 1984). Thus, a prehistoric mortuary study that pays particular attention to the treatment of subadults at a wider regional and diachronic scope is sorely needed to increase knowledge of this under-studied group.

Table 1.1. List of Research Questions

Number	Research Question
1	Do subadult burials have a higher degree of variability than adults in their respective burial programs, regarding burial position, body side, and burial direction?
2	Do subadult and adult burials exhibit similar patterning for grave depth and total number of grave goods, where the deepest burials should also be the ones with the largest numbers of grave goods?
3	Do subadults consistently receive grave goods at higher proportions than adults and have larger proportions of beads than do adults?
4	Do subadult burials more frequently have larger amounts of ornaments as grave goods than adult burials, while amounts of non-ornament grave goods remain comparable between subadult and adult burials?
5	Do subadults receive a wider diversity of grave good material types in their burial contexts than adults?
6	Do infant and child burials have lower frequencies for ceremonial paraphernalia being present among their grave goods than adolescent and adult burials?
7	Do adolescent and adult burials receive a higher degree of energy expenditure (grave features and burial pigmentation) than infant and child burials?
8	Are subadults (infants, particularly) more commonly part of dual or multiple interment types than adult burials?

With unmistakable need for additional research on this topic, it became apparent that some researchers made assumptions based on their findings that were not statistically tested or came to conclusions on subadult burial treatment that were limited to a specific site, sub-region, or time period. In both instances, clear direction for additional study was established in the need to test these assumptions and more limited conclusions against a dataset that was more expansive both in regional scope and prehistoric time period. Influenced by previous research, eight research questions were established (Table 1.1), encompassing 15 variables (Table 1.2) for 941 burials (data recording age available for 880 burials) in the Santa Barbara Channel region, which were drawn from Early and Middle period contexts on both the mainland and northern Channel Islands.

Goals and Questions Directing Study Research

The primary, overarching goal for this research project is to provide a regional baseline of subadult mortuary treatment in Early and Middle Chumash mortuary contexts. While subadults have been included in previous mortuary analyses to differing degrees, the framework of childhood theory utilized herein is a particular strength for this study, as it provides a mechanism by which subadults can be analyzed with respect to their greater communities. Building upon the foundations of previous research, these eight research questions were developed to: establish comparative trends in subadult and adult burial programs, examine more nuanced differences between infant, child, and adolescent burials, and consider some ways in which subadults may have received differential treatment in their respective burial programs. These research questions were also aimed at assessing differences between Early and Middle period burials, as well as burials from island and mainland contexts to discern potential differences between time periods and geographic contexts. Altogether, this study aims to provide a regional baseline, informed by previous Chumash mortuary studies, that reveals regional subadult trends for both the physical presentation of the body at burial, and for aspects of material culture the living chose to inter with the dead.

Using previously collected archaeological data from past Chumash mortuary investigations, these research questions are also designed to address gaps in knowledge and base assumptions regarding subadults in Chumash prehistory. These eight questions (Table 1.1) were designed to assess differences between subadult and adult burials, as well as between infant, child, and adolescent burials, regarding aspects of how the body was physically presented when it was interred, as well as the amounts and types of grave goods that were found within the associated burial contexts. The research questions have been designed to investigate patterns in the physical presentation of the deceased's body in the grave, patterns in non-single interments, the diversity within grave good material types, the presence and numbers of different types of grave goods, the frequency in which ceremonial objects were included, correlations between grave depth and the total number of interred grave goods, and the assessment of proxy values for degree of energy expenditure.

In order to address these questions in a way that is meaningful, not only to the study of Chumash archaeology, but also to the wider archaeological study of children and childhood, aspects of childhood theory are employed to form the base theoretical framework, which is further informed by lenses of personhood and practice (see Chapter 2 for a full theoretical discussion). By further integrating these theoretical aspects into the analysis and interpretation of the study data, the results presented here not only proffer quantitative data to support and/or refute these assumptions and patterns encountered in studies of more limited scope (e.g., limited to a particular site, time period, and/or regional sub-context/context), but also work towards situating the results in a context-dependent interpretation of pre-contact Chumash mortuary data, thus providing a more detailed picture of the past, which incorporates this less-studied group into the greater understanding of Chumash history.

Research Question 1: Do subadult burials have a higher degree of variability than adults in their respective burial programs, regarding burial position, body side, and burial direction?

The first research question addresses the variables of burial position, body side, and burial direction in order to more fully assess patterns in the physical arrangement of the deceased's body at time of interment. One common theme in mortuary literature (both Chumash and non-Chumash focused) is that subadult burials often have higher degrees of differentiation in burial treatment, compared to adults within their communities. Specifically in Chumash contexts, Patricia Martz (1984:98–99) argued that this would have been due to the fact that subadults had not yet received necessary rites that would have made them full members of society, and which would have afforded them burial modes more closely matching that of adults. This question aims to gain a greater understanding of the ways in which subadult and adult burials differ in their arrangement in the overall funerary context.

Research Question 2: Do subadult and adult burials exhibit similar patterning for grave depth and total number of grave goods, where the deepest burials should also be the ones with the largest numbers of grave goods?

The second question addresses both grave depth and total number of grave goods to test previous assertions whether a positive correlation exists between these two variables. A number of Chumash mortuary studies (Gamble et al. 2001; C. King 1990; L. King 1969; Martz 1984, 1992; Tainter 1971) have investigated increasing sociopolitical organization over time, and one material proxy for presence of high-status individuals repeatedly referenced (e.g., Gamble et al. 2001; L. King 1969; Martz 1984) is that the deepest graves should contain the highest amounts of grave goods. Although an assessment of sociopolitical organization is not an explicit aim of this study, further understanding the interplay of these two variables in both subadult and adult groups can provide further information about pre-contact Chumash burial programs.

Research Question 3: Do subadults consistently receive grave goods at higher proportions than adults and have larger proportions of beads being present than do adults?

The third research question was formulated to assess the degree to which beads were included in associated burial lots, especially for subadult burials. Previous scholars (e.g., Corbett 2007; Gamble 2017; Gamble et al. 2001; Green 1999; L. King 1969, 1982; Martz 1984) have identified broad trends in subadult burials, where they more often had grave goods than adults, and that subadults also more frequently had beads among their grave goods than adults. The question is designed to investigate whether or not subadult burials received beads at higher frequencies than adult burials. Ethnographic and ethnohistoric accounts attest to beads functioning as currency, approximately 1,000 years ago, by the post-contact Chumash (Gamble 2008, 2016; Gamble et al. 2001; C. King 1990), and even though the notion of beads as currency cannot be directly applied to pre-contact periods, it is clear that beads were objects that required considerable time and skill to make (Gamble et al. 2001:192). Additionally, the presence of beads in burials, especially in large quantities, was not distributed equally throughout the burial population, and as such their representation in the archaeological assemblage has been used to denote aspects of inequality between individuals (Gamble 2017).

Research Question 4: Do subadult burials more frequently have larger amounts of ornaments as grave goods than adult burials, while amounts of non-ornament grave goods remain comparable between subadult and adult burials?

The fourth research question investigates patterns in the numbers of non-ornament grave goods and the number of ornament grave goods between subadult and adult burials. The amounts of ornament grave goods are expected to differ most notably between subadult and adult burials. Chumash scholars (e.g., Green 1999; L. King 1982; Martz 1984) identified patterns in subadult and adult burials, where subadult burials received larger numbers of ornaments than adult burials, however, between the two age groups there was very little difference evident in the number of non-ornament grave goods. Based on previous results, infant and child burials are expected to exhibit higher rates for large amounts of ornament grave goods, as compared to adolescent and adult burials.

Research Question 5: Do subadults receive a wider diversity of grave good material types in their burial contexts than adults?

The fifth research question is designed to assess the overall diversity of grave good material types between subadult and adult burials. This question is inspired by the research of L. King (1982:89), where, in her analysis of the Medea Creek cemetery, subadult burials generally had greater diversity in grave good types than adults. While research questions 2 and 4 examined overall quantities of grave goods, question 5 addresses the relative diversity present in burial assemblages through the number of material types in the associated grave goods. Subadult burials are expected to have greater diversity in material types when compared to adults. Of the subadult sample, infant and child burials are expected to have greater diversity than adolescent burials, the latter of which is expected to more closely mirror patterns in the adult sample.

Research Question 6: Do infant and child burials have lower frequencies for ceremonial paraphernalia being present among their grave goods than adolescent and adult burials?

The sixth research question uses data for presence/absence of ceremonial paraphernalia to assess the degree to which subadult burials had these objects included in their burial contexts, especially between Early and Middle periods. Previous researchers (e.g., Gamble et al. 2001; Martz 1984) identified patterns in their respective analyses where subadult burials (particularly infant and child burials) received few to no objects of ceremonial paraphernalia compared to adult burials, who received them more regularly. This pattern is most closely associated with an increase in sociopolitical complexity (and subsequent formalization of a religious system) that occurred between the Early and Middle periods (C. King 1990; Kennett et al. 2009; Gamble et al. 2002; Martz 1992). The aforementioned scholars have recognized a trend, in the Middle period, where subadult burials especially showcase a rise in ceremonial paraphernalia.

Research Question 7: Do adolescent and adult burials receive a higher degree of energy expenditure (grave features and burial pigmentation) than infant and child burials?

The seventh research question is designed to evaluate the degree of energy expenditure observed in burials through the presence/absence of grave features and burial pigmentation. Inspired by the research results L. King (1969), this question focuses on the observed patterns in subadult burials, where subadults received more in the way of energy (labor) expenditure, which is estimated here through the presence of grave features and burial pigmentation (see Martz 1984). Additionally, the respective research of Stephanie Whittlesey (1978) and Martz (1984) further influence this question, suggesting that, among subadults, infants and children are likely to have the most variability in burial treatment, due to the fact they had not been ritually incorporated into society by the time of their death. Formal ritual incorporation may have taken the form of a ceremonial rite of passage, such as those documented cross-culturally, which are noted to occur around puberty (see Markstrom and Iborra 2003; Norbeck et al. 1962).

Research Question 8: Are subadults (infants, particularly) more commonly part of dual or multiple interment types than adult burials?

The eighth and final research question was designed to investigate a topic that has received little attention by previous studies: non-single interments. This question aims to discern the degree to which subadult burials were interred as either single, dual, or multiple burials (interment type) and in the case of non-single interments, the relative ages of the different individuals interred (interment type age association). Martz's (1984) research was one of the only Chumash studies that explicitly analyzed variables including age of the deceased and physical proximity to nearby interments. This study builds from this idea, collecting data only on contemporaneous dual and multiple interments, which has greater significance than simply analyzing burials in close proximity to one another that lack specific temporal context. Considering the results of Martz's research loosely, it is expected that infant burials (over child and adolescent burials) are more likely to be a part of dual interments with adults, however, non-single interments are relatively rare in the burial samples overall.

Structure of Dissertation

This dissertation comprises nine total chapters, covering the topic introduction, theoretical framework, regional and site backgrounds, study methods, results for statistical analyses, as well as the interpretation and discussion of results, and final conclusions.

Chapter 2: Theory

This chapter covers the theoretical framework used in this dissertation to further consider the treatment of Chumash subadults in the Early and Middle periods. The chapter opens with a detailed overview of the history of mortuary anthropology and archaeology, beginning with 19th century anthropological though on death and burial. From there, it presents the history of thought on this topic through the 20th century, covering broad anthropological, sociological, and ethnographic examinations of mortuary ritual, its subsequent analysis, and the culture-historical approach. Lastly, this initial section concludes with later 20th century archaeological examinations of mortuary analysis from both the processual and post-processual viewpoints.

This historical overview of seminal mortuary studies is followed by a discussion of recent archaeological investigations of children and childhood, covering a brief history childhood theory and the primary tenets involved in its study. Childhood theory is discussed further in regard to the investigation of past mortuary practice in this study, through lenses of personhood and practice. These theoretical lenses not only consider the involvement of the family and community of the deceased in the events surrounding mortuary ritual, but also the overall level of incorporation of subadults within the greater prehistoric community. Lastly, an overview of the predominant mortuary studies conducted in the greater Santa Barbara Channel region is presented, covering studies in the Santa Monica Mountains region, bioarchaeological studies, as well as both individual site analyses and larger regional mortuary analyses in the Santa Barbara Channel region.

Chapter 3: Regional Background

To orient the reader broadly to the area of study, a regional background is first presented, covering brief introductions into aspects of local geography, geology, ecology, archaeology, ethnography, and history relevant to the study area. The chapter begins with an introduction to the "Southern Coast" region of California, as it would have existed in prehistoric times, which is then followed by discussions of the regional biodiversity in the flora of the Santa Barbara Channel mainland and Northern Channel Islands, as well as of the fauna in the region that were of significance to the Chumash. Following the exploration of local flora and fauna, more specific aspects of Chumash culture and lifeways are discussed, including topics such as sociopolitical and economic organization, foodways and settlement, travel and exchange, as well as mortuary practices.

The second half of this chapter focuses more specifically on cultural chronologies developed by archaeologists for prehistoric and historic Chumash study, including a brief overview of Chumash history from the advent of European contact to present-day, to better contextualize this prehistoric study in the broader historical setting. The discussion of archaeological cultural chronologies covers the temporal phases developed by multiple scholars for both island and mainland contexts, and concludes with the chronology developed by C. King (1990), which is the predominant chronology used by this study and in the region overall. The overview of post-contact Chumash history very briefly covers the most salient details regarding the advent of European exploration, Missionization, and salvage ethnography. Finally, this chapter concludes with an overview and contextualization of the archaeological studies that have been conducted in the Santa Barbara Channel region from the late 19th century to present-day.

Chapter 4: Study Sample Background

Immediately following the regional background, this chapter provides a more detailed discussion of the sites included in this study's analysis. Sites located on the Northern Channel islands are discussed first, followed by a discussion of sites on the Santa Barbara Channel mainland. In the examination of island contexts, a geographic discussion of Santa Rosa Island is presented first, followed by site descriptions and excavation histories for Tecolote Point (SRI-3), Survey Point (SRI-5), and Cañada Verde Dunes (SRI-41). Coming after the examination of the sites on Santa Rosa Island, the discussion of Santa Cruz Island begins with an overview of the geography of Santa Cruz Island, which is subsequently followed by archaeological summaries for the two Orizaba sites (SCRI-159 and -162), Christy's Beach (SCRI-257), and El Montón (SCRI-333). The last part of the chapter summarizes the data for the Santa Barbara Channel mainland sites in Santa Barbara, Ventura, and San Luis Obispo counties. Summaries for sites in Santa Barbara county are provided for More Ranch House (SBA-43), Aerophysics (SBA-53), Winchester Canyon (SBA-71), Tecolote Canyon No. 1 (SBA-72), Tecolote Canyon No. 2 (SBA-73), and Las Llagas No. 1 (SBA-81). Lastly, the chapter concludes with site summaries for Ventura county and San Luis Obispo County, including Soule Ranch (VEN-61), Browne (VEN-150), and Fowler (SLO-406) sites.

Table 1.2. List of Dependent Study Variables Separated by Analytical Category

Variables Relating to the Physical Body of the Deceased	Variables Relating to the Objects Associated With the Body of the Deceased
1) Body Position 2) Body Side 3) Burial Direction (Compass Cardinal) 4) Interment Type 5) Interment Type Age Association 6) Grave Depth 7) Presence/Absence of Grave Features 8) Presence/Absence of Burial Pigmentation	9) Presence/Absence of Grave Goods 10) Number of Non-Ornament Grave Goods 11) Number of Ornament Grave Goods 12) Total Number of Grave Goods 13) Number of Material Types 14) Presence/Absence of Ceremonial Paraphernalia 15) Presence/Absence of Beads

Chapter 5: Materials and Methods

The fifth chapter comprises the methods utilized for this study, including the variables chosen for investigation and the statistical techniques employed in the data analyses. The chapter begins by outlining the parameters and procedures undertaken for the data collection process. This section is then followed by a brief discussion of the study sample and the two time periods from which the sites are drawn, as well as the established criteria used to identify sites that were deemed to be appropriate and representative for inclusion in the study sample. The central portion of the methods chapter discusses the analytical variables. Initially, the three independent variables are introduced, followed by each of the 15 study variables (Table 1.2), which are divided into those directly relating to the physical body of the deceased and those relating to the objects associated with the body of the deceased. Finally, the chapter closes with a brief overview of the statistical methods, as well as a short exploration of the limitations encountered when using existing archaeological documentation for mortuary analysis.

Chapter 6: Statistical Data for Variables Relating to the Physical Body of the Deceased

Chapter 6, the first of the two data-driven chapters, presents the results for the analysis of the variables relating to the physical body of the deceased (Table 1.2). It begins by outlining the chapter organization, as well as providing a summary overview the study sample data and statistical limitations associated with the analyses of these variables. The discussions for each variable follow the same basic pattern outlined here. The variable is briefly re-introduced, and then baselines are established for both time period phase and subadult/adult burials. More detailed analyses follow these baselines, providing results for Early period subadult/adult burials and Middle period subadult/adult burials. A baseline is then established for island/mainland contexts burials, which is followed by more detailed analyses for island contexts subadult/adult burials and mainland contexts subadult/adult burials. From this point, the subadult sample receives its own set of analyses, first establishing a baseline comparing all subadult burials, divided into infant, child, and adolescent age groups. More detailed analyses follow, displaying the results for the three Early period and three Middle period subadult age groups, as well as the results for the three island context and three mainland contexts subadult age groups. Finally, each section concludes with a summary of the most important findings encountered in the analysis of that particular variable. Once all variables are presented, the chapter closes with a brief summary of the most salient results for all eight variables relating to the physical body of the deceased.

Chapter 7: Statistical Data for Variables Relating to Objects Associated with the Body of the Deceased

Chapter 7, the last of the two data chapters, covers the analyses of variables relating to objects associated with the body of the deceased (Table 1.2). The chapter format follows that presented in Chapter 6, with the overall chapter organization introduced first, followed by a brief overview of the statistical limitations for the analyses conducted in this chapter. As with Chapter 6, each of the variable results presented follow the same basic format, where baselines are established for the dependent variables, and then more detailed analyses follow with time period and context comparisons for subadult/adult, and infant/child/adolescent age groups. The chapter completes with a summary section on the most notable findings for the variables relating to grave goods associated with the deceased's burial contexts.

Chapter 8: Discussion and Interpretation

The last primary chapter comprises a discussion and interpretation of the results, which were presented in Chapters 6 and 7. The chapter begins with a brief review of the study's theoretical framework, focusing on the most central aspects of childhood, personhood, and practice theories as they relate to the interpretation of the study results, and ends with a consideration of the greater significance of this research project. The bulk of this chapter considers the statistical results for the 15 variables in light of the eight research questions presented in the introduction (Table 1.1). For each of the research questions posed, the overall premise is introduced first, which is then followed by a brief recapitulation of the statistical results for the variable(s) investigated, as they pertain to the research question. Following the result summaries, a contextualized discussion and interpretation takes place, reintegrating the statistical findings with aspects of Chumash mortuary practice from other archaeological studies, and in certain cases also with aspects of ethnographic and ethnohistoric literature.

The second half of the chapter begins with a discussion of the study sample demography. In this exploration, the basics of archaeological demography in hunter-gatherer societies is presented, followed by aspects of subadult morbidity, mortality, and comparisons to the greater population. The demographic analysis closes with a discussion and analysis of the population profiles generated for each site within the study. Following the demographic discussion is a brief overview considering ethnographic accounts of Chumash children in life and death. Finally, the chapter concludes with a discussion of potential future research, including: multivariate analyses of grave goods, osteological and chemical analyses of systemic stress, osteological and genetic testing for relatedness, reburials and infant container burials, and assessment of settlement context burials.

Chapter 9: Conclusion

The dissertation closes with a brief concluding chapter that summarizes the most salient results of the study, and re-establishes the significance of the study in both Chumash archaeological studies and wider mortuary studies.

Significance of Research

Past mortuary studies in the Chumash region have done a great deal to aid in the greater understanding of the pre-contact and contact-era Chumash, however, the level to which these studies have engaged with subadult data leaves a number of venues for further investigation, especially at the broad, regional level. With this in mind, the primary aim of this study has been designed to further expand and refine the collective knowledge regarding the treatment of subadults in pre-contact Chumash settings, based upon the gaps and assumptions identified in previous research projects. The results and interpretations presented herein provide the much-needed baselines of subadult mortuary treatment, to which further studies can use as a comparative basis against their own data, whether it be at the individual site level, coming from a specific sub-region, or comparing trends between other time periods. The results of this study aid in the greater identification of aspects of burial practice that operate on age-based distinctions, while also drawing attention to other aspects of burial treatment that do not appear to have determining factors based on age of the deceased. The study of subadults here goes beyond simple age comparisons against adult burials, but also intentionally includes the analysis of different subadult age groups (infant, child, and adolescent), so that more refined trends can be assessed in the prehistoric treatment of this under-studied group.

CHAPTER 2
Theory

Mortuary Archaeology

In the history of modern archaeological investigations, mortuary contexts have been among the forefront of many studies in regions throughout the world. Although these contexts vary in space and time, the central theme present within all of them is the intentional treatment of the dead by those who prepared them for burial. Cemetery location, grave spacing and placement, body positioning, and inclusion of grave goods are but of a few of the many variables that have intrigued archaeologists. Differentiation in these variables have prompted investigators to inquire into the meaning of these burial variations as intended by the ancient people who were responsible for burying deceased members of their community.

In literate ancient societies, such as those exiting in Egypt, Mesoamerica, and China, textual documentation provides strong evidence for the reasoning and significance of many of these burial trends as relevant to their respective cultures and worldviews. However, in prehistoric societies without written documents that provide an emic perspective of burial rites, interpretations are reliant on other evidence as found in the archaeological and ethnohistoric records. Anthropologists, sociologists, and archaeologists have grappled time and time again with ways in which to theorize how humans have dealt with death and burial. Early anthropologists grappled with the origins of religion and humans' treatment of the dead, which became the jumping-off point for later scholars to continue crafting new theories and methodologies for the study of the mortuary record in ethnographic and archaeological contexts.

The material evidence found in mortuary contexts provides a rich dataset in which to investigate questions of the daily lives of prehistoric peoples. This study is directed at examining the mortuary treatment of subadults in Early and Middle period Chumash contexts in the Santa

Barbara Channel region, as subadults—in this region as well as many others—often display the greatest amount of variation in their respective burials. This being the case, many scholars have considered the variation present in these burials as confounding variables to analysis and have largely glossed over or ignored children in their respective mortuary datasets entirely. The analysis presented here explores the variation of subadult burials against others in their respective cemeteries, as well as throughout the region in both island and mainland contexts. The diachronic aspect of this study considers burial variation over time prior to the arrival of European explorers in the 16th century. Seven sites from the Early period (*n* = 388 burials) and nine sites from the Middle period (*n* = 556 burials) are examined synchronically and diachronically, emphasizing the burial treatment of children as it relates to their incorporation into their respective communities.

This chapter provides a brief summary of the most formative theoretical scholars and their respective studies, working chronologically from late 19th century scholars of "primitive" religion through to the foundational works of the late 20th century archaeological post-processual movement. Following this literature review is a concise summary of the history and application of childhood theory to mortuary contexts, which provides the necessary contextualization of practice and personhood as meaningful lenses through which to examine the place of subadults in prehistoric mortuary contexts. Lastly, this chapter concludes with a summary and brief analysis of the most significant mortuary studies in the Santa Barbara Channel region taking place within the last half-century.

19th Century Anthropological Thought on Death and Burial in "Primitive" and Prehistoric Societies

Independent scholars and amateur (largely "armchair") anthropologists working in the late 19th century preoccupied themselves with studying "primitive" religions and cultural development through a unilinear evolutionary framework. Edward B. Tylor (1866, 1878, 1920[1871]) relied primarily on ethnographic information to construct his thoughts on the progression of religion from the animism of inanimate objects through monotheism, upon which Lubbock later elaborated into a fully-fledged framework (Bartel 1982:35). Tylor's (1878, 1920[1871]) syntheses of the available ethnographic information led him to put forth the idea that mortuary rituals among different societies were based on innate human thought-processes, linking dreams with the existence of an afterlife and the dichotomy between the body and the soul. His contributions to archaeologically available burial variables were nearly non-existent, with the exception of noting burial orientation, when aligned to the rising and setting of the sun, which he viewed as being cross-culturally symbolic of life and death (Bartel 1982:35). The early ethnographic syntheses and subsequent hypotheses regarding human mortuary behavior conducted by Tylor provided the initial framework from which later anthropologists, sociologists, and archaeologists would begin to consider these same topics.

James G. Frazer, who is perhaps best remembered for his synthesis of magic and religion in the *Golden Bough* (1925), further expanded on the initial ideas of Tylor regarding human involvement in death and burial as it related to religion in a number of his earlier publications (1886, 1913). Frazer (1913:88) viewed religion as a "function of culture," asserting that the transition from magic to religion, as envisioned through an evolutionary framework, was motivated by death and the dead (Davies 2008:295), and also identifying fear as a primary motivator for burial of the deceased (Davies 2008; Durham 1933). Although many of Frazer's ideas stem from the prevailing intellectual thought of the time, he can be commended for his aim to balance descriptive and comparative methods of investigation in his analyses of religion and death (Frazer 1913:29–30), as well as his suggestions regarding researcher ethics in terms of judgments and cultural relativism (Davies 2008:287).

In line with later archaeological thought, he was critical of scholars who assumed that a given society had only one manner in which they conducted burial rites for all individuals, and further suggested that status differences and manner of death may be reflected in burial rites (Frazer 1913:162–163); however, despite this relatively "forward" thinking for the time, he characterized the incorporation of grave goods with the deceased in terms of evolutionary religious development as "economic loss" and a "decided step backward" (Frazer 1913:149). One of the major draw-backs to his analysis of religion, death, and burial through an evolutionary framework is that he did not take into account the psychological role of mourners in mortuary ritual (Davies 2008:294), which would not be seriously addressed by scholars for nearly half a century.

Jens J. A. Worsaae and John Lubbock stood out amongst their contemporaries in their use of archaeological remains, largely grave goods, to make interpretations of prehistoric societies. Worsaae (1843) published his study on Denmark's prehistoric past using archaeological evidence from ancient Danish burial mounds. The success of this volume led to its translation into English six years later (Rowe 1962; Worsaae 1849). Based on the ideas that Worsaae developed in this work, the term "Worsaae's Law" was coined by later archaeological scholars (Rowe 1962). The basic principle of Worsaae's Law is that objects found in a particular grave were, all things being equal, contemporaneous, both in their creation and use as well as time of deposition in the grave (Worsaae 1849). Although there are certainly issues with this being applicable to all archaeological contexts, this basic idea is the foundation on which archaeological relative dating applies to artifacts in mortuary contexts (Rowe 1962:129). The greater implications of Worsaae's work were twofold: 1) grave associations could be used to "check" developing stylistic sequences for a particular group, and 2) if a sequence had already been developed, then it could be expanded to include other types of artifacts not previously incorporated into the sequence (Rowe 1962:135–136). Worsaae's hypotheses, although not meant to be applicable beyond his study of Denmark, paved the way for later archaeological work on seriation and stylistic typologies (Murray 2008:155).

Lubbock, like Frazer and Tylor, was a proponent of a strict unilinear evolutionary framework, which heralded contemporary European culture as superior to all other cultural groups past and present (Fabian 1972; Trigger 1984). Despite this mindset, Lubbock did much to jump-start the field of prehistoric archaeology and, like Worsaae, continually pressed the importance of archaeological information as it could be used to understand prehistory (Murray 2008). His best-known publication *Pre-Historic Times* (1865) was incredibly popular after its initial publication as it was written for a wide audience and was "the first monograph to 'humanize' prehistory through the use of copious ethnographical analogy to understand what life was like" (Pettitt and White 2014:36). Some of his notable achievements include: coining the terms "Paleolithic" and "Neolithic", being one of the first implementers of the three-age system (Stone, Bronze, Iron), using ethnology to interpret archaeological artifacts (Pettitt and White 2014), and even developing national legislation in Great Britain to protect prehistoric archaeological monuments (Murray 2008).

More specifically in the realm of very early archaeological mortuary studies, Lubbock (1865) conducted one of the earliest analytical studies of nearly 300 prehistoric British tumuli, recording variables such as body orientation, grave goods, burial mode, and grave type. Lubbock made direct connections between the grave goods of the deceased, linking them to a belief by that society in an afterlife, and correlated burial treatments by "stage" of religious belief. Based on the results of his analysis, he hypothesized that age, sex, and social status of the deceased affected the burial treatment of the deceased and that increased energy expenditure (in terms of time, labor, materials, etc.) in tomb construction correlated with the wealthy/elite of that society;

however, his data did not support the latter hypothesis. Many of his hypotheses and methods align with those of processual archaeologists operating nearly a century later, especially in regard to incorporating quantitative analysis into prehistoric mortuary studies, identifying variability in ethnographic mortuary practices, and making direct correlations between socioeconomic status of the deceased and their respective mortuary context (Bartel 1982:36–37).

20th Century Sociological and Anthropological Thought on Mortuary Analysis: Ethnographic Mortuary Ritual and the Culture-Historical Approach

Sociologists and anthropologists working in the early 20th century critiqued and continued to build off of earlier works, especially those of Tylor, advancing the academic dialogue by placing death and burial back into its greater societal context (Bartel 1982:37–38). Robert Hertz, Arnold van Gennep, and Émile Durkheim further developed conceptions of death in a dichotomous view, albeit each operating within their own respective framework. Unlike many scholars before him, Hertz, working primarily with Indonesian ethnographic data, was concerned with the psychological/emotional effects experienced by the community during the period of time surrounding the death and burial rites of an individual (1960 [1907]:27–28). Like Frazer, Hertz (1960 [1907]:34) identified fear as a strong motivator surrounding rites of burial, and like Lubbock, he drew explicit attention to the ways in which social status, age, and sex play a role in subsequent burial and mortuary rites, going even further by providing examples of how mode of death (e.g., suicide, etc.) could further affect these rites (1960 [1907]:76–77, 84–85). Hertz considered the rites surrounding death and burial both for the community and for the deceased individual to be a rite of passage (1960 [1907]:36, 80–83, 86), however, he was not as explicit in identifying and defining these stages as van Gennep.

Following closely behind Hertz's work, van Gennep published his seminal work *Les rites de passage* (1960 [1909]), in which he most notably creates a classificatory system that defined and described the different stages of rites of passage. Like Hertz, his research contextualized the social relationships between the deceased and the community of which they were a part (Bartel 1982:38). Rites of passage, according to van Gennep (1960 [1909]), included rituals such as those pertaining to initiation, marriage, and funerals, which could generally be subdivided into 3 subsequent parts: separation (preliminal), transition (liminal), and incorporation (postliminal). In his view, mortuary rituals existed for both the living and the deceased and were generally dependent on factors such as age, sex, and social status, which subsequently governed the appropriate behavior of the living (van Gennep 1960 [1909]:146–147). In terms of archaeology, van Gennep's conception of "territorial passage" is arguably the most useful, in that he correlates death as a rite of passage in which the deceased is removed from the community of the living and then, either physically or conceptually, moved to a new area designated for the deceased, allowing them to finally be incorporated into the realm/community of the dead (Bartel 1982:38–39).

Durkheim's contributions to the study of death and burial are more indirect, however, the larger significance of his research on the field anthropology makes him worth mentioning here. Durkheim (1995 [1912]:21) was critical of the formative scholars of "primitive" religion, criticizing Frazer for not proffering a definition of "religion," while critiquing not only the definition of religion put forth by Tylor, but also semantically deconstructing his hypothesis that dreams were the source for the conception of a body-soul dichotomy for animistic religious types (1995 [1912]:46–67). In its place, he offers a universally applicable dichotomy of sacred and profane from the perspective of that culture (*emic*) rather than that of a non-group member (*etic*). Despite their relative importance in advancing the study of religion, death, and burial rites, these early studies conducted by Hertz, van Gennep, and Durkheim are rife with their own theoretical and methodological issues. For example, much of what these scholars published was nebulously phrased, relied on a very limited sample of ethnographic groups, which they used to make sweeping universal assertions, and for the most part was not able to be objectively evaluated (Bartel 1972:39).

Alfred R. Radcliffe-Brown and Bronislaw Malinowski were two influential social anthropologists coming out of the British school of structural-functionalism, whose research greatly influenced later 20th century anthropological and archaeological research into mortuary practice (Bartel 1982:39). Following in the steps of van Gennep and Durkheim, Radcliffe-Brown's (1922) ethnography on the Andaman Islanders was concerned with the ways in which an individual's death affected the remaining group members, which he addressed by examining aspects of mortuary ritual. Radcliffe-Brown maintained that the "social personality" of the deceased did not dissipate with the death of the individual; rather, its continued existence caused disruption in the social order and could only be mitigated by the survivors through burial ritual, which dictated the appropriate collective social responses to mourning (Radcliffe-Brown 1922:285–286). Operating within a structural-functional framework, he believed rituals surrounding death functioned as a way to restore and maintain social equilibrium (Radcliffe-Brown 1922:285). Malinowski (1960 [1944]:73–74; 1948:34–35) also believed that mortuary ritual was used to maintain social equilibrium, however, he connected its function to restabilizing the equilibrium to combat the physiological (biological) and psychological effects of death on the community. Moreover, his view deviates from the respective views of Radcliffe-Brown and Durkheim in that he believed that in order to interpret mortuary practice one must examine community behavior both at the group and individual levels (Bartel 1982:40).

Working with archaeological data from prehistoric aboriginal groups in California, Alfred L. Kroeber (1927) aimed to make sense of the large amount of variation present in these different burial modes and contexts, which he could not easily attribute to ecological zones or even particular cultural areas. Contrasting with the theoretical stance of Malinowski, Kroeber believed that mortuary practices were outside of the realm of biological factors and social relationships (Bartel 1982:49). Based in archaeological and ethnological research, Kroeber (1927) concluded that in areas where cultural groups were in close contact with other groups, there should be a greater diversity of mortuary practices, whereas groups that have fewer opportunities for contact with other groups should exhibit consequently fewer types of mortuary practices. Rather than placing mortuary practices within the realm of social organization, he posits that "social practices of disposing of the dead are of a kind with fashions of dress, luxury, and etiquette" (Kroeber 1927:314), and, as such, are less reliable in terms of making interpretations about more comprehensive societal functions.

Eventually moving out the prevailing culture-historical theoretical framework of the time, V. Gordon Childe examined mortuary practices throughout many Old World societies and connected the variation evident in these mortuary practices to different levels of social organization. In addition to many works of archaeological synthesis, he developed a number of sweeping models relating to socio-cultural evolution (Tringham 1983:86). In his monograph, *The Danube in Prehistory* (1929:297, 348), Childe interpreted the presence of great displays of wealth in a select few graves with the majority being modest in nature as representing a "chiefdom"-level society. In a later publication, Childe (1945:17) asserted that there was an inverse correlation between levels of investment in mortuary practices and social complexity, where more "complex" societies would have little in the way of grave goods present in burial contexts.

20th Century Archaeological Thought on Mortuary Analysis: The Processual Viewpoint

The processual movement of the 1960s and 1970s was spurred on by archaeologists' dissatisfaction with the culture-history theoretical and methodological approach that had been the dominant paradigm in archaeology up until this point in time (Brown 1995; Trigger 2006). The culture-history approach identified the importance of putting together a historical narrative of the culture being studying based on the premises of stratigraphy and artifact seriation, using these methods, among others, to address specific research questions that were largely temporally based (Trigger 2006:290). Rather than continuing to create descriptive analyses based on the reconstructed history of a single culture, processual archaeologists aimed to construct and test hypotheses using ethnographic and archaeological data to create universal statements about human behavior that could be applied cross-culturally (Trigger 2006). These research methods commonly employed ethnographic analogy—to various degrees of success—when testing the applicability of these universal statements against mortuary behavior preserved in the archaeological record. Processualists (e.g., Binford 1971, Brown 1971, Saxe 1971, Tainter 1978) viewed material culture as a passive cultural aspect that was reflective of the structure of that society. From this stance, their primary aim was to ascertain the social status of the deceased based on mortuary variables, including sex, age, and type and quantity of burial goods, which they argued would be indicative of the society's overall socio-cultural system.

Peter Ucko's (1969) article, *Ethnography and the Interpretation of Archaeological Remains*, brought into question the utility of using ethnographic analogy to make interpretations about the archaeological record, with the hope that it would advance new theoretical and methodological frameworks to study prehistoric archaeological mortuary contexts. In his study, he selected ethnographic examples of mortuary practices—that were far from logical in nature—to serve as cautionary tales for archaeologists interpreting mortuary practices (e.g., the Ashanti as the "archaeologist's nightmare," Ucko 1969:273). Despite the seeming futility of "accurately" interpreting prehistoric mortuary contexts with archaeological data alone, Ucko brings to light a number of important considerations and suggestions for more critical analyses. Among these, he asserted that: presence/absence of inhumations, grave goods, etc. was not necessarily representative of belief in an afterlife or lack thereof (1969:264–265), presence/absence of grave goods was not necessarily indicative of wealth of status or individuals (1969:267–269), and that changes in burial mode (e.g., cremation to inhumation or vice versa) were unlikely to represent changes in religious beliefs or influence from contact with neighboring cultural groups (1969:273). Overall, Ucko (1969) recognized the dynamic nature of mortuary practice and acknowledged, what would later become a primary tenet of the post-processual argument, the role that ideology can play in burial rites, whereby subversion may be evident in the mortuary context and may not accurately reflect social norms.

In a concerted effort to move towards a more systematic study of the archaeological record, James Brown (1971) employed formal analysis on mortuary data drawn from the Mississippian archeological site of Spiro, which was then compared to the ethnographic chiefdoms of the Natchez-Taensa and Choctaw. The ultimate goal of his analysis was to test the validity of the archaeological data against that of ethnographic examples to identify structural relations of a "higher order" that could then be compared outside of a given cultural context (Brown 1971:110). In addition to his formal analysis of mortuary variables, Brown (1971) drew attention to how archaeological data could be affected by factors such as collection of non-representative samples by the investigator, temporal change, as well as various post-depositional (cultural and natural) effects on the material culture. He also emphasized problems of sampling in mortuary analysis, as many factors "cannot be regarded as an 'average slice' of the prehistoric culture—as if all cultural elements have equal likelihood of being represented" (Brown 1971:110;

see Brown 1981). Although Brown's use of formal analysis (through key diagrams) attempted to compare archaeological and ethnographic mortuary data on a more abstract level, it was not able to sufficiently manage the degree of mortuary differentiation actually present in the sample (O'Shea 1984:9).

Arthur Saxe's (1971) Ph.D. dissertation spurred on the processual movement's analysis of the mortuary record as directly pertaining to the status of the deceased individual during life, as well as using such burial data to assign a level of social organization to a given society. In his dissertation, Saxe drew heavily upon Ward H. Goodenough's (1965) conception of role theory, arguing that information drawn from the mortuary context could be used to provide information on the deceased's "social personality" (Saxe 1971:4). Goodenough envisioned what most anthropologists had termed "social position" or "status" as *social identities*. In his view, an individual had multiple different *social identities*, which dictate the rights and duties of the individual in a particular social interaction. These social interactions between different *social identities* he termed *identity relationships*. The interactions that form these *identity relationships*, entail certain rites and duties, however these in part depend on both personal choice (agency) and the occasion (context) of the interaction, the composite of which makes up the individual's *social persona* (Goodenough 1965:2–7). Death and subsequent burial of the deceased in the realm of his/her community creates a unique occasion for the different social identities held by the deceased to come together in one instance, which would have rarely, if ever, have happened during that individual's life (Saxe 1971:6).

Saxe developed eight hypotheses, which he tested with ethnographic data drawn from the Kapauku in Papua New Guinea, Bontoc Igorot in the Philippines, and the Ashanti in Ghana. The first four of these hypotheses focused on testing the degree to which the deceased's social identity was conveyed through the final mortuary context (Saxe 1971:65–71), and the final four hypotheses focused on testing the degree to which the mortuary context conveyed information regarding the social structure of the society, as compared cross-culturally (Saxe 1971:75–119). Saxe's eighth hypothesis is perhaps the most widely-debated of them all, whereby he posited that groups were more likely to bury their dead in conscripted areas (e.g., cemeteries) when there was competition for critical resources. Therefore, the maintenance and continuation of these conscripted burial areas were necessary for the legitimization of a particular group's right to these resources, which were reinforced through lineal ties to the deceased (Saxe 1971:119–121). On the whole, Saxe's research embodied the processual viewpoint that burial practices were a passive result of the society's structure and organization.

Contemporary with Saxe's dissertation research, was Lewis Binford's (1971) cross-cultural analysis of ethnographic mortuary data drawn from the Human Relations Area Files (HRAF); the ultimate goal of this analysis was to ascertain the level of social complexity for these societies based on differential burial treatment of individuals in mortuary practice. Binford vehemently opposed the culture-historical approach of mortuary analysis, critiquing the views of Kroeber (1927) in particular; this approach generally viewed mortuary practices as unstable, being independent from biological or social variables, and maintained that similarities in mortuary practices were due to diffusion (Binford 1971:10–11; 15–17). At the core of his argument, Binford believed that there was a direct relationship between the burial treatment of an individual and his/her social persona, which included components such as age, sex, social status/position (hierarchical), social affiliation (heterarchical), and condition of death (1971:17–18). He further argued that there should be a correlation between variable types represented in mortuary contexts and the kinship systems and subsistence strategy employed by that society. Binford used subsistence practices as a proxy for sociopolitical complexity, which he readily acknowledged was a "crude index" (1971:18); nevertheless, his use of these uncritical homologues became the focal point of criticism from later scholars of mortuary analysis. For societies of "minimal complexity", this included variables such as sex, age and personal achievement, and for societies of "higher" sociopolitical complexity, the variables of social position and sub-group affiliation would be evident, which acted independently of age and sex (Binford 1971:18). Ultimately, Binford deduced that, based on the results of his analysis of the ethnographic HRAF data, mortuary practices of a given society directly correlated with the degree of socio-political complexity exhibited by that society (1971:23).

The aforementioned seminal works of Binford (1971) and Saxe (1971) can be reduced to three fundamental assumptions. The first assumption is that, since there are structured relationships between human behavior and material remains left behind, cemeteries and all that they contained could be used to interpret aspects of societal organization and social hierarchy. Second, variability in cemetery populations is non-random and is linked to the social persona of that individual, the latter of which is dependent on various aspects of the deceased's social identities held while they were alive. Moreover, this social persona-driven mortuary variation in turn correlates to the overall societal organization of that group. Lastly, individuals who are treated differentially in life will also be treated differentially in death. These key assumptions constitute the basis for processual mortuary analysis, forming, as it would later be termed, the "Saxe-Binford Approach". Much ink has been spilled critiquing different aspects of this approach, however some principal critiques include an analytical focus that is too representationist in nature (focusing on ego's role in the social structure), and their assumption of a direct link between burial practices and socio-political complexity (Brown 1995).

In response to Saxe (1971) and Binford's (1971) respective works, Joseph Tainter (1978) identified difficulties surrounding the interpretation of archaeological mortuary practices, especially when ethnographic data were used to test hypotheses aimed at making cross-cultural generalizations about the prehistoric archaeological record. Despite the inherent difficulty, he did not throw in the metaphorical towel, but rather challenged archaeologists working with mortuary contexts to make the most out of the information to which they have access (Tainter 1978:108–109). He employed a systems-theory model that tested for presence of correlations between the relative level of energy expended in burial to the corresponding social rank of the deceased. Tainter hypothesized that individuals with higher social rank would have burial contexts that exhibited greater levels of energy expenditure than others in their burial population, however, his hypothesis was ultimately not supported by his data. His methodology was later criticized by scholars like David P. Braun (1981) who took issue with his methodology in terms of how Tainter measured and quantified energy expenditure in burial and the appropriateness of his statistical analyses to test these variables.

20th Century Archaeological Thought on Mortuary Analysis: The Post-processual Viewpoint

The post-processual movement of the 1970s and 1980s enacted a theoretical push-back against the processual movement of the 1960s, aiming to incorporate a more humanistic approach to interpreting the archaeological record; the post-processual movement returned their attention not only on the ancient people that produced objects found archaeologically, but also on the meanings these objects may have had to these groups. The post-processual critique drew upon the works of Clifford Geertz (1966, 1973), Pierre Bourdieu (1977 [1972]) and Anthony Giddens (1984) to provide a framework with which to interpret archaeological mortuary contexts. Post-processualists recognized the highly ritualized nature of mortuary practices and the symbols inherent within the ritual itself, as well as those that were intrinsic to the final burial context of the deceased. As such, they utilized Geertz's notion of symbol systems and ritual, which considered the role religion—as a symbolic system—played in structuring the behaviors of those that prescribe to it (1973:90). Specifically, he posited that in establishing rituals, "the moods and motivations which sacred symbols induce in men and the general conceptions of the order of existence which they formulate for men meet and reinforce one another" and also that "the world as lived and the world as imagined, fused under the agency of a single set of symbolic forms, turns out to be the same world, producing thus that idiosyncratic transformation in one's own sense of reality" (Geertz 1973:112).

Post-processual archaeologists further advanced the idea that mortuary practices should be interpreted as ritual that was performative in nature, and as such were fundamentally integrated into the society's social organization as well as the accepted social norms of the society that produced them. Giddens' conception of "structuration" and Bourdieu's theory of "practice" informed post-processual theory building to a significant degree in this regard. Central to Bourdieu's theory of practice is that of *habitus*, which are defined as systems of dispositions belonging to individuals that are durable but at the same time are largely subconscious modes of action or inaction. These dispositions shape and are consequently shaped by social practice, while having no conscious path or specific end in mind (Bourdieu 1977 [1972]:72). Giddens' (1984) idea of structuration complement's Bourdieu's ideas neatly, in that it considers the normal range of properties inherent to any social system, which are continually produced and reproduced by the individuals a part of that system. The social "rules" that stem from this system only exist based on the reproduction of these rules by actors, who are imbued with agency to either adhere to the social norms, or diverge, based on the context of a given situation and subsequently informed by the communal social knowledge shared with members of their community. Considering the specific context in which these processes occur is crucial to both the ideas of Bourdieu and Giddens, which—when used in archaeological theory building and interpretation—necessitates a careful consideration of the society's ideology in terms of how it may affect what remains in the archaeological record.

Fairly early on in the historical trajectory of the post-processual movement, Lynne Goldstein (1976, 1980, 1995) critiqued the processual notion that archaeological mortuary contexts directly and accurately correspond to a society's social structure and advocated for the need to incorporate a spatial dimension into analyses of mortuary contexts to better understand social differentiation. She took particular issue with Saxe's hypothesis number eight (discussed previously), primarily for the reason that he assumed different cultures would all ritualize a given cultural aspect in the same manner (Goldstein 1976:61). Her ethnographic testing of Saxe's eighth hypothesis with data from 30 cultural groups could not substantiate this hypothesis as being universally applicable and in her analysis found that there were a greater number of possibilities for social structure type as disposal areas became less formal in nature (Goldstein 1976:58). Goldstein's research strongly advocated for analyses of mortuary contexts via a space-time framework (1976:64) and that—because of the multidimensional nature of mortuary contexts—analyses of intra- and inter-site dimensions of sites are crucial to interpret these contexts (1976:254; 1995:101). Although Goldstein's research was on the early side of the post-processual critique, it is Ian Hodder and Michael Parker Pearson who receive the most acclaim for this theoretical paradigm shift.

Hodder (1982a, 1982b) took issue with the processual notions that mortuary practices could be read as a one-to-one reflection of a given society's social hierarchy. At a base level, Hodder and others in the post-processual movement shared a dissatisfaction with the lack of context-dependent analyses in processual research, as well as the way the prehistoric groups were subjectively classified into static categories of social complexity (Trigger 2006). One of Hodder's primary goals was to incorporate the notion of daily practice for individuals in prehistoric cultures, which contextualized the society's system of beliefs and ideas when interpreting the archaeological record (Hodder 1982a).

In his critique of the processual paradigm of mortuary analysis, Hodder considered the idea that:

> Burial ritual may be used as part of an ideology which faithfully represents and mirrors aspects of a living society, but it is equally possible that the ideology may be concerned with distorting, obscuring, hiding or inverting particular forms of social relationships. The patterning of material remains in graves must be understood as specific to a burial and ritual context, while the relationship between patterns in life and patterns in death must itself be seen as specific to a wider cultural context. [Hodder 1982a:152]

Interpreting the variation evident in burial practices within a given society relied on the idea of human agency, as proposed by Giddens (1984), which brought the focus back onto the individual, rather than using the processual interpretation of agency at the group level. The theoretical focus thus shifted to incorporate the role that ideology played in ancient societies and the contextual nature that archaeological interpretations needed to embody in order to begin to make sense of the archaeological record, especially in mortuary contexts.

Like Hodder (1982a), Parker Pearson (1982:100) critiqued the ineffective nature of role theory favored by processual archaeologists to interpret mortuary practices. Parker Pearson's (1982) analysis, based within a Marxist framework, focused on identifying changes in mortuary practices in England from the Victorian period to the 20th century. The results of his study led him to conclude that ritual symbolism expressed in the burial context was an idealized way of representing power relationships, whereby the expression of ideology in burial contexts could be used to mask actual power relationships in life. Consequently, Parker Pearson stressed the necessity of not overlooking the relationship between the living and the dead in mortuary analyses, as this relationship could result in a "renegotiation" of status displays affected by external factors like social competition (1982:112).

In their analysis of Neolithic barrows in England and Sweden, Michael Shanks and Christopher Tilley (1982) provide complementing arguments to those of Hodder (1982) and Parker Pearson (1982), whereby they interpreted these mortuary contexts in terms of daily practice. Based on their study, they concluded that these burial contexts were representative of lineage leaders legitimizing their hierarchical position through differential mortuary practices. The barrow-type burial strategy, in their opinion, reinforced an ideology where the group was favored over the individual, further creating and maintaining an ideology of community solidarity (Shanks and Tilley 1982:151–152). Furthermore, Shanks and Tilley (1982:129–130) emphasized the importance of taking into account ideology when interpreting mortuary contexts, as it could be used as a means to legitimize social order; in the same vein, they cautioned that what remains in the archaeological record may not accurately represent real social relationships.

Maurice Bloch and Jonathan Parry's introductory chapter in their edited volume, *Death and the Regeneration of Life* (1982), took a strongly structural approach to the analysis of mortuary rites as examined through different ethnographic examples. From their viewpoint, a society's social structure was kept in equilibrium through ritual, which prescribed appropriate emotional responses to the situation (e.g., death and burial) for those individuals involved (Bloch and Parry 1982:6, 11). Bloch and Parry (1982:11) further argued that funerals functioned as a mechanism to maintain the *appearance* of a static, stable social system, which in reality was highly dynamic and fluctuating; they were later critiqued by Peter Metcalf and Richard Huntington (1991:6) who drew attention to the uncertainty of the potential outcomes in these "shows of power" that could just as well end negatively as they could positively. Bloch and Parry recognized the importance that ideology played in burial rituals and also identified its limitations, including the possibility that these rituals may not accurately represent the actual social order that was standard in society (1982:38–39).

Like Goldstein, Ellen-Jane Pader (1980, 1982) recognized and advocated for the importance of taking into account cemetery spatial structure in mortuary analyses, even going further to include analyses of individual grave spatial structure. Pader took issue with the simplistic and limiting interpretive methods favored by processual archaeologists, arguing that ranking status from low to high, or wealth from poor to rich, masked the complex and dynamic nature of social relationships (1980:143). Working within a Marxist-structuralist framework, she combined elements from symbol and ritual theory to not only assess *what* objects were included in mortuary contexts, but more importantly inquire *how* they were used, taking into account the specific context in which they were found (Pader 1980, 1982). Like her contemporaries, Pader was concerned with incorporating ideological factors, both of the archaeological population *and* of the archaeologists conducting the studies, into mortuary studies, asserting that "material culture is indeed an integral part of the total societal context and as such plays a critical role in the creation and recreation, interpretation and reinterpretation of society" (1982:35).

John O'Shea's contributions to the archaeological study of mortuary contexts are substantial. In his monograph, *Mortuary Variability* (1984), he carefully established different types of formation processes responsible for transforming the original burial context (primary depositional pathways) into what remains for archaeologists to find (postdepositional processes), as well as examining the issues surrounding identification of mortuary variability in the archaeological record. O'Shea (1984:32–38) presented four basic principles that identified the relationships constraining variability in the mortuary record and on which become the "building-blocks" to base mortuary analyses: 1) societies have a regular manner(s) in which they dispose of the dead, 2) mortuary populations reflect the living population in terms of demographic and physiological characteristics, 3) each burial is conducted based on directives (both prescriptive and proscriptive in nature) that control the characteristics of burial and are consistent with the deceased's social position in life, and 4) Worsaae's Law—objects present in a burial context are contemporary with each other at the time of burial. His results, using matched ethnographic and archaeological data, were able to establish many regular factors that affect patterning of variability in mortuary contexts, and also identified some limitations with the application of ethnographic knowledge to archaeological contexts; for example, he observed that horizontal distinctions are less likely to be identified when compared to vertical distinctions, if there is only archaeological data on which to base interpretations (O'Shea 1984:302).

In a later publication, O'Shea (1995) used the Hungarian Maros group as his archaeological case-study to demonstrate the necessity of incorporating multiple archaeological sites into synchronic and diachronic mortuary analyses. He criticized the single-site approach in that it: separates mortuary activities from other societal aspects, is not equipped to distinguish meaningful patterns in mortuary differentiation from idiosyncratic ones, and does not provide control for temporal aspects, which gives a false notion of static patterning (O'Shea 1995:126). He instead advocated for a multi-site approach, since it places the archaeological burial context in time and space and also "provides a more complete (and theoretically consistent) representation of past mortuary programs and, as such, is more reliable basis for understanding the social implications of observed mortuary differentiation" (O'Shea 1995:127). Following the approach laid out by O'Shea (1995:127), multi-site mortuary analyses allow for the identification of region-wide (intentional) patterning in the archaeological record from mortuary differentiation that may only be site-specific, or worse, idiosyncratic entirely.

Aubrey Cannon's (1989) research employed both ethnographic and archaeological case-studies to compare mortuary variability against the respective historical context of each society she included within her analysis. Cannon drew from Kroeber's (1927) seminal article, maintaining his position that patterns evident in mortuary contexts should be classified as trending fashions (1989:437). As such, she examined mortuary samples from Victorian-to-modern England, Northeast Iroquoia and ancient Greece to support her claim that—despite their vast differences in time and space—these three groups demonstrated competitive mortuary expressions (Cannon 1989:437). In her findings, she concludes that competitive mortuary displays expressing social status will either peak in popularity or there will be such degree of diversity that patterns cannot be meaningfully established (Cannon 1989:447). Cannon (1989:436–437) recognized that symbols in mortuary behavior underlie their expression in context and that manipulating these symbols and their meanings was an effective way to control the expression of social status. In line with her post-processual contemporaries, Cannon (1989:447) cautioned that status may be expressed in non-material ways and also that accurate representations of social status may not be evident through the mortuary context due to the fact that displays of fashion often follow cyclical patterning.

In 1991, P. Metcalf and R. Huntington published a revised version of their oft-cited monograph *Celebrations of Death* (first edition 1979). Like Ucko (1969), Metcalf and Huntington (1991) paid careful attention to the role that belief systems played in mortuary ritual as well as the extent that these contexts could also express subversive examples of social norms. Metcalf and Huntington (1991) evaluated three primary themes in this monograph: the relationship between emotion and mortuary ritual, the ways in which ritual is significant on a larger political level, and mortuary symbolism universals. In order to address these topics, the authors employed the use of ethnographic examples, especially those coming from seminal anthropological, sociological, and archaeological works dealing with mortuary ritual (e.g., Durkheim 1995 [1912]; Frazer 1925; Hertz 1960 [1907]; Radcliffe-Brown 1922; van Gennep 1960 [1909]). Metcalf and

Huntington (1991) used these foundational studies on death to put together a synthesis of this literature that examined death and mortuary practices in a different manner than was used by the original authors and further developed their arguments surrounding the transmutability of mortuary ritual (Ekengren 2013).

Ian Morris (1992) stressed a context-dependent analysis informed by a structuralist perspective in his research on ancient Greek and Roman mortuary contexts. Despite working with Old World archaeological examples, he maintained that ethnographic data are beneficial in evaluating questions of ideology in the mortuary record. His research framework was informed by Gidden's "Theory of Structuration", whereby he stressed that the individual actor cannot be studied without considering his/her place within the larger social structure of which they are a part (Morris 1992:3). According to Morris (1992:1–2), the living and the dead are linked through mortuary rituals, the latter of which are imbued with symbolic actions that in turn represent aspects of social structure and daily life. In order to address both synchronic and diachronic change in the sociocultural systems of ancient Greece and Rome, he developed a framework founded on five different axes: 1) typology, 2) time, 3) contexts of deposition, 4) space, and 5) demography (Morris 1992:24–27). Morris continually stressed the importance of context in creating meaningful analyses of mortuary contexts and employed textual data with other variables, including mortuary architecture, burial spatial patterning, osteological information, and grave goods.

Similar to the earlier studies of Cannon and Parker Pearson, Kathryn Kamp (1998) also examined ethnographic mortuary contexts as arenas for competitive display of social status. She challenged Lubbock's (1865) assertion that burials with greater degrees of energy expenditure correspond to elites in society, and also critiqued Binford's (1971) argument, whereby she acknowledged that social persona was often represented in burial contexts, however there was no direct link between social persona and societal social complexity (Kamp 1998:81). Using data drawn from the HRAF, Kamp concluded that social status was most commonly symbolized in mortuary contexts and was evident in some form in most societies in her study (1998:90). When considering variability evident in mortuary contexts she made a number of cautionary statements to archaeologists, perhaps the most salient being to not over-interpret slight variability in burial treatment or grave goods as these are not reliable markers of individual status; however, when burials express high levels of energy expenditure or ostentation, she suggests that they most likely are representative of social competition and acquisition of wealth than social hierarchy (Kamp 1998:100–101).

The history of studies of death and mortuary practices is long and meandering, and for that reason only the most salient works could be discussed within this section. It is only by examining this history in detail that one can fully appreciate the full range of academic discourse that has built upon the works of earlier scholars to create meaningful ways in which to approach the study of mortuary contexts in the archaeological record. The research design implemented in this project employs both diachronic and synchronic analyses to study mortuary contexts in the Santa Barbara Channel region with the intent to produce a much more comprehensive study of Early and Middle period Chumash mortuary practices than currently exists. The explicit focus on the treatment of children in mortuary contexts provides a much-needed baseline for mortuary studies in this region and is a useful point of comparison for future studies if children in prehistoric mortuary contexts, regardless of time period or region.

Archaeological Investigations of Children and Childhood

Although much productive research has been done in the Santa Barbara Channel region regarding mortuary practices in both prehistoric and historic contexts, children are consistently given only a passing mention, or ignored entirely in these analyses. This bias is not unique to this geographic and cultural region either, which is troubling in that it continues to ignore a sizeable proportion of the prehistoric population. Given that subadult mortality rates in prehistoric populations are relatively high, compared to modern standards (Goodman and Armelagos 1989; Lewis 2007), the burial data available to us from the Santa Barbara Channel region provides a large sample that promises to contribute substantially to the study of prehistoric subadults. By applying fundamentals of childhood theory, which focus on both the social and biological aspects of infants, children, and adolescents, we can begin to make connections between these groups of individuals and the adults in their greater community, further ascertaining aspects of their social identities within their community. Based on available archaeological data and osteological estimations of age from the original excavators, investigations into the relationship of material culture associated with burials of infants, children, and adolescents, as compared to adults in the community, can begin in earnest (Baxter 2005; Halcrow and Tayles 2008; Prout 2000).

Before continuing further, it is necessary to define the terminology that will be used throughout this dissertation regarding classification of infants and children. When discussing "age," especially in archaeological studies, this over-arching term is often broken down into three component parts: physiological/biological age, chronological age, and social age (Gowland 2002:10; Halcrow and Tayles 2008:192). Physiological/biological age refers to the body's aging process, chronological age refers to the elapsed time from birth, and social age includes a culturally-constructed component referring to the expected behavior and status of an individual in a particular age category (Gowland 2002:10; Halcrow and Tayles 2008:192). Connections between the aforementioned age components and the language used to refer to their antecedents are often unclear when using largely interchangeable terms of "juvenile," "subadult," "nonadult," "adolescent," "child," etc. Each of these terms is associated with a host of semantic problems (see discussion in Halcrow and Tayles 2008:192–197). However, the use of these terms is most often criticized in that authors do not clearly define their use of terms, thus posing problems for consistency in discourse across the discipline. Additionally, our modern Western conception of children and childhood can also be problematic especially in our interpretations. Rebecca Gowland rightly asserts:

> Terms such as child, adolescent, […] are, however, culturally loaded: they do not simply convey to the reader a chronological age, but a whole schema of appropriate social behavior and attributes derived from a modern western context. Imposing these social norms (whether consciously or not) onto the past is a practice that serves not only to perpetuate and validate our current age paradigm, but has the potential to misrepresent the population under study. [Gowland 2002:10]

Attempts to reconstruct aspects of childhood in prehistory must therefore be explicit in defining their terminology, and careful not to impose Western notions of childhood on ancient examples in their interpretations of archaeological data.

Given the limitations of documentation-based and collection-based research (see Chapter 5: Materials and Methods for a full discussion), physiological/biological age estimations as determined by the original excavators are used when available for the individuals in this study. Generally, adults were considered those with a biological age of 18 years and above while subadults were designated as those aged at 17.9 years or less. For detailed analysis, subadults were more finely classified into three sub-categories within the range of 0–17.9 years: infants (<3 years old), children (3–9.9 years old), and adolescents (10–17.9 years old). Following Siân Halcrow and Nancy Tayles (2008:197), the term "subadult" will be used to collectively refer to infants and children based on estimations of physiological/biological age and in no way implies a hierarchical relationship between "subadults" and "adults". When discussing specific burials, the subadult being discussed will be referred to as either an "infant," "child," or "adolescent," depending on the designation provided by the original excavators. Although these designations are less than perfect and inconsistencies in the original excavation methods leave many things to be desired, there is no reason to "throw the baby out with the bathwater", nor should we, as Tainter jocularly put it, "simply shake our heads, mutter something unrepeatable, and conclude that interpretation of mortuary remains is impossible" (1978:108). There is great value to the analysis of existing archaeological collections and even more so when the aim is to draw attention to a portion of the population that has been so long over-looked.

A Brief Historical Overview of Childhood Theory

Childhood theory was a late-blooming field of study, and it was not until the 1990s that anthropology and archaeology began seriously borrowing from sociological and psychological bodies of theory that had been investigating childhood since the 1970s (James 1998; Lillehammer 2010). Stemming from medieval historian Philippe Ariès' (1962 [1960]) claim that our modern notion of childhood could not be directly applied onto the past, academic dialogue focusing on children and childhood in the past began to emerge in earnest. The initial phase of interest (1970–1990) was slow to take hold in academia, with a gradual increase in the number of studies beginning to include children and culturally specific notions of childhood (Lillehammer 2010:20). However, when the United Nations held its "Convention on the Rights of a Child" in 1990, it allowed the contemporaneous academic discourse to consider a body of standards that solidified the modern world-view on children, and enabled an atmosphere open to further development of socially informed and context-specific theories on childhood (Bluebond-Langner and Korbin 2007; Crawford and Lewis 2008; James 2007; Lillehammer 2010). Following the aftermath of this convention, childhood theory went through its second developmental stage (1990–2005) and became a theoretical endeavor in its own right (Lillehammer 2010:20).

It was during the second stage of the development of childhood theory that archaeology began seriously engaging with previous discourse on children and childhood and began constructing and testing new theoretical and methodological models. Coming out of this theoretical movement, the primary focus was to move away from modern and principally western views of childhood, since they cannot be accurately applied to ancient populations. Rather, the emphasis turned to considering the idea that children can be, and were, social actors with their own identities in the past as well as today (Baxter 2005, 2008; Kamp 2001, 2005; Prout and James 1990; Sofaer Derevenski 2000). It is critical that children be seen as active participants in society—in regard to economic, social, political, and religious venues—as these are closely connected to the related material culture (Baxter 2005, 2008; Halcrow and Tayles 2008; Lucy 2005; Prout 2000; Schwartzman 2001; Sofaer Derevenski 2000; Wileman 2005). Since the preliminary stages of childhood theory in archaeology, archaeologists have published many rigorous applications of childhood theory and methodology in archaeological contexts, in both settlement and mortuary contexts around the world.

In specifically applying childhood theory to mortuary contexts, archaeologists have successfully addressed complex issues that include: individual identity, ethnicity, class, age, and production in economic activities. Lynn Meskell (1994, 1999a, 1999b) successfully analyzed differentiation in children's burials at the site of Deir el-Medina during the New Kingdom period of Egyptian history. In her findings, she was able to ascertain differences between the Eastern and Western cemeteries and discern that subadults were buried in specific groupings based on age-dictated lines on the hill in the Eastern necropolis; the youngest individuals were buried at the base of the hill moving upward in relative age to the middle of the hill where the adolescents were buried (Meskell 1994:38, 1999b:163). In another study, Julie Wileman (2005:73) discussed how, through the study of prehistoric Natufian groups, researchers were able to see changes in the treatments of subadult burial contexts over time. From these initial analyses, archaeologists are beginning to tease out the overall social organization through the different ways in which the bodies of adults and subadults were treated in mortuary contexts.

Additionally, Anne Ingvarsson-Sundström (2004) studied identities of children in Middle Helladic Asine, by using both osteological markers of health and activity, as well as the related material culture of burials. In her study, she was able to establish that Asine children had active and changing social roles throughout their lives and that at birth, neonates were considered individuals within their society and awarded the same type of mortuary treatments as older children. These cases are a select sample of some successful ways in which archaeologists have employed aspects of childhood theory in different regions and time periods. Also coming from a bioarchaeological approach, Sandra Wheeler (2009) used mortuary data from the Kellis 2 cemetery at the Dakhleh Oasis in order to investigate infancy and childhood during the Roman period of ancient Egyptian history. Her analysis employs skeletal and dental indicators of stress and trauma, which revealed that juveniles within her study experienced moderate stress, low trauma rates, and a general improvement in health from pre-Roman samples. Her study also investigated seasonal mortality patterns, which indicate that the mortality peak was in the Spring season, consistent with textual records. Overall, the results of Wheeler's (2009) analysis indicate that mortuary data from the Kellis 2 cemetery exhibit strong evidence for early Christian doctrine regarding the resurrection, which was evident in all burials, age, sex, and social status notwithstanding.

More recently, North American archaeologists have begun to adapt aspects of childhood theory to their respective projects. For example, the research of Nancy Phaup (2015) has examined Anglo and African American children at the late 19th century James River plantation in Virginia. Her study includes a close historical analysis of records documenting daily activities, as well behaviors and expectations for children during this time period, male children in particular. She argues that the lives of children, assessed through data coming from four separate households, differed based upon aspects relating to settlement patterns, dwellings and house-lots, providing a new perspective to life during late 19th century plantation life. In another study, Steven Dorland (2019) conducts a multi-scalar pottery analysis to assess 15th century northern Iroquoian childhood learning experiences pre-contact. His results indicated that younger potters were incorporated into adult potting activities, rather than having them be isolated, and that flexible learning techniques were encouraged, which necessitated minimal adult interference. Dorland (2019) argues that pottery production activities were similar in both study regions, and that traditions and cosmologies were active learning experiences during the pottery-making process.

The larger context of death is one arena in which we are able to consider discrete social events—such as the preparation of the body or burial rites—and the ways in which they would have impacted and involved the greater community (Gillespie 2001). Those responsible for burying the deceased made active decisions in regard to place of burial, body position and ornamentation, as well as grave goods meant to accompany the dead into the next life. This final representation of the body creates a socially contingent identity bestowed upon the deceased by those burying them (Gillespie 2001; Tung 2014). In the case of subadults in this study, the burial context perhaps has more to say about the relationship of the child to his/her caretakers/community, and subsequently provides us with archaeological information regarding these relationships at different stages in their lives based on the style of burial and the objects their caretakers chose to accompany them in death (Gillespie 2001:78). The temporality of the human life-cycle is particularly important in this situation, given that children are biologically and socially in a state of flux; their untimely deaths convey further details of their lives, and moreover their relationships with the larger community of which they were a part, that we cannot ascertain from household contexts alone (Geller and Stockett Suri 2014:499–501).

A meaningful way to incorporate the study of age identity and that of the relationships between the living and the dead in mortuary contexts is to apply archaeological conceptions of personhood to the archaeological record. Christopher Fowler (2004:85) defines personhood simply as "the condition of being a person as conceptualized by a given community." This uncomplicated definition is loaded with interpretive meaning when we apply it to mortuary contexts with subadults of various ages, as we can use it to assess two key aspects of archaeological personhood: age and treatment in mortuary practice. With these two aspects in mind, we can further consider differential treatment of subadult burials as "snapshots" of different stages of childhood (potentially signifying rites of passage), as well as being indicative of when full personhood is attained by the individual (as dictated by rules within the cultural community) (Fowler 2004:26, 44–45, 82; see also Gillespie 2001, Joyce 2000). To evaluate these aspects of personhood, we must closely consider the relationship between the deceased, the greater community, and the associated mortuary record, which is best understood and interpreted through concepts of practice (Budja 2010; Knapp and van Dommelen 2008).

Since theories of personhood and practice go hand-in-hand, we must take into account that what we find preserved in the archaeological record is the result of the past interactions of people (Fowler 2004:42). Practice theory often invokes Pierre Bourdieu's concept of *habitus*, which can be helpful when interpreting past habitual interactions that were shared at the individual and community-level. Personhood is regulated through daily community practice, and we must consider mortuary events at the community-level[1] when we interpret archaeological burials, as well as the community-level conception of personhood (Fowler 2004:45; Gillespie 2001). Thus, the material culture associated with a given burial is significant on many levels, but first and foremost, we must consider these objects to be representative of the relationships and connections between the living and the deceased, as well as signifying the community's conception of personhood (Fowler 2004:32).

The cemeteries in the Santa Barbara Channel region included in this study provide a respectable sample of subadults (*n* = 190, 21.6%) from prehistoric Chumash mortuary contexts, both on the Northern Channel Islands and the mainland. The primary significance of this study is to examine subadult mortuary treatment diachronically and synchronically between prehistoric island and mainland contexts to assess general patterns and differential treatment in burial. Applying aspects of childhood and personhood theory to this sample of mortuary data allows for a preliminary analysis of this often-overlooked group and provides a much-needed baseline for the analysis of childhood in prehistoric Chumash archaeological record. By contextualizing burial rites within the larger social matrix of which they would have been a part, material aspects of the burial context such as body positioning, grave goods, grave depth and location, etc. can be used to further assess differential social identity of the subadults in the sample. Thus, the analysis and interpretation of this dataset has significance beyond just this regional temporally explicit subadult sample, rather it is indicative of the experience of the population as a whole, enhancing our understanding of the past.

[1] It should be noted that there are ethnohistoric accounts (e.g., van Hemert-Engert and Teggart 1910) and archaeological evidence (e.g., Hull 2012, Hull et al. 2013) of Chumash mortuary events that extend beyond the individual community level.

Recent Mortuary Studies in the Santa Barbara Channel Region

The past 50 years of archaeology in the Santa Barbara Channel and Santa Monica Mountains regions have yielded a number of significant Chumash mortuary studies. These studies include both those that are bioarchaeological in nature, as well as those based in analyses of burial contexts and associated material culture. Earlier studies focus heavily on the identification of hierarchical status and heterarchical group affiliation based on different burial variables, while later studies address larger issues of relative and chronometric dating to elucidate regional trends in prehistoric and historic burial contexts over time. Both bioarchaeologically-focused and material culture-based studies deal with subadults differentially, as discussed below. The aim of this study is to build on this previous research and provide a synchronic and diachronic multi-site analysis of mortuary contexts on both the Northern Channel Islands and the Santa Barbara Channel mainland in both the Early and Middle periods using a perspective of mortuary theory based in the conception of personhood. The primary focus is to assess differential burial styles of subadults as compared to adults in their respective communities as well as between subadult age cohorts and compare these across time and space.

Southern Chumash Mortuary Studies: Santa Monica Mountains Region

In the Santa Monica Mountains region, a number of scholars have conducted mortuary studies on Chumash sites with primarily Late and historic period components. Linda King's (1969) analysis of Medea Creek examined three distinct areas in the cemetery, recording variability in terms of age, sex, grave depth, burial position and orientation, and burial accompaniments. Based on her findings, she argued that the cemetery was divided into two primary sections (east and west) based on kinship groupings that were derived from sociopolitical status, with the wealthier, higher status burials being circumscribed in the western part (L. King 1969:60). L. King used the same Medea Creek dataset for her dissertation (1982), however, a more fine-grained analysis caused her to reconsider some aspects of her previous conclusions. Her overall argument remained basically the same, in terms of the spatial delineations of the east and west portions of the cemetery being separated on basis of wealth and status, but she also noted clear patterns in the distribution of age groupings in the western part of the cemetery, notably that of subadults.

In this analysis, L. King (1982:66–94) identified that subadult burials were more prevalent in the western section of the cemetery, more frequently positioned on their right sides, more varied in burial orientation and grave depth, and had larger quantities of goods than did adults. The Lorenz curves used in her study—quantifying differentiation in wealth—also support the idea that there were more marked wealth inequalities in the form of burial goods with subadults than with adults (L. King 1982:114–116). Overall, L. King modified the conclusions she made in her earlier report (1969), concluding in her dissertation that the society buried at Medea Creek was ranked, but not stratified, and that adult status was more likely expressed outside of the final burial context (e.g., commemorative mourning ceremonies), given the large displays of wealth evident in subadult burials (1982:99). Both of L. King's analyses using the Medea Creek cemetery data set a strong baseline for later mortuary studies in the general region, and her use of John P. Harrington's unpublished ethnographic field notes, as well as ethnohistoric data, set the stage for contextualizing archaeological data with these rich sources of additional data.

Patricia Martz (1984) examined mortuary data from the cemeteries at Medea Creek, as well as Malibu (CA-LAN-264; both prehistoric and historic components), Trancas Canyon (CA-LAN-197) and Simo'mo (CA-VEN-26) in order to address diachronic change in the nature of Chumash sociopolitical organization. Her analysis showed that the earliest cemetery—Trancas

Canyon, dating to the Middle period—had distinctly different mortuary patterns than the other, later cemeteries in her study, which she suggested was representative of a "pre-Chumash" group. These later cemeteries also evidenced a higher proportion of subadults with socially-significant mortuary goods, which she attributed to ascribed status and the importance of lineage membership in society (Martz 1984:476). In this study, Martz provided regular comparisons between adults and children, often distinguishing between "adolescent", "child", and "infant" in the results of different analyses. Overall, Martz's (1984) research provides a fairly wide diachronic range of sites in the Santa Monica Mountains region, contributing key evidence of changing mortuary trends over time.

Terisa Green (1999) used the Mission period components of the cemeteries at Medea Creek and Malibu to investigate how Spanish Catholic conversion and acculturation affected Chumash religious practices, ideology, and ritual. She intentionally avoided using Mission data in her analysis, maintaining that the archaeological data provided a richer insight to exceptions to the patterns recorded in the Mission records and registers, and she further acknowledged the limitations of her study, since it only incorporated two sites limited to the Southern Chumash region (Green 1999: 237–240). On the whole, Green was able to demonstrate that traditional Chumash religious practices continued throughout the Mission period, albeit with some minor changes. Both cemeteries continued traditional burial practices after contact, with age-based differential treatment in burials (e.g., subadults with "wealthy" burials) at the forefront of this continuity, however, it is clear that interment practices had increasing variability over time, and especially at Malibu, the lack of ritual items seems to indicate a change in ritual performance (Green 1999:195–198).

Lynn Gamble, Phillip Walker, and Glenn Russell's (2001) analysis of the prehistoric and historic cemeteries at *Humaliwo* (Malibu) is one of few studies to combine intensive ethnographic and ethnohistoric data with artifact and osteological analyses to assess the social significance of mortuary patterns at this site. This study included the analysis of subadult data from both prehistoric and historic cemeteries, with some interesting findings. Based on close spatial relationship, quantity and type of grave good inclusions, and osteological analyses, the authors concluded that certain burials suggested kin-based groupings within the cemetery (Gamble et al. 2001:207). Differential treatment of subadults was also present in both mortuary contexts, where a small number of infants and children were buried with a substantial quantity of beads, as present in the Middle period cemetery (Gamble et al. 2001:201), and ethnographically-attested objects of high status, like *tomol* (sea-faring plank canoe) pieces, as evidenced in the Historic period cemetery (Gamble et al. 2001:198). Given the differential nature of grave good inclusion for subadults in both cemeteries, the authors concluded that the massive amount of wealth bestowed on a small number of subadults was not due to the emotional responses of survivors, but more likely representative of kin-group social status relationships, as the majority of subadults were buried with few to no grave goods (Gamble et al. 2001:197).

Chumash sociopolitical organization became a topic of intense debate during this period of time, which is further exemplified in Jeanne Arnold and Terisa Green's (2002) response to Gamble and colleagues' (2001) Malibu article, along with Gamble and colleagues' (2002) reply to Arnold and Green. Arnold and Green (2002:763–766) took issue with Gamble and colleagues' (2001) analysis of the cemeteries at Malibu, among their critiques they suggested that the cemetery data used was not representative and the authors did not account for effects of mourning behavior in the assemblages. Arnold and Green (2002:769–770) also took issue with Gamble and colleagues' use of the terms "social ranking" and "political evolution", and ultimately, they discount the authors' conclusion that there was evidence for a single Chumash chiefdom by the Middle period. Gamble and colleagues' (2002) reply provided a detailed point-by-point rebuttal to the critiques brought up by Arnold and Green (2002), while also drawing attention to areas in which Arnold and Green did not supply adequate support for their arguments. This scholarly debate exemplifies the tenuous nature of identifying chiefdoms—and sociopolitical organization writ large—from archaeological data, and Gamble and colleagues' (2001) article contextualized the need to use multiple lines of evidence to construct a strong argument when considering sociopolitical issues at the archaeological level.

More recently, the data from the cemeteries at Malibu were re-analyzed by Bornemann and Gamble (2018) through a lens of resilience theory. The authors compared the burial assemblages from the prehistoric and historic cemeteries to elucidate potential differences in mortuary rituals, symbolism and social complexity over time. Bringing new light to the Malibu dataset, Bornemann and Gamble (2018:180–181) documented the placement of beads in historic period burials that had 1,000 or more beads to assess whether bead placement occurred before interment/transit to the burial place or at some point afterwards. Eleven individuals from the historic cemetery had enough information to determine bead placement, and nine of these 11 individuals had beads placed around their neck or head, more likely indicative of the deceased being adorned with strings of beads prior to interment. In line with what might be expected due to the prevalence of age differentiated burials, seven of the nine aforementioned individuals were subadults. Bornemann and Gamble (2018:182–184) identified a number of factors that indicate Chumash resilience over time, including: evidence of maintained ascribed social and political hierarchies, persistence of shell beads used as currency in the Contact period, and use of Spanish objects as a way to continue native traditions with new materials. Ultimately, the authors credited the level of resilience seen at the site of Malibu to Chumash agency, whereby the maintenance of traditional lifeways was largely maintained through and beyond Spanish contact, albeit taking some new forms and incorporating new materials not previously available to them (Bornemann and Gamble 2018:186).

Santa Barbara Channel Bioarchaeological Studies

A number of studies have looked primarily at bioarchaeological data to assess different facets of Chumash prehistory in the Santa Barbara Channel region, and at the forefront of the scholars was Phillip Walker, whose individual and collaborative works greatly enhanced the current understanding of ancient Chumash lifeways. Many of his collaborative and individual research projects brought new light to ancient Chumash subsistence practices, health, and patterns of violence, the most salient of which are discussed below. Walker also collaborated with other scholars to further advance knowledge of differential preservation of human skeletal remains (Walker, Johnson, and Lambert 1988), markers for social complexity (Lambert and Walker 1991), and evolution of treponemal disease (Walker et al. 2005), which are not discussed further here. Walker not only published prolifically, but also trained and inspired a wide number of students to follow in his footsteps and further pursue bioarchaeological research in the Santa Barbara Channel region.

Phillip Walker and Jon Erlandson (1986:379) examined carious lesions on the dentition of burials from Santa Rosa Island, which they found to decrease significantly over time. In their study, males from early sites had fewer instances of dental caries than did females, which the authors attribute to a sexual division of labor that gave males and females differential access to carbohydrate-rich foods. Since the rate of caries not only decreased over time, but became relatively equal between males and females, the authors also suggested that there was an increase in the ratio of protein to carbohydrates, which coincided with an increase in the economic importance of fishing (Walker and Erlandson 1986:380). Addressing a similar question, but from a different perspective, Walker and Michael DeNiro (1986) examined stable carbon and nitrogen Isotope ratios from bone collagen to assess level of dependence on marine vs. terrestrial resources for sites on the mainland and islands. Their results were rather unsurprising, with island populations exhibiting a strong reliance on marine resources, mainland interior populations exhibiting a strong reliance on terrestrial resources, and coastal mainland populations exhibiting a mixed diet of marine and terrestrial resources, with a slightly higher emphasis on marine foods (Walker and DeNiro 1986:54–55). Although unsurprising, their results supported other avenues of archaeological research, including faunal and artifactual analyses (Walker and DeNiro 1986:60).

Continuing to examine issues of health on the Northern Channel Islands, Walker (1986) challenged a commonly-held assumption that adoption of a maize-based diet (deficient in iron and protein) was the most significant cause of porotic hyperostosis in North American Indian agriculturalists. By comparison, his research showed that the Chumash population living on the Northern Channel Islands had similar levels of porotic hyperostosis (in the form of cribra orbitalia), even though they did not practice agriculture and subsisted primarily on marine resources, which were rich in protein and iron (Walker 1986:346). The results were most notable when presence of cribra orbitalia was correlated with age: half of individuals under 18 years of age were affected by cribra orbitalia, while only 30% of individuals over 18 years of age were affected (Walker 1986:348). The youngest individuals in the study were around 3-4 years old and the lesions they exhibited were not active at the time of their deaths, which indicated that their cause would have been experienced in their first few years after birth (Walker 1986:349). Overall, Walker (1986:350–353) concluded that diarrheal infections were most likely the primary factor that caused cribra orbitalia in young children via contaminated water sources, but this factor may have also been adversely affected by prolonged breast-feeding practices, helminth infections, and malnutrition.

Moving somewhat away from pathological indices of health, Walker (1989) began investigating the prevalence of traumatic cranial injuries on the Northern Channel Islands. When island and mainland populations were compared, well-healed cranial fractures were rare among the mainland population and prevalent among the island population (Walker 1989:318). Instances of cranial trauma in island populations increased with age, being more common for people 15 years or older, and cranial injuries were also more common and more severe (i.e., deeper) for males than females (Walker 1989:317). Walker (1989:318–320) suggested accidental injuries, interpersonal violence, and self-inflicted injuries as potential factors that could have resulted in the type and frequency of cranial trauma present in his sample, providing a number of ethnographic comparisons for each. Ultimately, he concluded that—for the Chumash Island populations—interpersonal violence exacerbated by resource shortages on a circumscribed geographical environment was the most likely cause for this phenomenon (Walker 1989:321).

Sandra Hollimon (1990) investigated grave good patterning along with skeletal pathologies to assess patterns of differential health caused by gendered division of labor and sociopolitical status in Chumash society; her study spanned the Early, Middle, and Late periods from both island and mainland contexts. A primary limitation in her study was that the only burial and artifact association data came from her sample of cemeteries on Santa Cruz Island, and thus, this information may not be fully representative of mainland or other island contexts. In prehistoric periods, her analysis did not show significant differences in overall health or grave good type or quantity for males or females, causing her to conclude that all types of status positions could be attained by both males and females (Hollimon 1990:182–187; 203–207). On the whole, she concluded that gender was not a primary determinative for how individuals were treated in burial contexts (Hollimon 1990:208). In terms of overall health for her study population, Hollimon (1990:187) did not find any significant differences between males and females, and considering the results over time, she found that there was much variation in population health, which took a downward (e.g., more instances of poor health) trend. Her results demonstrated that, during the time period between the Middle and Late periods, individuals exhibited the poorest levels of health in her study, which she attributed primarily to population aggregation compounded by adverse environmental conditions (Hollimon 1990:187–190).

Patricia Lambert (1993) conducted a study to assess the overall health of Channel Islands (Santa Cruz and Santa Rosa) populations over the course of the prehistoric era. She used periosteal lesions—most commonly attributed to infectious disease—as a proxy measure of health to assess contemporary living conditions and disease history for the sites in her study (Lambert 1993:510–511). Her results indicated that overall level of health fluctuated over time, where the number of individuals exhibiting at least one skeletal lesion increased during the Early and Middle periods, but declined during the Late period; this was found to be statistically significant between Early and Later period populations. General trends indicated that males had a higher occurrence of periosteal lesions than did females, and adults more frequently had lesions than did subadults (Lambert 1993:515). In terms of physical stature, there were statistically significant differences evident in femur length between the earliest and latest periods in the study for both males and females, indicating a decline in stature over time (Lambert 1993:516). Lambert (1993:517) estimates that the loss of femur length over time would have accounted for an average reduction in stature of about 10 cm between earliest and latest populations.

Following her study on health of Chumash Island populations, Lambert's (1994) dissertation investigated causes of violent conflict in band and tribal societies using prehistoric and historic Chumash cemetery data from both island and mainland contexts. In order to assess levels of violence, Lambert (1994:32–49) examined forearm parry fractures, cranial injuries, and projectile injuries, noting their distribution for both age and sex. Interestingly, the results of Lambert's (1994:110, 136) study suggest that infants and children were not objects of violent conflict, however there was evidence that adolescents suffered trauma indicative of such violence. She correlated her previous research on skeletal indicators of stress (Lambert 1993; Lambert and Walker 1991; Walker and Lambert 1989) with her evidence of traumatic violence to make a case for resource stress being a primary factor in periods of violence and conflict (Lambert 1994:160). Her results demonstrated that, during the late Middle period violence reached its highest level, which she correlated with adverse climatic conditions and overall poor health (Lambert 1994:194, 202–203). This was further supported by her findings that, following the Middle period, populations increased, however, physical indicators of violence and conflict significantly decreased (Lambert 1994:199–200). All in all, Lambert makes a strong case for resource stress acting as a sizeable factor for periods of violence and conflict on the Channel Islands.

Sabrina Sholts (2010) collected metric and nonmetric cranial data obtained from cemetery sites on Santa Cruz and Santa Rosa Islands in order to identify phenotypic variation throughout the Holocene. Her results indicated that there was no evidence of population replacement in any period, which was exemplified further by her findings that Early period island populations were fairly homogeneous (Sholts 2010:196–200). However, there was evidence of decreasing levels of health for both males and females over time (Sholts 2010:220). Except for the earliest cemetery in her study, there was more variability observed for male crania than for female crania, which she interpreted as a shift from patrilocal to matrilocal postmarital residence patterns, occurring during the Early period (Sholts 2010:193, 217). Unfortunately, Sholts did not include subadults in her study, her reasoning being that they were not equally distributed among her study sites.

Santa Barbara Channel Mortuary Studies: Individual Site Analyses

Operating in the heyday of the processual movement, Tainter (1971) published a study on Northern Chumash mortuary data coming from salvage excavations at the Fowler site (CA-SLO-406) in San Luis Obispo County. Given the dominant theoretical paradigm at the time, Tainter's primary focus was to assess the level of social organization present at the Fowler site through analysis of the mortuary data. His discussion focused on particular features found in this site's burial contexts, as well as noteworthy artifacts that further supported his argument. For example, Tainter (1971:6) commented on a young adolescent (Burial 10), who was buried with an elk tibia sweat scraper/sword. Along with other examples of subadults buried with items of "high status", he interpreted these burials as evidence for inherited social roles, given the young ages of these individuals. Following in the footsteps of Gary Stickel (1968), Tainter (1971:16) concluded that the mortuary evidence from the Fowler site was indicative of a stratified social system with differentially ranked kinship groups and inherited status, dating back to at least AD 500.

More recently, Gamble (2017) published an article on the *El Montón* site (CA-SCRI-333), which is located on Santa Cruz Island. Part of this analysis examined previously excavated cemetery data drawn from the three cemeteries present on the large shell mound. Gamble used Lorenz curves and Gini coefficients to assess level of inequality present in the cemeteries' burial goods, which both indicate clear degrees of inequality in the cemeteries (Gamble 2017:Figure 6,

Table 3). When examined diachronically, the two earlier cemeteries showcase a higher proportion of subadults in comparison to adults than what was seen in the later cemetery, and in all cemeteries the subadults were commonly interred with numerous grave goods (Gamble 2017:439–440). Gamble (2017:441) also identified spatial patterning for high-status burials similar to that seen at Malibu. In terms of the level of material inequality present, she suggested that high-status individuals were buried with beads and ornaments, and that the presence of these objects in the graves of subadults "implies ascribed status, or at the very least, special treatment that others were not afforded" (Gamble 2017:440). The exceptional treatment of subadults in these cemeteries also implied that the Chumash attributed personhood to even the youngest subadults. The long-term use of this site, over a period of three millennia, mark it as a significant "persistent place" and the mortuary events that transpired over time were one way in which it was demarcated as such (Gamble 2017:441, 447).

Santa Barbara Channel Mortuary Studies: Regional Analyses

Arguably the most important mortuary study recently conducted is that of Chester King (1990), whereby he used artifacts from grave lots drawn from a wide variety of Chumash cemeteries to construct a temporal sequence for the Santa Barbara Channel region. His analysis primarily used shell beads and ornaments as key temporal markers, but also included other artifact types to supplement his chronological divisions. Some of the burial lots in C. King's study belonged to subadults, however the scope and intent of his study precluded detailed analyses of this kind. Using principles drawn from Worsaae's Law (C. King 1990:17), C. King's analysis refined the existing artifact-based seriation for the Santa Barbara Channel region, significantly improving and narrowing discrete periods of use for diagnostic artifacts. His chronology separates the Santa Barbara Channel temporal sequence into three primary periods, Early, Middle, and Late, with a number of more granulated sub-divisions for each period (C. King 1990:Table 1; see also Chapter 3—Regional Background for a more detailed discussion of C. King's sub-periods). C. King's (1990:16) study was based on the premise that a society's artifacts were reflective of (and aided in maintaining) their political, economic, and religious systems, and that changes in these artifacts also reflected changes in the respective system, which they were supposed to maintain. His analysis of burial lots from such a wide span of Chumash existence allowed him to identify some key shifts in Chumash political, economic, and religious organization.

Throughout the Early period, C. King (1990:117) noted that there was very little change evident in artifact type, especially when compared to the level of change observed in artifact types of the two later periods. He believed this to be indicative of a lesser degree of differentiation in political, economic, and religious institutions during the Early period than what was seen in the later Middle and Late periods. C. King (1990:117) posited that the institution of inherited leadership brought about the end of the Early period. This being the case, he observed evidence of very little effort being put into maintaining the economic system during the earliest sub-phase of the Middle period, which he believed was due to populations maintaining the newly established system of inherited leadership (C. King 1990:153). When compared to the Early period, C. King (1990:154) noted that there was a lesser proportion of Middle period burials that were associated with beads. He believed this to be indicative of a pattern of less wealth being interred with the deceased, which provided further support for the idea of centrally organized sociopolitical and economic institutions in operation. During the Late period, C. King (1990:196) noted that there was fairly clear differentiation in political and economic sub-systems, with a continuation of the hereditary-based sociopolitical organization and an increasingly complex economic system based on beads. He also observed that, rather than interring large quantities of beads with a select few individuals as in previous periods, it was more common in the Late period to create caches of objects, which included beads and other objects of ornamentation; beads during the late period were more commonly used as currency, rather than as valuable markers of status for display (C. King 1990:196). Overall, C. King's research refined the Chumash chronology in the Santa Barbara Channel region and added a nuanced understanding to the long development of highly complex social, political, and economic institutions in the region.

More recently, Raymond Corbett (2007) examined material and non-material aspects of mortuary practice in the Santa Barbara Channel region across a wide variety of prehistoric sites dating to the Early and Middle periods. He recorded demographic, geographic, and temporal patterns of burial contexts within his study in order to better understand ethnic/cultural continuity in the region. His study broadly examined a sizeable number of Early and Middle period sites, but only focused on a small proportion of these for "intensive analysis." For all of the burials in his study, Corbett (2007:142) analyzed the variables of position, side, orientation, age, and sex for both time periods and different geographical sub-regions. Since his primary goal was to identify "grammar and syntax" evident in mortuary practice, his non-material analytical methods were narrowed down to those that were able to discern whether or not the same social distinctions were marked through both material and non-material mortuary practices (Corbett 2007:213). Although some variables exhibited substantial variation over time, Corbett was able to tease out some underlying patterns.

Regarding non-material aspects of mortuary practices, for all burials, his results indicated that flexed burials were the most common type across time and space (Corbett 2007:144–145). When the variable of burial side was examined for all burials, the most common type was face-down, and even though this was somewhat variable over time, a clear pattern emerged in which face-up burials were predominant prior to the beginning of the Middle period, but gave way fairly quickly to a high proportion of face-down burials, which became the norm during the rest of the Middle period (Corbett 2007:158–162). When all burials were examined for burial orientation, a higher level of variation was observed, with a west orientation ultimately being the prominent direction for burials (Corbett 2007:173–175). Corbett's results (2007:187–188) suggested that in terms of non-material aspects of mortuary practice, such as burial position, side, and burial orientation, there was no significant difference in the treatment of infants (< 1 year old), subadults, or adults, which was consistent for both the Early and Middle periods. Corbett (2007:194–195) interpreted this to mean that females and subadults had essentially equal opportunities to have the same non-material burial treatment as adult males, which was true over time and in all geographic sub-regions. These results further indicated that the regional variations present in the more nuanced analyses eventually homogenized into a mortuary treatment that consisted of flexed, face-down burials, which were oriented towards the west, and Corbett believed this apparent shift—more or less complete by the end of the Middle period—to be evidence of wider social and cultural interaction occurring in the region as a whole.

In his examination of material aspects of mortuary practices, Corbett's (2007:266) analysis focused only on 13 assemblages from his larger sample, identifying "cliques" and "linked pairs" from their respective burial-associated artifacts. Based on his results from this sample of sites, he initially distinguished the presence of shell beads, abalone shells, and ornaments as burial goods that structured mortuary treatment, however, he qualified that these objects did not suggest particular social or gender roles, but should rather be seen as "neutral signifiers". When he removed shell beads from this same analysis, a pattern emerged in which utilitarian objects became the primary distinguishing factor of sub-groupings, cross-cutting sex and age-divisions, which he attributed to the presence of a moiety-type social organization (Corbett 2007:267).

After comparing the results of the analyses of material and non-material aspects of mortuary treatment, Corbett (2007:268) noted that groups and pairs linked by material mortuary patterns did not necessarily share the same burial arrangement and concluded that material and non-material mortuary treatments were indicative of different types of social groupings, relationships, and affiliations.

Direction of Dissertation Research

The aforementioned regional studies have done much to advance our collective knowledge of the prehistoric Chumash in the Santa Barbara Channel region. The authors have addressed a wide variety of research questions, which, by necessity, have dealt with subadult data unevenly. At worst, subadults are excluded entirely from analysis and at best they are included as an aside in general analyses of greater mortuary populations. This is just a general observation of the differential incorporation of subadults into these mortuary analyses, which is generally reflective of the larger patterns evident in archaeological mortuary studies, and not a reflection on the quality of the aforementioned works. This dissertation considers the previous analyses and interpretations of subadult mortuary contexts and works toward expanding this knowledge to further refine aspects of differential burial treatment for subadults. By examining these data through a lens of personhood based on a framework of childhood theory, this study considers subadults from prehistoric Chumash mortuary contexts from a more nuanced angle than the aforementioned studies. This explicit focus on subadults throughout the Santa Barbara Channel region in the Early and Middle periods provides a comprehensive analysis of prehistoric burial trends as well as situating treatment of subadults within their greater social context.

CHAPTER 3
Regional Background

The Prehistoric Californian Coast

The primary aim of this chapter is to provide a general sketch of the natural history of the California coast, narrowing down more specifically to focus on the human occupation of the Santa Barbara Channel. This chapter begins with a brief overview of the California coast including the most recent Ice Age, covering in more detail key geological and ecological features for the "Southern Coast" sub-region, of which the Santa Barbara Channel is a part. A summary of the different ecological zones in the Santa Barbara Channel region follows, which includes a discussion of corresponding flora and fauna most relevant to Chumash archaeological data and ethnohistoric accounts. The central portion of the chapter examines Chumash lifeways, stemming from archaeological and ethnohistoric records corresponding to the time of European contact, and is followed by a discussion of some of the foundational cultural chronologies developed for the region. The chapter concludes with summary sections on the repercussions of European contact, and a brief history of the archaeology of the region from the late 19th century to present-day.

Today's California coastline stretches nearly 2,000 km from end to end and includes a diverse number of ecological zones, which are differentiated from one another by variables such as soil type, elevation, and climate (Chartkoff and Chartkoff 1984; Jones 1992; Moratto 1984). During the last glacial cycle, the ancient Californian coast went through a number of drastic geological and ecological changes (Axelrod 1967; Heusser 1960; Jones 1992; Minnich 2007). Among these changes included a period of deglaciation, beginning approximately 19,000 years ago, which caused the sea level to rise at an incredible rate, reaching very nearly to modern sea levels around 6,000 years ago (Kennett et al. 2007:352). One notable aspect of the changing

Middle Holocene climate in western North America occurred between 9,000–6,000 years ago, which scholars have referred to as the altithermal, hypsithermal, xerothermic, or climatic optimum (Kennett 2005; Kennett et al. 2007; Schwitalla and Jones 2012). During this period of time, global temperatures were more variable, with warmer weather and less rainfall, which resulted in episodic abandonment of certain areas by native cultural groups, as well as marked cultural changes (Braje et al. 2005; Kennett 2005; Kennett et al. 2007; Schwitalla and Jones 2012).

The "Southern Coast" of California

The "Southern Coast" sub-region (Figure 3.1), from which the sites for this study have been drawn, consists of the area falling between Morro Bay to the north and Santa Monica to the south (Moratto 1984:115–116). Central and Southern California, encompassed within the Southern Coast sub-region, exhibit a mild Mediterranean climate, with warm dry summers and cool wet winters along the coast paralleled by more extreme temperature differentials and increased rainfall in the interior valleys (Erlandson 1994; D. L. Johnson 1977, 1983; Landberg 1965; Moratto 1984). Rainfall in this region follows a fairly consistent seasonal pattern, with winter rains beginning in late fall-early winter and ending in late spring-early summer. The summer months are characterized by a dense cool layer of low-stratus marine fog that moves over land in lieu of rainfall (Heusser 1960; D. L. Johnson 1977; Landberg 1965; Pisias 1978). The Southern Coast region is relatively mountainous with a generally rugged coastline that has intermittent bays and stretches of coastal plain (Erlandson 1994:22).

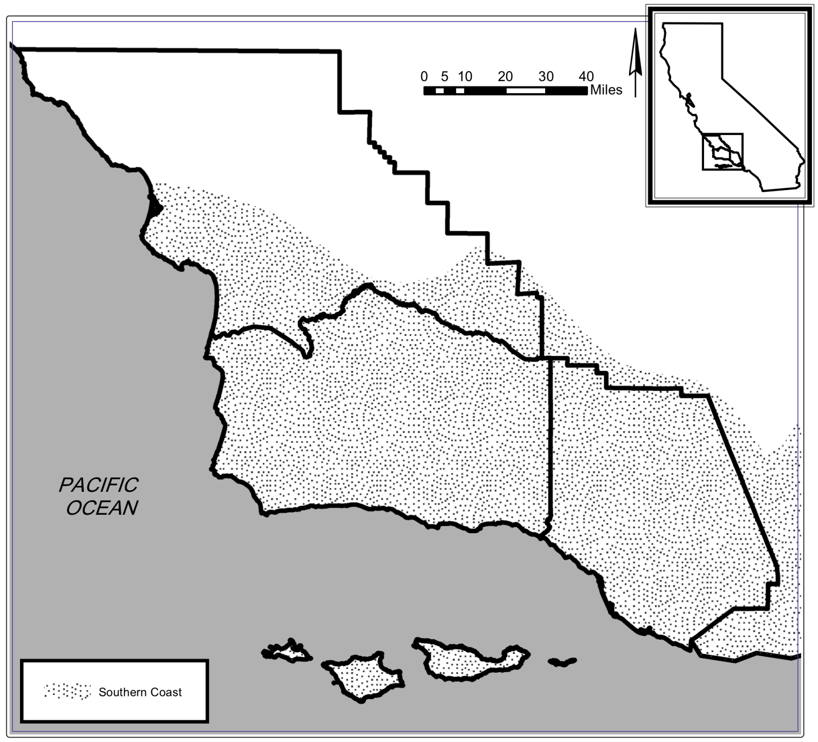

Figure 3.1. Study area with Southern Coast sub-region indicated (after Moratto 1984:Figure 4.4).

Focusing in on the study area more specifically, it is worth noting that the Santa Barbara Channel region is particularly well situated geographically due to its two primary natural boundaries: the Santa Ynez mountains and Pacific ocean. The south-facing coastline, coupled with the ocean-side protection of the four northern Channel Islands (Anacapa, San Miguel, Santa Cruz and Santa Rosa), result in fairly calm ocean activity even in winter (Glassow and Wilcoxon 1988:38). The Santa Ynez mountains, a transverse range that runs east-west, reaches elevations over 1000 feet and provides another level of geographic protection from the more extreme inland weather patterns and temperatures (Erlandson 1994, 1997; Glassow and Wilcoxon 1988; D. L. Johnson 1977; Landberg 1965; Moratto 1984).

Along the Santa Barbara Channel coast, marine terraces dating to the Pleistocene make up the majority of lower elevations (Erlandson 1994; Heusser 1960; Jones 1992) and the cliffs that border the shoreline periodically give way to lagoons and sloughs, the latter a type of seasonal estuary (Carlisle and Starr 2009; Jones 1992; Landberg 1965). The coastal beaches in this area, when compared to regions further north, are much less rocky in composition (Glassow and Wilcoxon 1988; Jones 1992). By comparison, the Northern Channel Islands are relatively mountainous and cliffs line much of their respective coastlines, however, they lack coastal plains and sizeable beaches that can be found on the mainland (Landberg 1965:46). The relatively shallow waters (between ~6–25 m in depth) immediately off the coast enable the survival of a rich ecosystem based upon the lush kelp beds that attach themselves to both rocky and sandy surfaces (Glassow and Wilcoxon 1988:38), while deep submarine canyons further off shore are also home to a wide variety of marine species (Gamble 2008:240). Additionally, the relatively cool California current and local wind patterns converge just offshore, resulting in an upwelling effect that draws nutrients from deep waters up, which attracts plankton, further supporting a wide array of species in the Santa Barbara Channel (Johnson 2000:302).

Santa Barbara Channel Region Biodiversity

The mild climate and diverse ecological zones of the land and sea made the Santa Barbara Channel region an attractive place for humans to reside (Erlandson 1997; D. L. Johnson 1977, 1983). The earliest evidence for human occupation on the Northern Channel Islands comes from human remains discovered at Arlington Springs on Santa Rosa Island, dating to approximately 13,000 BP (Johnson et al. 2002; Orr 1968). The majority of evidence from other sites, primarily on San Miguel and Santa Rosa islands, but also to a lesser extent on Santa Cruz Island, point to the settlement of the region occurring between approximately 12,000–8,500 BP by "Paleocoastal peoples" (Erlandson et al. 2011, 2015a, 2015b; Glassow et al. 2007; Gusick 2012). The abundance of resources available practically year-round in close proximity to coastal and island sites is recognized as a significant factor in the relatively high prehistoric population density reconstructed for this area, which is especially true for large sites found along the coast (Aschmann 1959; D. L. Johnson 1977, 1983; Jones 1992; Moratto 1984). The following two sections briefly summarize some examples of regional flora (Table 3.1) and fauna (Tables 3.2–3.5) most relevant to Chumash archaeological and ethnohistoric data (see the following works for more comprehensive discussions: Burt and Grossenheider 1976; Emerson 1982; Gill 2015; Horne 1981; Ingles 1954; Leonard 1971; McLean 1978; Ricketts et al. 1985; Timbrook 1990, 2007).

Mainland Flora of the Santa Barbara Channel Region

When not experiencing significant periods of drought, the Santa Barbara Channel region receives approximately 45 cm of rainfall per year, which sustains the rich diversity of plant life found in this area (Moratto 1984). Landberg (1965:46) identifies six distinct, geographically expansive, vegetation communities (including those located inland) that can be found within the confines of Chumash territory: coastal sagebrush, chaparral, California prairie, oak woodland, pinyon-juniper woodland, and Ponderosa pine forest. On a much narrower geographic scale are the three coastal communities: coastal strand, coastal salt marsh, and fresh water marsh, which also comprise Chumash territory (Landberg 1965:48).

Immediately along the mainland coast, coastal sagebrush or sage scrub communities can be found on the gently sloping, well-drained ancient marine/riverine terraces (Aschmann 1959:37). These communities most commonly exist in elevations between sea level and 3,000 ft, however, they tend to stay in lower elevations when directly bordering chaparral communities (Landberg 1965:48). Coastal sagebrush is also aptly referred to as "impoverished chaparral," in that both share many of the same plant species, albeit much more sparsely dispersed across the landscape for the sagebrush community (Aschmann 1959:37). The areas that supported this vegetation community were not particularly favored for food collection by the Chumash when compared to other areas, but they did collect at least one species of sage from this community for subsistence purposes (Aschmann 1965; Landberg 1965).

The chaparral community parallels coastal sagebrush in terms of elevation at sea level and extends even further—to approximately 4,000 ft—in elevation, and is readily found on foothills and mountain slopes (Aschmann 1965; Landberg 1965). Chaparral is collective term for a number of shrub-like, drought-resistant plants; many of these plants produce protein-rich seeds, which were collected and consumed by the Chumash (Chartkoff and Chartkoff 1984; Landberg 1965). This vegetation community contained many species that the Chumash collected for subsistence purposes (Chartkoff and Chartkoff 1984; Moratto 1984), including: buckthorns (Morgan and Cummings 1990), ceanothus, chamise, manzanita, mountain mahogany, and scrub oak (Junak et al. 2007:Table 13.4), chia and sages (Erlandson 1980:Table 5-4), and salal (Junak et al. 2007:Table 7.1). In addition to these species, the Chumash also collected amole (soap plant; Gamble 2008:Table 2) and geophytes, like Blue Dicks (Gill 2015:Table 1.1), as well as manzanita berries from chaparral communities (Moratto 1984:23). It is worth noting that many species found within this particular plant community thrive via regular episodes of burning, as ethnohistoric accounts describe the Chumash periodically manipulating their natural environment through intentional burning (Anderson 2005; Aschmann 1965; Cuthrell et al. 2012; Erlandson 1994; Landberg 1965; Moratto 1984; Timbrook 1993, 2007; Timbrook et al. 1982).

The California prairie community consists primarily of bunchgrasses (Landberg 1965:46), which many early European explorers identified as being located near water channels. Unfortunately, over time these grassland areas were used extensively for agricultural and urban development. As such, very little of this environment still exists, and where it does, it is almost entirely devoid of the native bunchgrasses that would have existed in prehistoric times

(Aschmann 1959:37). This community often shares borders with foothill woodlands, which is one of the two types of oak woodland found in Chumash territory. Foothill woodland communities are rather patchy in their dispersion across the landscape and they often comingle with chaparral communities— in addition to California prairie communities—in some areas (Landberg 1965:46). The second type of oak woodland community is valley woodland, which is commonly found on flood plains and alluvial fans. The dominant species in the foothill woodlands are California live oak and interior live oak, while the California white oak is the dominant species in the oak woodland community (Landberg 1965:48). These oak communities were territorially controlled by the Chumash, due to their production of acorns, a staple food that could be stored in large quantities for future use (Aschmann 1965; Gamble 2008).

Also found within Chumash territory are two additional woodland/forest communities: Pinyon-juniper woodland and Ponderosa pine forest. Both of these communities generally exist at elevations equal to or exceeding 5,000 ft (Landberg 1965). Pinyon-juniper woodlands are generally located at slightly lower elevations than Ponderosa pine forests on interior-facing mountain range slopes (Aschmann 1965:42). This community was fairly productive for the indigenous populations, who would come and harvest pinyon nuts and juniper berries from single-leaf pinyon and California juniper trees, as well as from other related species (Aschmann 1965; Landberg 1965). Ponderosa pine forest often shares a border with chaparral communities at higher mountain elevations and tends to be located on dry/rocky areas of relatively high elevation (Aschmann 1965; Landberg 1965). This forest community commonly includes species of canyon live oak and California black oak (Landberg 1965:48). Native communities were able to use the forest area as hunting grounds, while also having access to many plant species from which to gather in the surrounding meadows (Aschmann 1965).

Last, but certainly not least, are the coastal area communities, which consist of coastal strand, coastal salt marsh, and fresh water marsh. The coastal strand community, made up largely of succulents, is found directly abutting the ocean on sandy beaches and dune environments and thrives in the high humidity of this area. Plants, like Chenopodiaceae, benefitted enormously from the nitrogen-rich soil found here, which was a product of the dense native population in this particular zone. Both fresh and salt-water marshes were also found within this area. The coastal salt marsh can be found in tidal lagoon areas behind barrier beaches, however there are a limited number of species living in this zone, primarily halophytic in nature. In addition, the fresh water marsh community could be found along water channels that drained toward the sea (Aschmann 1959). A number of species could be found here, including reeds and rushes (Junak et al. 2007:318, Table 7.8), as well as marsh grasses (Gamble 2015), along with native trees, like poplars, sycamores, and willows (Junak et al. 2007).

Flora of the Northern Channel Islands

The following discussion provides an overview of the primary ways in which the Northern Channel Islands included in this study differ from the mainland in terms of vegetation communities (for detailed discussions encompassing Northern and Southern Channel islands see: Holland 1986; Junak et al. 2007). On the whole, the Channel Islands share the mild Mediterranean climate of the mainland, and as such, many of the vegetation communities found there resemble those that can be found on the mainland. These similarities with mainland vegetation communities are especially true for the Northern Channel islands (Junak et al. 2007; Landberg 1965). However, many island species are subject to ecological specializations not seen on the mainland, such as gigantism, dwarfism, mobility loss, and niche shifts (Junak et al.

2007:231). On Santa Cruz and Santa Rosa islands, for example, gigantism is evident in species such as Catalina cherry and endemic scrub oak (Junak et al. 2007; Timbrook 1990, 1993, 2007).

Table 3.1. Flora of Importance to the Chumash in the Santa Barbara Channel Region

Santa Barbara Channel Flora	
Common Name	*Scientific Name or Species*
Amole, "Soap Plant"	*Chlorogalum pomeridianum*
"Blue Dicks"	*Dichelostemma pulchella*
Buckthorn	*Rhamnaceae* sp.
California Black Oak	*Quercus Kelloggii*
California Juniper	*Juniperus californica*
California Live Oak	*Quercus agrifolia*
California White Oak	*Quercus lobata*
Canyon Live Oak	*Quercus chrysolepis*
Catalina Cherry	*Prunus ilicifolia ssp. Lyonii*
Ceanothus	*Ceanothus* spp.
Chamise	*Adenostoma fasciculatum*
Chia, Sage	*Salvia* sp.
Common Reed	*Phragmites australis*
Endemic Scrub Oak	*Quercus pacifica*
Interior Live Oak	*Quercus Wizlizenii*
Manzanita	*Arctostaphylos* spp.
Mountain Mahogany	*Cercocarpus betuloides*
Poplar	*Populus* sp.
Rushes	*Juncus* spp.
Salal	*Gaultheria shallon*
Saltgrass	*Distichilis spicata*
Scrub Oak	*Quercus berberidifolia*
Single-Leaf Pinyon (Pinon)	*Pinus monophylla*
Sycamore	*Platanus racemosa*
Willow	*Salix* spp.

Source: Compiled from Erlandson (1980:Table 5-4), Gamble (2008:Table 2), Gill (2015:Table 1.1), Junak and colleagues (2007:Table 7.1, 7.8, and 13.4), and Morgan and Cummings (1990).

Junak and colleagues (2007) identify five primary vegetation communities found on the Channel Islands: scrub, island chaparral, valley and foothill grassland, woodland and forest, and wetlands. Grassland communities are generally found on both Santa Cruz and Santa Rosa islands, largely on the northern halves of each respective island (Junak et al. 2007; Landberg

1965). Even with historic period ranching and farming activities, native grasslands still exist on the islands, albeit with a large number of non-native introduced grasses present. Be that as it may, they lack the species diversity that would have been present in prehistoric times (Junak et al. 2007:243). On Santa Cruz and Santa Rosa, various scrub communities exist on the respective southern halves of both islands, while woodland and forest communities—including species of both pine and oak trees—can be found growing in protected valleys and canyons as well as on rocky mountain- and cliff-sides at high elevations, respective to species (Junak et al. 2007; Landberg 1965).

Fauna of the Santa Barbara Channel Region Significant to the Chumash

Chumash subsistence practices drew more heavily upon the sea than the land, however archaeological faunal assemblages indicate the reliance of mammals and birds, albeit to a lesser extent. Small game (Table 3.2) in the form of rabbits and jackrabbits (Gamble 2008:Table 3), as well as rodents, like squirrels, pocket gophers, rats, and woodrats (Erlandson 1980:Table 5-1; Gamble 2008:Table 3), are found frequently in archaeological contexts (Landberg 1965:54). Large game, such as mule deer (Erlandson 1980:Table 5-1), are also present in these contexts, but to a much lesser extent (Landberg 1965:49). Large carnivores (e.g., bears, mountain lions) are extremely rare and did not make up a regular portion of the Chumash diet, however, smaller carnivores such as coyotes and domesticated dogs (Erlandson 1980:Table 5-1; Gamble 2008:Table 3) were certainly used for subsistence purposes (Landberg 1965:55). Other indigenous mammals in the region include badger, bobcat, gray fox, raccoon, and skunk (Erlandson 1980:Table 5-1). The Chumash also consumed species of reptiles and birds, however to a much lesser extent than the aforementioned animal types (Gamble 2008:26).

Table 3.2. Land Mammals of Importance to the Chumash in the Santa Barbara Channel Region

Santa Barbara Channel Land Mammals	
Common Name	*Scientific Name/Species*
Badger	*Taxidea taxus*
Black-Tailed Jackrabbit	*Lepus californicus*
Bobcat	*Lynx rufus*
California Ground Squirrel	*Spermophilus beecheyi*
Coyote	*Canis latrans*
Domesticated Dog	*Canis familiaris*
Gray Fox	*Urocynon cineroargenteus*
Kangaroo Rat	*Dipodomys* sp.
Mule Deer	*Odocoileus hemionus*
Valley Pocket Gopher	*Thomomys bottae*
Rabbit	*Sylvilagus* sp.
Raccoon	*Procyon lotor*
Striped Skunk	*Memphitis memphitis*
Western Gray Squirrel	*Scirus griseus*
Woodrat	*Neotoma* sp.

Source: Compiled from Erlandson (1980:Table 5-1) and Gamble (2008:Table 3).

Although there certainly was an abundance of land-based subsistence items, the nearby Pacific Ocean and shoreline offered an abounding supply of resources for the Chumash. Massive shell middens are well attested archaeologically from both island and mainland contexts and included species of mollusk, decapod, gastropod, bony fish, cartilaginous fish, and sea mammal (Braje et al. 2011; Colten and Arnold 1998; Huddleston and Barker 1978; Landberg 1965; Porcasi and Fujita 2000). Mollusk species found along the rocky shoreline include California mussels in great quantity, as well as red and black abalone (Kennett 2005:58). Other bi-valve species (Table 3.3) include different types of clam, oyster, and scallop (Denardo 1990:Table 18.3). Although shellfish has been previously considered a low-ranked food source, the importance of such species for subsistence has been supported by recent studies (Braje et al. 2007; Erlandson et al. 2008, 2011; Kennett 2005; Kennett and Kennett 2000). The results of these aforementioned studies indicate that mollusk size decreases over time, which researchers attribute to human predation rather than natural ecological causes.

Table 3.3. Shellfish of Importance to the Chumash in the Santa Barbara Channel Region

Santa Barbara Channel Shellfish	
Common Name	*Scientific Name/Species*
Black Abalone	*Haliotis cracherodii*
California Mussel	*Mytilus californianus*
California Oyster	*Ostrea lurida*
California Venus	*Chione* spp.
Giant Rock Scallop	*Hinnites multirugosus*
Jack Knife Clam	*Tagelus californianus*
Littleneck Clam	*Protothaca* spp.
Macoma	*Macoma* spp.
Pismo Clam	*Tivela stultorum*
Red Abalone	*Haliotis rufescens*
Washington Clam	*Saxidomus nuttallii*

Source: Compiled from Denardo (1990:Table 18.3).

The Chumash were expert fishers, however their skilled efforts were largely focused on marine contexts. Freshwater fishing did occur, however it was primarily a seasonal activity that contributed little to the overall subsistence strategy (Landberg 1965:67). In the relatively shallow waters (~≤100 ft) just offshore, kelp forests are common and support over 125 different species of fish (Glassow and Wilcoxon 1988; Landberg 1965). Among the many fish (Table 3.4) that find their home in the channel are species of cabezon (Glenn 1990:Table 17.4), surfperch and sculpin (Glenn 1990:Table 17.2), barracuda, halibut, sheephead, skipjack, bonito, hake, rockfish, guitarfish, dogfish, croaker, and seabass (C. King 1990:Table 2). Schooling fish species, such as anchovy, mackerel, jackmackerel, and sardines, use the kelp as cover from larger predators (C. King 1990:Table 2; Landberg 1965), including a few different species of shark, like mako, soupfin, and Pacific angel species, stingrays and skates (C. King 1990:Table 2), as well as large game fish, such as yellowtail and swordfish (Gamble 2008; C. King 1990:Table 2; Landberg 1965).

Table 3.4. Fish of Importance to the Chumash in the Santa Barbara Channel Region

Santa Barbara Channel Fish	
Common Name	*Scientific Name/Species*
Barred Surfperch	*Embiotocidae argenteus*
Bat Stingray	*Myliobatus californianus*
Broadbill Swordfish	*Xiphius gladius*
Cabezon	*Scorpaenichthys marmoratus*
California Barracuda	*Sphyraena argentea*
California Halibut	*Paralichthys californicus*
California Sheephead	*Semiocossyphus pulcher*
Mako Shark	*Isurus oxyrinchus*
Northern Anchovy	*Engraulis mordax*
Oceanic Skipjack	*Euthynnus pelamus*
Pacific Angel Shark	*Squatina californica*
Pacific Bonito	*Sarda chiliensis*
Pacific Hake	*Merluccius productus*
Pacific Jackmackerel	*Trachurus symmetricus*
Pacific Mackerel	*Scomber japonicas*
Pacific Sardine	*Sardinops sagax*
Pacific Sculpin	*Leptocottus armatus*
Rockfish	*Sebastes* spp.
Shovelnose Guitarfish	*Rhinobatos productus*
Skate	*Raja* spp.
Soupfin Shark	*Galeorhinus zypoterus*
Spiny Dogfish	*Squalus acanthias*
White Croaker	*Genyonemus lineatus*
White Seabass	*Atractoscion nobilis*
Yellowtail	*Seriola dorsalis*

Source: Compiled from Glenn (1990:Table 17.2, 17.4) and C. King (1990:Table 2).

It makes perfect sense that the kelp beds served as excellent fishing grounds for the Chumash in that they provided a discrete location for which to acquire a wide range of aquatic animals. Just as the many species of fish reside in the kelp that is a ready source of food, larger marine mammals (Table 3.5) including sea otter (now locally extinct), seals, and sea lions also relied upon this rich habitat for survival (Landberg 1965:68). The Santa Barbara Channel hosts four species of seal and two species of sea lion, which were of varying importance to Chumash subsistence (Landberg 1965:59). The most important species for Chumash subsistence were California Sea Lions and Guadalupe fur seals, followed by the Harbor Seal, Stellar Sea Lion, elephant seal, and Alaska (northern) fur seal (Erlandson 1980:Table 5-2; Landberg 1965).

Table 3.5. Sea Mammals of Importance to the Chumash in the Santa Barbara Channel Region

Santa Barbara Channel Sea Mammals	
Common Name	*Scientific Name/Species*
Alaska Fur Seal	*Callorhinus ursinus*
Bottlenose Dolphin	*Tursiops truncate*
California Gray Whale	*Eschrictus gibbosus*
California Sea Lion	*Zalophus californianus*
Common Dolphin	*Delphinus delphi*
Dall's Porpoise	*Phocoenoides dalli*
Elephant Seal	*Mirounga angustirostris*
Guadalupe Fur Seal	*Arctocephalus philippii*
Harbor Porpoise	*Phocoena phocoena*
Harbor Seal	*Phoca vitulina*
Pacific Striped Dolphin	*Lagenorhynchus obliquidens*
Pilot Whale	*Globicephala macrorhynchus*
Sea Otter	*Enhydra lutris*
Stellar Sea Lion	*Eumatopias jubatas*

Source: Compiled from Erlandson (1980:Table 5-2).

Larger species of fish and mammals are found more commonly in the deeper waters of the channel. These include bonito, marlin, swordfish, tuna, and yellowtail, as well as a number of different cetacean species (Gamble 2008; Landberg 1965). Cetacean species (Table 3.5) found in the channel are largely dolphins that frequent the deep marine canyons found within the channel, including bottlenose, common, and Pacific striped species, but also include two species of porpoise: Dall's and harbor (Colten 1995; Erlandson 1980:Table 5-2; Glassow 2000; Porcasi et al. 2000). There are also a few whale species that make their way through the channel, including the short-finned pilot whale and California gray whale (Colten 1995; Erlandson 1980:Table 5-2). Whale remains are fairly common in Chumash archaeological contexts, however, they were not actively hunted, but rather came across happenstance (Gamble 2008; Landberg 1965).

Chumash Lifeways

Most of the information we have about the specific interworkings of Chumash lifeways comes from historic and ethnohistoric documentation, the texts and accounts are discussed in further detail below. Although we cannot extrapolate this information onto pre-historic Chumash groups, discussion of these topics provides a useful point of comparison and reference (Arnold 1992:129). The Chumash are one of the best-known groups of California Southern Coast indians, and their collective territory included the Northern Channel islands as well as the areas of the mainland from San Luis Obispo down to Malibu and inland to the San Joaquin Valley's western edge (Moratto 1984:118). Among the oldest in California, the different Chumash groups (Barbareño, Cruzeño, Ineseño, Obispeño, Purismeño, and Ventureño) spoke languages that were once classified as belonging to the Hokan linguistic family, however, they are now considered to be a linguistic isolate (Golla 2007:80; see also Goddard 1996, Mithun 1999) and are acknowledged as one of the most sociopolitically complex groups to have existed without a formal agricultural system (Arnold 1992; Erlandson 1997; Landberg 1965; Moratto 1984). Their coastal occupation over thousands of years enabled them to be incredibly well-adapted to exploit marine resources, a fact that is well attested in both the archaeological and ethnohistoric record (Landberg 1965; Moratto 1984).

Sociopolitical and Economic Organization

In prehistoric times, archaeological evidence seems to indicate a transition from an egalitarian to a non-egalitarian society toward the end of the Early period, and a differentiation in political and ritual leadership in the beginning of the Middle period (C. King 1990). [At least by the time of European contact, the Chumash of the Santa Barbara Channel were hierarchically organized, with leaders holding positions by way of ascribed status (Arnold 1992; Erlandson 1997; Gamble 2008; Lambert and Walker 1991; Landberg 1965; Moratto 1984; Sassaman 2004). These chiefs (*wots*) were hereditary leaders that generally presided over a single village (Blackburn 1975, 1976; L. King 1969), however, some villages were so large they could have multiple chiefs (Blackburn 1975; Harrington 1942; Johnson 2000), while in other cases regional (paramount) chiefs presided over a number of villages (Blackburn 1975; L. King 1969). Chiefly duties included overseeing other political and religious offices, providing capital and organizing feasts, attending to the needs of visitors and those in need, as well as maintaining stored goods, and owning objects of ceremonial paraphernalia (Gamble 2008:Table 9). Although chiefs were often male, there are documented cases of female chiefs recorded across all Chumash groups (Harrington 1942; Hudson et al. 1981). Descent groups in these communities were patrilineal and virilocal, and marriage ties were ideally formed via lineage exogamy (Landberg 1965:29). Members of the community who held positions of high political, ritual, and/or economic status were generally wealthy and belonged to an elite group called the *'antap* (Blackburn 1975, 1976; Hudson et al. 1981; Martz 1992). This overarching religious network connected elite lineages throughout Chumash territory, through exclusive membership and esoteric ritual knowledge (Blackburn 1975; Hollimon 1990).

In terms of economic organization, the Chumash had occupational specialists responsible for production of many types of items, including those of high status, like the *tomol* as well as shell bead money (Arnold 1992; Erlandson 1997; Martz 1992). The *tomol* was incredibly important to the Chumash economy as it enabled reliable transportation to and from the Channel Islands as well as facilitating fishing endeavors in the deep waters of the channel (Gamble 2002; Landberg 1965). Crafts produced by the Chumash were renowned for the skills of the artists and craftsmen that created them (Erlandson 1997). Woven items, such as basketry, were not only well-made, functional objects, but they also often exhibited complex design motifs that speak to the skill of their makers (Moratto 1984). Chumash rock art in the form of petroglyphs and pictographs are also noteworthy (Lee and Hyder 1991; Scott and Hyder 1993), as are the many objects of shell, stone, wood, and bone made by skilled artisans (Moratto 1984:119).

Foodways and Settlement

The Santa Barbara Channel region was a lucrative place in which to settle, and the abundance of both land and sea-based species for immediate consumption, as well as long-term storage, allowed for settlements to be occupied year-round, maintaining relatively large, stable populations (Landberg 1965). Species coming from sea and shore contexts consistently made up the largest percentage of the coastal Chumash diet. The California mussel was a significant source of animal protein, as were pinnipeds (e.g., sea lions and seals) and fish (Glassow 1992; Landberg 1965). Occupying a much smaller percentage of the diet for coastal communities were both marine and freshwater birds, as well as land mammals like rabbits, squirrels, and even deer

(Gamble 2005; Glassow 1992; Moratto 1984). In contrast, inland communities had a higher reliance on locally available species, such as deer, rabbit, wood rat, ground squirrel, and pocket gopher (Landberg 1963), with marine fish and shellfish brought in from the coast (Glassow 1979). Available in both coastal and inland areas, Chumash collected acorns as a staple food group from oak groves (Horne 1981). Many different types of seeds, roots, nuts and fruit were collected for consumption as well. The Chumash expertly utilized the natural resources available to them, including selective predation on certain species to avoid depleting populations, as well as using intentional brush fires to modify the landscape (Horne 1981; Landberg 1965).

Given the abundance of species present in Chumash territory, the range of tools used for the acquisition of food ranged from simple to complex items. Men and women largely performed different subsistence activities, using both specialized and utilitarian tools for the task (Henshaw 1887; Hollimon 1990; Walker and Erlandson 1986). Men were primarily responsible for hunting and fishing activities (Gamble 1983). When hunting for land mammals, Chumash men often used bows and arrows, the latter of which had projectile point attachments. For smaller prey, like rabbits, curved throwing sticks/clubs, deadfalls, and slings were used, and for small birds, slings and spring-pole snares were used (Landberg 1965:36–37). Men were also responsible for various fishing activities, both near- and off-shore. In shallower waters near the coast, net fishing was a commonly-used technique; depending on the species of fish sought, Chumash men practiced line-fishing with different types of fishhooks, which were typically made of shell and/or bone, the shapes and compositions of which changed over time (Landberg 1965; Moratto 1984). The *tomol* was used for hunting sea mammals as well as large deep-water fish in the channel and around the Channel Islands (Landberg 1965; Moratto 1984), using harpoons fitted with bone barbs (Gamble 2002). These sturdy and stable canoes were constructed with redwood planks, sewn together with red milkweed fibers, and caulked with asphaltum and pine pitch to make them formidable seaworthy vessels. *Tomols* were large enough to hold up to 12 individuals—generally between 6–7 m in length—and were used for cross-channel and inter-island trips, as well as for fishing endeavors aimed at acquiring large game fish and sea mammals (Arnold 2007; Gamble 2002; Fagan 2007).

Women (along with others in the community) would have been largely responsible for the gathering of shellfish along the shoreline (Blackburn 1975; Glassow and Wilcoxon 1988; Heizer 1955; Henshaw 1887; Hollimon 1990; Sutton 2014). Shellfish gathering only required simple tools to be effective, for example, sandy species like clams could be gathered by hand, while rocky species like mussels and abalone could be obtained with the use of sticks or pries (Hollimon 1990; Kennett 2005). The collection, processing, and cooking of plant species, as well as the cleaning and cooking of fish, were tasks that fell primarily to women. As with shellfish, the majority of gathering could be accomplished simply by hand, however, the importance of nets and baskets for carrying and transporting these resources cannot be overlooked (Hollimon 1990). However, certain circumstances required the use of tools to facilitate collection. For example, acorns could be knocked off of trees using a long pole and tongs could be used to collect cactus fruit. For collecting edible roots, digging sticks topped with a weighted "doughnut stone" were used, and for collecting small seeds from grasses, a small basket and seed beater were used. For processing, mortars and pestles (commonly made from stone) were used for grinding and pounding various substances, while grinding slabs and millers were for grinding seeds (Landberg 1965:40). Cooking vessels and *comales*, the latter akin to a stone "frying pan" popular around the time of European contact, were often made from steatite (soapstone) imported from Santa Catalina island. This material was favored over other types since it is resistant to cracking over high, direct heat (Brown 2018; Landberg 1965).

At least by historic times, Chumash settlements were fairly standardized in the different elements that constituted them, however settlement size varied directly with population numbers (Landberg 1965). In historic accounts, the Spanish used different terms to denote relative settlement size. *Pueblo* was used to describe large settlements—especially those found along the coast—that boasted populations of up to 1,000 people (Erlandson 1997; Landberg 1965; Moratto 1984), while *rancheria* was used to describe smaller villages hosting lower numbers of inhabitants, which were more numerous inland, away from the coast (Landberg 1965). Similar elements comprised both large and small settlements, which were made up of many structures, as well as open spaces for ceremony and recreation. Settlement structures included houses for domestic purposes, sweatlodges, storage structures and smokehouses for preparing and storing foodstuffs, windbreaks, male puberty huts, as well as menstrual and childbirth huts for girls and women. Open-air spaces such as gaming fields for communal sports, formal cemetery areas, and dance grounds could also be found in settlement contexts, the latter of which were also associated with a specialized, sacred structure for use by members of the ‘*antap* group during ceremonies (Gamble 2008:115–126).

Travel and Exchange

Although Chumash groups were largely sedentary at least by the time of contact, there was still some seasonal movement, especially from coastal groups temporarily moving inland to exploit the resources available there (Moratto 1984). During spring and early summer, there was a high level of mobility in order to hunt, fish, and gather in the interior. As the summer transitioned into fall, many people would travel to the coast in order to take part in ocean fishing activities. Prior to fall transitioning to winter, groups would travel inland to take part in acorn and piñon (pine nut) collections, and during the winter months, groups would remain sedentary, relying primarily on stored food supplies (Moratto 1984:118). Taking or attempting to take surplus food stores, as well as hunting/collecting on territory belonging to another lineage, were two very common offences that often resulted in violence between groups (Landberg 1965:30).

Inter-group violence was one reason that inter-village alliances were made between different groups, however, it was not the sole reason for doing so (Erlandson 1997; Moratto 1984). These alliances had many benefits, including securing exogamous marriage partners and facilitating trade (J. R. Johnson 1988). Trade networks included routes that connected Chumash groups in the Santa Barbara Channel region to groups outside of Chumash territory, like the Yokuts and Kumeyaay, as well as within Chumash territory, between the mainland (coastal and interior) and island Chumash (Gamble 2008; Gamble and Zepeda 2002; Hughes and Milliken 2007; Moratto 1984). Even though Chumash did engage in long-distance trade, there was much more in the way of interregional trade happening within Chumash territory than outside of it (Gamble 2008:32). Both island and mainland contexts relied upon the other for raw materials and finished objects that could not be obtained or were difficult to obtain otherwise, and the *tomol* was essential in transporting these objects between locations. Items moving from the Channel Islands to the mainland were largely manufactured goods rather than raw materials, and included shell beads and ground stone objects, like digging stick weights (Gamble 2008:60). Items moving from the mainland to the Channel Islands included foodstuffs, like acorns, seeds, and roots, processed but unfinished materials, like furs and skins, and finished objects, like baskets and bows and arrows (Gamble 2008:227).

Mortuary Practices

Chumash cemeteries were located in the immediate vicinity of the settlement area or within settlement boundaries and were clearly demarcated by wooden boundary markers and/or whalebones (usually ribs). The Spanish, Crespí's 1769 account in particular, described the use of brightly painted poles or planks to mark individual graves (Brown 2001:427–429). Grave markers made from whalebone and/or stone more commonly survived the test of time, while wooden planks and poles are less often preserved. All segments of the population were interred together in cemeteries (i.e., there were not separate cemeteries divided by age or sex; Martz 1992), however, L. King's (1969) analysis of the Medea Creek (LAN-243) cemeteries seem to indicate that social ranking was a factor in the spatial component of interment. This pattern is also seen at other cemeteries in the region, such as Malibu (LAN-264) among others (see Gamble et al. 2001; Martz 1984, 1992). Space was often limited within cemetery boundaries, which frequently is evident by later graves being dug into earlier ones (Orr 1952). Grave goods were commonly included in burials, but objects included varied widely in terms of type and amount. It was not uncommon for individuals to be buried with no grave goods at all, however the majority of burials do include at least one object.

Historically, some burial rituals are known for the Chumash. For example, a third-gender undertaker (*'aqi*) was responsible for digging the grave, the depth of which corresponded to the "payment" in terms of number of baskets provided to them (Hollimon 1990, 1997, 2000, 2001; C. King 1982). For those belonging to the *'antap* cult, funerals were a community affair carried out with much ostentation. The Portolá expedition's Miguel Constansó described the funeral ceremonies of a village leader, whereby members of the community raised tall ceremonial poles, indicative of the status of the deceased (van Hemert-Engert and Teggart 1910; see also Crespí's account for August 20, 1769 in Brown 2001:427–429). In another ethnohistoric example, a Spanish missionary recorded the details of another village leader's funeral. As part of the burial rites, the deceased leader was covered in a cape made of rabbit skins, was adorned with many strings of shell beads that were laid upon his body, and had a massive crowd of a few hundred people in attendance openly mourning (Brown 2001). Archaeological and ethnohistoric sources also indicate different post-funeral communal mourning rituals. Hull and colleagues (2013; see also Hull 2012) have been able to identify discrete pit features that were intentionally filled with a number of object types, including intentionally "killed" items. They interpret their discrete use, large size, and object composition to indicate their use as part of mourning rituals at the community-level. Lastly, another ritual performed by the Chumash involved the periodic destruction of large quantities of grave goods in a community-wide conflagration, the function of which was to destroy all personal items owned by the deceased, effectively removing all physical reminders of that individual (Hollimon 2001:44). It should be noted that this ceremonial activity was more prevalent within certain Chumash groups, like the Ventureño and Inezeño, than others (Arnold and Green 2002; Hollimon 2001).

Cultural Chronologies in the Santa Barbara Channel Region

In comparison to other regions of the world, cultural chronologies of the Santa Barbara region (Figure 3.2) are as complicated as they are numerous for such a relatively small, circumscribed region. For ease of treatment, the following sections contain brief discussions of David Banks Rogers' (1929a), Ronald L. Olson's (1930), Phil C. Orr's (1943, 1968), and William M. Harrison's (1964) respective operating frameworks for studying prehistoric groups in the region, followed by brief summaries of essentially contemporaneous phases for both the Mainland and Santa Cruz and Santa Rosa islands. Chester King's (1990) chronology is favored in this study, as it is the most nuanced and temporally precise of the cultural chronologies for this region. As such, it has its own free-standing discussion following the summaries of the aforementioned foundational chronologies.

D. B. Rogers (with Olson following closely in his footsteps) had the incredibly difficult task of constructing a chronology for the Santa Barbara Channel region with essentially no previous research on which to rely. Without the relative luxury of radiocarbon dating, which would not be invented for nearly a decade after their initial efforts, both D. B. Rogers and Olson had to painstakingly construct artifact seriations from their site excavations in order to develop relative chronologies mainland and island contexts. Despite these circumstances, their relative ordering of cultural complexes stands more or less true still. Early Holocene groups of the Santa Barbara Channel appear to have been relatively egalitarian, with material culture indicating little in the way of trade or complex technologies (Erlandson 1997:91). These very early cultural groups were followed by the Millingstone horizon, which was widespread across southern and central California and included local phases like D. B. Roger's (1929a) and Orr's (1930) "Oak Grove." Technological complexity increased over time, which became one of the primarily defining characteristics of the Canaliño cultures, which immediately predated the historic Chumash (Moratto 1984:126).

As indicated previously, the early work of D. B. Rogers (1929a) laid the foundation for constructing cultural chronologies in this region, whereby he designated three separate sequences (Oak Grove, Hunting People, and Canaliño) based on differences he observed in material culture. Although more recent archaeological investigations have questioned these hypotheses, D. B. Rogers' working hypothesis for the different cultural sequences he identified in the material record was that each was representative of a distinct ethnic group that migrated and settled in the region, replacing in one way or another the cultural group that existed there previously (Glassow 1997; Moratto 1984). He suggested that the Oak Grove culture either was decimated by disease brought in by the Hunting People, or left the area prior to their arrival. In turn, the Hunting People culture was eventually subsumed into Canaliño culture due to their superior technology (Moratto 1984:124).

Working contemporaneously, Olson was able to use the foundational research of Rogers'—along with his own excavations on the mainland and Santa Cruz Island—to validate D. B. Rogers' cultural chronology for the Santa Barbara Channel region (Moratto 1984). Using the information to which he had access, Olson constructed a relative chronology that separated the mainland into four prehistoric archaeological phases (Archaic, Early Mainland, Intermediate Mainland, and Late Mainland Periods) and for Santa Cruz Island, he designated two prehistoric phases: Early and Late Island (Moratto 1984:124).

Orr's mainland chronology came about approximately 15 years after those of D. B. Rogers and Olson, and his chronology for Santa Rosa Island was not published until the late 1960s. Orr succeeded D. B. Rogers at the Santa Barbara Museum of Natural History and conducted a multitude of expeditions, the majority of which focused on Santa Rosa Island. Orr was one of the earliest scholars in the region to implement the use of radiocarbon dating, which he used on data from Santa Rosa Island to argue that the islands had been occupied continuously for over 10,000 years (Erlandson 1994:41). Orr's (1943) mainland chronology follows nearly exactly that of D. B. Rogers, with prehistoric divisions into Oak Grove and Hunting Phases, and the last prehistoric phase, the Canaliño, he sub-divided into Early, Middle, and Late sub-phases. The majority of Orr's research, however, was focused on Santa Rosa Island (Erlandson 1997:91). For Santa Rosa Island, he designated four separate phases: Early Dune Dweller, Highland, Late Dune Dweller, and Canaliño (Orr 1968).

Harrison's mainland chronology was the last of these to be published, and unfortunately, he did not excavate as widely as those scholars before him (Erlandson 1997). Despite this, given the timing of his research, he was able to rely upon advances in radiocarbon dating to provide chronometric dates for sites, refining the regional chronology further (Glassow 1997). Harrison (1964) developed six prehistoric phases for the mainland: Goleta, El Capitán, Extraños, Rincón, and Middle and Late Canaliño. The Goleta phase (~ 500 years duration) was the earliest in his chronology, which overlapped with early Oak Grove cultures, and had large gaps of time both before and after. The second gap in time following the Goleta phase was the El Capitán phase (~1,400 years duration), which was roughly equivalent to the Hunting People phase (Moratto 1984:137). The Extraños phase (~500 years duration) was delimited to about the first half of the El Capitán phase; Harrison used these parallel phases to indicate the influx of the Hunting People, and the Extraños phase is followed by a gap in time prior to the following phase (Glassow 1997; Moratto 1984). Beginning at the same time as the other Canaliño cultural phases (ca. 2000 BC), Harrison's Rincón phase (~500 years duration) follows the El Capitán phase, as the initial Canaliño phase in his sequence, and in turn is followed by Middle and Late Canaliño phases, respectively. With his access to radiocarbon dating, Harrison considered the hypotheses put forth by D. B. Rogers previously, arguing that—rather than there having been consecutive periods of complete cultural replacement—the Oak Grove and Hunting People cultures existed contemporaneously for nearly a millennium, eventually becoming a singular cultural group (Canaliño) that would become the ancestors of the Chumash (Moratto 1984:139).

Mainland: Oak Grove (Millingstone), Archaic, and Goleta Phase Cultural Sequences

The earliest of the Mainland phases is termed "Oak Grove" by D. B. Rogers (1929a) and Orr (1943), while Olson (1930) designates this as the "Archaic Period" in his chronology. These phases are roughly coeval with each other (ca. 5500–3000 BC), and make up a part of the larger "Millingstone" tradition described by William J. Wallace (1955) in his more expansive regional synthesis that included Central and Southern California. Harrison's (1964) "Goleta Phase"

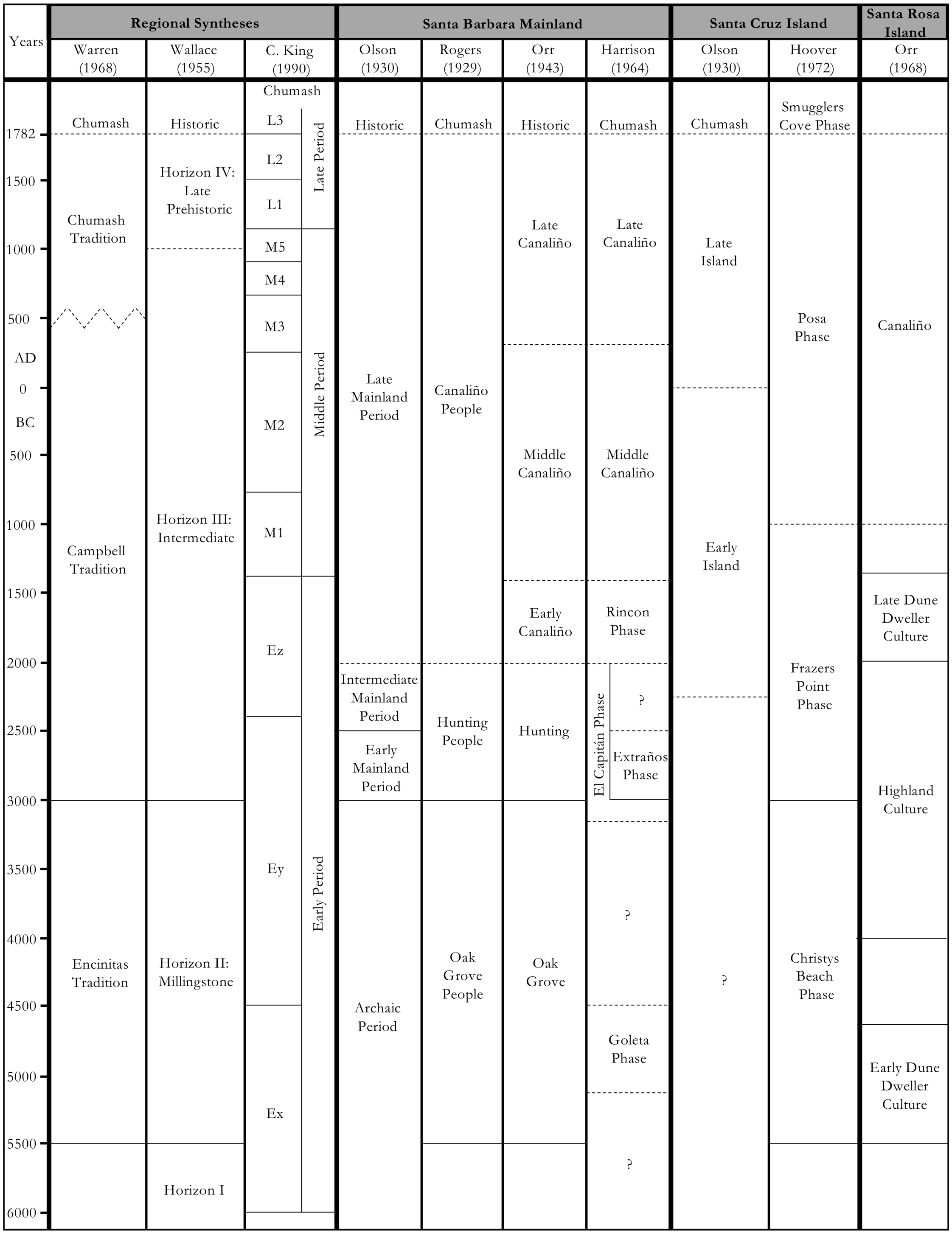

Figure 3.2. Chronological Concordance for the Santa Barbara Channel Region (adapted from Moratto 1984:Figure 4.5).

makes up only about a 600-year period (ca. 5100–4500 BC) a small portion of the 2,500+ years of the Oak Grove/Archaic time span, with unknown/unidentified cultural phases occurring before and after (Moratto 1984).

Even though there had been human occupation of the Santa Barbara Channel region for the much of the Early Holocene (ca. 8550–5050 BC), sea level rise from the last ice age has obscured an unknown number of these very early occupational sites (D. L. Johnson 1983). Therefore, in accordance with the available archaeological evidence, the majority of cultural sequences developed for this region have the earliest phases beginning around early-middle Holocene transition (ca. 5050–4050 BC). It is around this point in time when a number of core cultural traits, most notably mortars and pestles, began to have a level of standardization that could be recognized between sites in the overall region (Erlandson and Colten 1991; Glassow 1992). This is not to say, however, that there was not still considerable variation present in the contexts of these early sites (Erlandson 1994:45).

As part of the larger Millingstone phenomenon, Oak Grove sites were commonly located on high areas of land, such as knolls or terraces, away from the coast (Erlandson 1994; Moratto 1984). The material culture was not very diverse in terms of artifact types, but included large numbers of grinding stones (*manos* and *metates*), basic functional chipped stone tools, and on occasion non-functional stone items like "cogstones"[2] and charmstones (Erlandson 1994; Glassow 1997; Moratto 1984; Orr 1952). Domestic areas often had residences in the form of pit-houses, which appear to have been semi-subterranean in nature, but this type of dwelling is largely specific to Southern California. Larger sites often had sizeable middens, however, faunal remains within them are often less well preserved than the remains of shellfish, which make up

[2] The term "cogstone" refers to an artifact type that consists of a small disc of polished stone, often having notched edges, resembling very nearly a mechanical cog (Erlandson 1994:46).

the majority of midden constituents (Erlandson 1994, 1997; Glassow 1997; Moratto 1984). Most large sites had a cemetery, and burials were most commonly interred in an extended position and decorated with red ochre (Sholts 2010:36). Sites dating to this period have burials that are typified by their associations with large millingstones, such as those found at LAN-1 (Tank site) and SBA-142 (Glen Annie site; Moratto 1984). Large Oak Grove sites were believed by early researchers to serve as permanent settlements for a sedentary population (Erlandson 1994:46), however Glassow and colleagues (1988) suggest that these were actually base camps for a more nomadic population.

Mainland: Hunting People, Early and Intermediate Mainland, and El Capitán and Extraños Phase Cultural Sequences

Moving forward chronologically, the majority of the Middle Holocene (ca. 5000–1550 BC) is made up by either one or two phases as defined in these regional cultural chronologies. Rogers (1929) and Orr (1943) designated the next phase as the Hunting People (ca. 3000–2000 BC), while Olson (1930) separated this span of time into the Early and Intermediate Mainland periods (ca. 3000–2500 BC and 2500–2000 BC, respectively). Harrison's (1964) chronology, termed this period of time the El Capitán phase (ca. 3350–1950 BC), along with the Extraños phase (ca. 2900–2500 BC), the latter of which parallels the first half of the El Capitán phase.

It is during this "Intermediate Horizon" that a reliance on maritime resources becomes apparent, as sites dating to this relative period of time are located near the ocean and the material culture reflects an increase in fishing technology (Moratto 1984). The number of different types of artifacts increases drastically during this period. Mortars and pestles begin to replace *manos* and *metates* on a large scale, and there are many cases of groundstone vessels made from sandstone. Fishing technology points to both net fishing via stone sinkers and net weights, as well as to line-fishing in the form of shell and bone fishhooks. There is also increased evidence for hunting land animals in the form of many types of chipped stone projectile points, such as those that are side-notched as well as stemmed. During this period there is greater evidence for use of asphaltum, and there is a noticeable increase in the number and diversity of decorative and ritual items, such as shell and bone beads, inlaid shell bead decoration, ornaments, and hairpins (Erlandson 1994, 1997; Gamble and King 1997; Glassow 1997; Moratto 1984; Sholts 2010). Settlement size could range from very large, with substantial midden deposits, like examples in the Goleta Slough, while others were smaller and less easily identifiable (Erlandson 2008:21). Midden refuse found at sites from this time period more commonly includes remains of fish, as well as land and sea mammals, which are significantly more numerous than in the previous period (Erlandson 1994). Large cemeteries are frequently found at settlement sites, and during this period of time, burials were most commonly interred in a flexed position, face-down, with the head oriented towards the west (Corbett 2007:9). There is also evidence of greater numbers of sites being used as primary residential camp (Glassow 1997:73).

Mainland: Canaliño, Late Mainland, and Rincón Phase Cultural Sequences

The last of the prehistoric phases is that of the Canaliño culture, as designated by D. B. Rogers (1929a), which in its entirety lasted approximately 4,000 years and spans the late Middle Holocene into the Late Holocene. Olson's (1930) chronology echoes that of Rogers, except that he designates it as the Late Mainland period, following the naming convention he established previously. Both Orr (1943) and Harrison (1964) subdivide this period into three sub-phases. Orr's Early Canaliño is coeval with Harrison's Rincón phase (ca. 1950–1450 BC), and their respective Middle and Late Canaliño periods (ca. 1450 BC–AD 300 and AD 300–European Contact, respectively) match one another. This last prehistoric cultural phase begins around the

Middle-Late Holocene transition (ca. 1500 BC), and it is during this period that the material culture reached previously unprecedented levels of complexity, attesting to many of the Chumash cultural traits that would be evident at European Contact (Erlandson 1994; Erlandson and Colten 1991; Gamble 2008; Glassow 1997).

Compared to site location and size of earlier periods, Canaliño sites become significantly larger and more numerous across the landscape (Erlandson 1994, 1997). Canaliño material culture attests to a wide array of material types and produced objects, falling into both functional and decorative categories. There was a wide array of ground stone artifacts, including bowls and pestles, as well as *ollas* and *comales*, the latter of which become much more prominent post-contact (Brown 2018; Erlandson 1994; Moratto 1984). Fishing technology indicates a reliance on the sea, in the form of fishhooks made from shell and bone, while new hunting technology in the form of the bow and arrow indicates reliance on the land as well (Erlandson 1994). Craft specialists continued to make objects from organic materials, including woven basketry, as well as items of wood, including tools, bowls, and especially plank canoes (*tomols*). Decorative items of shell such as shell beads, ornaments, and other objects attest to increasingly specialized manufacturing industries for these objects (Erlandson 1994; Moratto 1984). Settlement sites had semi-subterranean houses that had superstructures of thatch and domed poles (Erlandson 1994; Moratto 1984), and middens associated with these contexts are large and deep, with a high density of faunal remains (Erlandson 1994; Glassow 1997). Large cemeteries with predominantly flexed burials are associated with sizeable settlement sites, which suggests the presence of a fairly large and sedentary population (Erlandson 1994, 1997; Moratto 1984).

Santa Cruz Island: Early and Late Island Cultural Sequences

Olson (1930) developed two prehistoric phases for Santa Cruz Island: Early and Late Island. This particular chronology is ill-adept to contextualize the Early Holocene occupation on the island, as Olson did not have sufficient identifiable data from this period. His Early Island phase was characterized by a very small number of millingstones, however the most distinguishing objects from this period were pendants made from bone and also charmstones. Following the Early Island period, the Late Island period exhibited material culture akin to that of mainland Canaliño culture, including elaborate shell ornaments, different types of fishhooks, and steatite *ollas* and *comales* (Moratto 1984:125–126).

Santa Rosa Island: Dune Dweller, Highland, and Canaliño Cultural Sequences

By comparison, Orr's (1968) later chronology for Santa Rosa Island is much more comprehensive. Orr determined four phases for prehistoric Santa Rosa: Early Dune Dweller, Highland, Late Dune Dweller, and Canaliño. Orr's extensive excavations on the island allowed him to amass a large body of samples from which he drew radiocarbon dates. Orr's Early Dune Dweller culture includes the Highland Cultural phase spanning approximately 3,500 years (ca. 5500–2000 BC). Sites dating to this period were located in large coastal sand dunes and had sizeable cemeteries with bodies interred in a seated position and usually adorned with red ochre. The Late Dune Dweller phase only spans about 1,000 years (ca. 2000–1000 BC), however there are some notable cultural changes that occurred during this time. Artifact types diversify to include those made from shell, bone, and stone, such as "Gypsum cave" points, mortars, and olivella beads. Lastly, Orr's Canaliño phase lasted about 2,500 years (ca. 1000 BC–AD 1600) and was denoted by very densely populated cemeteries that had burials containing large amounts of grave goods and were marked with either stone or wood grave markers (Moratto 1984:134).

Chester King's Chronology: Early, Middle, and Late Periods

As stated previously, C. King's (1982, 1990) chronology is used to discuss sites in this study, which date to Early and Middle Chumash time periods. It is by far the most accurate, comprehensive, and refined of the Chumash regional chronologies, covering both mainland and island contexts, and is divided broadly into three periods: Early, Middle, and Late. Each period is further subdivided based on corresponding changes in diagnostic artifacts; the Early period has three sub-phases (Ex, Ey, Ez), the Middle period has five sub-phases (M1, M2, M3, M4, M5), and the Late period has three sub-phases (L1, L2, L3). All sub-phases are prehistoric with the exception of phase L3. To construct this chronology, C. King conducted detailed analyses on diagnostic artifacts (primarily shell beads and ornaments) drawn from burial lots in the Santa Barbara Channel region to assess change through time. The resulting chronology tracks diachronic stylistic changes in artifact types (Table 3.6), which enabled a better understanding of changes in prehistoric technology and indirectly social organization (Moratto 1984).

The Early period (ca. 6000–1400 BC) has the longest duration of the three time periods, but data from the earliest recognized phase are the most uneven when compared to the others. Sites dating to the Early Holocene (before ~5000 BC) have less data compared to later sites due to limitations from useable burial lots (Erlandson 1994:51). Nevertheless, C. King was able to discern that Early period contexts had primarily rectangular shaped beads made from *Olivella biplicata*, *Haliotis* spp., and *Mytilus californianus* shell; *Haliotis* spp. ornaments, in rectangular and circular shapes, as well as rectangular pendants were also common in mortuary and midden contexts (C. King 1990:29). Early period material culture suggests an increase in fishing activity over time, evident in compound bone fishhooks and gorges, as well as whalebone pries, which were used for the procurement of abalone (C. King 1990:80). Moreover, an important shift in objects used to process foodstuffs is evident in the Early period, with a greater presence of mortars and pestles over *manos* and *metates*. *Manos* and *metates* become incredibly rare in the region following this Early period shift (Gamble and King 1997), which is also believed to indicate a greater reliance on large seeds like *islay* and acorns, over seeds collected from smaller plants, like grasses and sages (C. King 1990:88).

Table 3.6. Chronological Concordance and Diagnostic Artifact Summaries for C. King's (1990) Early, Middle, and Late Chronological Phases

C. King's (1990) Chronological Phases*	**Chronological Concordance****	**Diagnostic Artifacts***
Early Period 6000–1400 BC	Oak Grove and Hunting; Archaic, Early Mainland, and Early Island; Millingstone Horizon and [early] Intermediate Horizon; Dunedweller; Encinitas and Campbell	Rectangular shell beads (*Olivella biplicata*, *Haliotis* spp., *Mytilus californianus*); double perforated *Haliotis* spp. ornaments; rectangular pendants; circular ornaments; clam disc beads; stone disc and cylinder beads; whole *Olivella biplicata* shells (both spires ground and/or chipped)
Middle Period 1400 BC–AD 1150	Middle Canaliño; [early] Late Mainland; [late] Intermediate Horizon; [late] Campbell	Change from rectangular Olivella biplicata and abalone beads to circular disc beads; change from two-holed to one-hole abalone pendants; greater number and diversity of beads and ornaments than in the Early period
Late Period AD 1150–1804	Late Canaliño; Late Mainland; Late Prehistoric; Late Island; Chumash Tradition	Appearance of *Olivella biplicata* callus beads and clam disk and cylinder beads; Ornament perforations toward object margins; Lack of split punched beads and large stone beads

Source: * C. King 1990:28–44; ** Moratto 1984:Figure 4.5

Additionally, rock features used for cooking, like hearths and ovens, are less common in the Early period than they are later in time and, beginning with the Early period, there is evidence for basketry used for cooking and storage purposes (C. King 1990:89–90). Changes in settlement size and location are also evident in the Early period. Settlements in use before 3500

BC were situated in highly defensible locations, while settlements used between 3500–2500 BC were located at lower elevations and had comparatively a smaller fields of vision with which to keep an eye on neighboring groups. C. King (1990:90) attributes this change to indicate a relative lack of centralized leadership earlier in time, with only loose ties between neighboring groups, whereas later in time settlement size increases, allowing the larger settlements to aggregate, which afforded them greater protection from smaller groups.

When compared to the Early period, the Middle period (1400 BC–AD 1150) has sites with greater numbers of bead and ornament types, and specifically there is a shift from rectangular *Haliotis* and *Olivella* beads to circular *Haliotis* and *Olivella* beads, and from abalone pendants with two holes to those having only one (C. King 1990:32). Increased reliance on fishing is evident through new technologies, such as single-piece bone and shell fishhooks, as well as bone harpoon barbs (in use by the late Middle period), suggesting an increase in fishing for larger marine animals via the use of large boats. During this time period, stone net weights become part of the material culture, indicating use of nets for fishing purposes, which could be used to acquire small fish, like sardines, with dip and drag nets (C. King 1990:83–85). Additionally, plant food processing in the Middle period includes features such as rock ovens, especially on the mainland, which likely necessitated the use of substantial amounts of firewood (C. King 1990:89). Changes in social organization during the Middle period (by 600 BC) further resulted in population increases that no longer necessitated the highly defensible locations used through much of the Early period. Towards the end of the Middle period, sea-based resources become especially important to the Chumash—evident through midden refuse and increased canoe manufacturing—and villages are commonly found along the shoreline, immediately nearby boat landings (C. King 1990:91).

Material culture change in the Late period (AD 1150–1804) is evident through the advent of *Olivella biplicata* callus beads and also clam beads in cylindrical and disc shapes (C. King 1990:39). Although shell fishhooks were used in earlier periods, they become more frequent during the Late period (peaking during sub-phase L2), suggesting that acquisition of large pelagic fish was more frequent during this period than earlier in time (C. King 1990:87). Cooking vessels in the form of steatite stone bowls were fairly rare in the early to mid-Late period, however, mortar-shaped stone vessels had been used for cooking previously in the late Middle period (C. King 1990:90). Settlement locations in the Late period continue to grow larger in size for the most part, with sites located at the western end of the channel being located on higher ground, while sites in the eastern end of the channel are located on lower ground. Even though site sizes generally increase during this period, there is also evidence of small temporary camps and settlements in use (C. King 1990:91).

C. King's research supported his argument that prehistoric indigenous groups lived in the Santa Barbara Channel region for over 7,000 years, providing another level of doubt to the replacement theories that had been favored by previous scholars. Among his many conclusions, C. King identifies a pattern in shell bead use (also true for other artifacts in his study as well), where they served a primarily ornamental function early in time, which eventually is displaced by their function in economic/exchange contexts (Moratto 1984:145).

Contact and Beyond: European Explorers, Missionization, and Salvage Ethnography

When the first European explorers encountered the Chumash, they were met with one of the densest populations of hunter-gatherers to date (Erlandson 1994:26). The resulting interactions over hundreds of years drastically transformed the people as well as the local landscape. Landberg (1965:11) identifies four periods of European contact in this region: the

Spanish Exploration period (AD 1542–1769), the Mission period (AD 1769–1834), the Rancho period (AD 1834–1849), and the American period (AD 1849–present). The following historical periods discussed here are but a tip of the iceberg in terms of the complex history between the Chumash and Euro-American historical interactions. This section is merely meant to contextualize the current study in the broader matrix of the Chumash prehistoric and historic record see the following works for more in-depth discussion of these time periods and closely related topics (Beebe and Senkewicz 2001; Chartkoff and Chartkoff 1984; Hackel 2005; Jackson and Castillo 1995; Johnson and McLendon 2000; Walker and Johnson 2003).

The Spanish Exploration Period (AD 1542–1769)

This period of initial Spanish exploration lasted 227 years, over which there were only occasional and relatively brief visits recorded taking place between the Spanish and Chumash in the Santa Barbara Channel region (Chartkoff and Chartkoff 1984; Landberg 1965; Walker and Hudson 1993; Walker and Johnson 1992). The first notable recorded encounter is from Portuguese sailor Juan Rodriguez Cabrillo in 1542. Cabrillo, under Spanish employ, traveled north up the California coast, stopping at San Diego, Santa Catalina Island, and Santa Barbara before wintering in the Santa Barbara Channel from November of 1542 to February 1543 (Beebe and Senkewicz 2001; Hackel 2005). Unfortunately, Cabrillo died on San Miguel Island, and the record of the encounter with the Chumash was penned by Bartolomé Ferrer (Beebe and Senkewicz 2001:32). Although not as extended in duration as Cabrillo's visit, additional voyages were undertaken by Pedro de Unamuno in 1587, as well as by Sebastián Rodríguez Cermeño in 1595, the latter of which was interrupted by a tragic shipwreck (Beebe and Senkewicz 2001:38–45; Erlandson and Bartoy 1995). In 1602, Sebastián Vizcaíno sailed northward through the Santa Barbara Channel in November and December in search of an appropriate place to harbor ships that were a part of the Manila Galleon trade (Hackel 2005:34–36). Vizcaíno recorded his observations of this journey as did a priest a part of this expedition by the name of Fr. Antonio de la Ascensión (see accounts in Bolton 1916 and Wagner 1929; also Mathes 1968). Following Vizcaíno's voyage, there are minimal interactions recorded between Spanish and Chumash groups until the Portolá Land Expedition in the late 18th century (Johnson 1982:29).

The Mission Period (AD 1769–1834)

The Portolá Land Expedition is heralded as the beginning of the Mission period, and essentially served as a reconnaissance operation to locate sites in Alta California that could serve as locations in which to set up missions (Chartkoff and Chartkoff 1984; Glassow and Wilcoxon 1988). The expedition began in the late summer of 1769, whereby the expedition team traveled north from Baja California up to Monterey, returning via the same route in the winter of the following year (Walker and Johnson 1992, 1994). Fortunately, there exist a number of historic accounts from this expedition, including those from Gaspar de Portolá, Fr. Juan Crespí, Pedro Fages, and Miguel Constansó. The Spanish wrote extensively on their observations of the Chumash, as the Spanish saw the Chumash as superior to other indigenous California groups that they encountered on their journeys (see Crespí's account in Brown 2001 and Fages' account in Priestly 1937). In 1792, nearly a quarter-century after the founding of the Missions, José Longinos Martínez was tasked with conducting a botanical survey of Spanish territories in America, whereby he also made his own observations of the Chumash. He described aspects of his interactions with the Chumash in great detail, however, he stayed in the area for only two months (Engstrand 1997; Hass 2014).

The Spanish were not the only Europeans to have interest in Alta California during this period, as evidenced by English and Russian presence in the north part of Alta California, which threatened established Spanish trade routes and territory. In the interest of protecting their trade routes and territory, the Spanish friars built missions—approximately one day's travel apart—along the coast of Alta California. One goal of the Mission system was to compel the indigenous populations to convert to the Christian religion and give up their traditional lifeways (Jackson et al. 1995). In order to effect results for the latter goal, a *reducctiones* program was implemented at each mission, which was designed to convert indigenous peoples to Christianity and force them to adopt European lifeways such as farming and speaking Spanish, while also living together at the missions under the watch of Spanish missionaries. The *reducctiones* program was responsible for invoking huge changes to traditional native lifeways, from which native groups never fully recovered (Beebe and Senkowicz 2010:111; Landberg 1965:13). Even despite the relatively short-lived mission system, its *reducctiones* program was responsible for decimating Chumash populations as "neophytes" were ill-equipped to handle the close living-quarters of the missions, succumbing readily to epidemics (Chartkoff and Chartkoff 1984).

The Rancho Period (AD 1834–1849)

Without question, the implementation and continued operation of the Mission system was calamitous for the indigenous peoples living within them. However, the effects of this system were much farther reaching, given their operation for over 60 years—a far longer span of time than the Spanish had intended them to remain in action (Chartkoff and Chartkoff 1984:272). In the early 19th century, the Spanish government had been making plans to discontinue their operation, a decision that was sped up dramatically by the events leading to the signing of the Treaty of Córdoba in July of 1821 (Guedea 2000:129). This treaty finally acknowledged Mexico as its own political entity, independent from Spanish rule, and promised full citizenship to its constituents, including Indians living in Alta California. There was much political turmoil in the newly established Mexican empire during this period of time, nonetheless the Congress of Mexico City continued with Spain's plans, passing an act in August of 1833 that officially secularized the Missions (Chartkoff and Chartkoff 1984:273–274). Mission secularization was completed in 1834 and the *rancho* system established in its place; Indians responsible for maintaining the cattle-based economic system were "relegated to the status of péons," and in many respects worse off than they had been before (Landberg 1965:21).

Chartkoff and Chartkoff (1984:273) recognize three components that negatively affected the secularization process: 1) the tumultuous Mexican political sphere, 2) the function of the Franciscan Fathers in the larger system, and 3) the alacrity with which the Indians wanted to become Mexican citizens. Contemporary Mexican politics, were—as one would expect with a newly-fledged nation—rife with disagreement between political factions. As such, attention was not focused on Alta California, a region under their auspices over which they had very little control and whose main draw was the land and cattle belonging to the Missions. The Franciscan Fathers were essentially "free agents," who held loyalty to Spain not the newly established Mexican government and could not be relied upon to maintain the previous infrastructure. Although Mission secularization may seem like a victory for indigenous groups (and indeed it was in some respects), the Mission system had provided an infrastructure that enabled the Indians to engage in economic activities with Europeans, under the relative protection of the Fathers, and with such a system no longer in place, they were ill-prepared for life outside of the Missions (Chartkoff and Chartkoff 1984:273; see also Beebe and Senkewicz 2001:313–315; Hackel 2005:369–420).

The American Period (AD 1849–Present)

The American period is one, at least at the beginning, of salvage ethnography. Decimation of the native populations since the Mission period had taken their toll and not many living Chumash were old enough to remember more traditional lifeways (Chartkoff and Chartkoff 1984:296). A number of ethnographers (e.g., Rev. Stephen Bowers, Henry Henshaw, Lorenzo Yates) working in this period did their best to collect as much data as possible. However, John Peabody Harrington garners the most credit for Chumash salvage ethnography because of his extensive career collecting Chumash ethnographic and linguistic data from the early 20th century until his death in 1961 (Landberg 1965:21–22). The majority of his fieldwork was supported by the Smithsonian Institution's Bureau of American Ethnology, and he amassed an incredible amount of information, especially on linguistics for Barbarenõ, Inezeño, Centureño, Purisimeño, Obispeño, and Island Chumash, among many other indigenous groups, a body of information which modern scholars still rely upon heavily today (see, for example: Blackburn 1975, 1976; Harrington 1929, 1932, 1955, 1974; Hudson et al. 1981).

Contextualizing the Archaeology of the Santa Barbara Channel Region

The beginnings of modern archaeology in the region run parallel with the salvage ethnography that was taking place at the end of the 19th century. The earliest "excavators" were essentially looters, who collected Chumash artifacts for personal collections or sold them to museums for profit. Attempts at systematic excavation and collection of artifacts followed, which allowed for the first cultural chronologies to be developed for the region, further contextualizing prehistory of the Santa Barbara Channel coast. Things changed quite drastically with the invention of radiocarbon dating, which allowed researchers to explore more nuanced research questions and further refine overall knowledge of the prehistoric coast.

Late 19th to Early 20th Century Archaeology in the Santa Barbara Channel Region

It is most unfortunate that some of the earliest excavations (if they can indeed be referred to as such) in the region were conducted by antiquarian "pot-hunters". At this point in time, knowledge of prehistoric Chumash history was all but non-existent and site visitors readily took artifacts and human remains from sites they visited. Given that these collectors were after museum-quality artifacts for display in private and institutional collections, their collection efforts were primarily focused upon indigenous cemeteries, many of which were located along the coast. Two of the most well-known collectors were Reverend Stephen Bowers and Paul Schumacher, who were both responsible for acquiring and sending large numbers of unprovenanced artifacts to the Smithsonian Institution (Benson 1997; Erlandson 1994; Erlandson and Colten 1991; Moratto 1984; Orr 1952). Frenchman Jean Léon de Cessac was another contemporary antiquarian worth mentioning, as the rivalry between Cessac and Schumacher is well-documented (Erlandson 1994; Moratto 1984). Some of Bowers' notes still remain to us today, which indicate that many of the prehistoric cemeteries he excavated had already been plundered by the time he reached them (Benson 1997; Erlandson 1994).

Early to Mid-20th Century Archaeology in the Santa Barbara Channel Region

The period of time that followed the frenzied collection of unprovenanced artifacts and skeletal remains in the late 19th and early 20th century was marked by an intense scholarly interest in constructing a culture-history for the prehistoric Chumash. Although the excavations conducted by archaeologists in this period were not precisely up to modern standards, the work conducted was significantly superior to the excavations of Bowers and Schumacher and contributed immensely to knowledge of the prehistoric Chumash. In order to construct these histories, excavators still worked primarily in cemetery contexts, systematically excavating and collecting artifacts that they used to construct formal typologies. Among the foremost of the archaeologists at the time were D. B. Rogers and Orr, affiliated with the Santa Barbara Museum of Natural History and Olson, who was affiliated with University of California, Berkeley (Corbett 2007:97–103). Collectively, their work set the groundwork for further refining the Chumash cultural sequence with the invention of radiometric dating techniques.

Mid-20th Century to Present Archaeology in the Santa Barbara Channel Region

In line with the theoretical paradigm shift in archaeology from a culture historical approach to a processual (and later post-processual) approach, archaeology in the Santa Barbara Channel region utilized these approaches to advance knowledge of the prehistoric Chumash. The advent of radiometric dating techniques, radiocarbon (^{14}C) dating in particular, allowed for an absolute chronology to be established for the prehistoric Chumash. It is during this time that scholars have the ability to address questions regarding prehistoric ecological conditions and also to create a much clearer picture of prehistoric settlement in the region. Recent scholars have continued to investigate topics related to pre- and post-contact Chumash archaeology and history in the Santa Barbara Channel region relating to ecology (e.g., Johnson 2000; Kennett 2005; Rick et al. 2008), subsistence (e.g., Erlandson et al. 2009; Gill 2015; Rick 2011), religion and ritual (e.g., Green 2001; Paldam 2017; Perry 2007), sociopolitical organization (e.g., Arnold 2004; Gamble 2008; Kennett et al. 2009), violence and warfare (e.g., Brill 2014; Johnson 2013), among many others.

Conclusion

The geological, ecological, and anthropological history of Santa Barbara Channel region has been summarized here to provide the reader with some basic knowledge to aid in contextualizing this study within its place in both space and time. Even though this study deals only with prehistoric Early and Middle period sites, a discussion of Contact and Historic periods of Chumash history is warranted to document sources of data available to other researchers investigating questions of protohistoric and historic Chumash. Addressing research questions for prehistoric sites is no easy feat, as historic and ethnohistoric documents cannot be relied upon to accurately describe indigenous lifeways in the region thousands of years in the past. Nevertheless, the information collected by European explorers and missionaries, ethnographers, and archaeologists all add to our collective picture of prehistoric and historic Chumash culture, enhancing our knowledge of the past.

The overview of the Santa Barbara Channel region presented in this chapter focused on the many ways in which the Chumash engaged with their natural environment. Over time, this engagement created a rich and vibrant culture, which has been documented through ethnographic and ethnohistoric sources, as well as physically remaining as part of the archaeological record. In order to best understand the past mortuary record, it is imperative to have a greater understanding of Chumash daily life, including their sociopolitical and economic organization, foodways and settlement patterns, as well as their exchange patterns and interactions with neighboring groups. Cross-culturally, subadults leave few clearly associated archaeological remains in settlement and non-mortuary contexts (Kamp 2001), so by assessing mortuary treatment of subadults who died, a clearer picture can be developed of this particular prehistoric age group. Mortuary contexts continue to provide one of the best avenues to better understand subadult treatment. By assessing similarities and differences between subadult and adult burials, it is possible to ascertain aspects of subadult identities by comparison, as well as further understand their overall treatment in society. While the broad, regional overview presented here provides a basis for important aspects of Chumash culture, the information presented in the following chapter (Chapter 4) provides a more detailed contextualization regarding the sub-regions and specific sites from which the study data are drawn.

CHAPTER 4
Study Sample Background

Introduction to the Study Sample

The study sample includes 941 individuals from 16 Early and Middle period sites (Table 4.1) in the Santa Barbara Channel region located on and in the immediate vicinity of California's Southern coast (see regional discussion in Chapter 3). The study region is thus defined as the mainland area between the Fowler site (SLO-406) in the north and Soule Ranch (VEN-61) in the south, extending approximately 15 miles inland from the coastline, and also including both Santa Cruz and Santa Rosa islands in the chain of Northern Channel Islands (Figure 4.1). In order to be included in the site sample, a given cemetery needed have a minimum of ten interred individuals and not have any intrusive Late and/or Historic cemetery components (see Chapter 5 for full study selection criteria and methods).

Table 4.1. Number of Burials in Each Study Site, Grouped by Context

Context		Site Designation	Site Name	Number of Burials
Islands	*Santa Rosa Island*	SRI-3	Tecolote Point	71
		SRI-5	Survey Point	11
		SRI-41	Cañada Verde Dunes	145
	Santa Cruz Island	SCRI-159	Orizaba	19
		SCRI-162	Orizaba	28
		SCRI-257	Christy's Beach	69
		SCRI-333	El Montón	106
Mainland	*Santa Barbara County*	SBA-43	More Ranch House	46
		SBA-53	Aerophysics Site	12
		SBA-71	Winchester Canyon	57
		SBA-72	Tecolote Canyon No. 1	47
		SBA-73	Tecolote Canyon No. 2	8
		SBA-81	Las Llagas No. 1	237
	Ventura County	VEN-61	Soule Ranch	49
		VEN-150	Browne Site	12
	San Luis Obispo County	SLO-406	Fowler Site	24

This chapter provides the relevant background information for each of the cemetery sites included in the study sample. The discussion of this chapter is organized such that sites from the Northern Channel Islands (Santa Rosa and Santa Cruz Islands) are discussed first, followed by the sites located on the mainland of the Santa Barbara Channel region (Santa Barbara, Ventura, and San Luis Obispo counties).

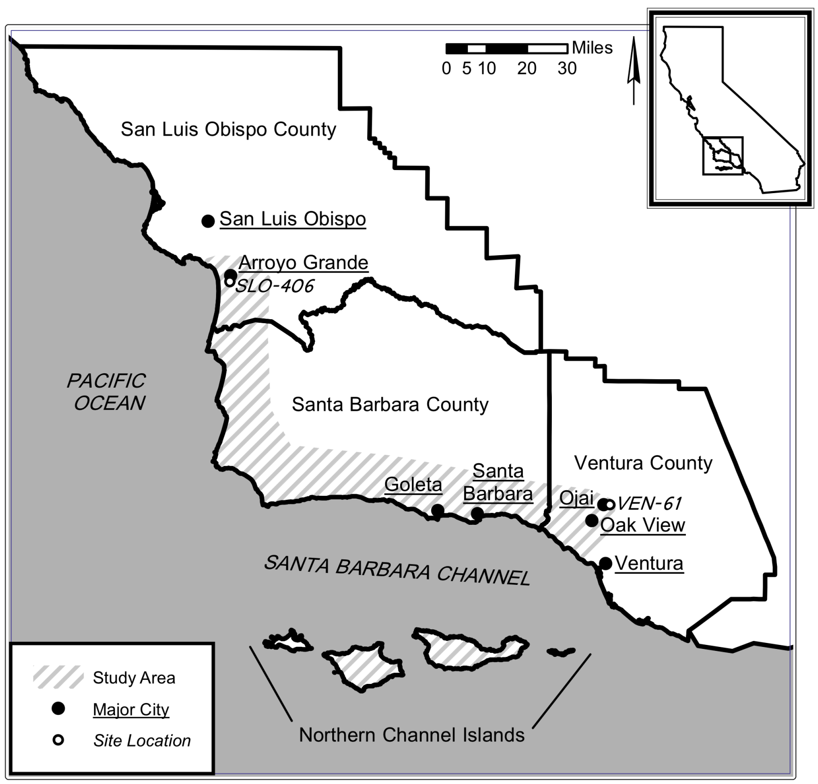

Figure 4.1. Regional map with area of investigation highlighted.

Beginning each of the respective regional discussions is a brief summary of the study area and sites included, which is followed in turn by more detailed discussions for each individual site, organized numerically by trinomial number, within that context. Each of the site summaries provides general locational information, site components and layout, relevant excavation history, total number of burials originally excavated, number of burials with sufficient information to be included in the study, and chronometric or relative dating information, which is used to classify each site based on C. King's (1990) chronology (Table 4.2). Where available, excavation methods are briefly summarized, however, these are unevenly represented in the excavation documentation, especially for sites excavated in the early 20th century.

Table 4.2. Number of Burials for Each Temporal Phase

Time Period	Temporal Phase	Number of Burials
Early	Ex	71
	Eya	56
	Eyb	196
	Ez	50
	Late Early	12
Middle	M1	115
	M2a	279
	M2b	83
	M3	71
	M4	8

Regarding the discussion of chronological dating for each of the individual sites, uncorrected radiocarbon (^{14}C) assays are given (Table 4.3), unless otherwise explicitly noted in text. When assigning a site within C. King's chronology, chronometrically dated materials that have clear burial associations are given preference over relative dating of artifacts, although they are usually in close concordance with one another. In instances where no radiocarbon dates are available for burial-associated materials, the sites were placed within the chronology based on relative dating of the burial lots. Radiocarbon dates from non-burial associated materials were not used to assign sites to particular temporal phases, given the wide discrepancy in dates possible, especially considering that many of the burial contexts are in direct association with cultural midden material.

Table 4.3. Available Radiocarbon Dates and Sample Types for Study Sites

Site Designation	Uncalibrated Radiocarbon Date(s) BP	Calibrated[3] Radiocarbon Date(s) calBC/calAD	Sample Type
SRI-3	4110 ± 70 [Intrusive]	2719 ± 161 [Intrusive]	Olivella shell (Burial 8)
	7050 ± 90	5903 ± 168	Abalone shell (Burial 28)
	7120 ± 120	5988 ± 239	Abalone shell (Cemetery A)
SRI-5	3420 ± 34	1704 ± 77	Shell disc beads (Burial 2)
	3396 ± 35	1693 ± 79	Shell beads (Burial 3)
	3797 ± 35	2240 ± 107	Olivella shell beads (Burial 10)
SRI-41	3020 ± 100	1247 ± 252	Cyprea shell beads (Burial 94)
	3287 ± 36	1577 ± 82	Olivella shell beads (Burial 54)
SBA-53	4620 ± 80	3400 ± 137	Abalone shell (Area A)
	4790 ± 60	3581 ± 85	Pismo clam shell (Unit 3)
	4890 ± 80	3668 ± 152	Pismo clam shell (Area B)
	4980 ± 60	3738 ± 86	Abalone shell (Area A)
	5090 ± 80	3872 ± 173	Pismo clam shell (Unit 1)
	5110 ± 60	3904 ± 137	Pismo clam shell (Unit 1)
SBA-71	1610 ± 90	435 ± 194 [calAD]	Abalone shell (Swordfish Dancer burial)
	1790 ± 90	224 ± 199 [calAD]	Abalone shell (Burial 7)
	2110 ± 90	212 ± 159	Pismo clam shell (Area H144)
SBA-81	2580 ± 70	693 ± 205	Abalone shell (Trench 13K burial)
	2660 ± 90	872 ± 171	Limpet shell (Trench 3G burial)
VEN-61	1989 ± 35	69 ± 14 [calAD]	Olivella disc beads (Burial 33)
	2181 ± 34	264 ± 102	Abalone bead (Burial 5)
SLO-406	1460 ± 60	596 ± 69 [calAD]	Bone collagen (Burial 8)

[3] The uncalibrated radiocarbon dates were calibrated with the OxCal (version 4.3.2) online module (https://c14.arch.ox.ac.uk/oxcal.html) using the IntCal 13 curve, which is based on the research of Reimer and colleagues (2013). All calibrated dates are calBC, except where calAD is indicated.

Northern Channel Islands Sites

The Northern Channel Islands lie within the Southern California Bight, which consists of the region from Point Conception in the north to Cabo Colnett in Baja California, to the south (Emerson 1982). The four islands that make up the Northern Channel Islands (Figure 4.2), moving east to west, are Anacapa, Santa Cruz, Santa Rosa, and San Miguel, which are actually the exposed mountaintops that continue the chain of Santa Monica mountains. Until approximately 9,000 years ago these, now separate, islands were actually connected as one large island, referred to as Santarosae (Clark et al. 2014; Kennett et al. 2008; Reeder-Meyers et al. 2015). They are separated from the mainland by the fairly deep waters of the Santa Barbara Channel, but it is important to note that they were never connected to the mainland (Emerson 1982; Kennett 2005). Each island is ecologically distinct from another, despite their geographically close grouping and their separation by fairly narrow and shallow straits (Emerson 1982:13). There was not sufficient data to include the two smallest islands, Anacapa and San Miguel, in this study, so only cemetery data from the two largest of the Northern Channel Islands were included in this study. Seven sites total were included from this context, three from Santa Rosa Island and four from Santa Cruz Island.

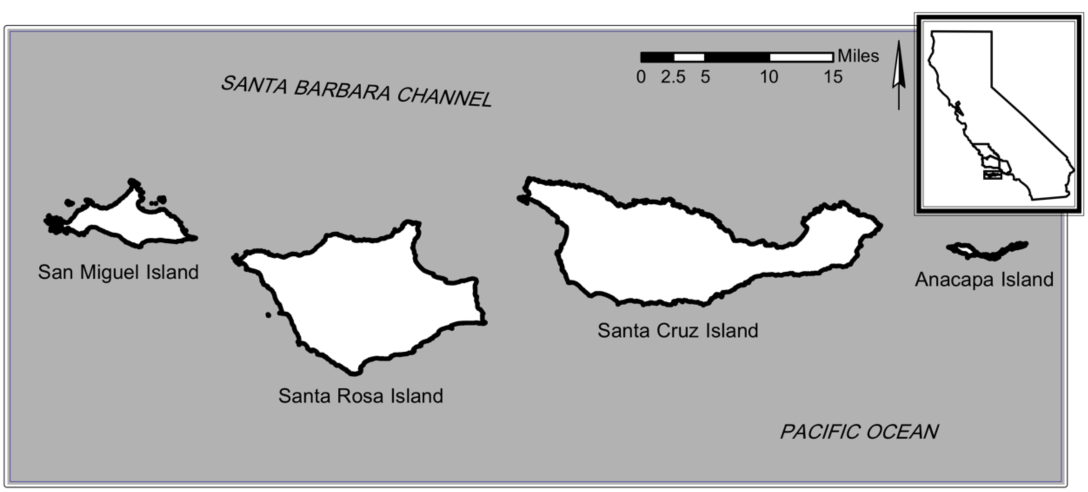

Figure 4.2. Map of the Northern Channel Islands.

Geographic Description of Santa Rosa Island

Santa Rosa Island is the second largest of the Northern Channel Islands, with an area of 217 square-kilometers (Kennett 2005:42), measuring about 14.5 miles long by about 10 miles wide (Glassow 1977:154). The island lies approximately 31 miles west of the city of Santa Barbara (Orr 1968:2), and is the second island from the west in the chain of Northern Channel Islands, with San Miguel located 3 miles to the west and Santa Cruz located 6 miles to the east (Glassow 1977:154). Comparatively, Santa Rosa is considered less rugged than Santa Cruz in terms of terrain, also exhibiting less topographic variability (Kennett 2005:42). Santa Rosa Island is host to the Monterey formation along the northern coast (Glassow 1977:155), and even has a Torrey pine forest on the northeastern corner of the island, which is the only indigenous stand of Torrey pines apart from Del Mar in the San Diego area (Emerson 1982:25).

Santa Rosa Island is marked by a mountainous ridge running along an east-west axis, more-or-less through the center of the island, with Soledad Peak as the highest point on the island, measuring 450 meters in height (Kennett 2005:42). Much of the island aside from this central range is made up of rolling hills, with fairly flat terraces present on the northern and eastern sides of this range, which are broken up by canyons (Orr 1968:10). The island's northern coast meets the shoreline in the form of steep cliffs, which are relatively low, but can reach heights of 400 feet in some places (Orr 1968:12). When the northern and southern sides of the island are compared, the southern side is much more rugged than the terrain found in the northern part of the island (Glassow 1977; Kennett 2005). Sandy beaches can be found along the shoreline of the island in the northwest, northeast, and southwest portions of the coastline, and are often accompanied by large sand dune formations (Glassow 1977; Rogers 1929b).

Sites Located on Santa Rosa Island

The sample from Santa Rosa Island (Figure 4.3) includes three sites located on the northern coast: Tecolote Point (SRI-3), Survey Point (SRI-5), and Cañada Verde Dunes (SRI-41). In total from these three sites, 227 burials have sufficient data to be included in the sample, which divide into 71 burials from SRI-3, 11 burials from SRI-5, and 145 burials from SRI-41. All three of these sites date to the Early period, albeit to different phases. In chronological order, SRI-3 is the earliest, phase Ex, followed by SRI-41, which dates to phase Eyb, and the latest is SRI-5, dating to phase Ez.

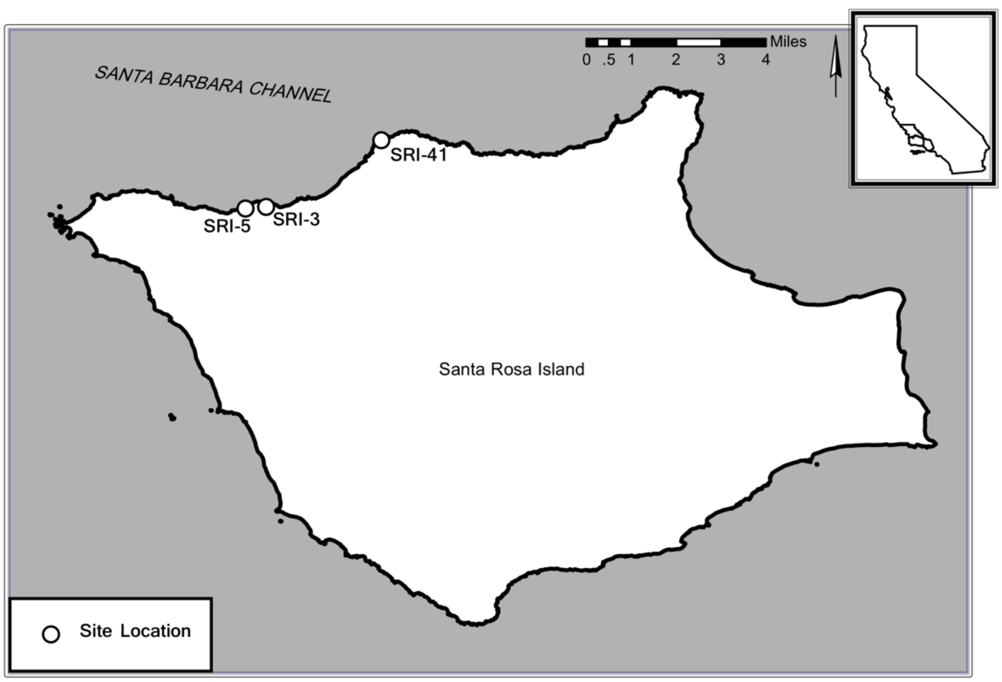

Figure 4.3. Map of Santa Rosa Island with locations of study sites indicated.

SRI-3, Tecolote Point

Tecolote Point (SRI-3) is located on the northwest coast of Santa Rosa Island, in between the mouths of Arlington and Tecolote canyons, in the Skull Gulch area (Orr 1949a, 1951a). The site consists primarily of large stable sand dunes that are interspersed with layers of habitation midden, which directly abut the sea cliffs (Orr 1951a, 1961). The site is known to have two cemeteries (A and B) located about 100 yards from one another, with a few isolated burials outside the bounds of these two formal cemeteries (Orr 1951a, 1961, 1968). The burials in cemetery B were largely eroded away during excavation in the late 1940s and are not included here (Orr 1951a). Cemetery A is located in the eastern portion of the site, on the top and north sides of a stable sand dune about 20 feet tall, capped with approximately 4 feet of midden (Orr 1951a, 1968:115). Orr (1951a, 1961, 1968:117) and his team from the Santa Barbara Museum of Natural History excavated the cemetery over three seasons, between 1949 and 1951, yielding a total of 79 burials. Based on the amount of weathered human bone observed at the site, Orr (1961) estimated that there could have originally been double the amount of burials originally interred in cemetery A.

While the majority of the 79 burials in the cemetery were found in the lower levels of the dune surrounded by a white sand matrix, three burials were found in a black sand matrix in the higher levels of the dune. Orr (1949a, 1968:118) remarked, even before detailed analysis or radiocarbon dating of the excavated materials, that these were intrusive burials and likely dated to a much later period than the other burials in the cemetery. Radiocarbon dates confirm this hypothesis, with a date of 4110 ± 70 RYBP (Olivella shell, Burial 8) corresponding to one of the intrusive burials, and two radiocarbon dates from burials-associated materials in the lower levels of the cemetery producing dates of 7050 ± 90 (Abalone shell, Burial 28) and 7120 ± 120 RYBP (Abalone shell, Cemetery A; Breschini et al. 1996:97). The two dates from the non-intrusive burials average to 7085 RYBP, establishing the use of the cemetery in the Early period, phase Ex. The three intrusive burials were not included in the study sample, and there was sufficient data to include 71 of the remaining 76 burials from Tecolote Point, cemetery A.

SRI-5, Survey Point

SRI-5, Survey Point, is located just adjacent to Tecolote Point (SRI-3) on the western end of the north coast of Santa Rosa Island. The site itself is located just west of Arlington canyon along the sea cliff, with the bulk of the site comprising sand dunes and midden (Orr 1968). Orr (1949b) identified four cemeteries at the site, with the focus of his excavations, aided by his Santa Barbara Museum of Natural History crew, on cemetery A. Cemetery A was located immediately alongside the sea cliff, with burials found on both the north and south sides of the sand dune (Orr 1968). Orr located this cemetery initially in 1946, visiting the site again in 1947 and 1948 to assess the level of erosion taking place. The erosion witnessed by Orr was concerning enough that he and his crew returned in 1949 to excavate a total of 11 burials from cemetery A (Orr 1949b, 1968:137–138). Three radiocarbon dates are available for burial-associated items from this cemetery: 3420 ± 34 (Shell disc beads, Burial 2), 3396 ± 35 (Shell beads, Burial 3), and 3797 ± 35 RYBP (Olivella shell beads, Burial 10; SBMNH 2006a). These three radiocarbon dates produce an average of 3538 RYBP, establishing the cemetery's use in the Early period, phase Ez. This average of the three radiocarbon dates is much closer to the M1 phase proposed by C. King (1990:33), based on his analysis of the burial lots and echoed by Lambert (1994:96), than by the non-burial associated radiocarbon dates used by Corbett (2007:102–103).

SRI-41, Cañada Verde Dunes

SRI-41, the Cañada Verde Dunes site, is situated immediately along the center of the northern coast of Santa Rosa Island. The site is located immediately to the southwest of, as its name would suggest, Cañada Verde, the second largest canyon on Santa Rosa Island (Orr 1968).

SRI-41 is host to four cemeteries (A, B, C, and X), with cemetery A being the largest, which is located on a small flat-topped mound abutting the sea cliff (Orr 1951b). Orr visited the site only briefly in 1947 and 1948, and undertook the majority of excavations with his crew associated with the Santa Barbara Museum of Natural History in 1951, given the rapid erosion of the site (Orr 1951b, 1968). It seems likely that pot-hunting activities were undertaken by W. G. W. Harford and others associated with the U.S. Coast and Geodetic Survey in 1872–1873 prior to scientific excavation in the late 1940s and early 1950s, which Orr (1968:150) estimates could have resulted in the excavation of over 100 skeletons. Despite this, Orr (1951b, 1968:160) and his team were able to excavate the densely occupied cemetery, resulting in a total of 152 burials, and he estimated that an additional 100+ remained unexcavated or had already weathered out. Out of the 152 total burial excavated by Orr and his team, 145 of these had sufficient information to be included in the study sample. Two radiocarbon dates are available from burial-associated materials from the cemetery: 3020 ± 100 (Cyprea shell beads from a necklace, Burial 94; Breschini et al. 1996:98) and 3287 ± 36 RYBP (Olivella beads, Burial 54; SBMNH 2006b). These two dates produce an average date of 3154 RYBP, placing the use of the cemetery within the Early period, phase Eyb.

Geographic Description of Santa Cruz Island

Santa Cruz Island is the largest of the Northern Channel Islands, with a total area of 249 square-kilometers (Kennett 2005:42). The island has a somewhat irregular shape, being about 24 miles in length and ranging from 7 to 2 miles in width, with the extreme west end, east end, and eastern isthmus being narrower than the central portion of the island (Glassow 1977:86). Santa Cruz is located about 28 miles due south from the city of Santa Barbara (Rogers 1929b:274), and is the second island from the east in the chain of Northern Channel islands, being 5 miles west of Anacapa and 6 miles east of Santa Rosa (Emerson 1982:35). As with Santa Rosa Island, Santa Cruz also shares some of the Monterey formation, which is located east of the isthmus, providing a source of high-quality chert on the island. Santa Cruz's unique topography and shape also allow for small protected coves at the mouths of canyons around the island, which is not as common at the other Northern Channel Islands (Glassow 1977:87–88).

Santa Cruz Island is very topographically diverse in comparison to the other Northern Channel Islands, and scholars have suggested that it is the most rugged out of all of the Channel Islands, both northern and southern (Emerson 1982; Glassow 1977; Kennett 2005; Rogers 1929b). The island hosts three mountain ranges, two running east-west and one running north-south. The ranges that run east-west are located roughly parallel to one another, with one in the northern part of the island and one in the southern part, with a central valley in between them (Emerson 1982; Kennett 2005). The northern range extends the entire length of the island, while the southern range is shorter in length, ending at Valley Anchorage. The island's highest peak, Mount Diablo, is found in the northern range having an altitude of over 750 meters, and the southern range has peaks of just over 450 meters (Glassow 1977:86). The smallest of the ranges, El Montañon, running north-south, effectively separates the east and west parts of the island, with both ends having moderately flat marine terraces, however the western side of the island is markedly more rugged than the eastern (Kennett 2005:42). The northern and southern coasts of Santa Cruz island have fairly steep cliff faces that abut the sea, and there are also stretches of sandy beaches located on the southwest side of the island (Glassow 1977).

Sites Located on Santa Cruz Island

The sample from Santa Cruz Island comprises four sites (Figure 4.4): Orizaba (SCRI-159), Orizaba (SCRI-162), Christy's Beach (SCRI-257), and El Montón (SCRI-333). The two Orizaba sites are located roughly in the center of the northern coast, while Christy's Beach is located on the southwestern part of the coast, and El Montón (SCRI-333) is located at the extreme west end. There were 222 burials from these four sites that had sufficient data to be included in the sample: 19 burials from SCRI-159, 28 burials from SCRI-162, 69 burials from SCRI-257, and 106 burials from SCRI-333. Two of these sites date to the Early period, the first being SCRI-333, which has two distinct phases present, Eya and Ez, and the second being SCRI-162, dating to phase Eyb. The two Middle period sites are SCRI-257, which dates to phase M1, and SCRI-159, which dates to phase M2a.

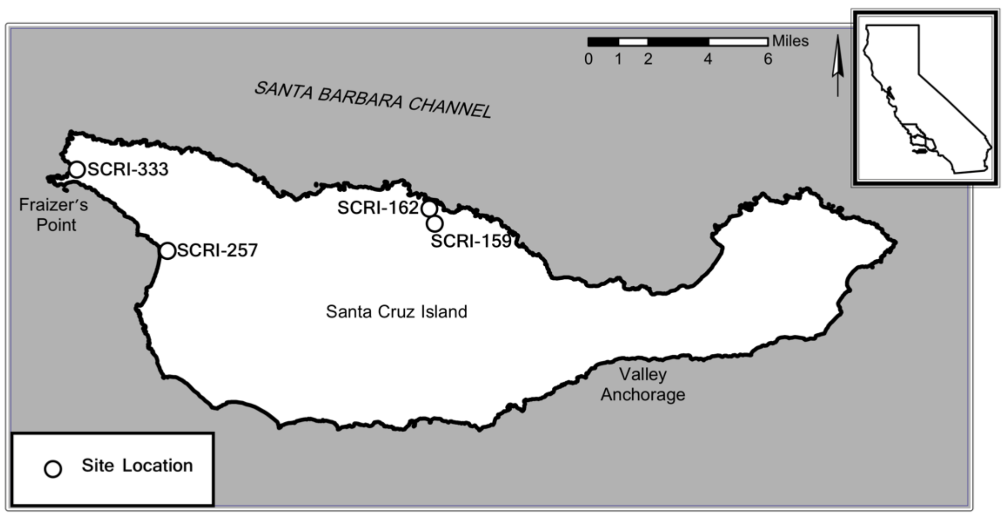

Figure 4.4. Map of Santa Cruz Island with locations of study sites indicated.

<u>SCRI-159, Orizaba</u>

The first of two sites in the Orizaba region is SCRI-159, located on the northern part of Santa Cruz Island. The site consisted of both settlement and cemetery components (Hoover 1972:248). Very little descriptive information is available regarding this site, with Robert Hoover's (1972) dissertation and Hoover and Todd Olson's (1973) data publication providing sufficient information on the cemetery excavations. In 1927, Ronald Olson conducted excavations at the site, which is also referred to as Olson's site #8, in conjunction with the

Anthropology Department at the University of California, Berkeley (Hoover 1972:17). Olson's excavations laid out seven units for excavation, and six of these fell within the cemetery area. In total, 19 burials were excavated (Hoover 1972:225), and all of these had sufficient information to be included in this study's sample. No radiocarbon dates from cemetery contexts at this site are known to the author, however C. King (1990:34) included this site in his dissertation, and based on the associated burial lots, he ascribed the site to the Middle period, phase M2a. Until radiocarbon dates are made available, this study will follow C. King (1990), Lambert (1994), and Corbett (2007) in ascribing the site to phase M2a.

SCRI-162, Orizaba

SCRI-162 is the second site in this study from the Orizaba region of Santa Cruz Island. This site also lacked descriptive details from Olson's field notes, however Hoover (1972:249) confirms the presence of both settlement and cemetery components at the site. Olson, with his team associated with the Anthropology Department at the University of California, Berkeley, excavated the site, also known as Olson's site #7, in 1927 (Hoover 1972:17). They laid down eight units for excavation in the cemetery, with a total of 28 burials excavated (Hoover 1972:232; Hoover and Olson 1973:26). Previous studies (Corbett 2007:114; Hoover 1972:232; C. King 1990:31) did not include the infant present in a dual burial from the site (Hoover and Olson 1973:26), which accounts for the additional burial included in this study. C. King's (1990:31) analysis of the burial lots from this site indicated it was in use during the Early period, phase Eyb. No radiocarbon dates from associated burial material are known to the author, so until dates are made available, this study will follow C. King (1990), Lambert (1994), and Corbett (2007) in ascribing the site to phase Eyb.

SCRI-257, Christy's Beach

SCRI-257 is referred to as Christy's (also "Christies" or "Christi" in older literature) Beach, and may also be seen in early publications under SCRI-83, which was the number assigned by the University of California Archaeological Survey (UCAS; Hoover 1972:15–16). This site lies at the western end of Santa Cruz Island, near where the mouth of Cervada creek finds its outlet to the ocean at Christy's Beach. SCRI-257, including settlement and cemetery components, is elliptical in shape and located on a sizeable mound at the mouth of the creek on the north bank, with the cemetery area located on the southern side of the mound (Hoover 1972:108; Rogers 1929b:317–319). Two seasons of excavations were conducted by Olson at this site, the first in 1927 with the University of California, Berkeley team, and the second with D. B. Rogers, operating with the Santa Barbara Museum of Natural History, ca. 1928 (Hoover 1972:16, D. B. Rogers 1929b:317–320). Two cemeteries were excavated, exposing over 200 burials, and the cemetery even included the burial of a canine and the skull of an island fox, the latter wrapped in a ceremonial bundle (Hoover 1972:116–120). Only the second cemetery fit the parameters to be included in this study, where excavations uncovered 72 burials. Sixty-nine of these burials had sufficient information to be included in this study. No radiocarbon dates from cemetery contexts at this site are known to the author, however in C. King's (1990:33) analysis of the associated burial lots, he ascribed the second cemetery at the site to the Middle period, phase M1. Until radiocarbon dates are made available, this study will follow C. King (1990), Lambert (1994), and Corbett (2007) in ascribing the site to phase M1.

SCRI-333, El Montón

SCRI-333 (Olson's site #3) is known colloquially as El Montón, due to the presence of the massive shell mound at the site, but is also referred to in older literature as Fraizer's Point (Hoover 1972:70; Olson 1930; Van Valkenburgh 1933). The massive shell mound that makes up the majority of the site is located at the northwestern end of Santa Cruz Island near Frazier's Point, and is adjacent to a defunct airstrip that was constructed during World War II (Hoover 1972:70). The massive, nearly elliptical-shaped, site had both settlement and cemetery components, with many house depressions located on the mound and its slopes, as well as three cemeteries at the southern end of the mound surface, near the center of the site (Gamble 2017; Hoover 1972; Van Valkenburgh 1933). Olson conducted two expeditions to the site in the late 1920s, excavating two of the three cemeteries on the mound. The first season took place in 1927 with the UCAS team, and the second season took place in 1928 with D. B. Rogers and the Santa Barbara Museum of Natural History. A third excavation season took place in 1932 under the direction of Richard Van Valkenburgh, who excavated the third and largest cemetery at the site (Gamble 2017; Hoover 1972; Van Valkenburgh 1933). However, Van Valkenburgh's excavations do not have sufficient records of the burials to be included in this study, so only the two cemeteries excavated by Olson are included in this study (Gamble 2017; Glassow 2004).

Based on Olson's excavated materials, D. B. Rogers believed the site to be an Early Oak Grove site (Van Valkenburgh 1933). Although the site itself is incredibly well dated (see radiocarbon dates in Breschini et al. 1996:70 and Gamble 2017:Table 2), no radiocarbon dates are available from burial-associated materials. Relative dating from the associated burial lots, however, confirms the antiquity of the site, with the earlier of the two cemeteries (units K-Q) dating to the Early period, phase Eya, and the later of the two cemeteries (units A-I) dating to the Early period, phase Ez. The cemetery excavated by Van Valkenburgh, but not included in this analysis, fills in the temporal gap neatly, dating to the Early period, phase Eyb (Gamble 2017:431; C. King 1990:31). All-in-all, Olson excavated 107 total burials (Olson 1927–1928, 1930:Table 4; Van Valkenburgh 1933), and 106 of these had sufficient data to be included in this study: 56 from the Eya phase cemetery and 50 from the Ez phase cemetery.

Santa Barbara Channel Mainland Sites

The mainland sites chosen from the Santa Barbara Channel region comprise three counties: Santa Barbara, Ventura, and San Luis Obispo. The different Chumash groups that lived in this area occupied the region from San Luis Obispo all the way down to Malibu Canyon (Grant 1978:505). The coastal plain that exists between Point Conception and Point Mugu was densely populated in prehistory and is where the majority of the sites included in this study are located (Olson 1930). Additional sites within the broader Chumash territory but beyond the bounds of this floodplain are included to broaden the study's range of sites.

Unfortunately, the Santa Barbara Channel mainland region has not been as lucky as Santa Rosa and Santa Cruz Islands in terms of being affected by bioturbation processes, as burrowing rodents have caused disturbance to a number of mainland sites (Gill 2015; Glassow 1977). Early looting and pot-hunting on both the mainland and islands have affected some sites, as has modern development, but the excavations included in this study provide important analyses on the finite archaeological record (see Chapter 5 for a detailed accounting of study methods). A total of nine sites from the mainland were included in this study: six from Santa Barbara county, two from Ventura county, and one from San Luis Obispo county.

Sites Located within Santa Barbara County

The sample from Santa Barbara county comprises six sites (Figure 4.5), which are largely located in the Goleta area, approximately 10 miles west of the city of Santa Barbara: More Ranch House (SBA-43), the Aerophysics site (SBA-53), Winchester Canyon (SBA-71), Tecolote Canyon No. 1 (SBA-72), Tecolote Canyon No. 2 (SBA-73), and Las Llagas No. 1 (SBA-81). Combined, these six sites have a total of 407 burials with sufficient data to be included in the sample. The total number of burials separate into: 46 burials from SBA-43, 12 burials from SBA-53, 57 burials from SBA-71, 47 burials from Tecolote Canyon No. 1, 8 burials from Tecolote Canyon No. 2, and 237 burials from SBA-81. SBA-53 is the only site from the Santa Barbara county mainland that dates to the Early period, phase Eyb, while the other five sites date to the Middle period albeit to different phases. In chronological order, SBA-43 is the earliest, phase M1, followed by SBA-81, phase M2a, SBA-71, phase M2b, SBa-72, phase M3, and finally SBa-73, which dates to phase M4.

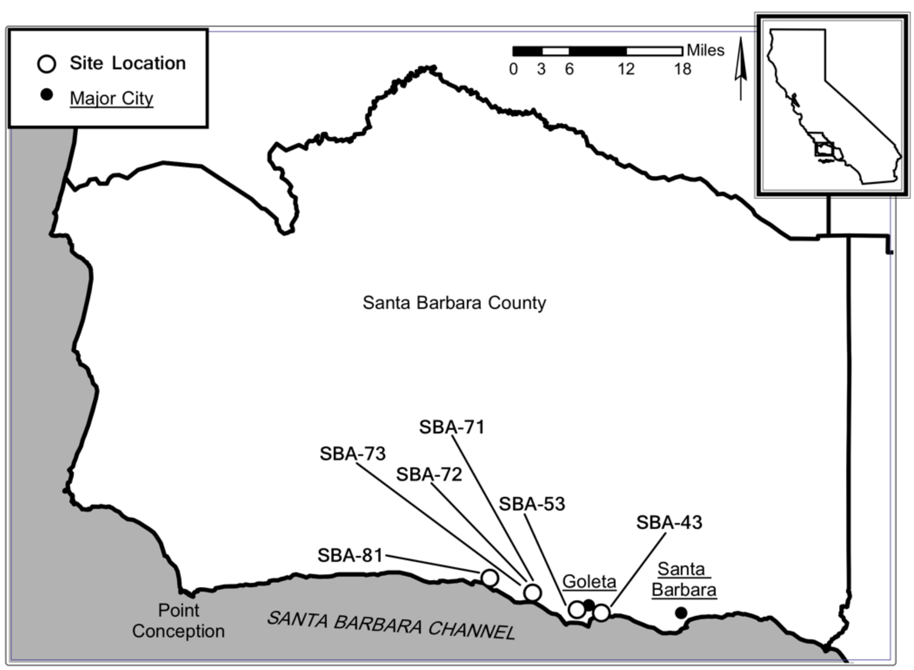

Figure 4.5. Map of Santa Barbara county mainland with location of study sites indicated.

SBA-43, More Ranch House

SBA-43 (More Ranch House; Rogers' Goleta Slough #2, Olson's Mainland 2) is a coastal mainland site located in Goleta at the west end of More Mesa on a slight rise overlooking the Goleta slough. The habitation portion of the site is marked by a large midden, which is separate from the cemetery area of the site (Craig 1982; Gerber et al. 2003; SBMNH ca. 1960s). Excavations in the cemetery were carried out by Olson in 1927 and 1928 (Rogers 1929a) and, at the time, Olson was unable to locate the habitation portion of the site (SBMNH ca. 1960s). Notes regarding the excavations are somewhat limited in comparison to some of the other sites included in this study. They do however provide some information on the methods of excavation, which included the screening of all excavated material, however the screen gauge is not listed (SBMNH ca. 1960s). Ultimately, Olson recorded 49 burials from the SBA-43 cemetery, and 46 of these had enough data to be included in this study.

Olson's (1930:17) preliminary report for the site gives only limited information regarding the cemetery, but attests to the somewhat equivocal chronology, referring to the site as "difficult to place." Ultimately, he asserts that he believes the site to be a late phase of the Early period. However, C. King's (1990:32) analysis of the burial lots from the site resulted in classifying the site as belonging to the Middle period, phase M1. He does note that there is a possibility that a few phase Ez burials could be present, however there is not enough information available to confirm the presence of any specific phase Ez burials. There are no chronometric dates for SBA-43 known to the author, so the site will be assigned to the Middle period, phase M1 after C. King.

SBA-53, Aerophysics Site

SBA-53 was originally named Campbell #1 by D. B. Rogers (1929b:142) during his survey and excavation of the site initially in 1925, but was later referred to as the Aerophysics site, after the property owner, by William H. Harrison (1964:45) and this nomenclature has been maintained by later scholars. The Aerophysics site is located on a conspicuous rise about two miles west of Goleta, along the southwestern edge of the Goleta slough (Harrison 1964; Lambert 1994; Rick and Glassow 1999; Rogers 1929b). D. B. Rogers (1929b) performed initial survey and excavations at the site in 1925, however he was unable to locate the cemetery and his work was thus focused in the settlement portion of the site. In the 1950s, the area on which the site was located was slotted for development, and Harrison (1964:47) undertook salvage excavations at the site in 1956 and 1957, prior to the complete destruction of the site. Harrison's (1964:47–48) excavations were able to locate the cemetery, where D. B. Rogers previously failed. Harrison's excavations were conducted in independent units, with established arbitrary levels measured to a datum point, and all excavated material was passed through a 1/4" screen. This salvage excavation project was able to uncover 17 burials (Harrison and Harrison 1966:37–38), and 12 of those burials had enough data to be included in this study.

After considering the results of his excavations, Rogers (1929b:146–147) believed this to be a Hunting People site, which was also echoed by later excavators (Harrison and Harrison 1966:63). Three radiocarbon dates from Harrison's excavations were analyzed in 1963, resulting in dates of 4620 ± 80 (Abalone shell, Area A), 4890 ± 80 (Pismo clam shell, Area B), and 4980 ± 60 RYBP (Abalone shell, Area A; Breschini et al. 1996:49). Three additional radiocarbon dates were obtained more recently, resulting in dates of 4790 ± 60 (Pismo clam shell, Unit 3), 5110 ± 60 (Pismo clam shell, Unit 1), and 5090 ± 80 RYBP (Pismo clam shell, Unit 1; Rick and Glassow

1999:237). These radiocarbon dates produce an average date of 4912 RYBP, which places this site in the Early period, phase Eyb.

SBA-71, Winchester Canyon

SBA-71 is referred to as the Winchester Canyon site, or as Winchester No. 3 as it was dubbed by D. B. Rogers (1929b:181). The site is located in the Ellwood area of Goleta, on a hilltop which sits on the sea cliff between Bell and Tecolote creeks (D. B. Rogers 1926, 1929b:181). This large habitation site had a sizeable cemetery component as well, with the primary section of the cemetery being densely-packed with burials and ellipsoid in shape. There were also other burials found outside of this central cemetery, that were much more sparsely interspersed (D. B. Rogers 1926).

In 1926, D. B. Rogers conducted excavations at the site, focusing primarily on the cemetery section, where he found the famous “Swordfish Dancer” burial. He also noted the prevalence of stone grave markers at the site overtop burials in the densely packed central cemetery (D. B. Rogers 1926, 1929b). Unfortunately, some of the original unpublished field notes have been misplaced or lost, so there is little information available on D. B. Rogers’ (1944) excavation methods. Later excavations were also conducted by Claude Warren (University of Nevada, Las Vegas) in the form of a field school in 1971, which was sponsored by the National Endowment for the Humanities (C. King 1980:28). All-in-all, D. B. Rogers’ (1929b:185) excavations uncovered 75 burials, 57 of which had sufficient information to be included in the study sample.

D. B. Rogers (1929b:185) believed that there was an Oak Grove component at the site, as well as sparsely distributed Hunting People burials that were scattered around the central burial area, which he attributed to the Canaliño culture. Despite the early excavation of this site, three radiocarbon dates are available from burial-related contexts: 1790 ± 90 (Abalone shell, Burial 7), 2110 ± 90 (Pismo clam shell, Area H144; Breschini et al. 1996:49), and 1610 ± 90 RYBP (Abalone shell, Swordfish Dancer burial; Erlandson and Rick 2002:172). These average 1837 RYBP, placing the use of the site during phase M2b of the Middle period.

SBA-72, Tecolote Canyon No. 1

D. B. Rogers referred to SBA-72 as Tecolote Canyon No. 1 in his excavation documentation, and this site is the first of two sites from the Tecolote Canyon area included in this study. SBA-72 is a large settlement site located at the mouth of Tecolote creek in Goleta, on the Tecolote Ranch property, with two distinctly separated cemeteries located along the western edge of the site (D. B. Rogers 1926b, 1929b:187–188, 192). Rogers excavated the site in 1926, but what remains of his excavation documentation does not indicate specific excavation methods employed. D. B. Rogers (1926b) believed the northern and southern cemeteries to be in use at the same time and that the northern cemetery was reserved for the burial of males and the southern cemetery for females. However, Rogers' own skeletal data does not support these assumptions, and C. King (1980:50) recognized that Rogers was erroneously attributing gender to burials based on inclusion of certain types of ornaments and beads as grave goods rather than making interpretations from the skeletal data. He did however note a marked number of individuals who died by violence in the northern cemetery (D. B. Rogers 1926b, 1929b:192).

Due to the temporal difference in the northern and southern cemeteries, only burial data from the northern cemetery were used in this study. In the northern cemetery, Rogers excavated a total of 62 burials, 9 of which were reburials, but did not excavate the cemetery fully due to evidence of previous looting (C. King 1980:46). Of the 62 total burials from the northern cemetery, 47 burials fulfilled the requirements to be included in this study. Unfortunately, no burial-related radiocarbon dates are available for this site, however, C. King (1980:46), using associated burial lots, was able to assess the diagnostic artifacts and assign the northern cemetery at SBA-72 to the Middle period, phase M3. Until radiocarbon dates from burial associated materials are made available, this study will follow C. King (1980, 1990), Lambert (1994), and Corbett (2007) in assigning the northern cemetery at SBA-72 to phase M3.

<u>SBA-73, Tecolote Canyon No. 2</u>

SBA-73 is the second site from the Tecolote Canyon area, and given its direct proximity to SBA-72, D. B. Rogers (1926c) referred to this site as Tecolote Canyon No. 2. SBA-73 lies on the opposite side of the creek from SBA-72 and largely mirrors the organizational layout present at Tecolote Canyon No. 1. SBA-73 is slightly smaller in size than SBA-72, and the residential area of the site was located on top of a small rise, with the two separate cemeteries at the south end of the base of the rise (D. B. Rogers 1929b). Prior to D. B. Rogers' excavations at the site in 1926, substantial looting had been accomplished by Francisco "Chico" Leyva in the late 1800s, and in 1908, Frederick Ward Putnam (University of California, Berkeley) performed the first scientific excavations at the site (C. King 1980:61, 1990:35; Moore 1982:3; D. B. Rogers 1926d, 1929b:197). For D. B. Rogers' (1926c) excavations at the site, the initial 6 inches of soil were not investigated because of disturbance from cultivation, but his field notes indicate the use of arbitrary excavation levels and screening of excavated material, although no screen mesh size is given.

Only burial data from the northern cemetery were used in the subsequent analysis, as the southern cemetery did not meet the minimum requirements for inclusion in this study. From the 10 burials excavated in the northern cemetery (C. King 1980:60), eight met the requirements to be included in the study sample. D. B. Rogers' excavations in 1926 were focused primarily on the cemeteries, however many of the diagnostic artifacts Rogers had anticipated on finding had been removed previously, making the site difficult to place chronologically. However, with the remaining associated burial lots and collections from Putnam's excavations, C. King (1980:60, 1990:35) was able to identify the cemetery as dating to the Middle period, phase M4. C. King notes the possibility that the northern cemetery could have an M3 component as well, but until burial-associated radiocarbon dates can be obtained, this study follows C. King (1980, 1990), Lambert (1994), and Corbett (2007) in assigning SBA-73 to phase M4.

SBA-81, Las Llagas No. 1

SBA-81 is another coastal site located in Goleta at the mouth of Las Llagas Canyon (C. King 1990). Since it is one of three distinct sites located at the mouth of the canyon, D. B. Rogers (1925, 1929b:213) referred to it as Las Llagas No. 1 in his excavation notes and subsequently published analyses. SBA-81 is a large site, forming a relative L-shape on the top of a bluff, and it is the easternmost of the three sites located at the mouth of Las Llagas Canyon (D. B. Rogers 1925, 1929b:214). The cemetery was located slightly southeast of the settlement portion of the site, and D. B. Rogers (1929b:218) believed that, based on the shape and layout of the large cemetery, that two smaller cemeteries had amalgamated into one massive cemetery. A member of Rev. Stephen Bowers' archaeological team, Judge Jacob Shoup, brought the existence of SBA-81 to D. B. Rogers' (1925) attention in 1923, and in 1925 and 1926 Rogers conducted excavations at the site. D. B. Rogers (1925, 1929b) remarked upon the number of stone grave markers at the site, as well as the extreme density of burials and reburials at the cemetery.

Within this site's expansive cemetery, D. B. Rogers was able to excavate over 364 burials (C. King 1990:34), and 237 burials of those fit the requirements to be included in this study, making this the largest cemetery in the study sample. When D. B. Rogers (1929b:221) published his analysis of the site, he believed that SBA-81 was representative of a transitional period between the site's occupation of the Hunting People and the Canaliño culture. Two radiocarbon dates are available from burial-associated materials, dating to 2580 ± 70 (Abalone shell, Trench 13K burial), and 2660 ± 90 RYBP (Limpet shell, Trench 3G burial; Breschini et al. 1996:50). These two dates produce an average of 2620 RYBP, which falls in neatly with C. King's (1990:34) temporal ascription of the site to the Middle period, phase M2a, based on the associated burial lots.

Sites Located within Ventura County

The sample from Ventura county includes two sites (Figure 4.6), the Browne site (VEN-150), located nearby the coast, and Soule Ranch (VEN-61), located slightly more inland; both sites are approximately 30 miles southeast of the city of Santa Barbara. In total, 61 burials had enough of the requisite categories to be included in the sample, which break down into 49 burials from VEN-61, and 12 burials from VEN-150. In chronological order, VEN-150 dates to the late part of the Early period, while VEN-61 has two periods of use during the Middle period, one during phase M2a and one during phase M2b.

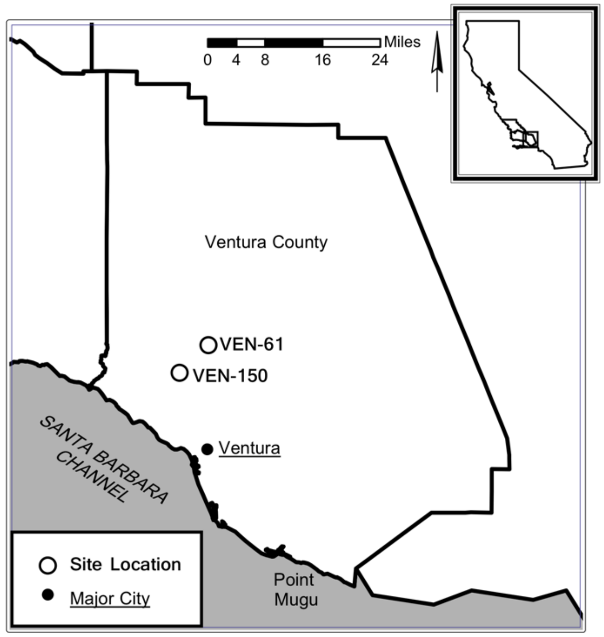

Figure 4.6. Map of Ventura county mainland with location of study sites indicated.

VEN-61, Soule Ranch

Soule Ranch (called Bard Ranch preceding 1873) is located in Ventura county at the eastern boundary limits of the city of Ojai. VEN-61 is located on a hill, 40 feet above the level of the creek, at the Soule Ranch. Two cemeteries were located on this hill, with one being markedly larger than the other. At the time of excavation, the property owner, Mr. Soule, gave permission initially to Bill Schlinger, Bill's brother, John Schlinger, and John's wife to perform initial excavations in 1941 and 1942. It should be noted that the site was looted to some extent over time, however, Mr. Soule attested that looters almost never disturbed the ground, but instead collected and removed surface finds.

In 1942, Phil Orr, associated with the Santa Barbara Museum of Natural History, and assisted by Ben Wright, conducted their own excavations at the site. Since the Schlingers were not trained in archaeological methods nor supervised by professional archaeologists, their excavations and the associated cultural material are for the most part unprovenanced and not included here. For Orr's museum expedition excavations, the archaeological team used 3/16" mesh to screen excavated material. During the initial stages of excavation, the crew began painstakingly mapping the burials, however this process was abandoned due to the complicated nature of the cemetery, which was compacted with many superimposed burials. To quantify the degree of compaction in this cemetery, Orr estimated that there was one burial for every cubic yard of excavated soil (Orr 1942). The presence of clearly superimposed burials at VEN-61 differs somewhat from other sites in that, rather than simply having graves dug into earlier graves and the disturbed bone redeposited as is common practice, burials were carefully superimposed instead. In his field notes, Orr recorded over 115 burials from VEN-61 (Orr 1942), however only 49 burials had sufficient data to be included in this study.

Based on the distinct types of superimposed burials in the cemetery, Orr believed that there were two periods of occupation at the site, the earlier being by the Hunting People and the later by the Canaliño (Orr 1942). In the early 1960s, a University of California, Los Angeles research team conducted research and published a report on a midden associated with the settlement portion of the site. Based on the team's findings, the report gives an approximate date for the site of AD 1–1500, which falls almost completely within the Middle period (Susia 1962:177). Fortunately, two radiocarbon dates are now available for this site, one from each of the two potential periods of occupation identified by Orr: 2181 ± 34 (Abalone bead, Burial 5) and 1989 ± 35 RYBP (Olivella disc beads, Burial 33; SBMNH 2006c). Based on these dates, which fall within earlier dating estimates, this site has been assigned to the Middle period, with the earlier burials being assigned to phase M2a, and the later burials being assigned to phase M2b.

VEN-150, Browne Site

The Browne site is located in the town of Oak View, near Ojai, within Ventura county. The cemetery was located slightly southwest of the center of the site, and the density of the burials indicated this was a circumscribed place of burial outside the settlement area. Cairns were present for nearly every burial, marking their respective locations in the cemetery. The site owners, Mr. and Mrs. Robert O. Browne, purchased the property initially because of the archaeological material evident on the ground surface, and they were active participants in the resulting excavations and analyses. The property owners began their own excavations in 1958, and beginning in 1959, a number of archaeologists, professional and avocational, as well as students and volunteers aided in the excavation and analysis of the resulting data. Excavations continued through 1961, and resumed briefly again in 1963. Among the team responsible for excavations were Ed Beechert and his students from Ventura College, Roberta Greenwood, Claude Warren (Archaeological Survey of University of California, Los Angeles), and Charles Rozaire (Los Angeles County Museum of Natural History) along with his students from San Fernando Valley State College. For the most part, controlled excavation techniques were employed, with all artifacts and materials recorded in situ, in relation to an established datum point. All excavated materials were passed through a 1/4" screen, and for areas needing additional control, 1/8" screens were used (Greenwood 1969). A total of 14 burials were identified and recovered from the cemetery, however two of these were reburials, and were not included in the analysis. The remaining 12 burials from this site had sufficient information to be included in the study sample.

In the published site report, Roberta Greenwood (1969:58) identified the site's material culture and physiography as one of considerable age, drawing parallels to other comparable sites, including Zuma Creek, Malaga Cove II, and Glen Annie Canyon. Greenwood (1969:58) was unable to have success with radiocarbon dating material at the site, but estimated that—due to the similarity of VEN-150 to the aforementioned sites among others in the region with established radiocarbon and obsidian hydration dates—the site likely dated to the beginning of Phase II of the Topanga assemblage, ca. 5000 BC. One radiocarbon date has more recently been made available: 1030 ± 30 RYBP (Bone collagen, Burial 1; Berger and Protsch 1989:59; Breschini et al. 1996:89), which falls far outside the expected chronological age for material culture. However, this sample is of dubious quality given that it was collected and submitted for testing by the site owners and not by professional archaeologists. Given that the material culture present at the site, as well as the obsidian hydration values, so closely match sites of much greater antiquity, this radiocarbon date is deemed spurious and the author follows after Ray Corbett (2007:116) in assigning this site to the late Early period. Until additional radiocarbon dates can be produced, a more exact date cannot be established.

Sites Located within San Luis Obispo County

The sample from San Luis Obispo county comprises one cemetery at the Fowler site (SLO-406; Figure 4.7), which is located approximately 90 miles northwest of the city of Santa Barbara in the town of Arroyo Grande. Twenty-four of the excavated burials from the site had sufficient information to be included in the study sample, and the site is dated to phase M3 of the Middle period.

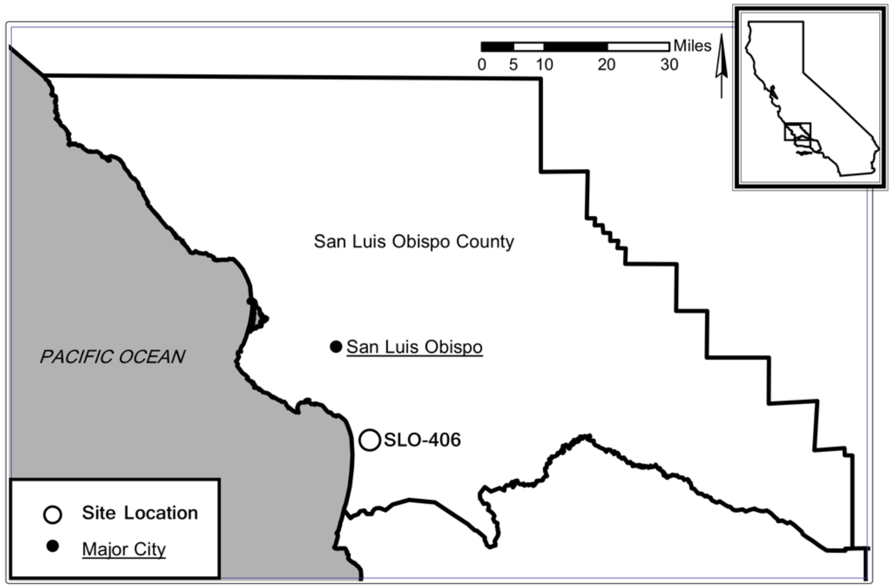

Figure 4.7. Map of San Luis Obispo county mainland with location of study site indicated.

SLO-406, Fowler Site

SLO-406, known colloquially as the Fowler site, is located on the western banks of an ancient slough or bay. The cemetery area of the site was located outside the bounds of the settlement area and consisted primarily of a beach sand deposit. The Fowler site was excavated in 1970 in the form of a salvage excavation project, due to the cemetery's location coinciding with a commercial building project (Tainter 1971; Warren 1971). The excavations were directed by Charles Dills, who was a professor at the California State Polytechnic College at San Luis Obispo, as well as a site recorder for the San Luis Obispo County Archaeological Society (SLOCAS). Included in the excavation crew were members of SLOCAS, as well as students from Santa Barbara City College and the University of California, Santa Barbara. The sterile sand, which covered the cemetery, rendered traditional excavation units and measurements ineffective, so all burials and site features were measured in reference to a central datum. All excavated material was passed through either an 1/8" or 1/16" screen to ensure the recovery of small archaeological objects. From the 42 total burials recorded (16 of these were exposed by bulldozer), 24 burials had enough information to be included in this study (Tainter 1971).

When an analysis of the site's excavation data was originally published (Tainter 1971), no chronometric dating of the excavated material had been performed. However, Tainter (1971:3–4) assigned a relative date of 1500–2500 BP based on similarities in material culture to the nearby site of Avila Beach (SLO-56). More recently, radiocarbon dating was performed resulting in a date of 1460 ± 60 RYBP (Bone collagen, Burial 8), which confirms Tainter's original relative dating, placing the site in the Middle period, phase M3 (Berger and Protsch 1989:59; Breschini et al. 1996:89; C. King 1990:35).

Summary of Study Sample

In summation, the study sample includes data from 941 burials drawn from a total of 16 sites in the Santa Barbara Channel region (Table 4.1). Altogether, the sites included span a period of nearly 6,000 years, from approximately 5200 BC–AD 450. Data from a total of 449 burials were collected from island contexts, with 227 burials from Santa Rosa Island and 222 burials from Santa Cruz Island. Data from a total of 492 burials were collected from mainland contexts, with 407 burials from Santa Barbara county, 61 burials from Ventura county, and 24 burials from San Luis Obispo county.

When the study sample (n = 941) is broken down by time period, 385 burials date to the Early period and 556 burials date to the Middle period (Table 4.2). To provide further granulation the number of burials is provided for C. King's (1990) temporal phases,[4] 71 burials dated to phase Ex, 56 burials dated to phase Eya, 196 burials dated to phase Eyb, 50 burials

[4] The only exception is the "Late Early" burials, which could be dated firmly to the Early period, but not to a specific phase at this time.

dated to phase Ez, and 12 burials could be dated, generally, to the Late portion of the Early period. For the Middle period, 115 burials dated to phase M1, 279 burials dated to phase M2a, 83 burials dated to phase M2b, 71 burials dated to phase M3, and 8 burials dated to phase M4.

Conclusion

This chapter has provided a more in-depth examination of the study region, focusing particularly on the archaeological sites from which the study sample was drawn. While the burials themselves are of the utmost importance in making interpretations regarding the mortuary treatment of subadults, it is crucial to also present the excavation histories for these sites, as well as their contextual and temporal placement in the Santa Barbara Channel region and chronology. While the aims of the original excavators do not necessarily align with the focus of this study on subadults, excavators were still careful to note their presence and record subadult burials with the same care and diligence as they did for adults. When the attention to detail by the original excavators is considered along with the secure temporal and geographic context of the burials included in this study, it allows for the opportunity to assess differences present in subadult burials at both diachronic and regional levels. Overall, the mortuary data compiled from the 16 sites present within the dataset make an ideal sample from which to further examine aspects of childhood theory in a prehistoric Chumash context.

The discussion of site environment and geography within this chapter contextualizes the study data within the overall region, while the discussion of site excavation histories aid in placing the respective excavations within their own historical timeline for mortuary studies in the region. Although this chapter situated the study sites within a greater geographic setting and diachronic timeline, the following chapter (Chapter 5) provides the methods used to collect data from the previously mentioned sites, thus placing the aims of this study within the history of mortuary studies in the region. The chapter begins by providing an overview for the parameters and procedures used in the data collection process, as well as the criteria employed in selecting sites for the study. A discussion of the analytical variables used in the statistical analyses follows, which includes the independent variables, those relating to the physical body of the deceased, and also those relating to objects associated with the body of the deceased. Finally, the methods chapter concludes with a discussion of the statistical analyses used in the study and the limitations of using previously collected data in a study of this nature.

CHAPTER 5
Materials and Methods

Collection of Data: Parameters and Procedure

The data for this study were drawn from published sources, as well as unpublished site reports, field notes, excavation records, and collections inventories, all of which came from previously excavated mortuary contexts. These prior excavations were motivated by academic, contract, and salvage reasons, and were conducted by professionally trained archaeologists, archaeological field school participants, avocationists, and volunteers. The unpublished documentation used in this study are located at three facilities: the Santa Barbara Museum of Natural History (SBMNH), the Central Coast Information Center (CCIC), and the Repository for Archaeological and Ethnographic Collections at University of California, Santa Barbara. Research at the SBMNH was conducted between October 2016–October 2018, at the CCIC in October 2018, and at the Repository for Archaeological and Ethnographic Collections between November 2017–November 2018.

The author began this research endeavor by first consulting published data sources relating to Chumash mortuary contexts focusing on the greater Santa Barbara Channel region. From these sources the author then compiled a list of sites with mortuary components, noting to which time period they dated, and how many burials were recorded for each. From there, the list was reduced to only sites that dated to the Early and Middle periods and had at least ten burials recorded. The author consulted archival records for these sites at the three previously mentioned facilities in order to collect data from the unpublished site reports, field notes, excavation records, and collections inventories. The unpublished materials were collected first, followed by the published materials. Based on the collected data, a list of variables was created to tabulate each individual burial's context. In total, 15 variable categories were established and the data were recorded into a Microsoft Excel spreadsheet.

Table 5.1. Summary of Sites Included in Study, Including Time Period Phase, Sub-Phase, and Sample Size

	Site Designation	Time Period Phase	Time Period Sub-Phase(s)	Site Sample Size
Santa Rosa Island Sites	SRI-3	Early	Ex	71
	SRI-5	Early	Ez	11
	SRI-41	Early	Eyb	145
Santa Cruz Island Sites	SCRI-159	Middle	M2a	19
	SCRI-162	Early	Eyb	28
	SCRI-257	Middle	M1	69
	SCRI-333	Early	Eya; Ez	106
Santa Barbara County Mainland Sites	SBA-43	Middle	M1	46
	SBA-53	Early	Eyb	12
	SBA-71	Middle	M2b	57
	SBA-72	Middle	M3	47
	SBA-73	Middle	M4	8
	SBA-81	Middle	M2a	237
Ventura County Mainland Sites	VEN-61	Middle	M2a; M2b	49
	VEN-150	Early	Late Early	12
San Luis Obispo County Mainland Sites	SLO-406	Middle	M3	24

Time Periods and Samples

For this study, data were collected from 16 total sites coming from both mainland and island contexts in the Santa Barbara Channel region, ultimately resulting in data from 941 total burials (Table 5.1). From Northern Channel Islands contexts, data were collected from 449 burials coming from seven sites. Three sites on Santa Rosa Island yielded information on 227 burials, while four sites on Santa Cruz Island yielded information on 222 burials. From Santa Barbara county mainland contexts, six sites were suitable for data collection, resulting in 407 burials. One site from San Luis Obispo county mainland context yielded burial data from 24 individuals, and two sites from Ventura county mainland contexts resulted in data from 61 burials. Overall, seven sites within this study date to the Early Period (ca. 6000–1400 BC) and nine sites date to the Middle Period (ca. 1400 BC–AD 1150) according to C. King's (1990:28) chronology.

Site Selection Criteria

There were a number of specific criteria used to determine whether or not a site was appropriate to include in the data collection process for this study. The first criterion used was site chronology, which was established from published and unpublished sources for each site. Since the primary aim of this study is to examine pre-contact (Early and Middle period) mortuary patterns through geographic and diachronic comparative analysis, all Late period and Historic period sites were excluded from data collection. Additionally, in order to maintain tight temporal control over the sites included in the study, sites with intrusive Late and/or Historic components were excluded from data collection. This is especially important for mainland sites, given the bioturbation processes that have affected cemetery sites there, so post-contact grave goods are not spuriously attributed to earlier burials, or vice versa. Secondly, minimum number of burials for any given cemetery was a crucial determining factor, where a cemetery had to have a minimum of ten individuals recorded by excavators to be included.[5] Thirdly, this project was designed so that both island and mainland sites would be represented in this study to identify mortuary patterns that may differ between the two contexts.

If a given site was able to fulfill the aforementioned three criteria, the published and unpublished documentation was then investigated further to assess whether or not there were

[5] This minimum value is established *prior* to removal of cases from the study sample for burials that did not meet the minimum required number of variables, as well as those that did not adhere to the parameters of the study, such as reburials.

enough detailed burial data to include within the study. Sites that had unpublished excavation records along with published materials (e.g., reports, monographs, articles) were given preference over those that had only unpublished records or only published materials. However, if either unpublished materials or published materials alone were of sufficient quality and had enough information to fulfill the majority of the variables for data collection (detailed below), the site was also included in data collection. Sites that were professionally excavated, or ones with professional archaeologists leading excavations (e.g., field schools) were given preference over archaeological projects that were not led by professional archaeologists. Information collected by excavators regarding individual burials had to fulfill the majority of variables (< 50 %) chosen for analysis, however a site was not excluded from the study unless the burials recorded could not meet the minimum number of required variable categories. At a base level, to be included in this study, there had to be sufficient information on age, body position and orientation, and presence/absence of grave goods for the majority of burials.

Selection of Analytical Variables

Given that this research is based solely on the resulting published and unpublished materials from previously conducted archaeological excavations, there were a wide range of variables collected by excavators, some of which did not always coincide across excavation projects. The list of variables below was chosen to encompass the broadest number of categories across these different excavations, while simplifying some to reduce "noise" in the subsequent statistical analyses. The dependent variables (Figure 5.2) break down into two primary categories: 1) those directly relating to the physical body of the deceased, and 2) those relating to the objects associated with the body of the deceased. Variables relating to the physical body of the deceased include burial position, body side, burial direction (compass), interment type (e.g., single, dual, or multiple interment), interment type age association (e.g., all subadult, all adult, or subadult and adult non-single interments), grave depth, presence/absence of grave features, and presence/absence of burial pigmentation. The variables relating to the objects associated with the body of the deceased include presence/absence of grave goods, number of non-ornament grave goods, number of ornament grave goods, total number of grave goods, number of material types, presence/absence of ceremonial paraphernalia, and presence/absence of beads. Each of the variables included in the study is defined and discussed in the sections that follow.

Table 5.2. List of Dependent Variables Separated by Analytical Category

Variables Relating to the Physical Body of the Deceased	**Variables Relating to the Objects Associated With the Body of the Deceased**
1) Body Position	9) Presence/Absence of Grave Goods
2) Body Side	10) Number of Non-Ornament Grave Goods
3) Burial Direction (Compass Cardinal)	11) Number of Ornament Grave Goods
4) Interment Type	12) Total Number of Grave Goods
5) Interment Type Age Association	13) Number of Material Types
6) Grave Depth	14) Presence/Absence of Ceremonial Paraphernalia
7) Presence/Absence of Grave Features	15) Presence/Absence of Beads
8) Presence/Absence of Burial Pigmentation	

Discussion of Independent Variables

The following independent variables were those that structured the subsequent dependent variable analyses, which were designed to compare differences between Early and Middle periods, island and mainland contexts, subadult and adult burials, as well as at a finer level of analysis for subadult burials, examining the differences between infant, child, and adolescent burials.

<u>Geographic Location</u>

To identify differences between geographic contexts, each burial was designated as belonging to either island or mainland cemeteries, depending on the location of the respective site. Burials from Santa Rosa and Santa Cruz islands received island designations, and burials from Santa Barbara, San Luis Obispo, and Ventura counties were given mainland designations.

Time Period Phase

In order to facilitate analysis of diachronic change, time period data were recorded for each burial based on C. King's (1990) typology, as belonging to either Early or Middle periods. Burials from sites that dated to the Early period included sub-phases Ex, Eya, Eyb, and Ez. One study cemetery (VEN-150) could not be assigned to a specific sub-phase, but it could be established as being in use during the late portion of the Early period, thus also receiving an Early period designation. Burials from Middle period cemeteries included the sub-phases M1, M2a, M2b, M3 and M4.

Biological Age of the Deceased

Data concerning the estimated biological age of the deceased was collected at two different levels to provide a range of granularity, facilitating comparisons between subadult and adult burials, as well as intragroup comparisons for subadult burials. At the broadest level, biological age data were grouped into adult (≥ 18 years old) and subadult (≤ 17.9 years old) categories. To provide more granularity in the subadult designation, the subadult group was subdivided further into infant (< 3 years old), child (3–9.9 years old), and adolescent (10–17.9 years old) categories.

Discussion of Variables Directly Relating to the Physical Body of the Deceased

This section discusses the variables chosen for statistical analysis that relate directly to the physical body of the deceased. As stated above, the variables chosen for analysis were the ones that most broadly covered the range of previously collected excavation data—obtained from published and unpublished sources—used in this study. As such, the author would like to reiterate that estimated biological age was not determined by the author, but was rather ascertained from the analyses of the excavators and/or subsequent modern studies. It should be noted that osteological analysis for many of the individuals included in this study, subadults particularly, would not have been feasible given the uneven *in situ* preservation and subsequent retainment of the existing collections in museum and repository settings. This is especially true considering that the osteological remains of infants and children are fragile and often poorly preserved even in the best of taphonomic conditions, and the remains of many subadults in this study were left *in situ* by the excavators, or excavators only collected certain skeletal elements, like crania (Olson 1927–1928; Orr 1949a, 1949b, 1951b).

There were also situations in which a given burial did not possess adequate information, which caused it to be excluded from the study. These situations include burials that did not fall within the specified temporal range, were located outside of cemetery contexts, were lacking estimation of biological age, had insufficient documentation (e.g., those that were missing a sizeable portion of the variables chosen for analysis or those that had unreliable data for the majority of the variables), were not fully exposed/excavated, and were significantly damaged/disturbed from modern ground-breaking practices (e.g., modern construction/mechanical excavation, grave-cutting). Burials that fell into any of the aforementioned categories were excluded from the statistical analyses performed for this study, as their information was deemed inadequate for this study's data collection procedure.

Variable 1: Burial Position

Burial position was recorded and separated into four types: 1) flexed, 2) extended, 3) semi-flexed, and 4) seated. In cases where an individual is not fully extended or fully flexed, the term "semi-flexed" is used to describe the disposition of the body (also includes dispositions recorded by excavators as "semi-extended"), which are defined as those that have the femora either at right angles to the body or are extended in line with the body and have the feet drawn back near the pelvis (Orr 1968). In cases where a "probable" position was recorded by excavators, the burial was coded as "unknown." Unfortunately, it was not possible to systematically collect data on degree of flexure (loose flex, tight flex, etc.). This aspect was inconsistently recorded by excavators, and in instances where it was recorded, excavators did not provide quantifiable degrees of flexure, so this variable aspect was not included in the subsequent analyses.

Variable 2: Body Side

Body side refers to the portion of the body that made primary contact with the bottom of the grave. This variable is divided into anatomical right, anatomical left, supine (face up), prone (face down), and seated. Any instance of a "probable" burial side recorded by excavators was coded as "unknown."

Variable 3: Burial Direction (Compass)

Burial direction was recorded in compass cardinal directions, according to the direction of the head. Head direction was determined based on the direction of the cervical end of the vertebrae, as if following an imaginary axis from the lumbar to cervical vertebrae (Bickel 1981). The only exception was for seated burials in which the direction of the face was used. In all cases, burial direction was recorded in terms of general cardinal compass direction, as quantifiable compass degrees were not recorded by excavators consistently enough to use in statistical analysis. To reduce "noise" in the statistical results, compass direction was limited to the eight principal directions, which include the four cardinal directions (North, South, East, and West) and the four intercardinal/ordinal directions (Northeast, Northwest, Southeast, and Southwest). When excavators recorded burial direction using half-wind compass points (e.g., North-Northeast), the half-wind direction was collapsed to the dominant cardinal direction (for example, North-Northwest and North-Northeast directions were coded as North, East-Northeast and East-Southeast directions were coded as East, South-Southeast and South-Southwest directions were coded as South, and West-Southwest and West-Northwest directions were coded as West). If excavators could not determine burial direction, often because of disturbed and poorly preserved burials, they were coded as "unknown."

<u>Variable 4: Interment Type</u>

Interment type refers to the number of contemporaneous individuals interred in a given grave. This is divided into three interment type categories: 1) single, 2) dual, and 3) multiple. Single interments contained no more than one individual, dual interments contained no more than two contemporaneously buried individuals, and multiple interments contained three or more contemporaneously buried individuals. Excavator notes had to clearly distinguish that burials appeared to be contemporaneous in order to be categorized as a dual or multiple interment. Graves disturbed by intrusive burials and/or reburials were not considered dual or multiple interments. Burials that could not be established as either single, dual, or multiple interment types were coded as "unknown."

Variable 5: Interment Type Age Association

Interment type age association is inextricably linked to interment type (Variable 4) and is designed to provide more refined analysis of non-single interments (e.g., dual and multiple types). This category comprises dual and multiple interment types, classifying them into three categories: 1) all adult burials, 2) all subadult burials, and 3) adult and subadult burials. Given that non-single interments are more infrequently encountered in the dataset than single interments, assessing the general ages (subadult/adult) of the individuals interred together provides a way to assess further patterning for this variable.

Variable 6: Grave Depth

This numeric variable records the depth of the grave as measured from the surface to the top of the skull in inches.

Variable 7: Presence/Absence of Grave Features

Grave features are defined here as stone slabs, cairns, or large whale bone elements (e.g., ribs, scapulae, and vertebrae), the primary purpose of which was to mark the location of a particular grave. This information was recorded in the form of presence/absence data.

Variable 8: Presence/Absence of Burial Pigmentation

A fairly widespread Chumash burial practice was the intentional decoration of the body with pigment (Orr 1968). This was typically found in the form of red and/or black pigment located on the head and/or abdomen of the deceased. Data regarding burial pigmentation was recorded in the form of presence/absence data.

Discussion of Variables Relating to Objects Associated with the Body of the Deceased

The following section describes the second set of analytical variables designed to document information on objects interred with the deceased. For the purposes of this study, the author considered grave goods to be any object intentionally deposited with the deceased (Hamlin 2007:114). In certain instances, there were objects that the author considered "grave goods," which some early excavators did not. For example, the earliest excavators considered grave goods—at least in the form of their respective data tabulations—to be objects that were unmistakably worked by humans, such as beads, projectile points, and fishhooks. As such, ecofacts and organic materials, like unworked shells or lumps of pigment or asphaltum, if present in graves, were often not considered grave goods by many excavators. In order to get a fuller picture of the burial context, variable categories were included here to gather data on these items at presence/absence and numeric levels.

In order for items to have the most secure association, in any instance that an artifact could not be identified as being in "direct association" with a given burial (this was especially common in dual/multiple burial contexts and in cases of burial disturbance by reburial practices), it was excluded from this analysis. A full list of possible grave goods, which are based upon the classification system developed by Travis Hudson and Thomas C. Blackburn (1982, 1983, 1985, 1986, 1987), are available in Appendix A (see Tables A.1–A.2).

<u>Variable 9: Presence/Absence of Grave Goods</u>

For the purposes of this study, a burial was considered to have grave goods, if at least one item considered a grave good (see Appendix A:Tables A.1–A.2) was interred with the deceased. This information was recorded for each burial in the form of presence/absence data.

Variable 10: Number of Non-Ornament Grave Goods

This variable records the numeric count of grave goods in direct association with the deceased that do not fall under the ornamentation category (see Appendix A:Table A.2 for specific artifact types). The non-ornament category comprises artifacts belonging to general/unspecified, food procurement, food preparation, shelter, clothing, ceremonial paraphernalia, simple processing and fabrication, and complex processing and manufacturing categories. Due to the friable nature of pigment, asphaltum, and charcoal, these objects were not included in the number of non-ornament grave goods or the total number of grave goods (Variable 12).

Variable 11: Number of Ornament Grave Goods

Variable 11 is complementary to variable 10 in that it records the remaining types of artifacts found in burial contexts, namely those that function as ornaments. Ornaments here follow after Hudson and Blackburn's (1985) ornamentation category and include beads, pendants, rings and other ornaments of differing material types (see Appendix A:Table A.1 for a full list of artifact types). Although not necessarily its primary or sole function, Chumash ornaments certainly conveyed information about social position to others in their society. Regarding objects of ornamentation, Hudson and Blackburn (1985:19) assert that the importance of these objects is evident in "the time, interest, and specialized skills devoted to their manufacture by highly trained craftsmen, and [they] suggest as well that significant social data were encoded in the formal variability." Given the high visibility of these items, in daily life and also in the burial context, objects of ornamentation were tabulated separately from non-ornament objects (Variable 10) to provide a numerical contrast between these two categories.

Variable 12: Total Number of Grave Goods

The total number of grave goods is based upon the sum of the number of non-ornament grave goods (Variable 10) and the number of ornament grave goods (Variable 11). To be included in this analysis, a burial had to have grave good quantities for *both* variables 10 and 11. For variables 10–12, if fragmented or "ritually killed" objects were present in a given burial lot, the minimum number of items (MNI) were used.

Variable 13: Number of Material Types

Variable 13 records the number of material types present in the burial context of an individual. There are five possible material types: 1) stone, 2) bone (faunal), 3) shell,[6] 4) organic, and 5) composite. For a given material type to be recorded as being present in a particular burial context, a minimum of one artifact of that material type had to be present. This variable serves as one measure of diversity identified in burial contexts.

Stone objects include both examples of ground stone and chipped stone. The faunal bone category includes both worked examples, like bone gorges, and minimally modified examples, such as coral or mammal burials. Shell objects include both worked varieties, like shell ornaments, as well as unworked/minimally modified examples, such as shell dish containers. Organic materials include pieces of wood and burned clay, as well as basketry/matting. Lastly, composite objects included grave goods that were made up of two or more of the aforementioned material types. Presence of asphaltum or paint/pigment on an object alone did not qualify the object to fall under the composite category. The author considered

[6] While shell is commonly subsumed under the faunal material category, given that faunal artifacts in this dataset are far more limited in frequency compared to shell, these categories were split to provide more nuance in this particular material category.

paint/pigment to be a decorative element and application of asphaltum a functional, but also potentially decorative, attribute, thus disqualifying such examples from the composite category. For example, a whole abalone shell that was plugged with asphaltum or a stone pestle coated with pigment would *not* be considered to fall into the composite type, but a stone mortar with shell beads inlaid around the rim with asphaltum *would* be considered a composite object.

Variable 14: Presence/Absence of Ceremonial Paraphernalia

Following after Hudson and Blackburn's (1986) classification of objects for ceremonial or non-secular purposes, this study's grave goods included objects of ritual paraphernalia and musical instruments (See Appendix A:Table A.2 for a full list of grave goods in the ceremonial paraphernalia sub-category). Objects of ritual paraphernalia include charmstones, crystals, and effigies, whereas musical instruments include whistles and rattles. Data for this analysis was collected in terms of presence of at least one artifact in the ceremonial paraphernalia sub-category.

Variable 15: Presence/Absence of Beads

Due to the important nature of beads in Chumash culture, the author felt it beneficial to distinguish this category as separate from ornaments generally (Variable 11) in order to establish a finer distinction in the presence of such an important artifact class in burial contexts. This variable category documents the presence/absence of beads in direct association with the deceased's burial.

Statistical Analyses

The unprocessed data collected from the published and unpublished source material was compiled into a MicroSoft Excel spreadsheet, which allowed for data storage and eventual coding (See Appendix B and C for codebook and dataset, respectively) for analysis via *SPSS Statistics* software (version 25). SPSS was used for all statistical analyses, which are described briefly below.

Descriptive, univariate, and bivariate techniques are used in this study's data analyses to examine the relationships present between the independent and dependent variable categories, which are divided into those relating to the physical body of the deceased, and those relating to the objects associated with the deceased's body. The primary statistical tests employed in this study are: Chi-squared (χ^2), Fischer's Exact (FET), Mann-Whitney *U*, and Kruskal-Wallis. Two levels of significance (e.g., used to reject the null hypothesis, which states that the relationship between row and column variables is due to randomness) were employed in this study, depending on sample size for each analysis. For analyses with sample sizes larger than 20, the significance level (α) was established at the 0.05 level, but for analyses with sample sizes less than or equal to 20, α was increased to the 0.1 level in order to take the power of the statistical test into account (Pituch and Stevens 2016:5). To assist in assessing the power of a given analysis, Jacob Cohen's (1988) criteria for effect size were used, where values of 0.1 are considered to have a small effect, values of 0.3, a medium effect, and values of 0.5, a large effect.

Statistical testing for nominal variables took the form of either the Chi-square test or FET. For nominal variables with large ($n > 100$) sample sizes, the Chi-squared test is used to determine independence (via contingency tables) by measuring the differences between expected and observed values, which determine the probability of a relationship between row and column variables (Shennan 1997:109–113). For nominal variables with small ($n < 100$) sample sizes and for cases where greater than 20 % of cells had values less than 5, the Fischer's Exact Test is used to determine independence. The FET generates exact significance values, rather than the approximate values computed for Chi-square, which makes it an ideal test for determining independence with small sample sizes. The *p*-values generated by the FET are generally lower than those produced via Chi-square, which produces a more conservative *p*-value (Blalock 1972:287–291).

Statistical testing for ordinal variables took the form of either the Mann-Whitney U test, a non-parametric alternative to the independent-samples *t*-test, or the Kruskal-Wallis test, a non-parametric alternative to the one-way Analysis of Variance. The Mann-Whitney *U* test compares medians, rather than means, by taking the scores from the nominal variable, ranking them, and then comparing the ranks for a significant difference (Blalock 1972:250; Nachar 2008:14). The Mann-Whitney *U* test also has the benefit of having a high degree of accuracy for small samples ($20 > n < 5$; Nachar 2008:13). In order to compare the three subadult age groups (infant, child, and adolescent), the Kruskal-Wallis test had to be employed, as the Mann-Whitney *U* test is only suitable for comparing two groups. Very similar to the Mann-Whitney *U* test, the Kruskal-Wallis test transforms the scores for the nominal variable into ranks, and then compares the sums of the rankings (Blalock 1972:349).

Exceptions in Statistical Analysis

For each of the tests performed, the entire burial sample was included, unless a particular case was missing the relevant information for that particular test (these were coded as "unknown" or "no data" depending on the context).

Limitations of Using Existing Archaeological Documentation

One of the key aims of this study is to demonstrate the value of using available published and unpublished documentation that do not necessitate osteological or formal collections-based analyses, however, there are a few limitations—as is inherent with any dataset—that need to be disclosed. Since the study data is drawn from already existing collections, the first limitation is that excavators were operating within the archaeological standards, both methodological and theoretical, of their respective times. Given these issues, the goals and methods of the original excavation projects differ, and there sometimes exists a lack of consistency in the number and type of variables chosen by excavators to record for burial contexts. As such, efforts were made to choose variables that represented the widest range of distinct categories shared between excavation contexts for data collection.

There are also some issues in the consistency of the methods used by excavators. One important issue was whether or not screens were used in the recovery of small artifacts like beads. This type of human error could potentially affect the accuracy of the artifact counts for each burial lot. The earliest excavations had the greatest discrepancy in this regard, as sometimes screens were not used at all or if screens were utilized for object recovery, then the mesh size was often inappropriate for very small artifacts. It is likely that, due to human error, a small number of beads were missed by early excavators due to poor or nonexistent screening procedures, however, this is mitigated here by having bead data recorded in presence/absence form and also numerically within the category of ornament grave goods for statistical analysis.

Additionally, the author did not perform analyses of the human remains or burial goods, which would not have been feasible due to the large numbers of artifacts and human remains, the latter of which are outside of the author's area of expertise. There were also issues with the recovery of human remains in the original excavations, as some of the excavators working in the late 19th century and very beginning of the 20th century were concerned only with collecting crania for study, and disposed of or never bothered to collect the infracranial material (Walker 2000:11); in addition, poor preservation of *in situ* remains also prompted excavators in certain cases to not collect, either in full or in part, the remains of these individuals for study (Orr 1949a; SBMNH 2006b). Therefore, the data collected were based upon the documentation and analysis of the osteological and artifactual remains made by the original excavators, which was then cross-checked with published subsequent analyses of the data, where available.

Conclusion

The parameters for this study were designed so that a wide set of mortuary variables, pertaining to both the physical presentation of the body and the objects associated with the body of the deceased, could be documented with information on relative biological age, time period, and geographic context. In line with foundational discussions of childhood theory as applied to archaeological contexts (see Baxter 2005; Gowland 2002; Halcrow and Tayles 2008; Prout 2000), this study was designed to record age-based differences in mortuary treatment at both the subadult and adult level, but also within the subadult sample at the distinction of infant, child, and adolescent age groups. The analysis of Chumash subadults both in comparison with adults in their communities, but also with subadults of differing age groups facilitates a nuanced comparison, resulting in a greater understanding of the ways in which subadult mortuary ritual differed from that of adults, but also how relative subadult age may have affected certain aspects of burial ritual.

Altogether, data from 941 pre-contact (Early and Middle period) burials were collected from 16 sites in the Santa Barbara Channel region, drawn from both island and mainland contexts. Fifteen study variables were established to statistically assess potential differences in burial programs between subadult and adults, but also within the subadult sample at the infant, child, and adolescent level. The variables presented in this chapter provide the base context for the statistical analyses that are described in Chapters 6 and 7; Variables 1–8, those relating to the physical body of the deceased, are presented in Chapter 6, while Variables 9–15, those relating to the objects associated with the body of the deceased, are presented in Chapter 7. Through the analysis of these 15 variables in the following two chapters, the statistical results provide a measurable baseline with which to make comparisons between age groups, as well as to assess potential diachronic and geographic differences.

CHAPTER 6
Statistical Data for Variables Relating to the Physical Body of the Deceased

Chapter Organization and Summary Data for Study Sample

This chapter is the first of two data-driven chapters detailing the analyses and results of variables relating to the physical body of the deceased (see Appendix D), which is followed by a second chapter that covers the variables relating to objects associated with the deceased (Chapter 7). The first section of this chapter summarizes the total study sample by subadult and adult burials as well as the subadult sample by infant, child, and adolescent burials used the subsequent analyses, which are followed by a section outlining the statistical limitations relating to this chapter's set of variables. The sections that come after address each of the eight variables relating to the physical body of the deceased: 1) body position, 2) body side, 3) burial direction (compass), 4) interment type, 5) interment type age association, 6) grave depth, 7) presence/absence of grave features, and 8) presence/absence of burial pigmentation.

For each of the individual variable sections, the same basic analyses were performed, but differ slightly between categorical and continuous variables, due to the nature of the statistical tests that correspond to each variable type. Generally, a baseline of the total study sample is established for each variable, followed by analyses of subadult and adult burials and also by infant, child, and adolescent burials. First, basic summary data are presented for all burials in the study sample, which are examined first by Early and Middle period phases, and then by island and mainland contexts to establish basic trends for the two time periods in the study, as well as between the two primary contexts. Following the aforementioned analyses, the subadult and adult samples are analyzed by Early and Middle period phases. Data are then presented for the entire study sample analyzed by island and mainland contexts, and then followed by the analysis of subadult and adult samples by island and mainland contexts. Subsequently, data for the subadult sample divided into infant, child, and adolescent burials are presented for the entire subadult sample to establish a baseline for all subadult burials. Infant, child, and adolescent burials are then analyzed by Early and Middle period phases, and then by island and mainland contexts. Finally, each section is brought to a close by a summary of the findings for that particular variable for all of the analyses performed.

Table 6.1. Frequency Count and Percentage for Subadult and Adult Burials by Total, Early and Middle Period, and Island and Mainland Context Burials

Total Study Sample	**Subadult Burials**		**Adult Burials**		**Total**
	Count	**Percent**	**Count**	**Percent**	
All Burials	190	21.6 %	687	78.4 %	**877 (100 %)**
Early Period Burials	114	31.5 %	248	68.5 %	**362 (100 %)**
Middle Period Burials	76	14.8 %	439	85.2 %	**439 (100 %)**
Island Burials	128	29.8 %	302	70.2 %	**430 (100 %)**
Mainland Burials	62	13.9 %	385	86.1 %	**447 (100 %)**

A total of 941 burials drawn from 16 sites in the Santa Barbara Channel region comprise the dataset used in the subsequent analyses. When the sample is reduced to those with estimated ages, there are data from 877 total burials, which divides into 190 subadult burials and 687 adult burials. Considering the study sample for all burials from Early and Middle period phases, there are a total of 801 burials, with 362 total burials dating to the Early period, and 439 dating to the Middle period (Table 6.1). The Early period sample breaks down into 114 subadult burials and 248 adult burials, while the Middle period sample is divided into 76 subadult burials and 439 adult burials. Lastly, examining the study sample for all burials from island and mainland contexts, there are a total of 877 burials, with 430 total burials coming from island contexts, and 447 burials coming from mainland contexts. The island contexts sample breaks down into 128 subadult burials and 302 adult burials, while the Middle period sample is divided into 62 subadult burials and 385 adult burials.

Table 6.2. Frequency Count and Percentage for Infant, Child, and Adolescent Burials by Total, Early and Middle Period, and Island and Mainland Context Burials

Subadult Study Sample	Infant Burials		Child Burials		Adolescent Burials		Total
	Count	Percent	Count	Percent	Count	Percent	
All Burials	91	48.1 %	62	32.8 %	36	19.0 %	**189 (100 %)**
Early Period Burials	68	60.2 %	23	20.4 %	22	19.5 %	**113 (100 %)**
Middle Period Burials	23	30.3 %	39	51.3 %	14	18.4 %	**76 (100 %)**
Island Burials	73	57.0 %	29	22.7 %	26	20.3 %	**128 (100 %)**
Mainland Burials	18	29.5 %	33	54.1 %	10	16.4 %	**61 (100 %)**

Since one of the main aims of this study is to discern any possible patterning occurring within the subadult group, the entire subadult sample is further divided into infant (n = 91), child (n = 62), and adolescent (n = 36) burials for additional analysis (Table 6.2). Considering the subadult sample for both Early and Middle period phases, there are a total of 113 subadult burials dating to the Early period, and 76 subadult burials dating to the Middle period. The Early period sample breaks down into 68 infant burials, 23 child burials, and 22 adolescent burials, while the Middle period sample is divided into 23 infant burials, 39 child burials, and 14 adolescent burials. Lastly, examining the entire subadult sample for island and mainland contexts, there are 128 burials from island contexts and 61 burials from mainland contexts. The island contexts sample breaks down into 73 infant burials, 29 child burials, and 26 adolescent burials, while the Middle period sample is divided into 18 infant burials, 33 child burials, and 10 adolescent burials.

Statistical Limitations for the Following Analyses

It should be noted, as discussed in the previous chapter, that not every burial had data in every possible category, which is the reason sample sizes differ between analyses of different variables. In order to provide enough granulation for the analysis of interment type age association (Variable 5), categories for this variable were designed such that when analyzed for subadult and adult burials, structural zeroes were present in the table, which rendered statistical analyses impossible for those specific analyses. Another limitation for the statistical analysis of interment type age association is the small sample size present for some of the subadult analyses, particularly when they are divided into infant, child, and adolescent burials. Fischer's Exact test values are given for such analyses to account for the small sample size. For cases where the sample size of a given analysis was less than or equal to 20, the significance level (α) was increased to the 0.1 level in order to take the power of the statistical test into account (Pituch and Stevens 2016:5). Unless otherwise noted, the significance level for each analysis was established at the 0.05 level.

Due to the non-parametric nature of the one ordinal variable in this chapter, Mann-Whitney *U* and Kruskal-Wallis tests were used as non-parametric alternatives to the parametric independent samples t-test and Analysis of Variance, respectively. To showcase the relative rarity of outliers and extreme outliers in each of the analyses, these cases were not removed from the visual representations of the data. Furthermore, these non-parametric tests were chosen because they use analyses based on median values, which are more stable with respect to exceptional values.

Analysis of Variable 1: Burial Position

The analyses presented in this section convey the results for burial position, which was recorded in one of four possible types: 1) flexed, 2) extended, 3) semi-flexed, and 4) seated. In cases where an individual is not fully extended or fully flexed, the term "semi-flexed" is used to describe the disposition of the body (also includes dispositions recorded by excavators as "semi-extended"), which is defined as having femora either at right angles to the body or extended in line with the body and have the feet drawn back near the pelvis (Orr 1968). Additional discussion of burial position can be found in Chapter 5 (see Variable 1 discussion).

Burial Position for All Burials by Time Period

In order to establish a diachronic baseline for burial position, data from the Early and Middle periods are analyzed (Figure 6.1 and Table 6.3). A Pearson chi-square test for independence (n = 588, χ^2 = 33.05, $p < 0.001$) revealed a highly significant statistical difference between burial position and time period. Although the flexed position remains the most common through time, there are significant differences in the proportion of the three other burial positions. Two patterns identified here are that extended positions transition from least common in the Early period to second most common in the Middle period, while seated and semi-flexed positions become less popular in the Middle period than they were in the Early period.

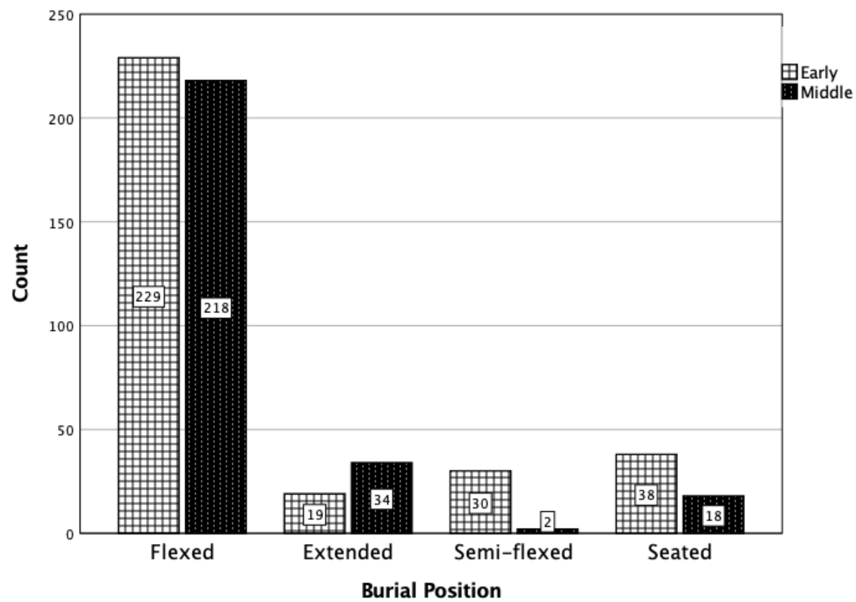

Figure 6.1. Bar graph of burial position for all burials by time period.

Table 6.3. Frequency Count and Percentage of Burial Position for All Burials by Time Period

Burial Position	Early Period		Middle Period	
	Frequency	Percent	Frequency	Percent
Flexed	229	72.5 %	218	80.1 %
Extended	19	6.0 %	34	12.5 %
Semi-flexed	30	9.5 %	2	0.7 %
Seated	38	12.0 %	18	6.6 %
Total	**316**	**100 %**	**272**	**100 %**

Burial Position by Subadult and Adult Burials

The following analysis establishes a baseline for burial position in subadult and adult burials (Figure 6.2 and Table 6.4). A Pearson chi-square test for independence (n = 546, χ^2 = 9.29, p = 0.026) revealed a statistically significant difference between burial position and subadult/adult burials. Both subadult and adult burials have similar proportions for flexed and seated burial positions, however adult burials have nearly equal proportions between extended and semi-flexed burials, while subadult burials have over twice the proportion of extended burials and half the proportion of semi-flexed burials, as compared to adults. This patterning indicates that subadult burials were more commonly interred in extended positions, and only rarely interred in semi-flexed positions.

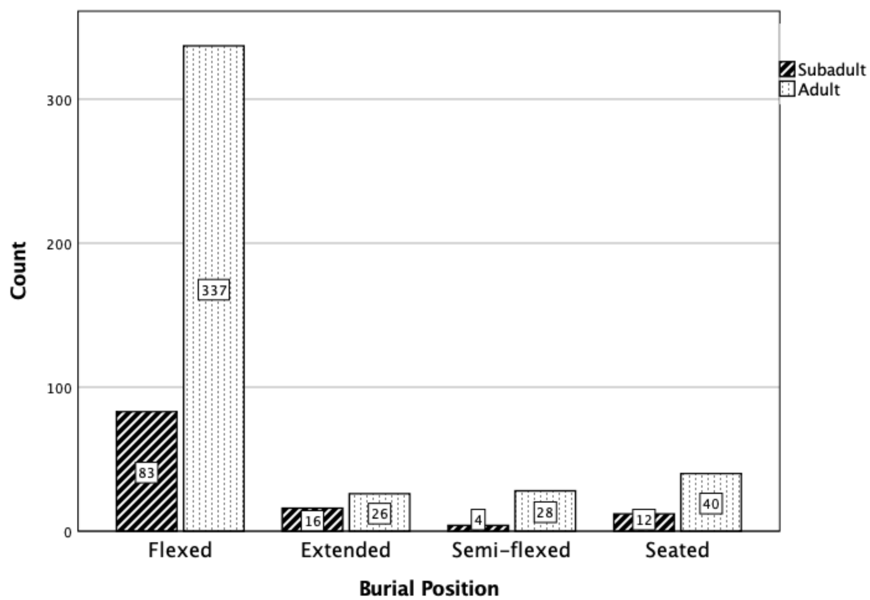

Figure 6.2. Bar graph of burial position for subadult and adult burials.

Table 6.4. Frequency Count and Percentage of Burial Position for Subadult and Adult Burials

Burial Position	Subadult		Adult	
	Frequency	Percent	Frequency	Percent
Flexed	83	72.2 %	337	78.2 %
Extended	16	13.9 %	26	6.0 %
Semi-flexed	4	3.5 %	28	6.5 %
Seated	12	10.4 %	40	9.3 %
Total	**115**	**100 %**	**431**	**100 %**

Burial Position for Subadult and Adult Burials by Time Period

To facilitate diachronic comparisons between subadult and adult burials, Early period subadult and adult burial positions are analyzed (Figure 6.3 and Table 6.5), followed by Middle period subadult and adult burial positions (Figure 6.4 and Table 6.6). For the Early period sample, a Pearson chi-square test for independence (n = 300, χ^2 = 8.36, p = 0.039) revealed a statistically significant difference between Early period burial position and subadult/adult burials. Both age groups have similar proportions for flexed burials, as the most common position, however, proportions for the remaining three burial positions result in opposing patterns. Subadults have extended burials over two-and-one-half times more frequently than adult burials, while adult burials have semi-flexed and seated positions at approximately twice the rates of subadult burials.

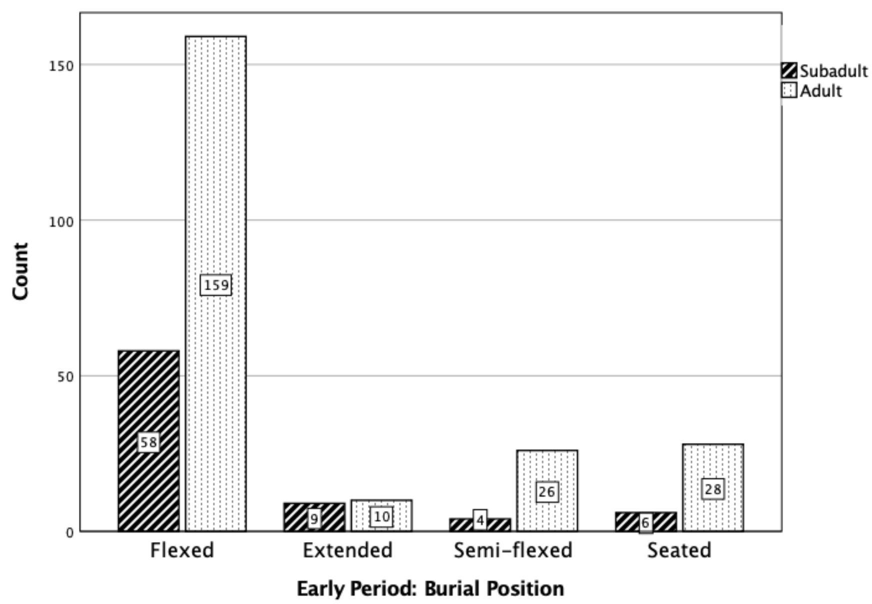

Figure 6.3. Bar graph of burial position for Early period subadult and adult burials.

Table 6.5. Frequency Count and Percentage of Burial Position for Early Period Subadult and Adult Burials

Early Period: Burial Position	Subadult		Adult	
	Frequency	Percent	Frequency	Percent
Flexed	58	75.3 %	159	71.3 %
Extended	9	11.7 %	10	4.5 %
Semi-flexed	4	5.2 %	26	11.6 %
Seated	6	7.8 %	28	12.6 %
Total	**77**	**100 %**	**223**	**100 %**

The following analysis considers burial positions for Middle period subadult and adult burials (Figure 6.4 and Table 6.6). A Fischer's Exact test for independence (n = 246, p = 0.017) indicated a statistically significant difference between Middle period burial position and subadult/adult burials. Based on the proportions between the two age groups, subadults exhibit more variation in burial position than adults, however, both age groups rarely are interred in semi-flexed positions. Adult burials have flexed positions as the most common type, while extended and seated positions are present in similar proportions, albeit far less substantial rates than flexed burials. For subadult burials, flexed burials are also the most common type, but are present at a lower proportions than what is seen for adults, and proportions of extended and seated burials are evident at similar rates, however, subadults have these two burial positions approximately two-and-one-half times more frequently than adult burials.

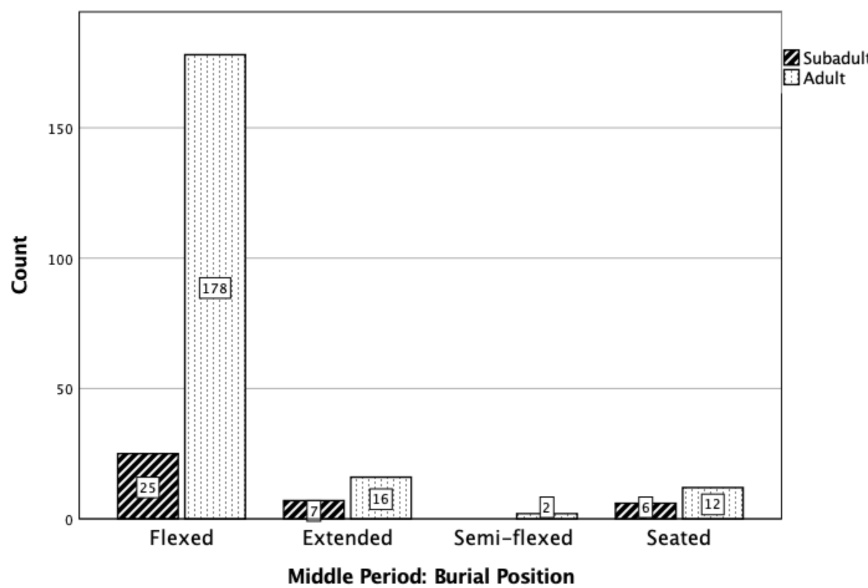

Figure 6.4. Bar graph of burial position for Middle period subadult and adult burials.

Table 6.6. Frequency Count and Percentage of Burial Position for Middle Period Subadult and Adult Burials

Middle Period: Burial Position	Subadult		Adult	
	Frequency	Percent	Frequency	Percent
Flexed	25	65.8 %	178	85.6 %
Extended	7	18.4 %	16	7.7 %
Semi-flexed	0	0.0 %	2	1.0 %
Seated	6	15.8 %	12	5.8 %
Total	**38**	**100 %**	**208**	**100 %**

Burial Position for All Burials by Island and Mainland Contexts

In order to establish a baseline for burial position between geographic contexts, burials from both islands and mainland contexts are analyzed (Figure 6.5 and Table 6.7). A Pearson chi-square test for independence (n = 588, $\chi^2 = 20.16$, $p < 0.001$) revealed a highly significant statistical difference between burial position and geographic context. For both contexts, flexed burials remain the most common position at similar proportions. Island burials are interred in seated positions at similar rates to extended burials on mainland contexts, while extended burials are present in island burials at similar rates to seated burials on the mainland. Semi-flexed burials are more common than extended burials in island contexts, but are nearly non-existent in mainland burials. Perhaps the most striking pattern here is the reversal in popularity for extended and seated burials between geographic contexts.

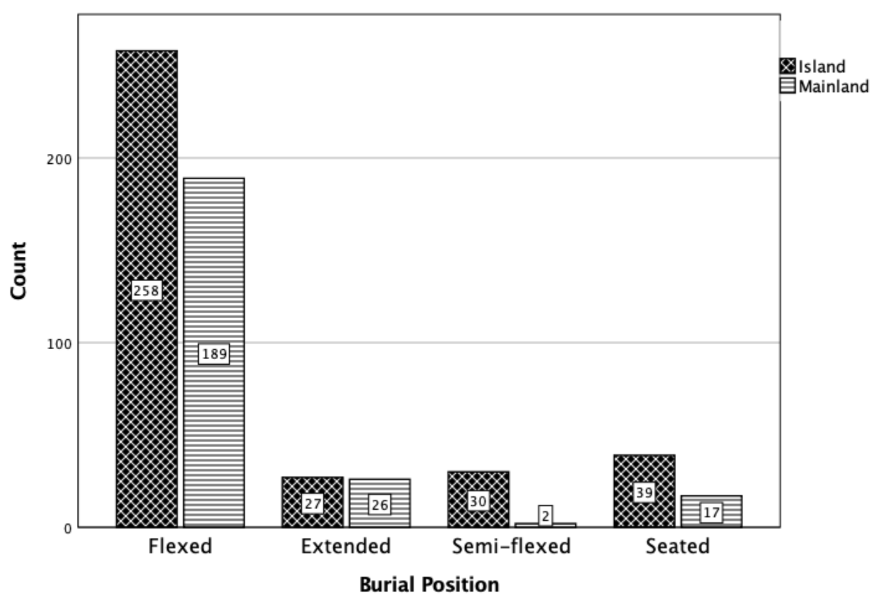

Figure 6.5. Bar graph of burial position for all burials by island and mainland contexts.

Table 6.7. Frequency Count and Percentage of Burial Position for All Burials by Island and Mainland Contexts

Burial Position	Island		Mainland	
	Frequency	Percent	Frequency	Percent
Flexed	258	72.9 %	189	80.8 %
Extended	27	7.6 %	26	11.1 %
Semi-flexed	30	8.5 %	2	0.9 %
Seated	39	11.0 %	17	7.3 %
Total	**354**	**100 %**	**234**	**100 %**

Burial Position for Subadult and Adult Burials by Island and Mainland Contexts

This analysis conveys burial position for island subadult and adult burials (Figure 6.6 and Table 6.8) to facilitate relative geographic comparisons between these two age groups and the mainland sample of subadult and adult burials (Figure 6.7 and Table 6.9). For island contexts, a Pearson chi-square test for independence (n = 337, $\chi^2 = 9.48$, p = 0.024) revealed a statistically significant difference between burial position and island subadult/adult burials. Flexed burials are the most common position in both subadult and adult burials, while the least common position for subadults is semi-flexed and for adults is extended. Subadults have extended positions nearly two-and-one-half times more frequently than adults, while they have semi-flexed and seated burials nearly half as frequently as adult burials.

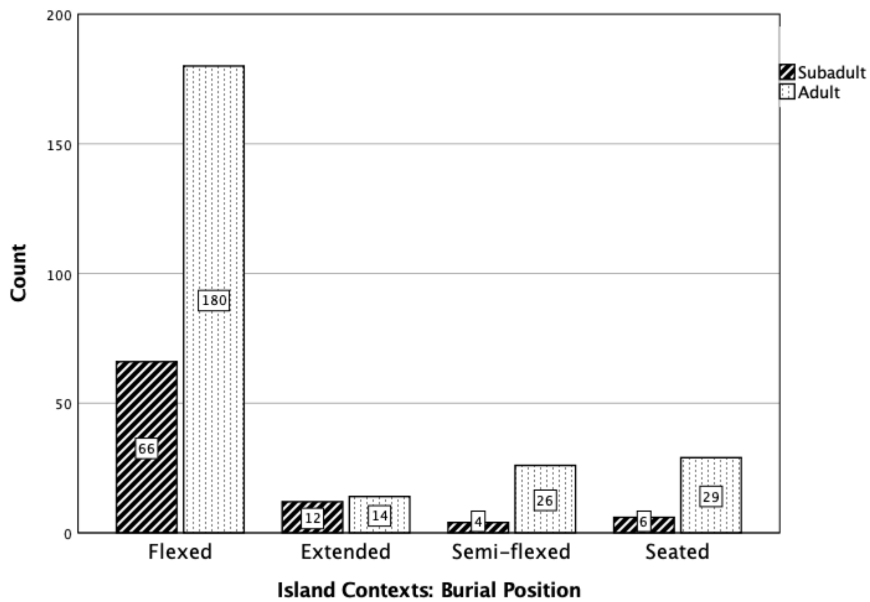

Figure 6.6. Bar graph of burial position for island contexts by subadult and adult burials.

Table 6.8. Frequency Count and Percentage of Burial Position for Island Contexts by Subadult and Adult Burials

Island Contexts: Burial Position	**Subadult**		**Adult**	
	Frequency	**Percent**	**Frequency**	**Percent**
Flexed	66	75.0 %	180	72.3 %
Extended	12	13.6 %	14	5.6 %
Semi-flexed	4	4.5 %	26	10.4 %
Seated	6	6.8 %	29	11.7 %
Total	**88**	**100 %**	**249**	**100 %**

The following analysis establishes rates for burial position in subadult and adult burials from mainland contexts (Figure 6.7 and Table 6.9). A Fischer's Exact test for independence (n = 209, p = 0.009) revealed a statistically significant difference between burial position and mainland subadult/adult burials. Both subadult and adult burials have the flexed position as the most common type, however, subadult burials have a lower frequency than adult burials and semi-flexed positions are the least common type for both age groups. Both subadult and adult burials have extended and seated burials at similar proportions, respective to age group, however, subadult burials have extended positions over two times as frequently, and seated positions nearly four times as frequently as adult burials. This patterning indicates more variation across mainland subadult burials than in adult burials.

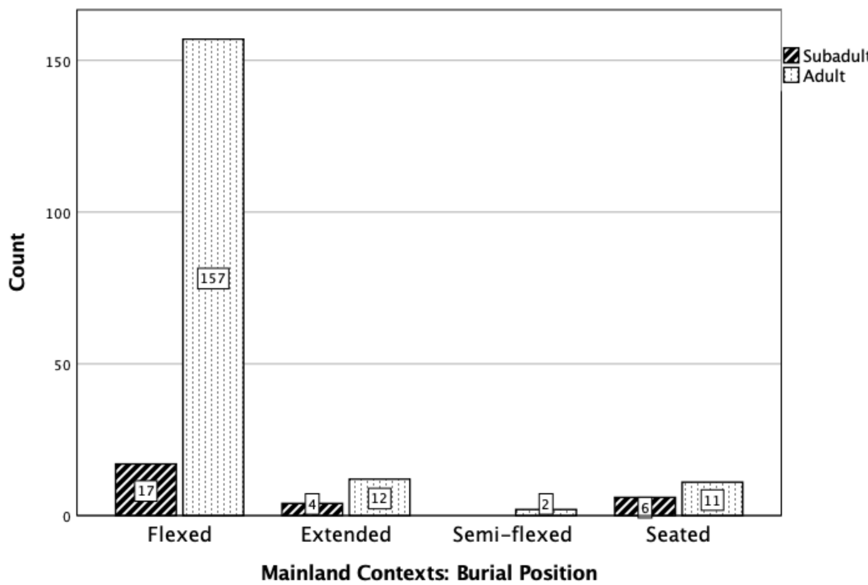

Figure 6.7. Bar graph of burial position for mainland contexts by subadult and adult burials.

Table 6.9. Frequency Count and Percentage of Burial Position for Mainland Contexts by Subadult and Adult Burials

Mainland Contexts: Burial Position	**Subadult**		**Adult**	
	Frequency	**Percent**	**Frequency**	**Percent**
Flexed	17	63.0 %	157	86.3 %
Extended	4	14.8 %	12	6.6 %
Semi-flexed	0	0.0 %	2	1.1 %
Seated	6	22.2 %	11	6.0 %
Total	**27**	**100 %**	**182**	**100 %**

Burial Position for Infant, Child, and Adolescent Burials

To further assess potential differences in subadult burials, burial position is analyzed for infant, child, and adolescent burials (Figure 6.8 and Table 6.10). A Fischer's Exact test for independence (n = 115, p = 0.068) did not reveal a statistically significant difference between burial position and infant, child, and adolescent burials. While all three subadult age groups have flexed burials as the most common type, infants have a higher proportion than either child or adolescent burials. Seated positions are far less common in infant burials than in child or adolescent burials, while extended burials are more common in infant and child burials than in adolescent burials. Lastly, the semi-flexed position is among the least common burial positions for the three age groups. Very little in the way of clear age-group patterning is seen between infant, child, and adolescent burials at this level of analysis.

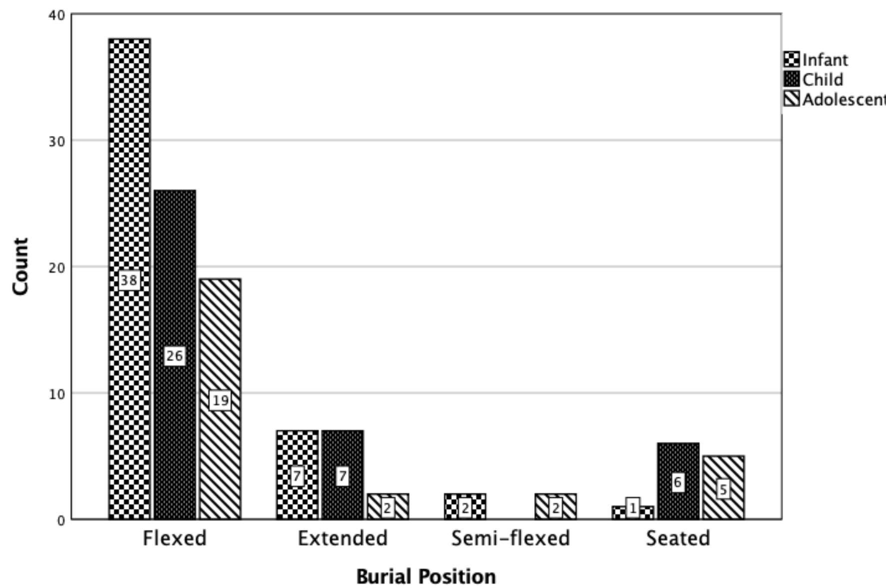

Figure 6.8. Bar graph of burial position for infant, child, and adolescent burials.

Table 6.10. Frequency Count and Percentage of Burial Position for Infant, Child and Adolescent Burials

Burial Position	Infant		Child		Adolescent	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Flexed	38	79.2 %	26	66.7 %	19	67.9 %
Extended	7	14.6 %	7	17.9 %	2	7.1 %
Semi-flexed	2	4.2 %	0	0.0 %	2	7.1 %
Seated	1	2.1 %	6	15.4 %	5	17.9 %
Total	**48**	**100 %**	**39**	**100 %**	**28**	**100 %**

Burial Position for Infant, Child, and Adolescent Burials by Time Period

To facilitate diachronic comparisons between infant, child, and adolescent burials, Early period subadult data are analyzed (Figure 6.9 and Table 6.11), followed by Middle period subadult data (Figure 6.10 and Table 6.12). For Early period subadult burials, a Fischer's Exact test for independence ($n = 77$, $p = 0.024$) revealed a statistically significant difference between burial position and Early period infant, child, and adolescent burials. All three age groups have flexed burials as the most common position, however infant and child burials have more similar patterning than either group does to adolescent burials. In this case, the patterns seen in adolescent burials have more similarities to the adult Early period sample (Table 6.5) than to infant or child burials.

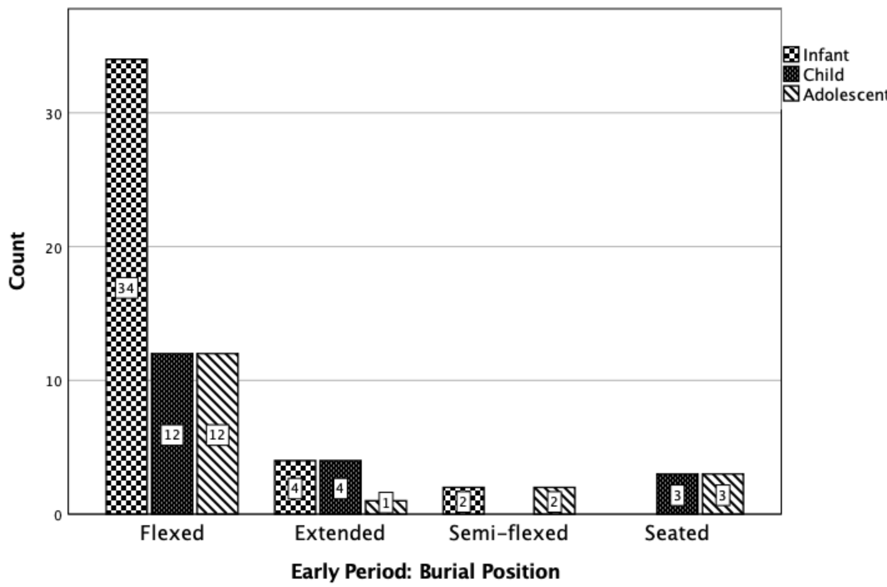

Figure 6.9. Bar graph of burial position for Early Period infant, child, and adolescent burials.

Table 6.11. Frequency Count and Percentage of Burial Position for Early Period Infant, Child and Adolescent Burials

Early Period: Burial Position	Infant		Child		Adolescent	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Flexed	34	85.0 %	12	63.2 %	12	66.7 %
Extended	4	10.0 %	4	21.1 %	1	5.6 %
Semi-flexed	2	5.0 %	0	0.0 %	2	11.1 %
Seated	0	0.0 %	3	15.8%	3	16.7 %
Total	**40**	**100 %**	**19**	**100 %**	**18**	**100 %**

For the Middle period sample of infant, child, and adolescent burials (Figure 6.10 and Table 6.12), a Fischer's Exact test for independence (n = 38, p = 0.678) did not reveal a statistically significant difference between burial position and Middle period infant, child, and adolescent burials. Patterning for infant, child, and adolescent burials is very similar, however infant burials show more variation in burial position than child or adolescent burials, which could potentially be due to small sample size. One trend throughout the three groups is that there are no cases of semi-flexed burials for Middle period subadults. Two additional trends suggest that extended burials decrease in popularity as age increases, while seated burials seem to increase as age increases.

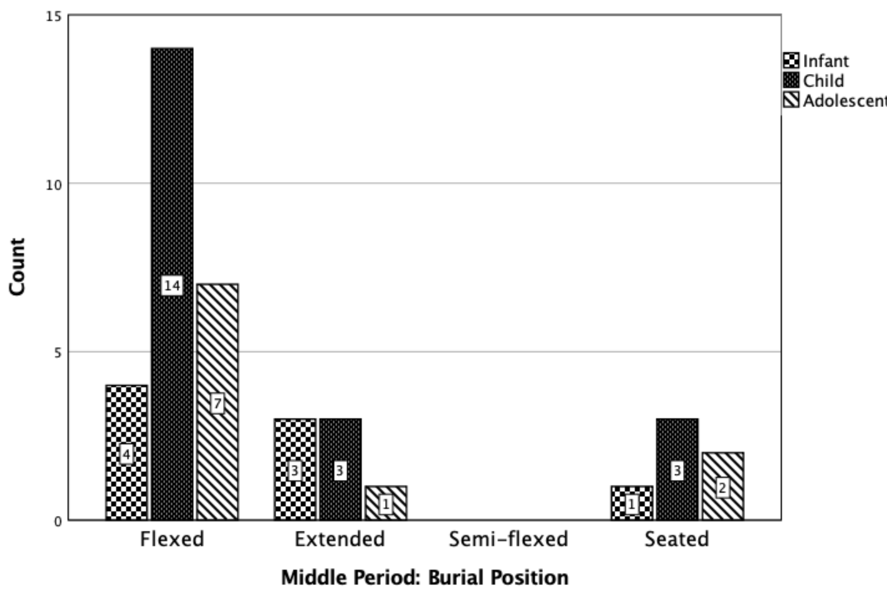

Figure 6.10. Bar graph of burial position for Middle Period infant, child, and adolescent burials.

Table 6.12. Frequency Count and Percentage of Burial Position for Middle Period Infant, Child, and Adolescent Burials

Middle Period: Burial Position	Infant		Child		Adolescent	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Flexed	4	50.0 %	14	70.0 %	7	70.0 %
Extended	3	37.5 %	3	15.0 %	1	10.0 %
Semi-flexed	0	0.0 %	0	0.0 %	0	0.0 %
Seated	1	12.5 %	3	15.0 %	2	20.0 %
Total	**8**	**100 %**	**20**	**100 %**	**10**	**100 %**

Burial Position for Infant, Child, and Adolescent Burials by Island and Mainland Contexts

The following two analyses convey rates for burial position in island infant, child, and adolescent burials (Figure 6.11 and Table 6.13), as well as for mainland contexts subadult burials (Figure 6.12 and Table 6.14). A Fischer's Exact test for independence (n = 88, p = 0.035) indicated a statistically significant difference between burial position and island infant, child, and adolescent burials. For island subadults, all three age groups have flexed burials as the most common position, however, infant and child burials are slightly more similar to one another than they are to adolescent burials, in terms of the remaining burial positions. In this analysis, adolescent burials are more similar to island adult burials (Table 6.8) than to the other two subadult age groups.

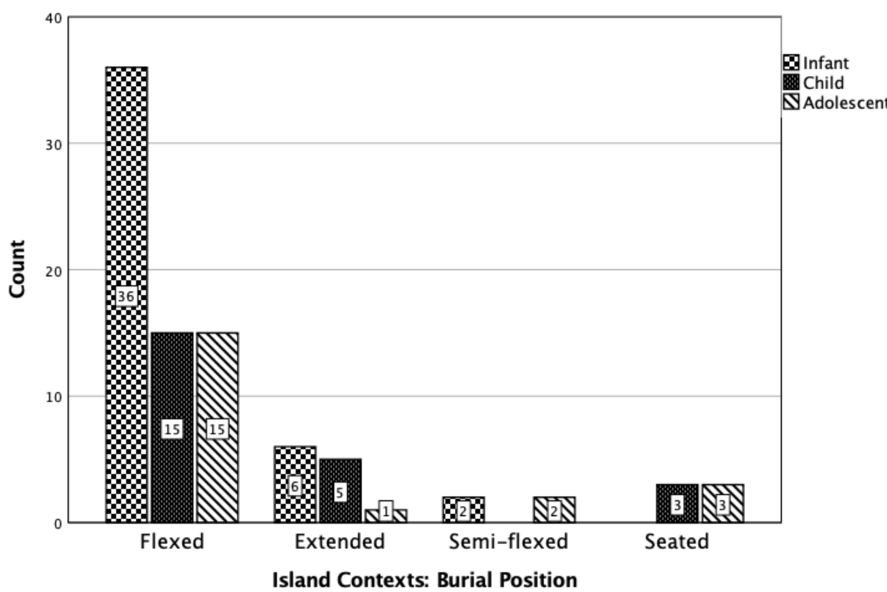

Figure 6.11. Bar graph of burial position for island contexts by infant, child, and adolescent burials.

Table 6.13. Frequency Count and Percentage of Burial Position for Island Contexts by Infant, Child, and Adolescent Burials

Island Contexts: Burial Position	Infant		Child		Adolescent	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Flexed	36	81.8 %	15	65.2 %	15	71.4 %
Extended	6	13.6 %	5	21.7 %	1	4.8 %
Semi-flexed	2	4.5 %	0	0.0 %	2	9.5 %
Seated	0	0.0 %	3	13.0 %	3	14.3 %
Total	**44**	**100 %**	**23**	**100 %**	**21**	**100 %**

For mainland contexts infant, child, and adolescent burials (Figure 6.12 and Table 6.14), a Fischer's Exact test for independence (n = 27, p = 0.890) did not reveal a statistically significant difference between burial position and mainland infant, child, and adolescent burials. The flexed position remains the most common type for all subadult age groups, and there are no cases of subadult burials having semi-flexed positions. At this level of analysis, there is no clear patterning that differentiates the age groups from one another, and none of the subadult age groups have similar patterning and proportions to adults from mainland contexts.

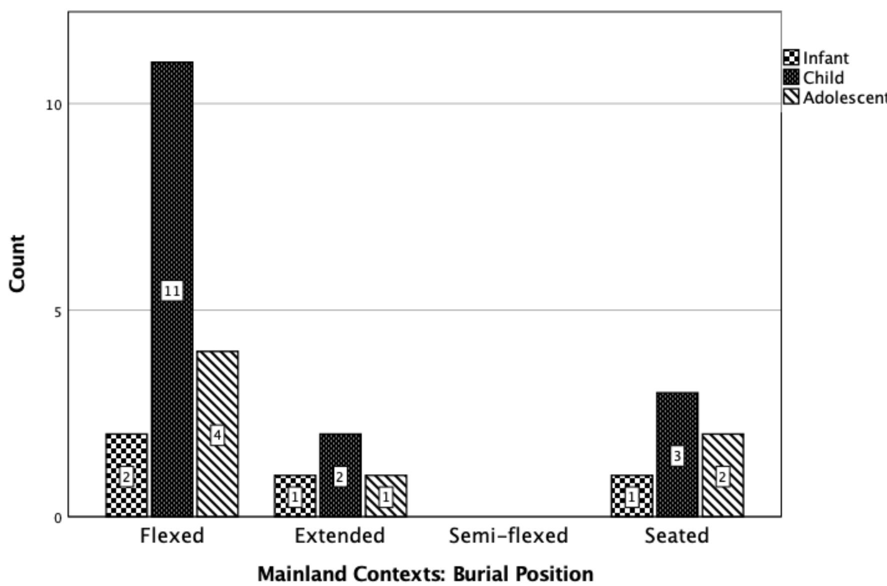

Figure 6.12. Bar graph of burial position for mainland contexts by infant, child, and adolescent burials.

Table 6.14. Frequency Count and Percentage of Burial Position for Mainland Contexts by Infant, Child, and Adolescent Burials

Mainland Contexts: Burial Position	Infant		Child		Adolescent	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Flexed	2	50.0 %	11	68.8 %	4	57.1 %
Extended	1	25.0 %	2	12.5 %	1	14.3 %
Semi-flexed	0	0.0 %	0	0.0 %	0	0.0 %
Seated	1	25.0 %	3	18.8 %	2	28.6 %
Total	**4**	**100 %**	**16**	**100 %**	**7**	**100 %**

Summary of Findings for Variable 1: Burial Position

For the analysis of burial position, nine of the 12 statistical iterations revealed statistically significant results, and two of these nine analyses resulted in *p*-values that indicated highly significant differences. The highly significant analyses were all burials by time period (Table 6.3) and all burials by geographic context (Table 6.7). The analyses with statistically significant *p*-values were all burials by subadult/adult burials (Table 6.4), subadult/adult burials for Early and Middle periods (Tables 6.5 and 6.6), subadult/adult burials by island and mainland contexts (Tables 6.8 and 6.9), Early period infant, child, and adolescent burials (Table 6.11), and island contexts infant, child, and adolescent burials (Table 6.13). The primary pattern for all of these iterations is that flexed burials were the dominant position, however it is in the differences of the remaining three burial positions—extended, semi-flexed, and seated—that the significant differences lie. Generally, diachronic analyses revealed that extended burials gain popularity over time, while seated and semi-flexed burials become less common, and a similar pattern is seen between geographic contexts with extended burials being more popular in mainland contexts, while semi-flexed and seated burials are more common in island contexts. Basic analyses between subadult and adult burials reveal a pattern where subadult burials appear to have greater variation in burial position than their adult counterparts.

In the Early period, subadults have a greater proportion of extended burials than adults, while adults have greater proportions of semi-flexed and seated positions than subadults. For the Middle period, subadults have higher proportions of extended and seated burials than adults, but both age groups have similar proportions of semi-flexed positions. Subadult and adult patterns for burial position in island contexts mirror closely what was seen in the Early period, while mainland contexts subadult and adult patterns for burial position align with those seen in the Middle period sample. When the subadult sample is divided into infant, child, and adolescent burials, Early period infant and child burials appear more similar to one another than to adolescent burials, while adolescent burials have greater similarities to Early period adults (Table 6.5). Patterns for island subadults vary from this observed pattern, as infant burials appear to have more similarities in terms of burial position with island adults than to child or adolescent burials. Additionally, two insignificant patterns of note were seen for Middle period infant, child, and adolescent burials (Table 6.12) where proportions of extended burials decrease as age increases, and for seated burials, proportions increase with age. Although burial position cannot be used as a clear marker for age, given that flexed burials are most common for all, irrespective of age, context, or time period, the differences in proportions for the other three positions suggest that age-based differentiation was present in burial position.

Analysis of Variable 2: Body Side

This section presents the analyses conducted to examine trends in body side, which is defined as the portion of the deceased's body that made primary contact with the bottom of the grave. This variable is divided into five possible types: 1) anatomical right, 2) anatomical left, 3) supine (face up), 4) prone (face down), and 5) seated.

Body Side for All Burials by Time Period

In the following analysis, data from Early and Middle period burials for body side are analyzed to establish a diachronic baseline (Figure 6.13 and Table 6.15). A Pearson chi-square test for independence (n = 608, $\chi^2 = 133.30$, $p < 0.001$) revealed a highly significant statistical difference between body side and time period. In the Early period, supine burials are the most common side, while prone are the least common, but in the Middle period, this trend is essentially reversed, with prone burials becoming the most common side, and supine the second least common. Throughout both periods, seated and anatomical left burial types remain at a similar proportion, while the anatomical right type increases in frequency over time. There seems to be a clear pattern where the predominant body side changes from supine to prone over time.

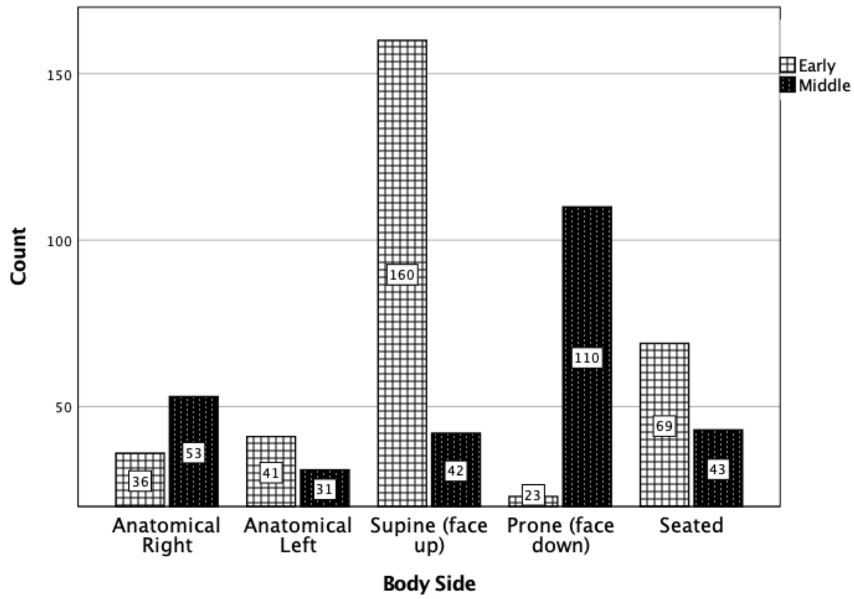

Figure 6.13. Bar graph of body side for all burials by time period.

Table 6.15. Frequency Count and Percentage of Body Side for All Burials by Time Period

Body Side	Early Period		Middle Period	
	Frequency	Percent	Frequency	Percent
Anatomical Right	36	10.9 %	53	19.0 %
Anatomical Left	41	12.5 %	31	11.1 %
Supine (face up)	160	48.6 %	42	15.1 %
Prone (face down)	23	7.0 %	110	39.4 %
Seated	69	21.0 %	43	15.4 %
Total	**329**	**100 %**	**279**	**100 %**

Body Side by Subadult and Adult Burials

Subadult and adult burials are analyzed here to establish an age-comparative baseline for body side (Figure 6.14 and Table 6.16). A Pearson chi-square test for independence (n = 572, χ^2 = 9.23, p = 0.055) did not reveal a statistically significant difference between body side and subadult/adult burials, however, it should be noted that the p-value is approaching significance. Although proportions for most of the body side types are very similar, adults have higher proportions of burials with anatomical right and prone burials, while subadults have a higher proportion of seated burials. At this level of analysis, there are more similarities than differences between this age division, however, the most notable trend is the proportions of prone and seated burials for subadult and adult burials.

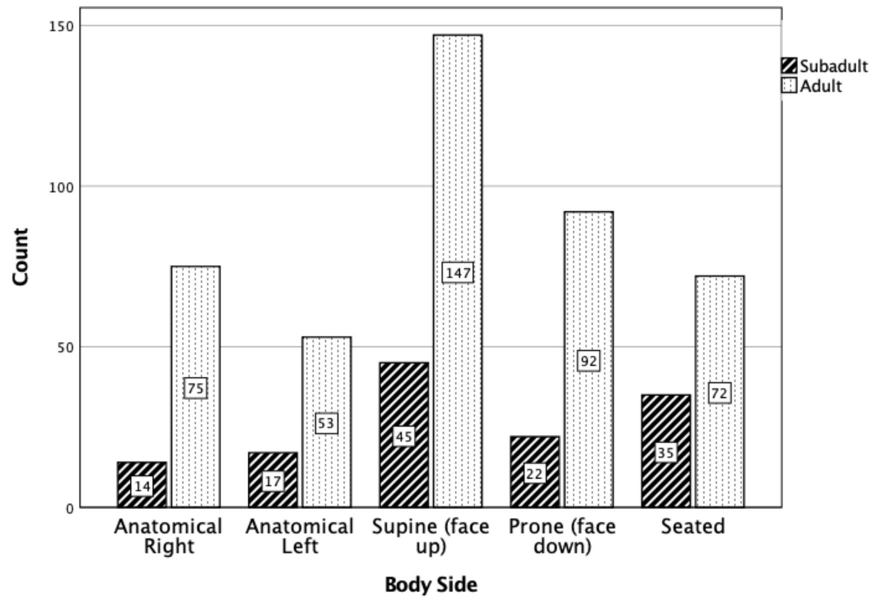

Figure 6.14. Bar graph of body side for subadult and adult burials.

Table 6.16. Frequency Count and Percentage of Body Side for Subadult and Adult Burials

Body Side	Subadult		Adult	
	Frequency	Percent	Frequency	Percent
Anatomical Right	14	10.5 %	75	17.1 %
Anatomical Left	17	12.8 %	53	12.1 %
Supine (face up)	45	33.8 %	147	33.5 %
Prone (face down)	22	16.5 %	92	20.9 %
Seated	35	26.3 %	72	16.4 %
Total	**133**	**100 %**	**439**	**100 %**

Body Side for Subadult and Adult Burials Comparing Time Period

Data from Early period subadult and adult burials for body side are analyzed first (Figure 6.15 and Table 6.17), followed by Middle period subadult and adult data (Figure 6.16 and Table 6.18) to provide a point of comparison between age groups diachronically. A Pearson chi-square test for independence (n = 315, χ^2 = 7.33, p = 0.119) did not reveal a statistically significant difference between body side and Early period subadult/adult burials. The majority of body side types occur at similar proportions between the two age groups, however, the primary difference is in the proportion of anatomical right, prone, and seated types, where prone and seated burials are more common for subadults, and anatomical right burials are more common for adults. Although not statistically significant, these differences echo what was seen for the total sample of subadult and adult burials.

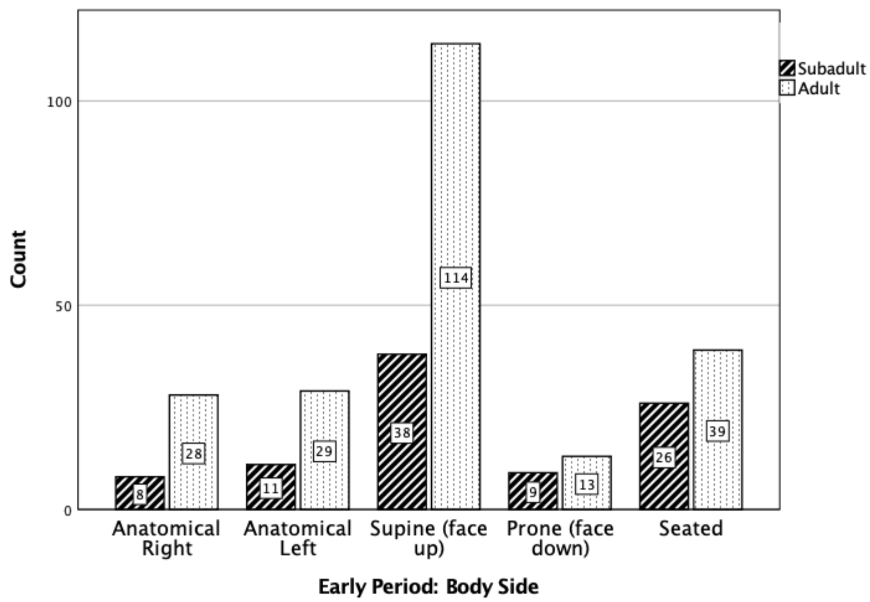

Figure 6.15. Bar graph of body side for Early period subadult and adult burials.

Table 6.17. Frequency Count and Percentage of Body Side for Early Period Subadult and Adult Burials

Early Period: Body Side	Subadult		Adult	
	Frequency	Percent	Frequency	Percent
Anatomical Right	8	8.7 %	28	12.6 %
Anatomical Left	11	12.0 %	29	13.0 %
Supine (face up)	38	41.3 %	114	51.1 %
Prone (face down)	9	9.8 %	13	5.8 %
Seated	26	28.3 %	39	17.5 %
Total	**92**	**100 %**	**223**	**100 %**

For the Middle period sample, a Pearson chi-square test for independence (n = 257, χ^2 = 2.45, p = 0.653) did not reveal a statistically significant difference between body side and Middle period subadult/adult burials. For both age groups, the most common body side is prone, and the remainder of types occur at similar frequencies, with the most notable differences between age groups seen in anatomical right and seated types. Adults have higher proportions of anatomical right burials, while subadults have higher proportions of seated burials. Patterns (albeit not proportional values) for subadult and adult for anatomical right and seated burials appear to be maintained in both the Early and Middle periods.

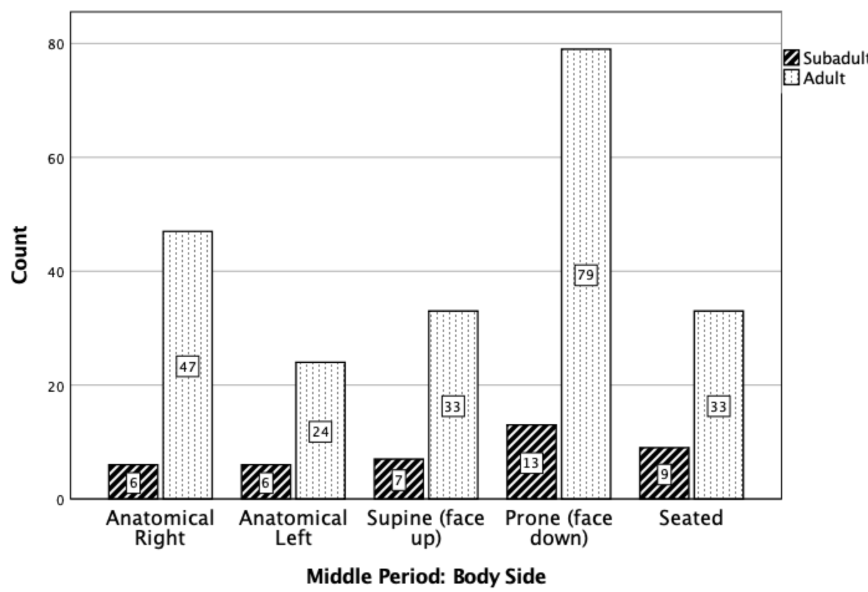

Figure 6.16. Bar graph of body side for Middle period subadult and adult burials.

Table 6.18. Frequency Count and Percentage of Body Side for Middle Period Subadult and Adult Burials

Middle Period: Body Side	Subadult		Adult	
	Frequency	Percent	Frequency	Percent
Anatomical Right	6	14.6 %	47	21.8 %
Anatomical Left	6	14.6 %	24	11.1 %
Supine (face up)	7	17.1 %	33	15.3 %
Prone (face down)	13	31.7 %	79	36.6 %
Seated	9	22.0 %	33	15.3 %
Total	**41**	**100 %**	**216**	**100 %**

Body Side for All Burials by Island and Mainland Context

For this analysis, data from island and mainland contexts burials are analyzed to convey a baseline for body side between geographic contexts (Figure 6.17 and Table 6.19). A Pearson chi-square test for independence (n = 608, χ^2 = 249.57, p < 0.001) revealed a highly significant statistical difference between body side and geographic context. For island contexts, supine burials are the most common body side, while prone burials are the least, and this pattern is reversed for mainland contexts, with prone burials being the most common body side and supine burials being the least common type. Additional patterns are observed where proportions of anatomical right and seated burials are essentially reversed between contexts, indicating higher prevalence of seated burials in island contexts, and higher proportions of anatomical right burials in mainland contexts. The clearest variations are observed between contexts in the most and least common types, which show the most significant differences.

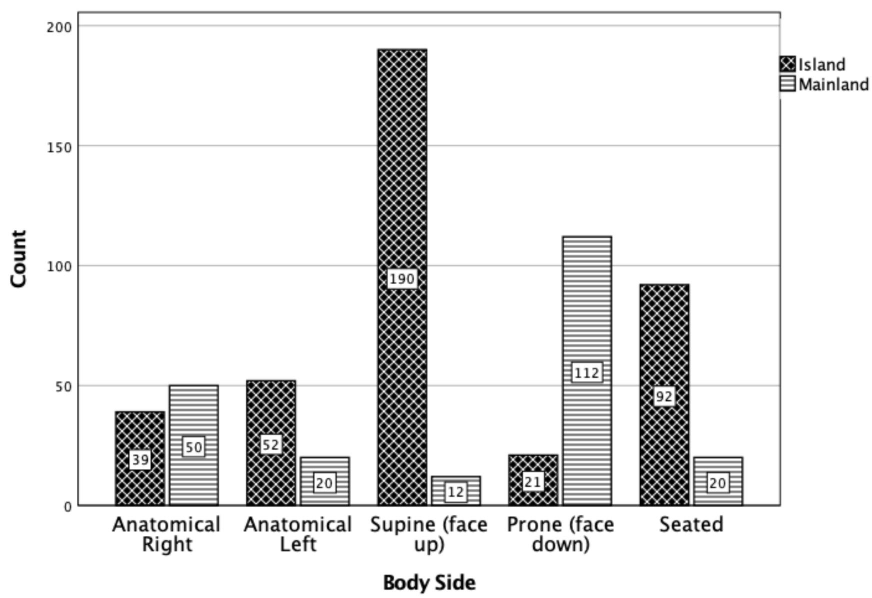

Figure 6.17. Bar graph of body side for all burials by island and mainland context.

Table 6.19. Frequency Count and Percentage of Body Side for All Burials by Island and Mainland Context

Body Side	Island		Mainland	
	Frequency	Percent	Frequency	Percent
Anatomical Right	39	9.9 %	50	23.4 %
Anatomical Left	52	13.2 %	20	9.3 %
Supine (face up)	190	48.2 %	12	5.6 %
Prone (face down)	21	5.3 %	112	52.3 %
Seated	92	23.4 %	20	9.3 %
Total	**394**	**100 %**	**214**	**100 %**

Body Side for Subadult and Adult Burials by Island and Mainland Contexts

The following analyses provide the results for body side in island subadult and adult burials (Figure 6.18 and Table 6.20) and mainland subadult and adult burials (Figure 6.19 and Table 6.21) to assist in making geographic-based comparisons between these age groups. For island contexts burials, a Pearson chi-square test for independence (n = 378, χ^2 = 4.87, p = 0.301) did not reveal a statistically significant difference between body side and island subadult/adult burials. Although there are somewhat noticeable differences in the proportion of anatomical right and prone burials between the age groups, there are more similarities for patterning and proportion of body side between the age groups. These results indicate that there does not appear to be age-based differentiation in the treatment of subadult and adult burials from island contexts.

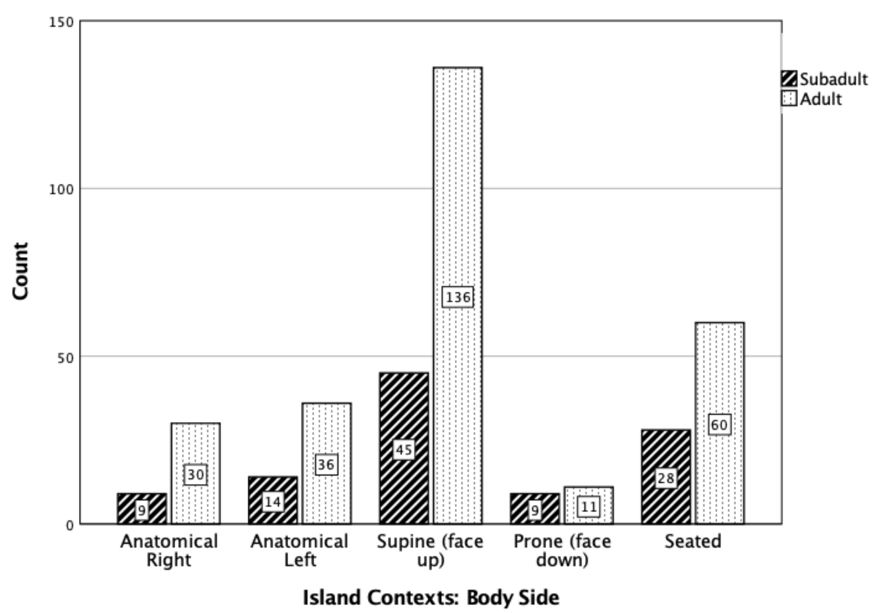

Figure 6.18. Bar graph of body side for island contexts by subadult and adult burials.

Table 6.20. Frequency Count and Percentage of Body Side for Island Contexts by Subadult and Adult Burials

Island Contexts: Body Side	Subadult		Adult	
	Frequency	Percent	Frequency	Percent
Anatomical Right	9	8.6 %	30	11.0 %
Anatomical Left	14	13.3 %	36	13.2 %
Supine (face up)	45	42.9 %	136	49.8 %
Prone (face down)	9	8.6 %	11	4.0 %
Seated	28	26.7 %	60	22.0 %
Total	**105**	**100 %**	**273**	**100 %**

For the mainland sample, a Fischer's Exact test for independence (n = 194, p = 0.056) did not reveal a statistically significant difference between body side and mainland subadult/adult burials, however, it should be noted that the p-value is approaching significance. Frequencies for body side are very similar between mainland subadult and adult burials, with the most notable differences being observed in anatomical right and seated types. Adults have anatomical right burials one-and-one-half times more often than subadults, while subadults have seated burials over three times as frequently as adults. Although not statistically significant, these patterns are so pronounced that they are worthy of note.

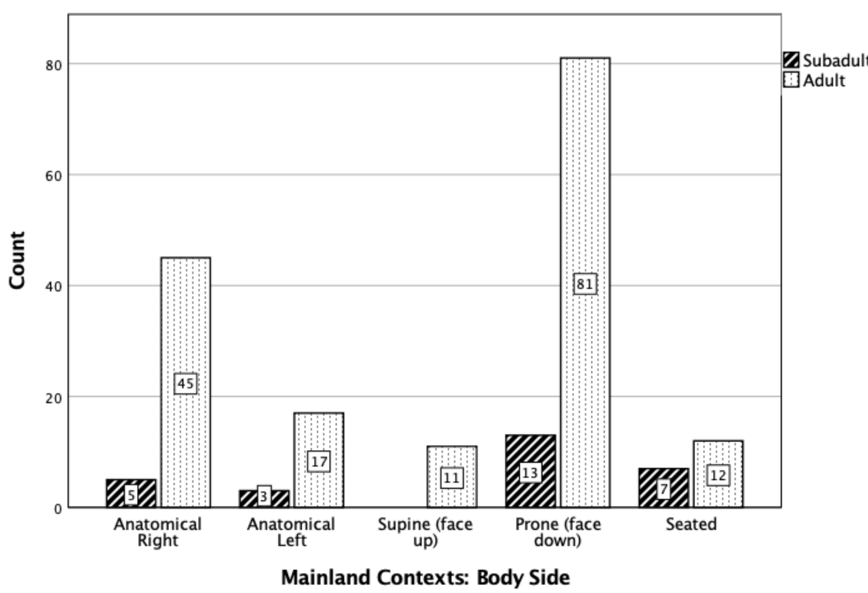

Figure 6.19. Bar graph of body side for mainland contexts by subadult and adult burials.

Table 6.21. Frequency Count and Percentage of Body Side for Mainland Contexts by Subadult and Adult Burials

Mainland Contexts: Body Side	Subadult		Adult	
	Frequency	**Percent**	**Frequency**	**Percent**
Anatomical Right	5	17.9 %	45	27.1 %
Anatomical Left	3	10.7 %	17	10.2 %
Supine (face up)	0	0.0 %	11	6.6 %
Prone (face down)	13	46.4 %	81	48.8 %
Seated	7	25.0 %	12	7.2 %
Total	**28**	**100 %**	**166**	**100 %**

Body Side for Infant, Child, and Adolescent Burials

To investigate potential age-based patterns in subadult burials, infant, child, and adolescent burials are analyzed for body side (Figure 6.20 and Table 6.22). A Pearson chi-square test for independence (n = 133, χ^2 = 10.67, p = 0.221) did not reveal a statistically significant difference between body side and infant, child, and adolescent burials. There are some minor differences between proportions of body side type for the three subadult age groups, however the similarities are greater in comparison. The clearest trend overall is that supine burials are among the most common type for subadult burials. Very little in the way of age-based patterning is evident at this level of analysis.

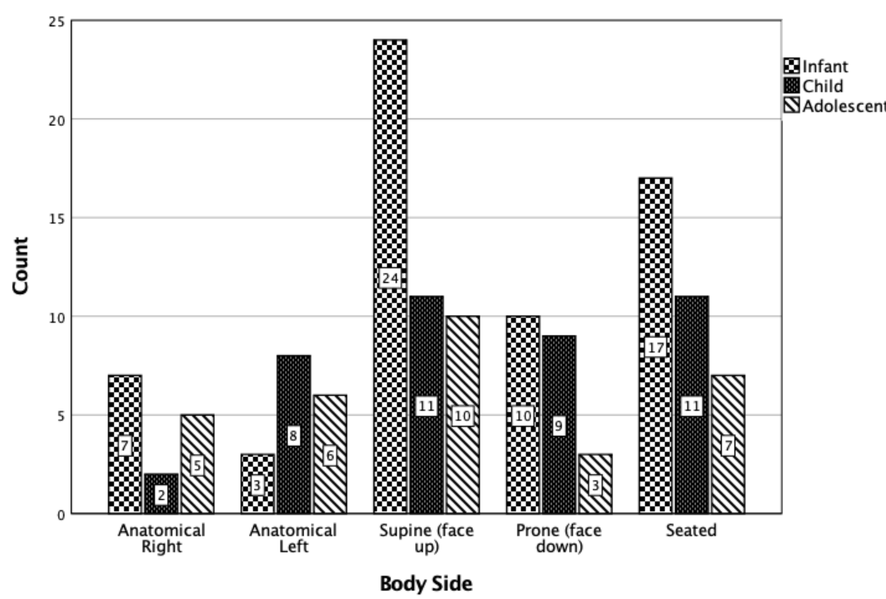

Figure 6.20. Bar graph of body side for infant, child, and adolescent burials.

Table 6.22. Frequency Count and Percentage of Body Side for Infant, Child and Adolescent Burials

Body Side	Infant		Child		Adolescent	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Anatomical Right	7	11.5 %	2	4.9 %	5	16.1 %
Anatomical Left	3	4.9 %	8	19.5 %	6	19.4 %
Supine (face up)	24	39.3 %	11	26.8 %	10	32.3 %
Prone (face down)	10	16.4 %	9	22.0 %	3	9.7 %
Seated	17	27.9 %	11	26.8 %	7	22.6 %
Total	**61**	**100 %**	**41**	**100 %**	**31**	**100 %**

Body Side for Infant, Child, and Adolescent Burials by Time Period Phase

The following two analyses are designed to provide a point of diachronic comparison for subadult body side, examining Early period infant, child, and adolescent burials (Figure 6.21 and Table 6.23), as well as Middle period infant, child, and adolescent burials (Figure 6.22 and Table 6.24). A Fischer's Exact test for independence (n = 92, p = 0.060) did not reveal a statistically significant difference between body side and Early period infant, child, and adolescent burials, however, the p-value is approaching significance. Two main similarities are observed between the three age groups; supine and seated burials are first and second most common types, respectively, at very similar proportions across the age groups. Two differences in the proportions between the three age groups are worthy of note; anatomical left types appear to increase in frequency as age increases, while prone types appear to decrease as age increases.

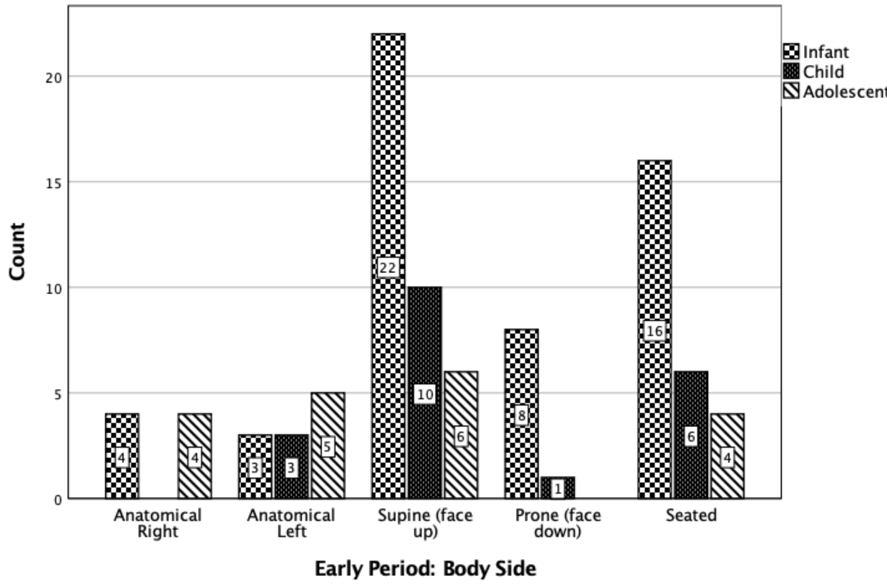

Figure 6.21. Bar graph of body side for Early Period infant, child, and adolescent burials.

Table 6.23. Frequency Count and Percentage of Body Side for Early Period Infant, Child and Adolescent Burials

Early Period: Body Side	Infant		Child		Adolescent	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Anatomical Right	4	7.5 %	0	0.0 %	4	21.1 %
Anatomical Left	3	5.7 %	3	15.0 %	5	26.3 %
Supine (face up)	22	41.5 %	10	50.0 %	6	31.6 %
Prone (face down)	8	15.1 %	1	5.0 %	0	0.0 %
Seated	16	30.2 %	6	30.0 %	4	21.1 %
Total	**53**	**100 %**	**20**	**100 %**	**19**	**100 %**

For Middle period sample of subadults, a Fischer's Exact test for independence (n = 41, p = 0.229) did not reveal a statistically significant difference between body side and Middle period infant, child, and adolescent burials. There is very little in the way of identifiable patterning among infant, child, and adolescent burials, which is true even when these different age groups are compared to the Middle period sample of adult burials. One pattern observed for Middle period subadults is that seated types seem to increase with the increase in age. Altogether though, the data do not support differential treatment existing between the age groups. When compared to the Early period subadult sample, patterning is much more clear among Early period subadults than Middle period subadults.

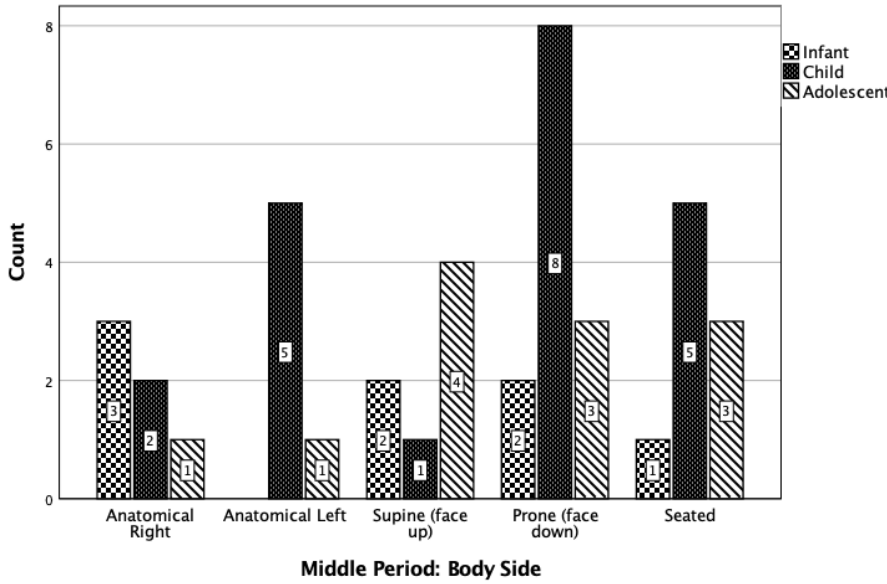

Figure 6.22. Bar graph of body side for Middle Period infant, child, and adolescent burials.

Table 6.24. Frequency Count and Percentage of Body Side for Middle Period Infant, Child, and Adolescent Burials

Middle Period: Body Side	Infant		Child		Adolescent	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Anatomical Right	3	37.5 %	2	9.5 %	1	8.3 %
Anatomical Left	0	0.0 %	5	23.8 %	1	8.3 %
Supine (face up)	2	25.0 %	1	4.8 %	4	33.3 %
Prone (face down)	2	25.0 %	8	38.1 %	3	25.0 %
Seated	1	12.5 %	5	23.8 %	3	25.0 %
Total	**8**	**100 %**	**21**	**100 %**	**12**	**100 %**

Body Side for Infant, Child, and Adolescent Burials by Island and Mainland Contexts

These final two analyses convey the results for subadult burials from island (Figure 6.23 and Table 6.25) and mainland contexts (Figure 6.24 and Table 6.26) in order to evaluate potential geographic-based patterns in body side between infant, child, and adolescent burials. For island contexts, a Fischer's Exact test for independence (n = 105, p = 0.049) revealed a statistically significant difference between body side and island infant, child, and adolescent burials. For island subadults, supine and seated burials are the first and second most common types, respectively, occurring at very similar proportions between age groups. One pattern of note is in the proportion of prone burials, which appear to decrease as age increases. This trend also holds true when infant burials are compared to adult burials from island contexts (Table 6.20), where prone burials also are the least common type. Otherwise, there is very little in the way of clear patterning for body side among these three age groups.

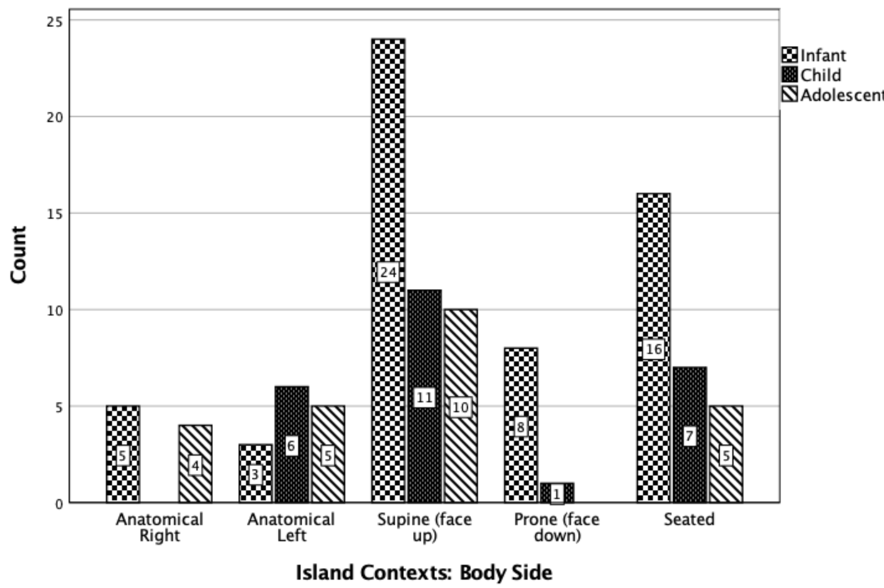

Figure 6.23. Bar graph of body side for island contexts by infant, child, and adolescent burials.

Table 6.25. Frequency Count and Percentage of Body Side for Island Contexts by Infant, Child and Adolescent Burials

Island Contexts: Body Side	Infant		Child		Adolescent	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Anatomical Right	5	8.9 %	0	0.0 %	4	16.7 %
Anatomical Left	3	5.4 %	6	24.0 %	5	20.8 %
Supine (face up)	24	42.9 %	11	44.0 %	10	41.7 %
Prone (face down)	8	14.3 %	1	4.0 %	0	0.0 %
Seated	16	28.6 %	7	28.0 %	5	20.8 %
Total	**56**	**100 %**	**25**	**100 %**	**24**	**100 %**

For the sample of subadults from mainland contexts, a Fischer's Exact test for independence (n = 28, p = 0.942) did not reveal a statistically significant difference between body side and mainland infant, child, and adolescent burials. There are more similarities than differences evident between the three age groups and body side types. Child and adolescent burials are more similar to each other in terms of patterning and relative proportions. The primary difference evident is the proportion of anatomical right burials for infant burials, which occur over three times as frequently for infants than for child or adolescent burials. Additionally, there are no examples of supine burials for mainland subadults. When compared to adults from mainland contexts (Table 6.21), all three subadult age groups differ in the proportion of seated burials, which occur approximately four times more frequently for subadult burials than they do for adult burials from mainland contexts. Between geographic contexts, there appears to be more variation in island subadult burials than in mainland subadult burials, however, this may be an effect of sample size.

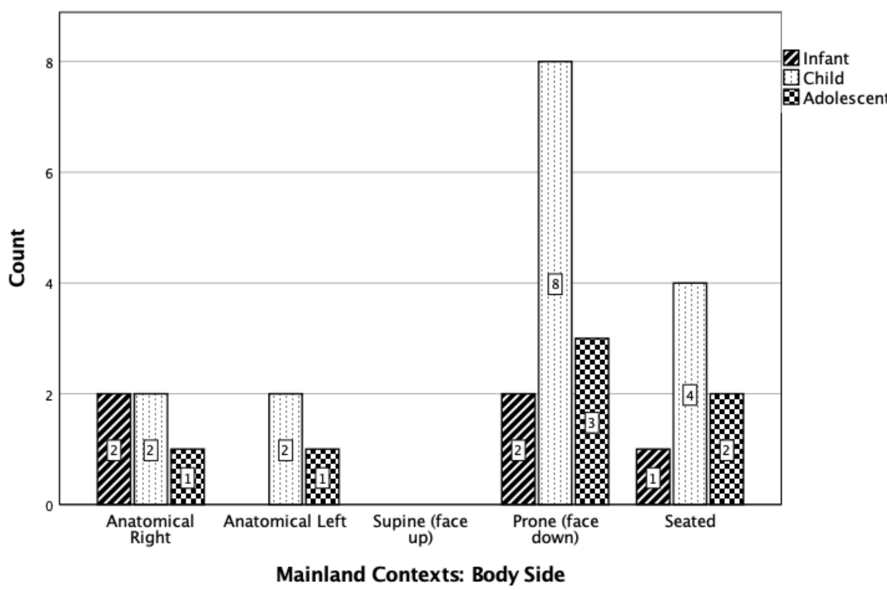

Figure 6.24. Bar graph of body side for mainland contexts by infant, child, and adolescent burials.

Table 6.26. Frequency Count and Percentage of Body Side for Mainland Contexts by Infant, Child and Adolescent Burials

Mainland Contexts: Body Side	Infant		Child		Adolescent	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Anatomical Right	2	40.0 %	2	12.5 %	1	14.3 %
Anatomical Left	0	0.0 %	2	12.5 %	1	14.3 %
Supine (face up)	0	0.0 %	0	0.0 %	0	0.0 %
Prone (face down)	2	40.0 %	8	50.0 %	3	42.9 %
Seated	1	20.0 %	4	25.0 %	2	28.6 %
Total	**5**	**100 %**	**16**	**100 %**	**7**	**100 %**

Summary of Findings for Variable 2: Body Side

For the investigation of body side, three of the 12 total analyses yielded statistically significant results. Results for all burials by time period (Table 6.15) and all burials by geographic context (Table 6.19) revealed highly significant results, and island contexts infant, child, and adolescent burials (Table 6.25) resulted in significant results. Diachronically, supine burials are the most common type and prone are the least common in the Early period, however this trend is reversed for the Middle period. Between geographic contexts, island contexts exhibit a similar pattern, with supine burials as the most frequent type and prone the least, which is reversed for mainland contexts. For subadults from island contexts, a notable pattern is evident for prone burials, the frequency of which appears to decrease as age increases.

Although not statistically significant, three additional analyses yielded *p*-values that are approaching significance, all burials by subadult/adult burials (Table 6.16), Mainland subadult/adult burials (Table 6.21), and Early period infant, child, and adolescent burials (Table 6.23). Between all subadult and adult burials, subadults have larger frequencies of seated burials, while adults have higher frequencies of anatomical right and prone burials. Between subadult and adult burials from the mainland, subadults have seated burials over three times as often as adults, while adults have anatomical right types one-and-one-half times more often than subadults. Between the three subadult age groups for the Early period, trends are evident where anatomical left types appear to increase in frequency as age increases, while prone types appear to decrease as age increases. Another pattern that is not statistically significant is observed for Middle period infant, child and adolescent burials, where seated types seem to increase with the increase in age. Altogether, the most notable patterns for body side are evident between contexts and time periods, while there are far fewer trends that would indicate an age-based difference at finer levels of analysis.

Analysis of Variable 3: Burial Direction (Compass)

The results presented in this section record the direction the burial was oriented towards, based on compass cardinal points. Burial direction was determined by the direction of the head, which is defined as the direction of the cervical end of the vertebrae, as if following an imaginary axis from the lumbar to cervical vertebrae (Bickel 1981). In the case of seated burials, however, the direction of the face was used. Compass directionality was limited to the eight principal directions, which include the four cardinal directions (North, South, East, and West) and the four intercardinal/ordinal directions (Northeast, Northwest, Southeast, and Southwest). In instances where excavators recorded burial direction based on half-wind compass points, the half-wind direction was collapsed to the dominant cardinal direction (e.g., North-Northwest and North-Northeast coded as North; see Chapter 5, Variable 3 for additional examples and discussion).

Burial Direction (Compass) for All Burials by Time Period

The following analysis conveys the results regarding burial direction for Early and Middle period burials (Figure 6.25 and Table 6.27), thus establishing a diachronic baseline. A Pearson chi-square test for independence (n = 603, $\chi^2 = 22.04$, p = 0.002) revealed a highly significant statistical difference between burial direction and time period. For the Early period, west-oriented burials are the most common grave direction, while southeast-oriented burials are the least common direction. An additional pattern of note is that the four most common Early period grave directions are aligned with the four cardinal directions, with west-east orientation dominant over south-north. For the Middle period, east-oriented burials are the most common grave direction, while southeast-oriented burials are also the least common. The two most common grave orientations for Middle period burials are aligned in an east-west direction, which is opposite to what we see in the Early period.

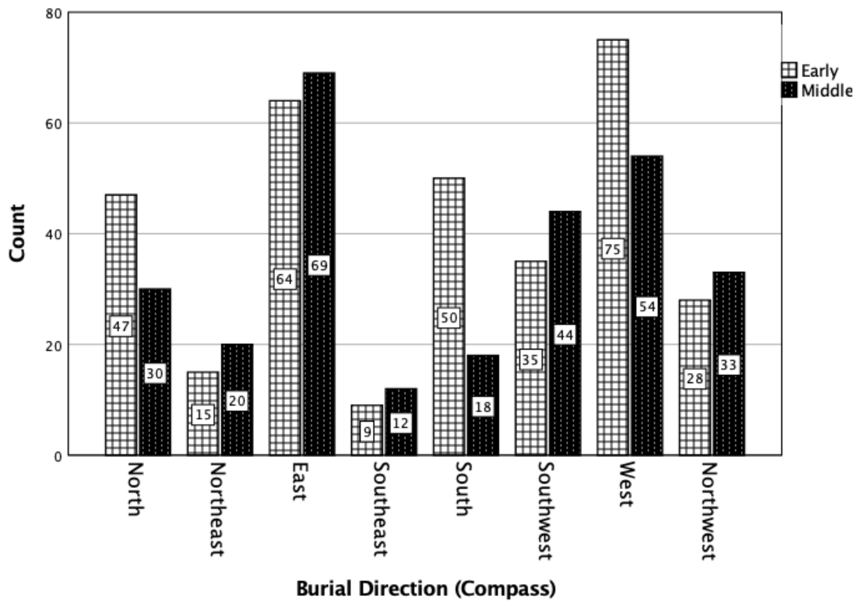

Figure 6.25. Bar graph of burial direction (compass) for all burials by time period.

Table 6.27. Frequency Count and Percentage of Burial Direction (Compass) for All Burials by Time Period

Burial Direction (Compass)	**Early Period**		**Middle Period**	
	Frequency	**Percent**	**Frequency**	**Percent**
North	47	14.6 %	30	10.7 %
Northeast	15	4.6 %	20	7.1 %
East	64	19.8 %	69	24.6 %
Southeast	9	2.8 %	12	4.3 %
South	50	15.5 %	18	6.4 %
Southwest	35	10.8 %	44	15.7 %
West	75	23.2 %	54	19.3 %
Northwest	28	8.7 %	33	11.8%
Total	**323**	**100 %**	**280**	**100 %**

Burial Direction (Compass) by Subadult and Adult Burials

To take into account potential age-based differences for burial direction, subadult and adult burials are analyzed to determine a baseline (Figure 6.26 and Table 6.28). A Pearson chi-square test for independence (n = 583, χ^2 = 2.93, p = 0.892) did not reveal a statistically significant difference between burial direction and subadult/adult burials. Patterning and proportions for both subadult and adult burials are incredibly similar, which indicates that, at this broad level of analysis, burial direction was not influenced by age-based distinctions.

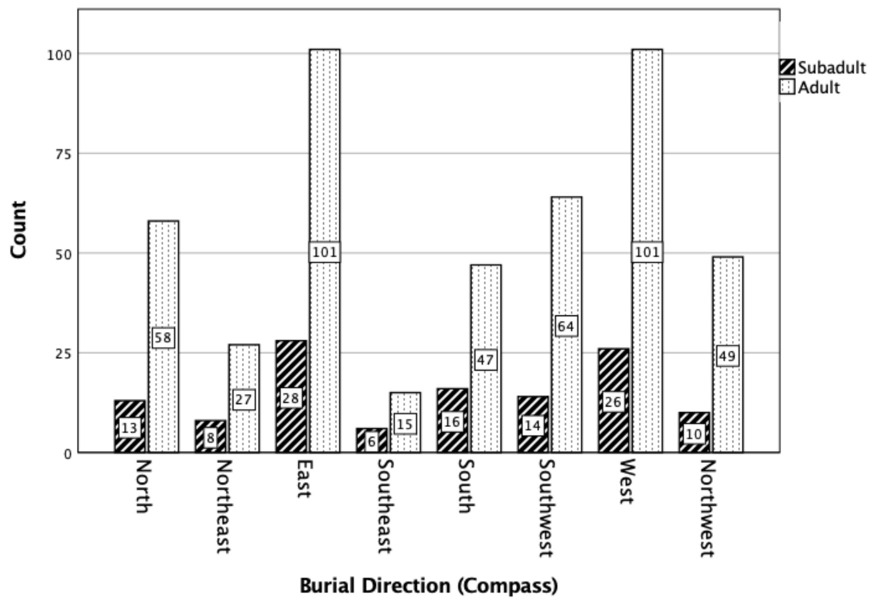

Figure 6.26. Bar graph of burial direction (compass) for subadult and adult burials.

Table 6.28. Frequency Count and Percentage of Burial Direction (Compass) for Subadult and Adult Burials

Burial Direction (Compass)	Subadult		Adult	
	Frequency	Percent	Frequency	Percent
North	13	10.7 %	58	12.5 %
Northeast	8	6.6 %	27	5.8 %
East	28	23.1 %	101	21.9 %
Southeast	6	5.0 %	15	3.2 %
South	16	13.2 %	47	10.2 %
Southwest	14	11.6 %	64	13.9 %
West	26	21.5 %	101	21.9 %
Northwest	10	8.3 %	49	10.6 %
Total	**121**	**100 %**	**462**	**100 %**

Burial Direction (Compass) for Subadult and Adult Burials Comparing Time Period

In order to further examine diachronic trends in subadult and adult burials, Early period subadult and adult burial data are analyzed first (Figure 6.27 and Table 6.29), followed by Middle period subadult and adult burial data (Figure 6.28 and Table 7.30). A Pearson chi-square test for independence (n = 308, $\chi^2 = 6.62$, p = 0.470) did not reveal a statistically significant difference between burial direction and Early period subadult/adult burials. East- and west-oriented burials are the most common types for subadults, while west-oriented burials are the most common type for adults and, for both age groups, southeast orientations are the least common type. For both subadult and adult burials, the four most common burial directions align with the four cardinal directions, however, subadults have east- and west-oriented burials occurring at equal proportions, while adults favor a west-east orientation. Overall, there are very few differences in proportion for burial direction in Early period subadult and adult burials, indicating that age does not appear to be a factor influencing burial direction.

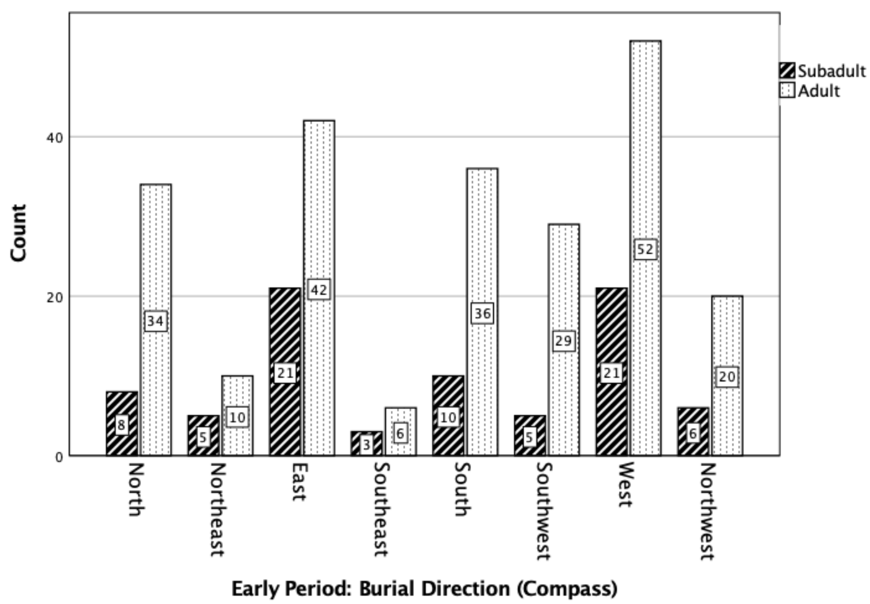

Figure 6.27. Bar graph of burial direction (compass) for Early period subadult and adult burials.

Table 6.29. Frequency Count and Percentage of Burial Direction (Compass) for Early Period Subadult and Adult Burials

Early Period: Burial Direction (Compass)	Subadult		Adult	
	Frequency	Percent	Frequency	Percent
North	8	10.1 %	34	14.9 %
Northeast	5	6.3 %	10	4.4 %
East	21	26.6 %	42	18.3 %
Southeast	3	3.8 %	6	2.6 %
South	10	12.7 %	36	15.7 %
Southwest	5	6.3 %	29	12.7 %
West	21	26.6 %	52	22.7 %
Northwest	6	7.6 %	20	8.7 %
Total	**79**	**100 %**	**229**	**100 %**

For the Middle period sample, a Pearson chi-square test for independence (n = 275, χ^2 = 10.02, p = 0.188) did not reveal a statistically significant difference between burial direction and Middle period subadult/adult burials. The most common grave direction is southwest for subadult burials and east for adult burials, however, for both age groups southeast-oriented burials are the least common. For Middle period subadults, the four cardinal direction orientations immediately follow the southwest-orientation as the most common type, with no clear directional patterning evident. For adult burials, the east-west orientation is dominant, followed by southwest- and northwest-oriented burials, indicating more of a west-oriented direction for the majority of these burials. One commonality between subadult and adult burials from both time periods is that the least common burial direction is southeast. As with the Early period sample, age does not appear to be a primary factor in burial direction.

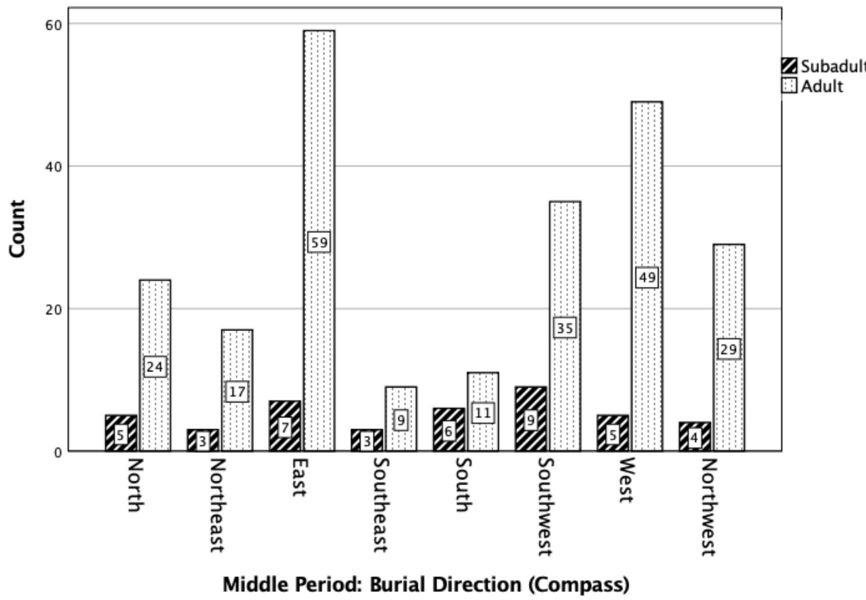

Figure 6.28. Bar graph of burial direction (compass) for Middle period subadult and adult burials.

Table 6.30. Frequency Count and Percentage of Burial Direction (Compass) for Middle Period Subadult and Adult Burials

Middle Period: Burial Direction (Compass)	Subadult		Adult	
	Frequency	Percent	Frequency	Percent
North	5	11.9 %	24	10.3 %
Northeast	3	7.1 %	17	7.3 %
East	7	16.7 %	59	25.3 %
Southeast	3	7.1 %	9	3.9 %
South	6	14.3 %	11	4.7 %
Southwest	9	21.4 %	35	15.0 %
West	5	11.9 %	49	21.0 %
Northwest	4	9.5 %	29	12.4 %
Total	**42**	**100 %**	**233**	**100 %**

Burial Direction (Compass) for All Burials by Island and Mainland Context

The analysis that follows provides a point of geographic comparison for burial direction, exhibiting the results for island and mainland contexts (Figure 6.29 and Table 6.31). A Pearson chi-square test for independence (n = 603, χ^2 = 18.46, p = 0.010) revealed a statistically significant difference between burial direction and geographic context. West-oriented burials are the most common type in island contexts, while east-orientations are most common for mainland contexts. Patterning and proportions between the contexts appear very similar, with the proportion of south-oriented burials being the most noticeable difference in this regard. For both island and mainland contexts, the most common grave directions lay along a west-east and east-west alignment, respectively. Although the difference in burial direction between island and mainland contexts is considered to be statistically significant, the differences apparent do not appear to have real world significance.

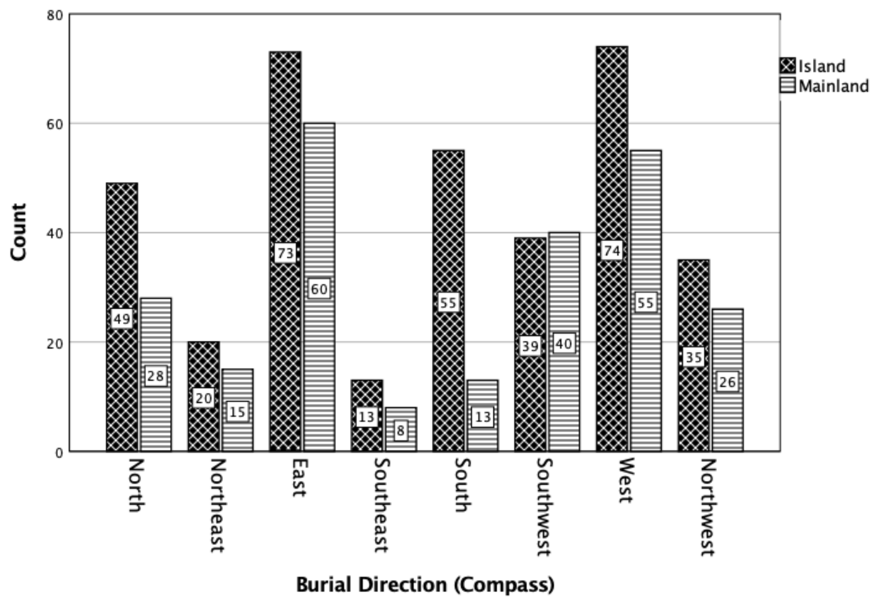

Figure 6.29. Bar graph of burial direction (compass) for all burials by island and mainland context.

Table 6.31. Frequency Count and Percentage of Burial Direction (Compass) for All Burials by Island and Mainland Context

Burial Direction (Compass)	**Island**		**Mainland**	
	Frequency	**Percent**	**Frequency**	**Percent**
North	49	13.7 %	28	11.4 %
Northeast	20	5.6 %	15	6.1 %
East	73	20.4 %	60	24.5 %
Southeast	13	3.6 %	8	3.3 %
South	55	15.4 %	13	5.3 %
Southwest	39	10.9 %	40	16.3 %
West	74	20.7 %	55	22.4 %
Northwest	35	9.7 %	26	10.6 %
Total	**358**	**100 %**	**245**	**100 %**

Burial Direction (Compass) for Subadult and Adult Burials by Island and Mainland Contexts

To further investigate potential patterns for burial direction in subadult and adult burials, samples from island (Figure 6.30 and Table 6.32) and mainland contexts (Figure 6.31 and Table 6.33) are analyzed. For island contexts, a Pearson chi-square test for independence (n = 342, χ^2 = 9.90, p = 0.195) did not reveal a statistically significant difference between burial direction and island subadult/adult burials. Island subadult and adult burials share similar patterning, with the four cardinal directions being the four most common burial directions, followed by the four intercardinal directions. However, the most common direction for subadult and adult burials differs (east and west, respectively), but this follows the overall trend of an east-west directionality being the most common orientation. Again, age does not appear to be a primary factor in burial direction for island contexts.

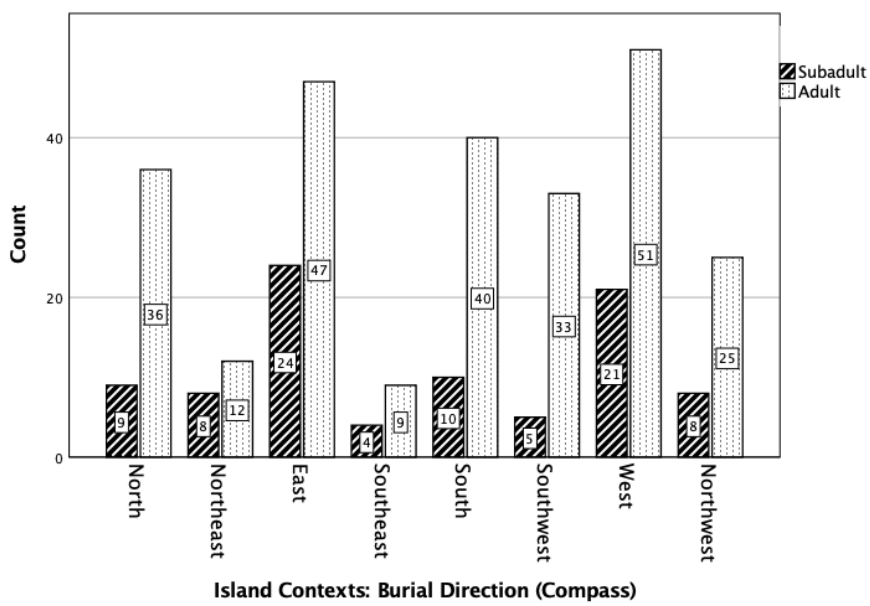

Figure 6.30. Bar graph of burial direction (compass) for island contexts by subadult and adult burials.

Table 6.32. Frequency Count and Percentage of Burial Direction (Compass) for Island Contexts by Subadult and Adult Burials

Island Contexts: Burial Direction (Compass)	Subadult		Adult	
	Frequency	Percent	Frequency	Percent
North	9	10.1 %	36	14.2 %
Northeast	8	9.0 %	12	4.7 %
East	24	27.0 %	47	18.6 %
Southeast	4	4.5 %	9	3.6 %
South	10	11.2 %	40	15.8 %
Southwest	5	5.6 %	33	13.0 %
West	21	23.6 %	51	20.2 %
Northwest	8	9.0 %	25	9.9 %
Total	**89**	**100 %**	**253**	**100 %**

This analysis details the results for burial direction in the mainland contexts sample of subadult and adult burials (Figure 6.31 and Table 6.33). A Fischer's Exact test for independence (n = 241, p = 0.005) revealed a highly significant statistical difference between burial direction and mainland subadult/adult burials. Subadult burials have southwest-orientations as the most common direction, with northeast-oriented burials the least common, while adult burials have east-oriented burials as the most common type and southeast-oriented burials as the least common type. Mainland adults follow the overall pattern of east-west aligned burials being most common, but we do not see this evident in the subadult sample. Overall, the mainland contexts sample of subadult and adult burials did not exhibit as clear patterning as was evident in the island contexts sample.

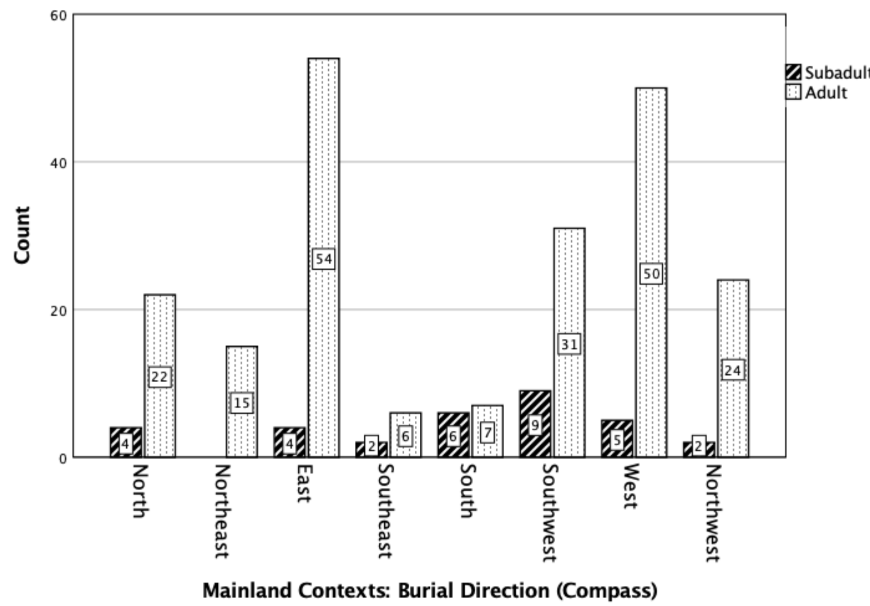

Figure 6.31. Bar graph of burial direction (compass) for mainland contexts by subadult and adult burials.

Table 6.33. Frequency Count and Percentage of Burial Direction (Compass) for Mainland Contexts by Subadult and Adult Burials

Mainland Contexts: Burial Direction (Compass)	Subadult		Adult	
	Frequency	Percent	Frequency	Percent
North	4	12.5 %	22	10.5 %
Northeast	0	0.0 %	15	7.2 %
East	4	12.5 %	54	25.8 %
Southeast	2	6.3 %	6	2.9 %
South	6	18.8 %	7	3.3 %
Southwest	9	28.1 %	31	14.8 %
West	5	15.6 %	50	23.9 %
Northwest	2	6.3 %	24	11.5 %
Total	**32**	**100 %**	**209**	**100 %**

Burial Direction (Compass) for Infant, Child, and Adolescent Burials

The results of this analysis provide a closer examination for burial direction in subadult burials, as reflected in the three established subadult age groups (Figure 6.32 and Table 6.34). A Fischer's Exact test for independence (n = 120, p = 0.020) revealed a statistically significant difference between burial direction and infant, child, and adolescent burials. Infant and child burials have west-orientations as the most common direction, while east-oriented burials are the most common for adolescent burials. Southeast-oriented burials are the least common type for infant and adolescent burials, while northeast-orientations are least common for child burials. Although no clear patterning is evident for the three subadult age groups, the most and least common directions fall, more-or-less, within the range of directions expected based on the previous analyses.

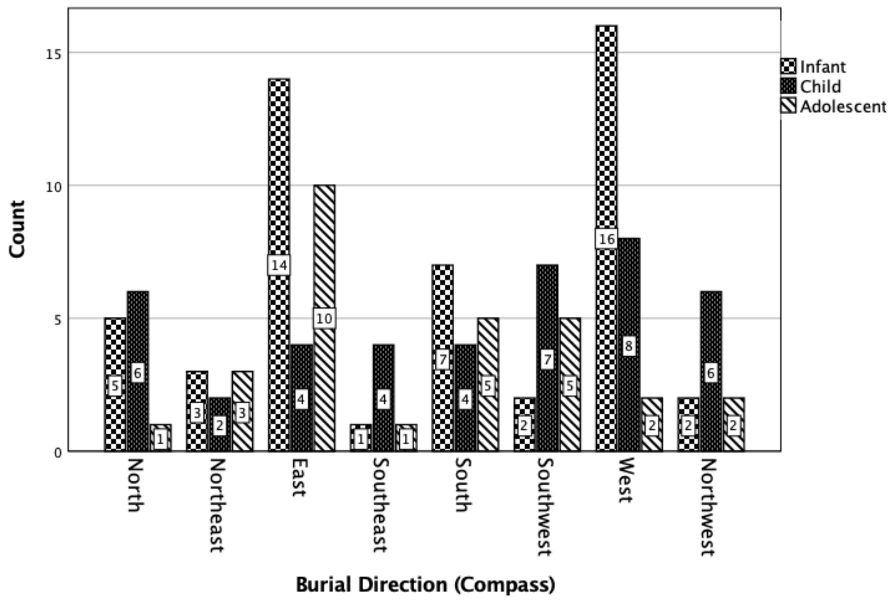

Figure 6.32. Bar graph of burial direction (compass) for infant, child, and adolescent burials.

Table 6.34. Frequency Count and Percentage of Burial Direction (Compass) for Infant, Child, and Adolescent Burials

Burial Direction (Compass)	**Infant**		**Child**		**Adolescent**	
	Frequency	**Percent**	**Frequency**	**Percent**	**Frequency**	**Percent**
North	5	10.0 %	6	14.6 %	1	3.4 %
Northeast	3	6.0 %	2	4.9 %	3	10.3 %
East	14	28.0 %	4	9.8 %	10	34.5 %
Southeast	1	2.0 %	4	9.8 %	1	3.4 %
South	7	14.0 %	4	9.8 %	5	17.2 %
Southwest	2	4.0 %	7	17.1 %	5	17.2 %
West	16	32.0 %	8	19.5 %	2	6.9 %
Northwest	2	4.0 %	6	14.6 %	2	6.9 %
Total	**50**	**100 %**	**41**	**100 %**	**29**	**100 %**

Burial Direction (Compass) for Infant, Child, and Adolescent Burials by Time Period Phase

To take differences in time period into account, the following two analyses convey the results for burial direction in infant, child, and adolescent burials from the Early (Figure 6.33 and

Table 6.35) and Middle periods (Figure 6.34 and Table 6.36). A Fischer's Exact test for independence (n = 78, p = 0.099) did not reveal a statistically significant difference between burial direction and Early period infant, child, and adolescent burials. For the Early period, the most common grave direction for infant and child burials is west-oriented, but for adolescent burials it is east-oriented. However, this is not considered to be a meaningful difference because it falls in line with the over-arching pattern of east-west orientation evident in previous test iterations. One pattern of note, however, is the similarity of Early period infant burials to those of Early period adults (Table 6.29) in terms of patterning for the four cardinal directions being the four most common burial directions, followed by the four intercardinal directions.

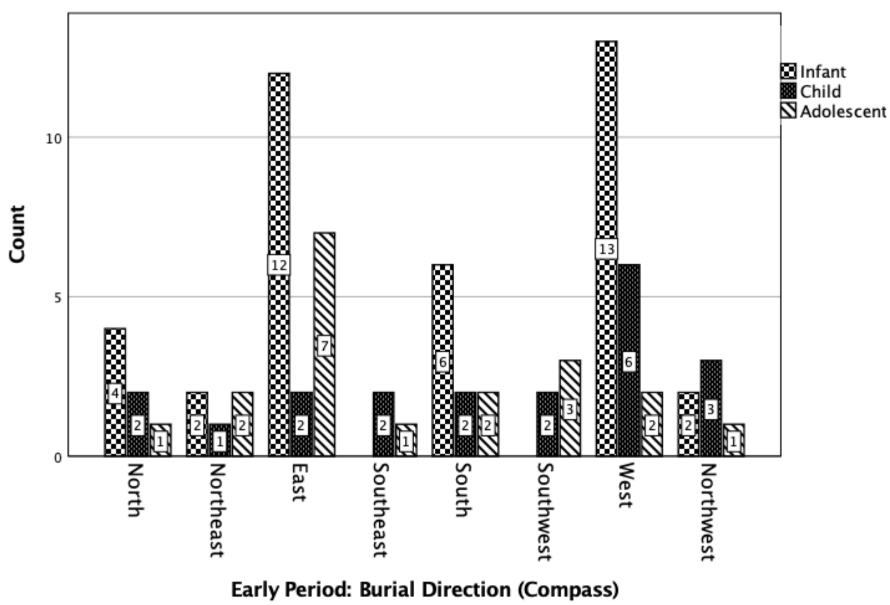

Figure 6.33. Bar graph of burial direction (compass) for Early Period infant, child, and adolescent burials.

Table 6.35. Frequency Count and Percentage of Burial Direction (Compass) for Early Period Infant, Child, and Adolescent Burials

Early Period: Burial Direction (Compass)	**Infant**		**Child**		**Adolescent**	
	Frequency	**Percent**	**Frequency**	**Percent**	**Frequency**	**Percent**
North	4	10.3 %	2	10.0 %	1	5.3 %
Northeast	2	5.1 %	1	5.0 %	2	10.5 %
East	12	30.8 %	2	10.0 %	7	36.8 %
Southeast	0	0.0 %	2	10.0 %	1	5.3 %
South	6	15.4 %	2	10.0 %	2	10.5 %
Southwest	0	0.0 %	2	10.0 %	3	15.8 %
West	13	33.3 %	6	30.0 %	2	10.5 %
Northwest	2	5.1 %	3	15.0 %	1	5.3 %
Total	**39**	**100 %**	**20**	**100 %**	**19**	**100 %**

This analysis displays the results for burial direction in infant, child, and adolescent burials from the Middle period (Figure 6.34 and Table 6.36). A Fischer's Exact test for independence (n = 42, p = 0.660) did not reveal a statistically significant difference between burial direction and Middle period infant, child, and adolescent burials. There is no clear patterning among infant, child, and adolescent burials, which is true even when these different age groups are compared to the Middle period sample of adult burials. The only observation of note is that Middle period child burials deviate from the dominant trend of east-west directionality being in the highest proportions; infant and adolescent burials maintain this trend with west- and east-oriented burials being the most common types, respectively. Comparing subadults from both time periods, neither Early nor Middle period infant, child, and adolescent burials exhibit any clear patterning relative to one another.

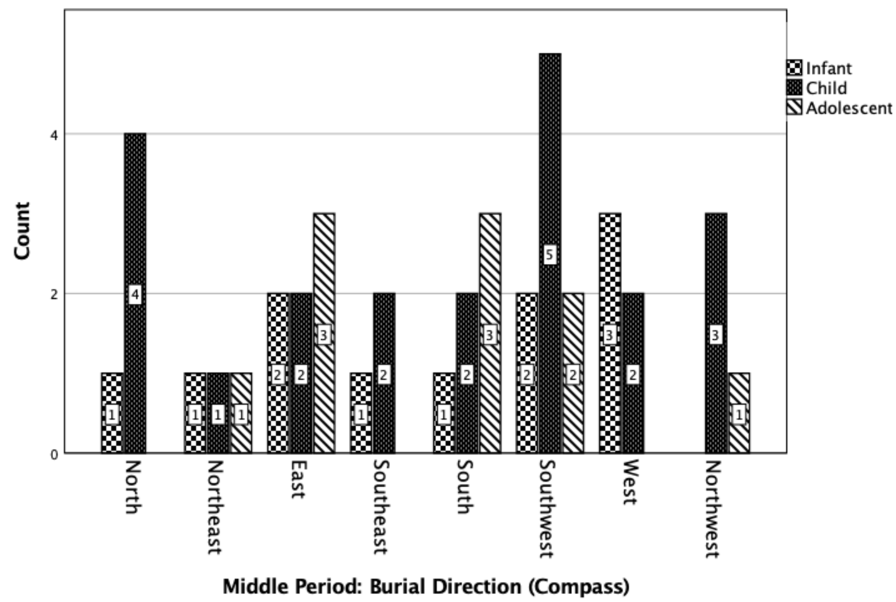

Figure 6.34. Bar graph of burial direction (compass) for Middle Period infant, child, and adolescent burials.

Table 6.36. Frequency Count and Percentage of Burial Direction (Compass) for Middle Period Infant, Child, and Adolescent Burials

Middle Period: Burial Direction (Compass)	**Infant**		**Child**		**Adolescent**	
	Frequency	**Percent**	**Frequency**	**Percent**	**Frequency**	**Percent**
North	1	9.1 %	4	19.0 %	0	0.0 %
Northeast	1	9.1 %	1	4.8 %	1	10.0 %
East	2	18.2 %	2	9.5 %	3	30.0 %
Southeast	1	9.1 %	2	9.5 %	0	0.0 %
South	1	9.1 %	2	9.5 %	3	30.0 %
Southwest	2	18.2 %	5	23.8 %	2	20.0 %
West	3	27.3 %	2	9.5 %	0	0.0 %
Northwest	0	0.0 %	3	14.3 %	1	10.0 %
Total	**11**	**100 %**	**21**	**100 %**	**10**	**100 %**

Burial Direction (Compass) for Infant, Child, and Adolescent Burials by Island and Mainland Contexts

Concluding the series of analyses for burial direction, data from infant, child, and adolescent burials are established for island (Figure 6.35 and Table 6.37) and mainland contexts (Figure 6.36 and Table 6.38). For island contexts, a Fischer's Exact test for independence (n = 89, p = 0.028) revealed a statistically significant difference between burial direction and island infant, child, and adolescent burials. For infant and child burials, west-oriented burials are the most common, while east-oriented burials are the most common direction for adolescent burials. Overall, the east-west directionality is predominant for all infant, child, and adolescent burials, which is shared with island adults as well. The primary differences between the three age groups appear to reside in the proportions of the remaining directions, and overall do not indicate age-based differentiation in burial direction.

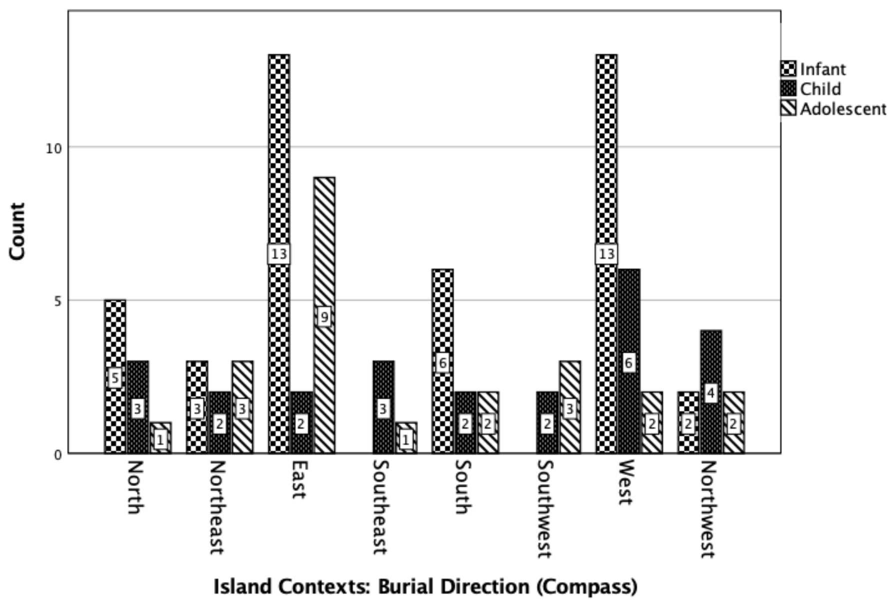

Figure 6.35. Bar graph of burial direction (compass) for island contexts by infant, child, and adolescent burials.

Table 6.37. Frequency Count and Percentage of Burial Direction (Compass) for Island Contexts by Infant, Child and Adolescent Burials

Island Contexts: Burial Direction (Compass)	Infant		Child		Adolescent	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
North	5	11.9 %	3	12.5 %	1	4.3 %
Northeast	3	7.1 %	2	8.3 %	3	13.0 %
East	13	31.0 %	2	8.3 %	9	39.1 %
Southeast	0	0.0 %	3	12.5 %	1	4.3 %
South	6	14.3 %	2	8.3 %	2	8.7 %
Southwest	0	0.0 %	2	8.3 %	3	13.0 %
West	13	31.0 %	6	25.0 %	2	8.7 %
Northwest	2	4.8 %	4	16.7 %	2	8.7 %
Total	**42**	**100 %**	**24**	**100 %**	**23**	**100 %**

Lastly, this analysis provides the results for burial direction in the mainland contexts sample of infant, child, and adolescent burials (Figure 6.36 and Table 6.38). A Fischer's Exact test for independence (n = 31, p = 0.667) did not reveal a statistically significant difference between burial direction and mainland infant, child, and adolescent burials. Considering the proportions of burial directions for the three age groups, there are no clear patterns evident among infant, child, and adolescent burials. There are also no clear similarities between any of the subadult groupings when compared to the sample of adult burials. Only infant burials share in the overall trend of east-west directionality, with west-oriented burials being the most common type for this group. As with the island contexts sample, the results for this analysis do not indicate burial direction being a variable distinguishing age.

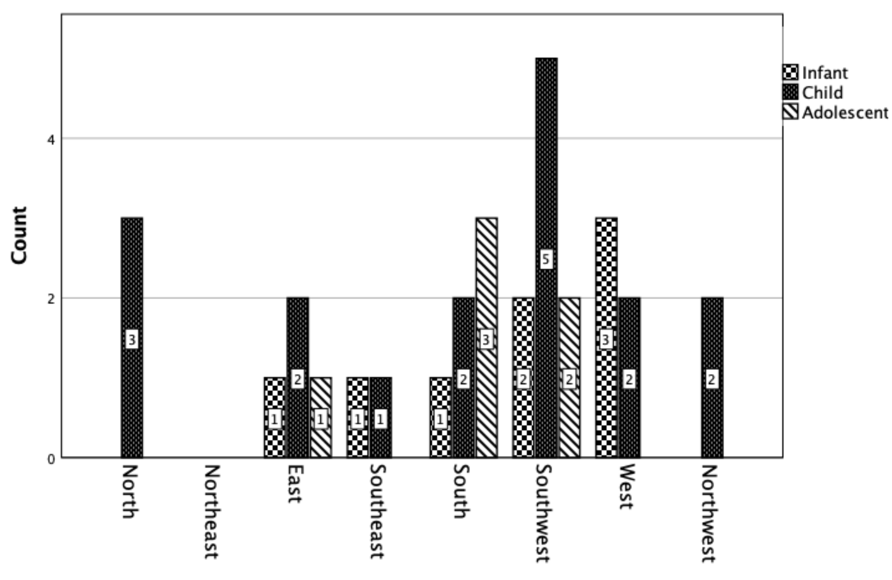

Figure 6.36. Bar graph of burial direction (compass) for mainland contexts by infant, child, and adolescent burials.

Table 6.38. Frequency Count and Percentage of Burial Direction (Compass) for Mainland Contexts by Infant, Child, and Adolescent Burials

Mainland Contexts: Burial Direction (Compass)	Infant		Child		Adolescent	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
North	0	0.0 %	3	17.6 %	0	0.0 %
Northeast	0	0.0 %	0	0.0 %	0	0.0 %
East	1	12.5 %	2	11.8 %	1	16.7 %
Southeast	1	12.5 %	1	5.9 %	0	0.0 %
South	1	12.5 %	2	11.8 %	3	50.0 %
Southwest	2	25.0 %	5	29.4 %	2	33.3 %
West	3	37.5 %	2	11.8 %	0	0.0 %
Northwest	0	0.0 %	2	11.8 %	0	0.0 %
Total	**8**	**100 %**	**17**	**100 %**	**6**	**100 %**

Summary of Findings for Variable 3: Burial Direction (Compass)

Four of the 12 analyses for burial direction indicated statistically significant differences. Highly significant results were revealed in the analyses of all burials by time period (Table 6.27) and mainland contexts subadult/adult burials (Table 6.33), while analyses for all burials by geographic context (Table 6.31), all subadult burials by infant, child, and adolescent burials (Table 6.34), and island contexts infant, child, and adolescent burials (Table 6.37) yielded significant results. Between time periods, Early period burials predominantly face west, while Middle period burials predominantly face east. For the mainland contexts sample of subadult and adult burials, adult burials primarily face east, while subadults have the majority of burials with southwest orientations. Comparing samples from both geographic contexts, island contexts had most burials facing west, while mainland contexts burials largely had east-facing orientations, and the most notable difference in proportion between the two contexts is in south-oriented burials, which were far less common in mainland contexts. Infant and child burials from island contexts primarily had west-oriented burials, while adolescent burials had largely east-facing burials.

Considering the results of all analyses performed for burial direction, a few trends are evident for both significant and insignificant statistical results. For the most part, the majority of burials are interred with an east-west directionality, with the most notable differences in primary direction being evident between geographic context and time period. Additionally, southeast-oriented burials are generally the least common type, which is apparent throughout the majority of analytical iterations. Overall, burial direction does not appear to be determined based on age, but on other cultural factors.

Analysis of Variable 4: Interment Type

This section provides the results for analyses of interment type, which refers to the number of contemporaneous individuals interred in a given grave. Three interment type categories were possible: 1) single, 2) dual, and 3) multiple. Single interments contained no more than one individual, dual interments contained no more than two contemporaneously buried individuals, and multiple interments contained three or more contemporaneously buried individuals. In order to be classified as either a dual or multiple interment, excavation notes needed to clearly establish burials as being contemporaneous. Single burials were not considered dual or multiple interments in cases where graves were disturbed by intrusive burials or reburials.

Interment Type for All Burials by Time Period

This analysis establishes a baseline for interment type in Early and Middle periods, to ascertain broad patterns for this variable diachronically (Figure 6.37 and Table 6.39). A Pearson chi-square test for independence (n = 608, χ^2 = 23.65, p < 0.001) revealed a highly significant statistical difference between interment type and time period. For both time periods, single interments are the predominant type, while for the Early period, dual interments occur over twice as frequently as multiple interments, and for the Middle period, proportions of dual and multiple interments are much more similar. Between the time periods, Early period dual interment types occur over three times more frequently than in the Middle period, while multiple interment types occur over as often as in the Middle period. There appears to be more variation for interment type in the Early period sample than for the Middle period.

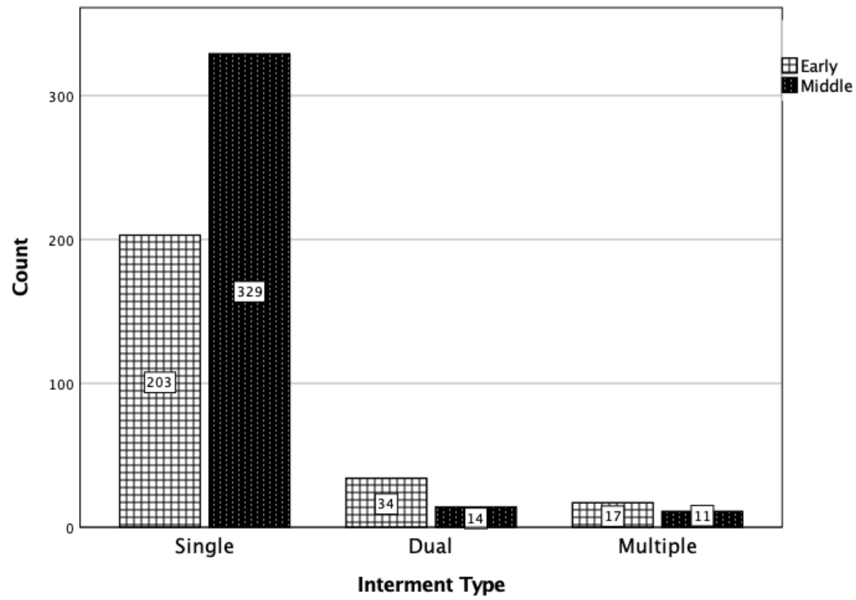

Figure 6.37. Bar graph of interment type for all burials by time period.

Table 6.39. Frequency Count and Percentage of Interment Type for All Burials by Time Period

Interment Type	Early Period		Middle Period	
	Frequency	Percent	Frequency	Percent
Single	203	79.9 %	329	92.9 %
Dual	34	13.4 %	14	4.0 %
Multiple	17	6.7 %	11	3.1 %
Total	**254**	**100 %**	**354**	**100 %**

Interment Type by Subadult and Adult Burials

To establish an age-comparative baseline for interment type, subadult and adult burial data are analyzed (Figure 6.38 and Table 6.40). A Pearson chi-square test for independence (n = 556, $\chi^2 = 12.98$, $p = 0.002$) revealed a highly significant statistical difference between interment type and subadult/adult burials. For both age groups, single interments are the most common type, however, for subadults, dual interments occur nearly two-and-one-half times as frequently as multiple interments, while the proportions of dual and multiple interments for adults are much closer in proportion. Between the age groups, subadults have dual interments over two-and-one-half times as often as adults, and multiple interments nearly one-and-one-half times as often as adults. Between the two age groups, there appears to be a clear pattern where subadult burials are more frequently interred in dual or multiple burials than adults.

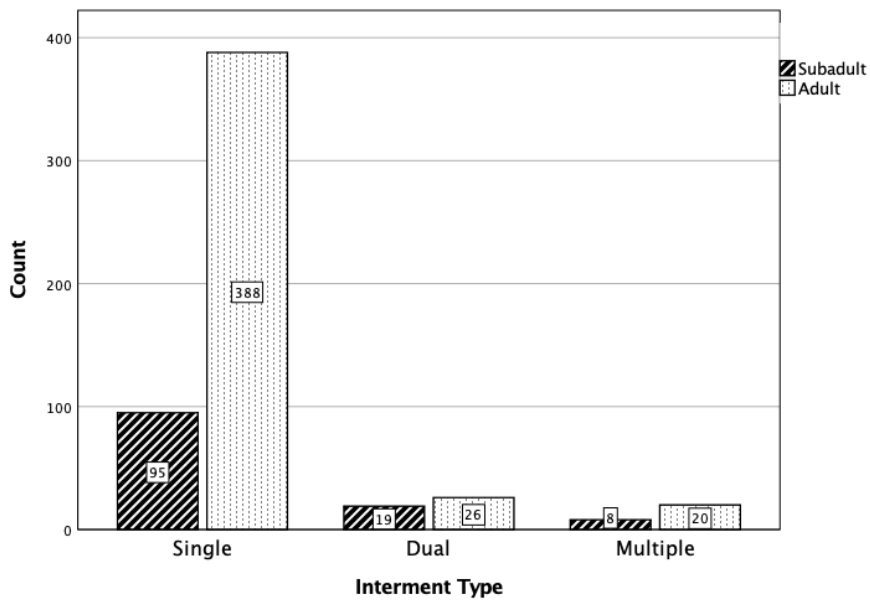

Figure 6.38. Bar graph of interment type for subadult and adult burials.

Table 6.40. Frequency Count and Percentage of Interment Type for Subadult and Adult Burials

Interment Type	Subadult		Adult	
	Frequency	Percent	Frequency	Percent
Single	95	77.9 %	388	89.4 %
Dual	19	15.6 %	26	6.0 %
Multiple	8	6.6 %	20	4.6 %
Total	**122**	**100 %**	**434**	**100 %**

Interment Type for Subadult and Adult Burials Comparing Time Period

This analysis considers interment type data for Early period subadult and adult burials (Figure 6.39 and Table 6.41) to facilitate comparisons between these two age groups, diachronically, with the Middle period sample (Figure 6.40 and Table 6.42). For the Early period sample, a Pearson chi-square test for independence (n = 236, χ^2 = 4.47, p = 0.107) did not reveal a statistically significant difference between interment type and Early period subadult/adult burials. While both Early period age groups have predominantly single interment types, subadults more frequently have dual interments than adults, while adults have multiple interments more often than subadults. Although not statistically significant, Early period subadults appear to exhibit more variation in interment type than their adult counterparts.

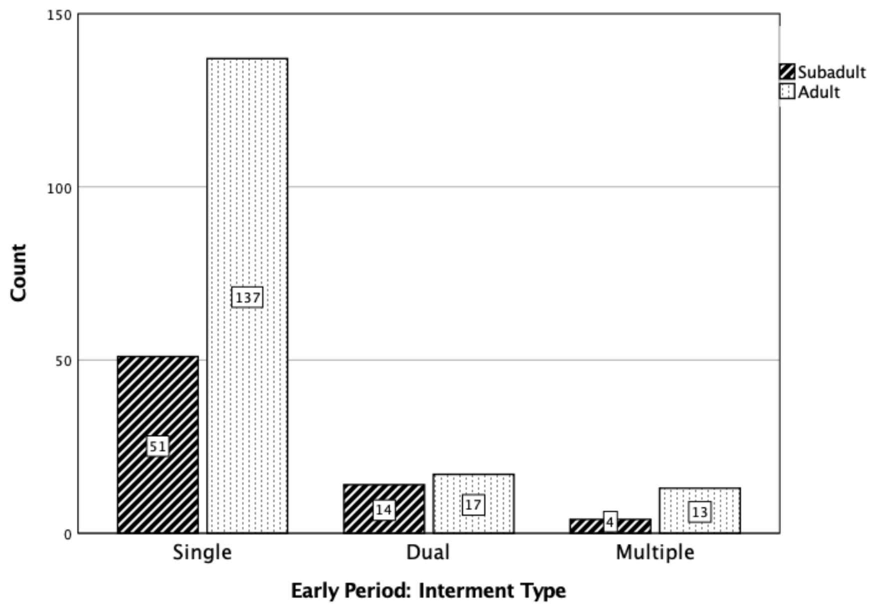

Figure 6.39. Bar graph of interment type for Early period subadult and adult burials.

Table 6.41. Frequency Count and Percentage of Interment Type for Early Period Subadult and Adult Burials

Early Period: Interment Type	Subadult		Adult	
	Frequency	Percent	Frequency	Percent
Single	51	73.9 %	137	82.0 %
Dual	14	20.3 %	17	10.2 %
Multiple	4	5.8 %	13	7.8 %
Total	**69**	**100 %**	**167**	**100 %**

For the Middle period sample, a Fischer's Exact test for independence ($n = 320$, $p = 0.019$) revealed a statistically significant difference between interment type and Middle period subadult/adult burials. For both Middle period age groups, single interments are the most common type, however the proportions for dual and multiple interments for subadults occur at nearly three times the rates present for adult burials. These results indicate a clear pattern where Middle period subadults more frequently included in dual and multiple interments than adults.

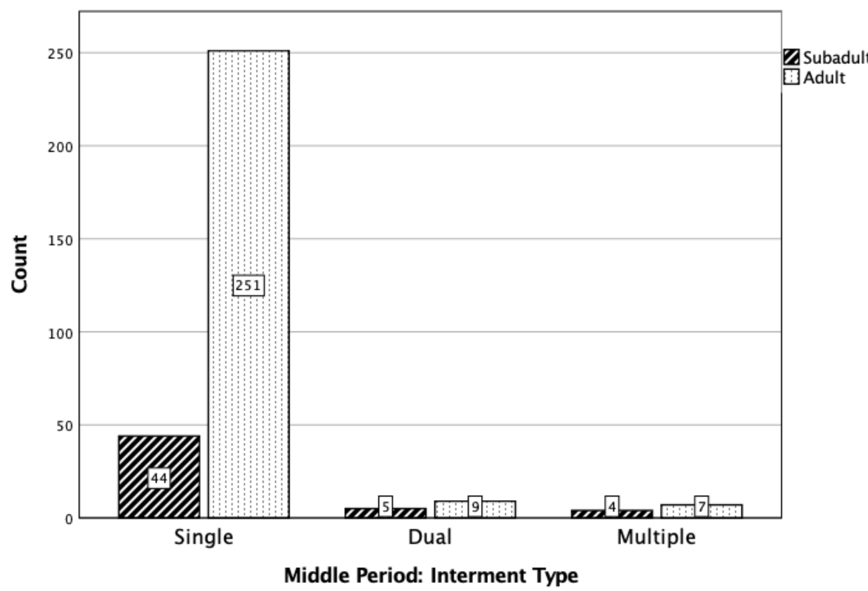

Figure 6.40. Bar graph of interment type for Middle period subadult and adult burials.

Table 6.42. Frequency Count and Percentage of Interment Type for Middle Period Subadult and Adult Burials

Middle Period: Interment Type	Subadult		Adult	
	Frequency	Percent	Frequency	Percent
Single	44	83.0 %	251	94.0 %
Dual	5	9.4 %	9	3.4 %
Multiple	4	7.5 %	7	2.6 %
Total	**53**	**100 %**	**267**	**100 %**

Interment Type for All Burials by Island and Mainland Context

The following analysis establishes a baseline for interment type between island and mainland contexts (Figure 6.41 and Table 6.43), to ascertain broad patterns for this variable at a relative geographic level. A Pearson chi-square test for independence (n = 608, $\chi^2 = 19.58$, $p <$ 0.001) revealed a highly significant statistical difference between interment type and geographic context. Single interments are the most common type for both contexts, however island contexts have dual interments occurring at nearly twice the rate of multiple interments, while proportions for dual and multiple interments are very similar for mainland contexts. More variation is evident in the island contexts sample, which had dual and multiple interments occurring approximately three times more frequently than for mainland contexts.

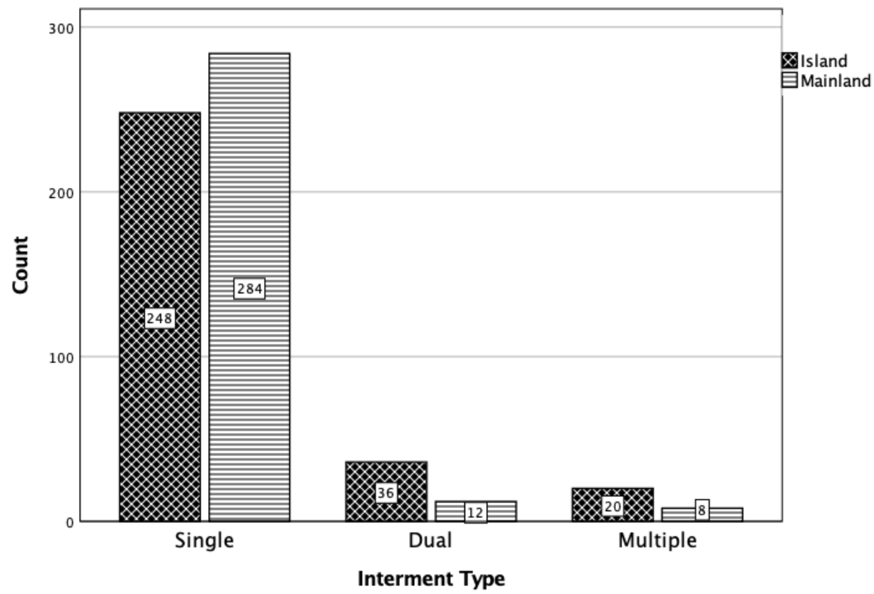

Figure 6.41. Bar graph of interment type for all burials by island and mainland context.

Table 6.43. Frequency Count and Percentage of Interment Type for All Burials by Island and Mainland Context

Interment Type	**Island**		**Mainland**	
	Frequency	**Percent**	**Frequency**	**Percent**
Single	248	81.6 %	284	93.4 %
Dual	36	11.8 %	12	3.9 %
Multiple	20	6.6 %	8	2.6 %
Total	**304**	**100 %**	**304**	**100 %**

Interment Type for Subadult and Adult Burials by Island and Mainland Contexts

To facilitate context-based comparisons between subadult and adult burials, interment type data are analyzed for island subadult and adult burials (Figure 6.42 and Table 6.44), followed by mainland subadult and adult burial data (Figure 6.43 and Table 6.44). For the island contexts sample, a Pearson chi-square test for independence (n = 285, χ^2 = 6.09, p = 0.047) revealed a statistically significant difference between interment type and island subadult/adult burials. While both age groups have single interments as the most common type, subadult burials exhibit more variation in proportions of dual and multiple interments than adults. Subadults are included in dual interments over twice as often as adults, however both age groups have comparable rates for multiple interments. Again, an age-based difference is seen in these results, most notably for the proportion of dual interments for subadults.

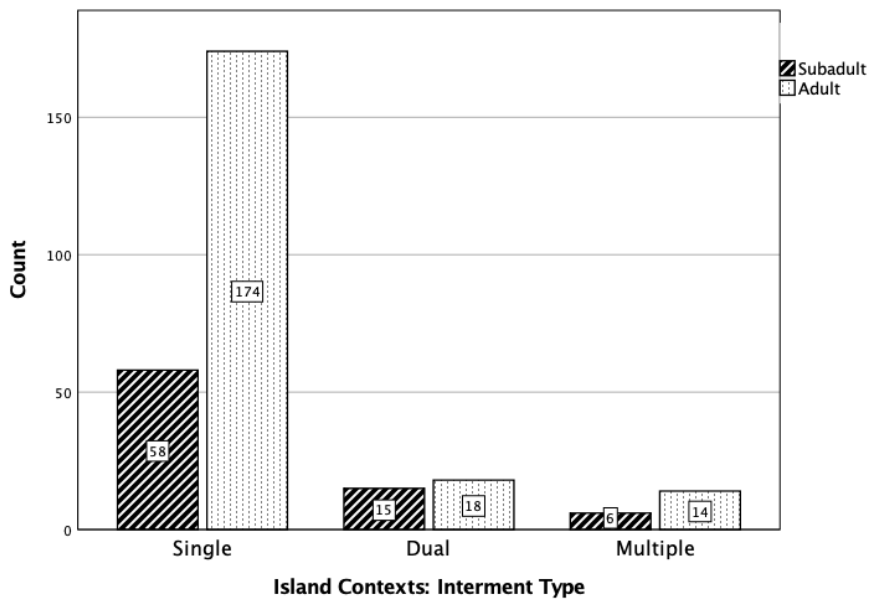

Figure 6.42. Bar graph of interment type for island contexts by subadult and adult burials.

Table 6.44. Frequency Count and Percentage of Interment Type for Island Contexts by Subadult and Adult Burials

Island Contexts: Interment Type	Subadult		Adult	
	Frequency	Percent	Frequency	Percent
Single	58	73.4 %	174	84.5 %
Dual	15	19.0 %	18	8.7 %
Multiple	6	7.6 %	14	6.8 %
Total	**79**	**100 %**	**206**	**100 %**

For the mainland contexts sample, a Pearson chi-square test for independence (n = 271, χ^2 = 3.48, p = 0.175) did not reveal a statistically significant difference between interment type and mainland subadult/adult burials. Single interments are again the most common type for both age groups, however, subadults have dual burials nearly twice as frequently as multiple interments, while the proportions of dual and multiple interments for adults are much more similar in value. Subadult burials have dual interments over two-and-one-half times more frequently than adults, and multiple interments nearly twice as often as adults. Although not statistically significant, the patterns seen here appear to echo those seen in other iterations for interment type between subadult and adult age groups, so the analysis has real world significance, if not at the statistical level.

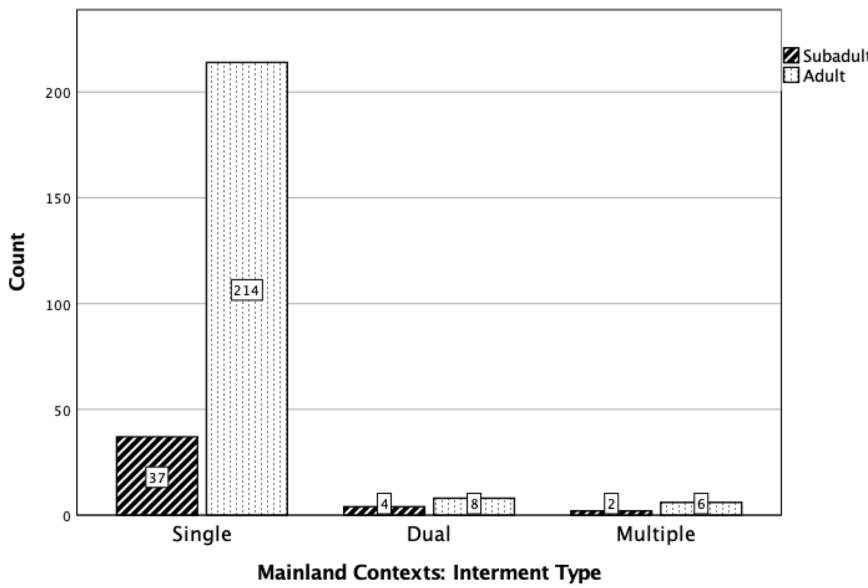

Figure 6.43. Bar graph of interment type for mainland contexts by subadult and adult burials.

Table 6.45. Frequency Count and Percentage of Interment Type for Mainland Contexts by Subadult and Adult Burials

Mainland Contexts: Interment Type	Subadult		Adult	
	Frequency	Percent	Frequency	Percent
Single	37	86.0 %	214	93.9 %
Dual	4	9.3 %	8	3.5 %
Multiple	2	4.7 %	6	2.6 %
Total	**43**	**100 %**	**228**	**100 %**

Interment Type for Infant, Child, and Adolescent Burials

The following analysis serves to establish finer granulation in subadult burials by comparing infant, child, and adolescent burials for interment type (Figure 6.44 and Table 6.46).

A Fischer's Exact test for independence (n = 122, p = 0.214) did not reveal a statistically significant difference between interment type and infant, child, and adolescent burials. All three age groups have single interments as the most common type, while infant and adolescent burials have dual interments at higher proportions than child burials, and there are no cases of multiple interments for adolescents. Despite not reaching statistical significance, these results indicate greatest variation in interment type in infant burials, which steadily decreases as age increases.

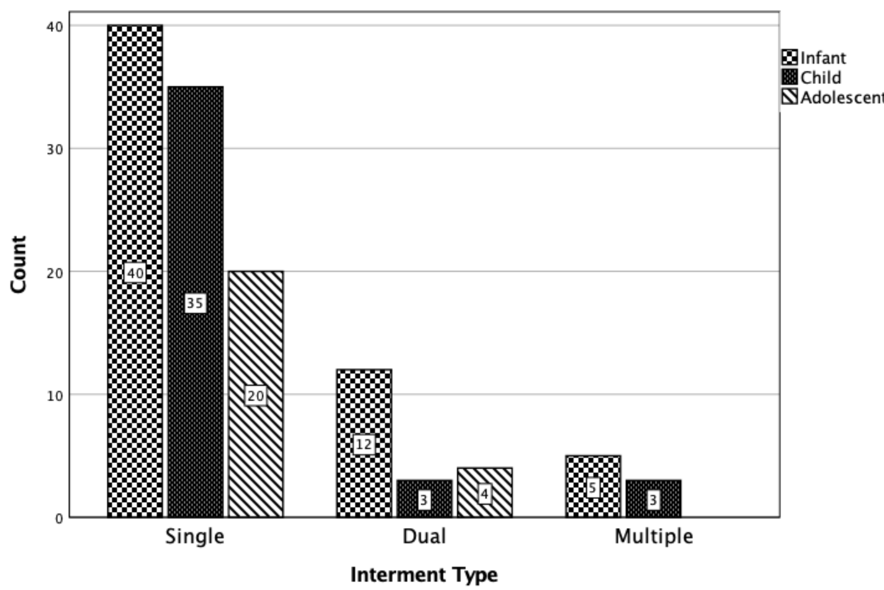

Figure 6.44. Bar graph of interment type for infant, child, and adolescent burials.

Table 6.46. Frequency Count and Percentage of Interment Type for Infant, Child and Adolescent Burials

Interment Type	Infant		Child		Adolescent	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Single	40	70.2 %	35	85.4 %	20	83.3 %
Dual	12	21.1 %	3	7.3 %	4	16.7 %
Multiple	5	8.8 %	3	7.3 %	0	0.0 %
Total	**57**	**100 %**	**41**	**100 %**	**24**	**100 %**

Interment Type for Infant, Child, and Adolescent Burials by Time Period

The following analysis establishes the rates for interment type in Early period infant, child, and adolescent burials (Figure 6.45 and Table 6.47). A Fischer's Exact test for independence (n = 69, p = 0.640) did not reveal a statistically significant difference between interment type and Early period infant, child, and adolescent burials. Single interment types are the most common for all three age groups, occurring at very similar proportions, however child and adolescent burials have nearly identical patterning and proportions, while more variation is evident in interment type for infant burials. A trend is evident here where infant burials have the most variation, which appears to decrease for child and adolescent burials.

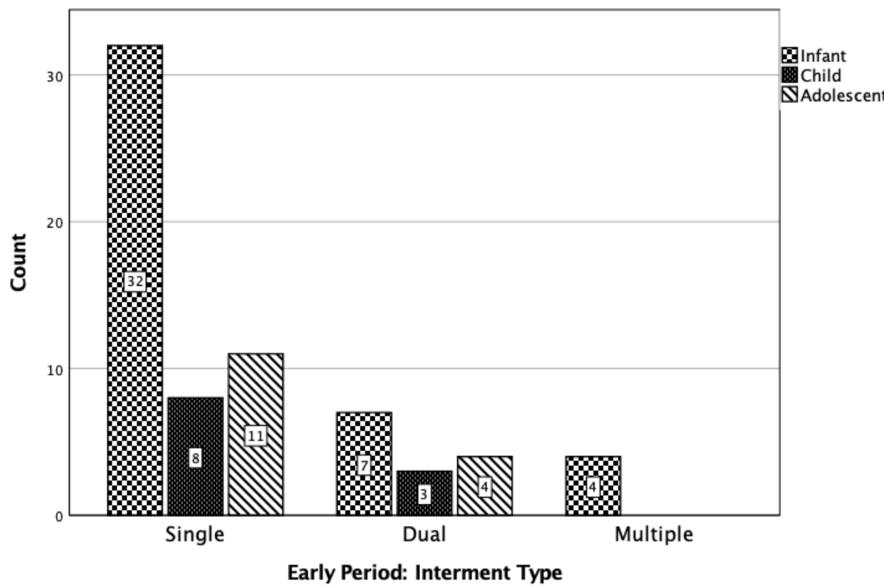

Figure 6.45. Bar graph of interment type for Early Period infant, child, and adolescent burials.

Table 6.47. Frequency Count and Percentage of Interment Type for Early Period Infant, Child, and Adolescent Burials

Early Period: Interment Type	Infant		Child		Adolescent	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Single	32	74.4 %	8	72.7 %	11	73.3 %
Dual	7	16.3 %	3	27.3 %	4	26.7 %
Multiple	4	9.3 %	0	0.0 %	0	0.0 %
Total	**43**	**100 %**	**11**	**100 %**	**15**	**100 %**

This analysis establishes the rates for interment type in Middle period infant, child, and adolescent burials (Figure 6.46 and Table 6.48). A Fischer's Exact test for independence (n = 53, p = 0.004) revealed a highly significant statistical difference between interment type and Middle period infant, child, and adolescent burials. While all three age groups have single interments as the most common type, proportions for child and adolescent burials are much more similar to one another than they are to infant burials. There is also more variation in interment type in infant burials, which appears to decrease as age increases. Patterning for age-based differentiation in interment type is much more pronounced in the Middle period subadult sample than in the Early period sample of infant, child, and adolescent burials.

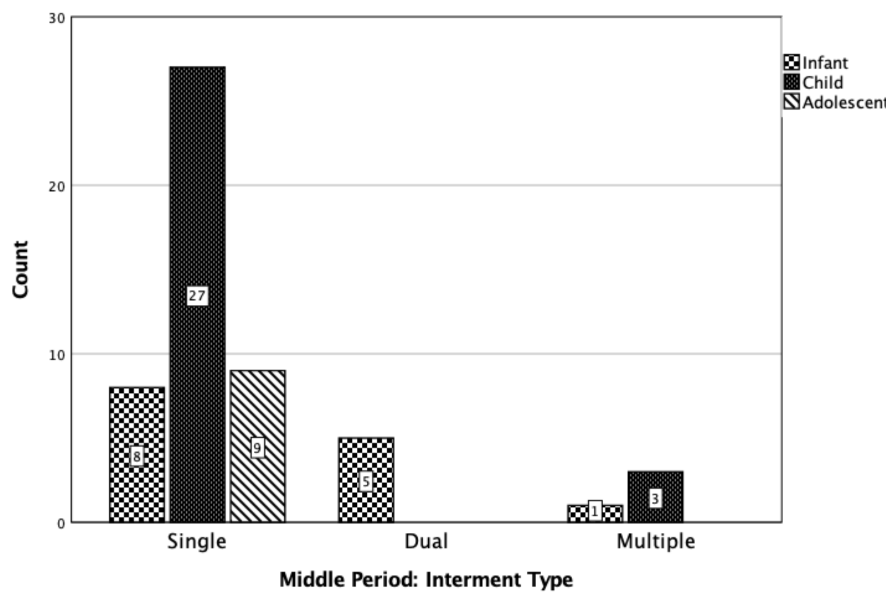

Figure 6.46. Bar graph of interment type for Middle Period infant, child, and adolescent burials.

Table 6.48. Frequency Count and Percentage of Interment Type for Middle Period Infant, Child, and Adolescent Burials

Middle Period: Interment Type	Infant		Child		Adolescent	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Single	8	57.1 %	27	90.0 %	9	100.0 %
Dual	5	35.7 %	0	0.0 %	0	0.0 %
Multiple	1	7.1 %	3	10.0 %	0	0.0 %
Total	**14**	**100 %**	**30**	**100 %**	**9**	**100 %**

Interment Type for Infant, Child, and Adolescent Burials by Island and Mainland Contexts

To facilitate context-based comparisons for subadults, interment type data for island infant, child, and adolescent burials are analyzed (Figure 6.47 and Table 6.49), followed by mainland subadult burials (Figure 6.48 and Table 6.50). A Fischer's Exact test for independence (n = 79, p = 0.792) did not reveal a statistically significant difference between interment type and island infant, child, and adolescent burials. Single interment types are the most common for all three subadult age groups, occurring at very similar proportions. Infants again display the most variation in interment type, which appears to decrease as age increases. Despite not reaching statistical significance, the trends evident here are remarkably similar to those in other analytical iterations for interment type in infant, child, and adolescent burials.

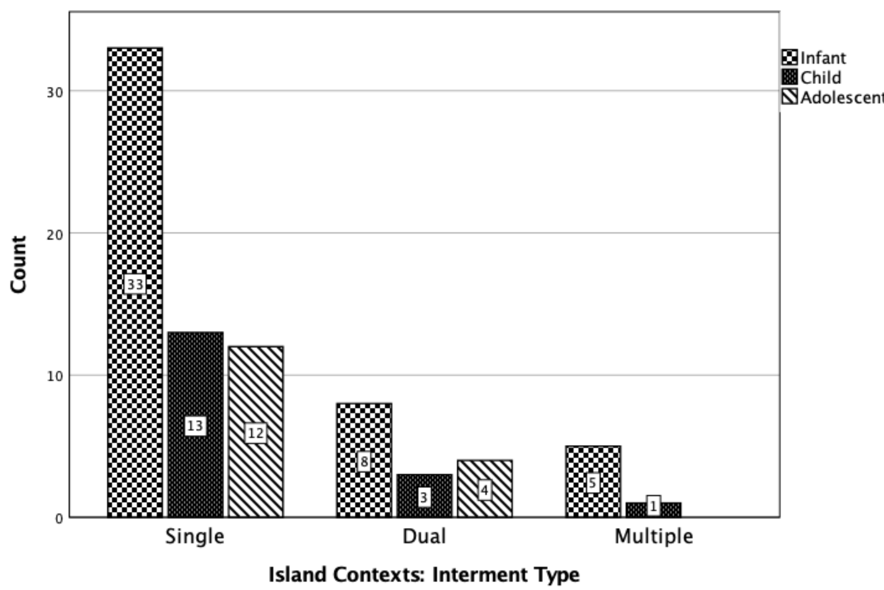

Figure 6.47. Bar graph of interment type for island contexts by infant, child, and adolescent burials.

Table 6.49. Frequency Count and Percentage of Interment Type for Island Contexts by Infant, Child and Adolescent Burials

Island Contexts: Interment Type	**Infant**		**Child**		**Adolescent**	
	Frequency	**Percent**	**Frequency**	**Percent**	**Frequency**	**Percent**
Single	33	71.7 %	13	76.5 %	12	75.0 %
Dual	8	17.4 %	3	17.6 %	4	25.0 %
Multiple	5	10.9 %	1	5.9 %	0	0.0 %
Total	**46**	**100 %**	**17**	**100 %**	**16**	**100 %**

This analysis establishes the rates for interment type in mainland infant, child, and adolescent burials (Figure 6.48 and Table 6.50). A Fischer's Exact test for independence (n = 43,

p = 0.010) revealed a statistically significant difference between interment type and mainland infant, child, and adolescent burials. While all three age groups have single interments as the most common type, child and adolescent burials have single interments occurring at more similar rates to one another than to infant burials. The most variation is still evident in infant burials, however this decreases steadily as age increases. For mainland contexts, there appears to be age-based differentiation present for infant, child, and adolescent burials.

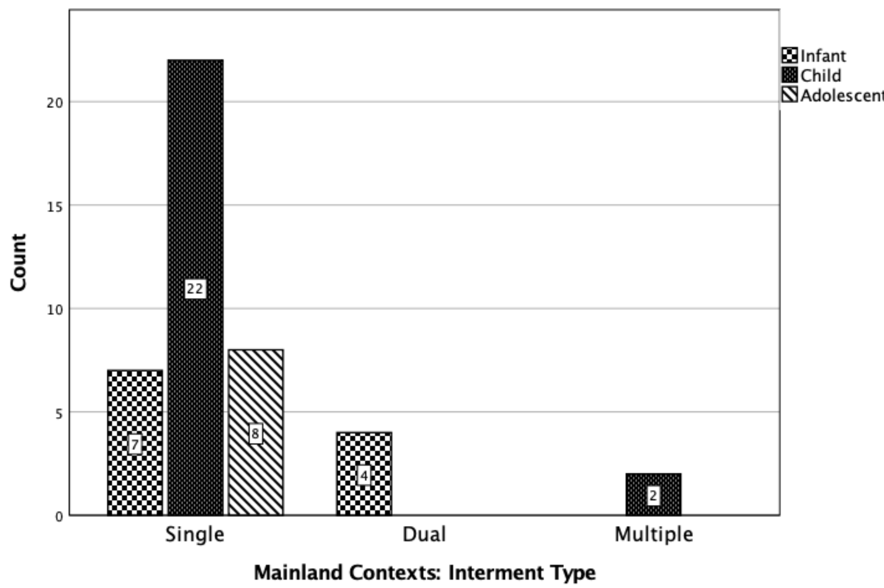

Figure 6.48. Bar graph of interment type for mainland contexts by infant, child, and adolescent burials.

Table 6.50. Frequency Count and Percentage of Interment Type for Mainland Contexts by Infant, Child, and Adolescent Burials

Mainland Contexts: Interment Type	Infant		Child		Adolescent	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Single	7	63.6 %	22	91.7 %	8	100.0 %
Dual	4	36.4 %	0	0.0 %	0	0.0 %
Multiple	0	0.0 %	2	8.3 %	0	0.0 %
Total	**11**	**100 %**	**24**	**100 %**	**8**	**100 %**

Summary of Findings for Variable 4: Interment Type

For interment type, seven of the 12 total analyses performed revealed statistically significant differences. Highly significant differences were seen in the analyses for all burials by time period (Table 6.39), all burials by subadult/adult burials (Table 6.40), all burials by geographic context (Table 6.43), and Middle period infant, child, and adolescent burials (Table 6.48). The analyses conducted for interment type resulted in statistically significant results for Middle period subadult/adult burials (Table 6.42), island contexts subadult/adult burials (Table 6.44), and mainland contexts infant, child, and adolescent burials (Table 6.50). Throughout the majority of analyses, single interments were the most common type at the highest proportion, followed by dual, and then multiple interments, the latter two at much lower rates than single interments. More variation is seen in proportions of the three possible interment types in the Early period and island contexts, than in the Middle period and mainland contexts, respectively. Subadults had dual and multiple interments at greater rates than what was evident for adult burials, and when the subadult sample was examined in more depth, age-based differences are apparent with infants having the highest level of interment type variation, which appears to decrease as age increases.

For both statistically significant and insignificant results, there are the same general patterns evident throughout the analyses. Subadult burials have the most variation in interment type, while adults exhibit less variation overall, with single interments having the highest proportion and multiple and dual interments occurring at similar proportions to one another, but at much lower proportions than single interments. For infant, child, and adolescent burials, the greatest levels of variation for interment type are seen in infant burials, which appears to decrease as age increases. Based on the results of the analyses for interment type, there is a clear age-based differentiation at both the subadult/adult level and the infant, child, and adolescent level.

Analysis of Variable 5: Interment Type Age Association

Interment type age association is inextricably linked to Variable 4, interment type, and *only* subadult and adult burials having dual or multiple interment types were included in the analyses for this variable. There were three possible age associations for dual and multiple interments: 1) all adults, 2) all subadults, and 3) adult and subadult.

Interment Type Age Association for All Burials by Time Period

In order to establish a diachronic baseline for interment type age associations, data from the Early and Middle periods are analyzed (Figure 6.49 and Table 6.51). A Fischer's Exact test for independence (n = 72, p = 0.450) did not reveal a statistically significant difference between interment type age association and time period. For both time periods, adult and subadult interment types are the most common, followed by the all adults type, both of which are present at very similar proportions between the time periods. The primary difference is evident in the all subadults type, which is not evident in the Middle period sample. Altogether, there are very few differences present between time periods for interment type age association.

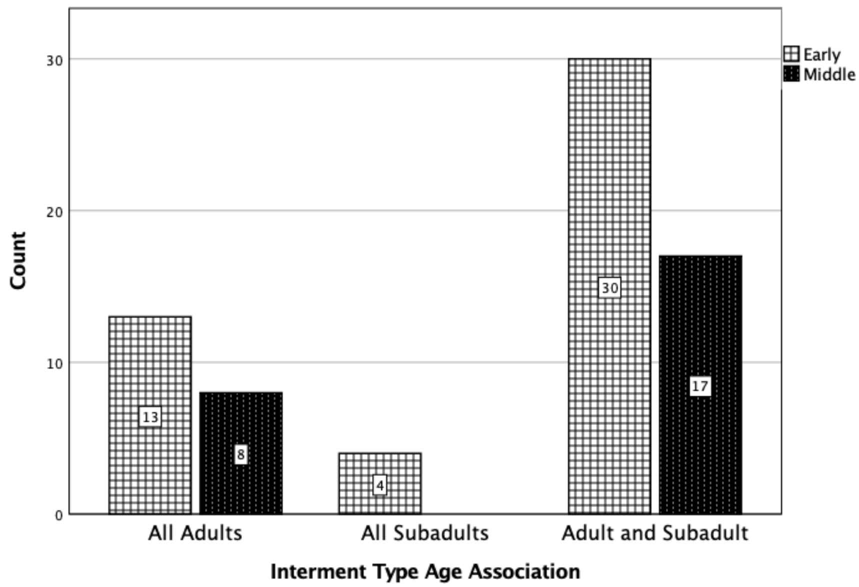

Figure 6.49. Bar graph of interment type age association for all burials by time period.

Table 6.51. Frequency Count and Percentage of Interment Type Age Association for All Burials by Time Period

Interment Type Age Association	Early Period		Middle Period	
	Frequency	Percent	Frequency	Percent
All Adults	13	27.7 %	8	32.0 %
All Subadults	4	8.5 %	0	0.0 %
Adult and Subadult	30	63.8 %	17	68.0 %
Total	**47**	**100 %**	**25**	**100 %**

Interment Type Age Association by Subadult and Adult Burials

The following analysis establishes a baseline for interment type age associations in subadult and adult burials (Figure 6.50 and Table 6.52). However, due to the presence of structural zeroes in the data table (indicated by dashes), statistical testing could not be performed. The patterning between the subadult and adult burials (n = 72), however, appears to be meaningful. Subadults have far greater proportions for burials with adults than they do with other subadults, while adults have a much more even split between adult and subadult and all adult burials. At this broad level of analysis, there does appear to be a notable difference where subadults are more frequently interred with adults, while adults are more frequently interred with other members of their respective age group.

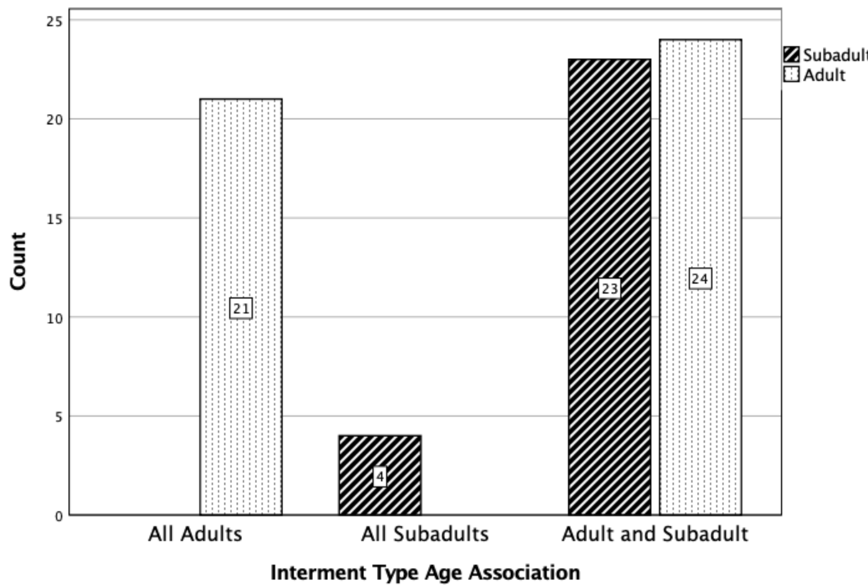

Figure 6.50. Bar graph of interment type age association for subadult and adult burials.

Table 6.52. Frequency Count and Percentage of Interment Type Age Association for Subadult and Adult Burials

Interment Type Age Association	Subadult		Adult	
	Frequency	Percent	Frequency	Percent
All Adults	–	–	21	46.7 %
All Subadults	4	14.8 %	–	–
Adult and Subadult	23	85.2 %	24	53.3 %
Total	**27**	**100 %**	**45**	**100 %**

Interment Type Age Association for Subadult and Adult Burials Comparing Time Period

To facilitate diachronic comparisons between subadult and adult burials, Early period subadult and adult burial data for interment type age associations are tabulated (Figure 6.51 and Table 6.53), followed by Middle period subadult and adult burial data (Figure 6.52 and Table 6.54). For both analyses, statistical testing could not be performed due to the presence of structural zeroes. In the Early period sample (n = 47), subadults are interred with adults over three times more frequently than they are with other subadults, while adults have a nearly even split between being buried with other adults or subadults. Proportions of adult and subadult burials are higher for subadults, while adults are twice as likely to be buried with other adults than subadults are to be buried with other subadults.

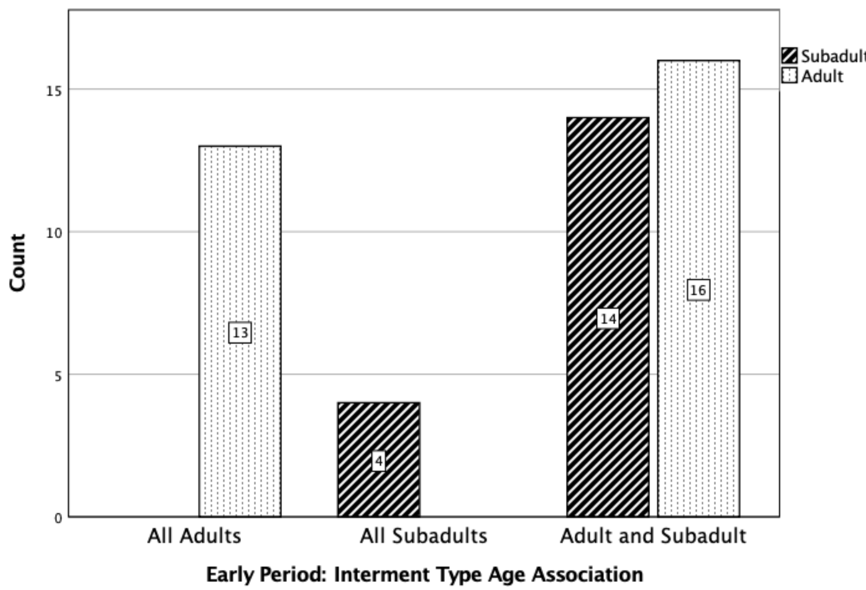

Figure 6.51. Bar graph of interment type age association for Early period subadult and adult burials.

Table 6.53. Frequency Count and Percentage of Interment Type Age Association for Early Period Subadult and Adult Burials

Early Period: Interment Type Age Association	**Subadult**		**Adult**	
	Frequency	**Percent**	**Frequency**	**Percent**
All Adults	–	–	13	44.8 %
All Subadults	4	22.2 %	–	–
Adult and Subadult	14	77.8 %	16	55.2 %
Total	**18**	**100 %**	**29**	**100 %**

The following analysis considers interment type age associations for Middle period subadult and adult burials (Figure 6.52 and Table 6.54). For the Middle period sample (n = 25), all subadult burials are interred with adults, while adult burials have an even division between being buried with subadults and other adults. Very similar patterning is seen between Early and Middle period samples for interment type age association.

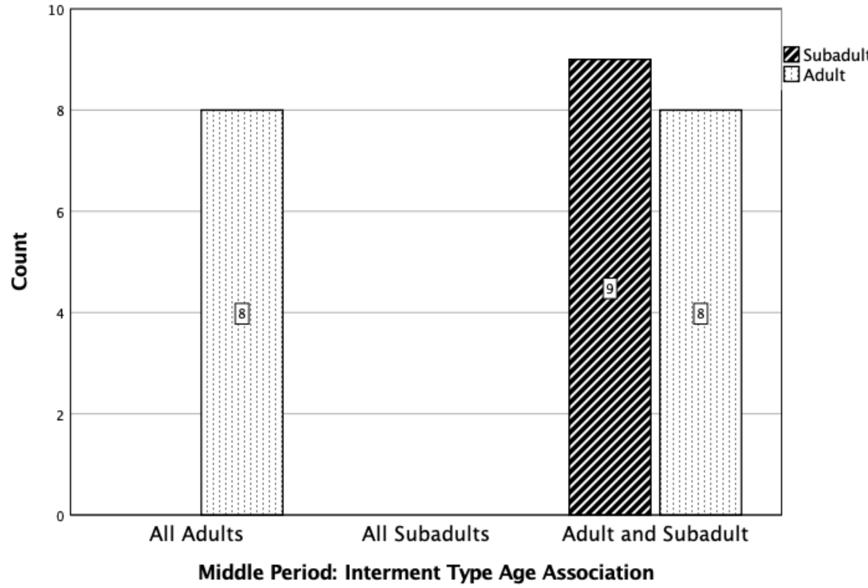

Figure 6.52. Bar graph of interment type age association for Middle period subadult and adult burials.

Table 6.54. Frequency Count and Percentage of Interment Type Age Association for Middle Period Subadult and Adult Burials

Middle Period: Interment Type Age Association	**Subadult**		**Adult**	
	Frequency	**Percent**	**Frequency**	**Percent**
All Adults	–	–	8	50.0 %
All Subadults	0	0.0 %	–	–
Adult and Subadult	9	100.0 %	8	50.0 %
Total	**9**	**100 %**	**16**	**100 %**

Interment Type Age Association for All Burials by Island and Mainland Context

In order to establish a baseline for interment type age associations between contexts, burials from both islands and mainland contexts are analyzed (Figure 6.53 and Table 6.55). A Fischer's Exact test for independence (n = 72, p = 0.283) did not reveal a statistically significant difference between interment type age association and geographic context. Similar patterning is seen for interment type age association between island and mainland contexts, where adult and subadult burials are the predominant type, and the all subadults type is the least commonly observed. There appears to be more variation in the island contexts sample, where adult and subadult burials occur over two-and-one-half times as frequently as all adult interments, and all adult interments occur over three times as often as all subadult interments. For mainland contexts, adult and subadult interments occurred over one-and-one-half times more frequently than the all adults type, and there are no cases of the all subadult interments.

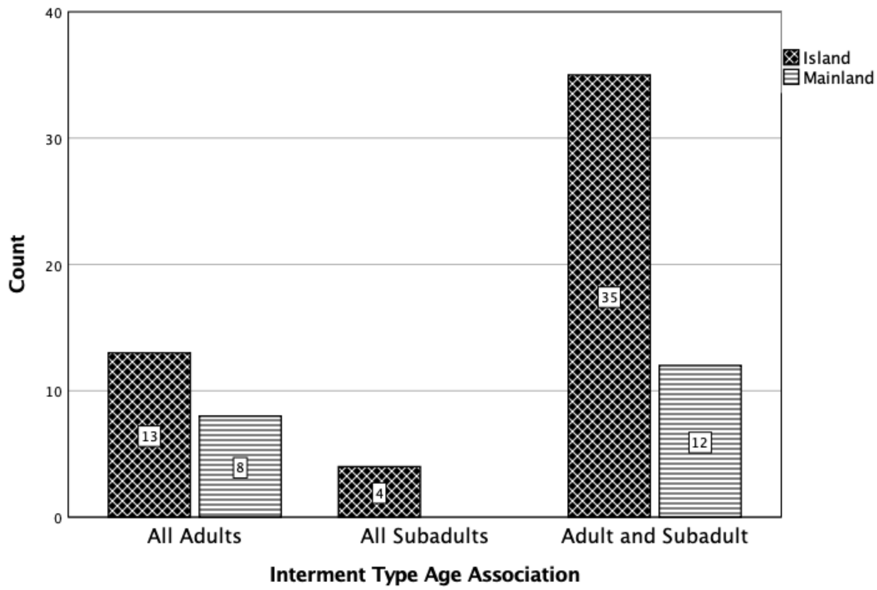

Figure 6.53. Bar graph of interment type age association for all burials by island and mainland context.

Table 6.55. Frequency Count and Percentage of Interment Type Age Association for All Burials by Island and Mainland Context

Interment Type Age Association	Island		Mainland	
	Frequency	Percent	Frequency	Percent
All Adults	13	25.0 %	8	40.0 %
All Subadults	4	7.7 %	0	0.0 %
Adult and Subadult	35	67.3 %	12	60.0 %
Total	**52**	**100 %**	**20**	**100 %**

Interment Type Age Association for Subadult and Adult Burials by Island and Mainland Contexts

This analysis conveys data for interment type age associations in island subadult and adult burials (Figure 6.54 and Table 6.56) to facilitate relative geographic comparisons between these two age groups and the mainland contexts sample (Figure 6.55 and Table 6.57). For both analyses, structural zeros preclude statistical significance testing, so general patterns will be presented instead. For island contexts (*n* =52), subadults are buried with adults approximately four times as frequently as they are buried with other subadults. For adult burials, the proportions of burials with other adults and subadults are much closer in value. Subadults are buried with adults nearly one-and-one-half times as frequently as is seen for adults, while adults are buried with other adults approximately twice as often as subadults are buried with other subadults.

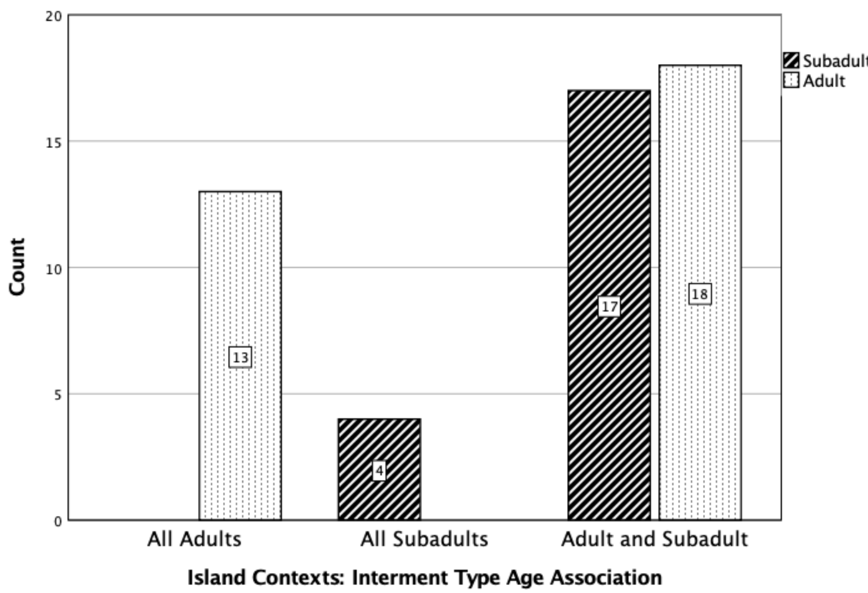

Figure 6.54. Bar graph of interment type age association for island contexts by subadult and adult burials.

Table 6.56. Frequency Count and Percentage of Interment Type Age Association for Island Contexts by Subadult and Adult Burials

Island Contexts: Interment Type Age Association	Subadult		Adult	
	Frequency	Percent	Frequency	Percent
All Adults	–	–	13	41.9 %
All Subadults	4	19.0 %	–	–
Adult and Subadult	17	81.0 %	18	58.1 %
Total	**21**	**100 %**	**31**	**100 %**

The following analysis establishes the rates for interment type age associations in subadult and adult burials from mainland contexts (Figure 6.55 and Table 6.57). For mainland contexts (n = 20), all subadults are buried with adults, while adults have a roughly even division between burial with subadults and with other adults. All-in-all, very similar patterns are seen between island and mainland contexts samples for interment type age associations.

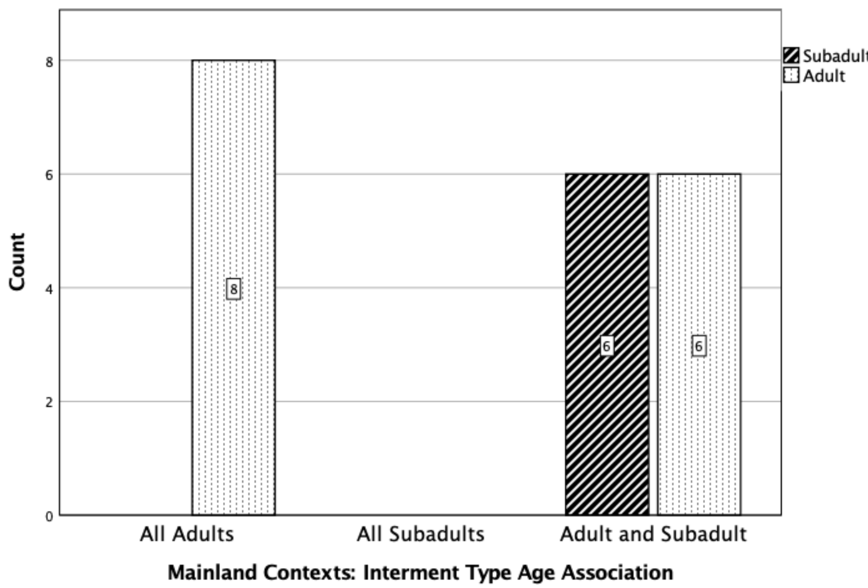

Figure 6.55. Bar graph of interment type age association for mainland contexts by subadult and adult burials.

Table 6.57. Frequency Count and Percentage of Interment Type Age Association for Mainland Contexts by Subadult and Adult Burials

Mainland Contexts: Interment Type Age Association	Subadult		Adult	
	Frequency	Percent	Frequency	Percent
All Adults	–	–	8	57.1 %
All Subadults	0	0.0 %	–	–
Adult and Subadult	6	100.0 %	6	42.9 %
Total	**6**	**100 %**	**14**	**100 %**

Interment Type Age Association for Infant, Child, and Adolescent Burials

To further assess potential differences in subadult burials, interment type age associations are analyzed for infant, child, and adolescent burials (Figure 6.56 and Table 6.58). A Fischer's Exact test for independence (n = 27, p = 0.016) revealed a statistically significant difference between interment type age association and infant, child, and adolescent burials. All infant burials are interred with adults, while child burials have adult and subadult interments occurring twice as often as all subadult interments, and for adolescent burials, there is an even split between the two interment types. The results of this analysis provide a clear pattern for age-graded interment type age associations, where all subadult type interments increase as age decreases, while adult and subadult type interments decrease as age increases.

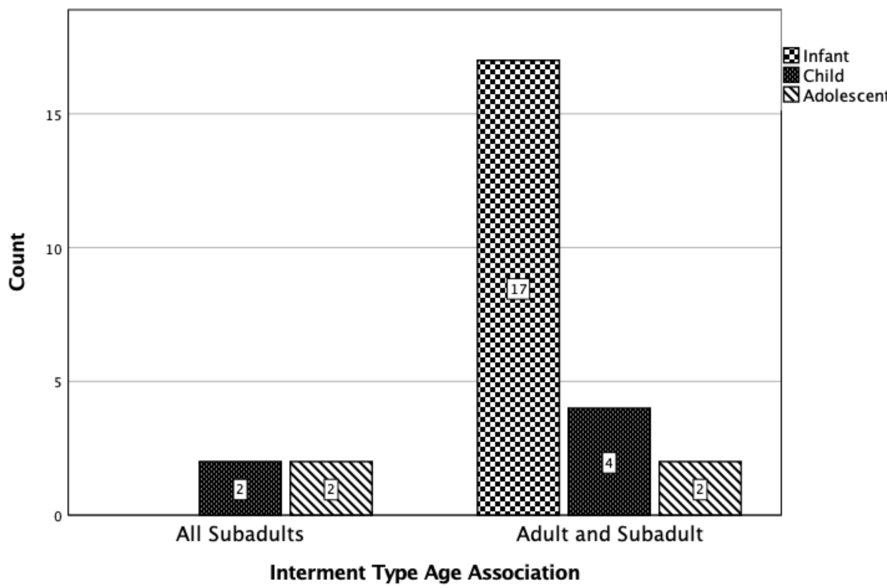

Figure 6.56. Bar graph of interment type age association for infant, child, and adolescent burials.

Table 6.58. Frequency Count and Percentage of Interment Type Age Association for Infant, Child, and Adolescent Burials

Interment Type Age Association	Infant		Child		Adolescent	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
All Subadults	0	0.0 %	2	33.3 %	2	50.0 %
Adult and Subadult	17	100.0 %	4	66.7 %	2	50.0 %
Total	**17**	**100 %**	**6**	**100 %**	**4**	**100 %**

Interment Type Age Association for Infant, Child, and Adolescent Burials by Time Period

To facilitate diachronic comparisons between infant, child, and adolescent burials, Early period subadult data are analyzed for interment type age association (Figure 6.57 and Table 6.59), followed by data for the Middle period subadult sample (Figure 6.58 and Table 6.60). For the Early period, a Fischer's Exact test for independence (n = 18, p = 0.015) revealed a statistically significant difference between interment type age association and Early period infant, child, and adolescent burials. For the Early period subadult sample, all infant burials are interred with adults, while child burials are interred with other subadults twice as often as they are interred with adults, and adolescent burials have equal proportions for interment with other subadults and adults. Altogether, there appear to be some clear age-based patterns for interment type age associations in Early period subadult burials.

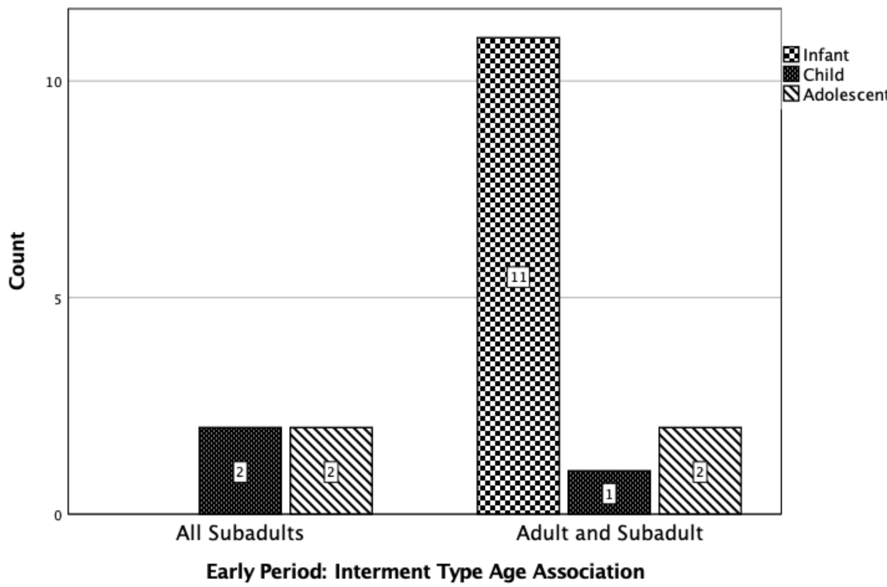

Figure 6.57. Bar graph of interment type age association for Early Period infant, child, and adolescent burials.

Table 6.59. Frequency Count and Percentage of Interment Type Age Association for Early Period Infant, Child, and Adolescent Burials

Early Period: Interment Type Age Association	Infant		Child		Adolescent	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
All Subadults	0	0.0 %	2	66.7 %	2	50.0 %
Adult and Subadult	11	100.0 %	1	33.3 %	2	50.0 %
Total	**11**	**100 %**	**3**	**100 %**	**4**	**100 %**

For the Middle period sample (n = 9) of infant, child, and adolescent burials (Figure 6.58 and Table 6.60), statistical testing for independence could not be assessed because the variable was constant. All Middle period infant and child burials are interred with adults, while there are no cases for adolescent interments with either other subadults or adults. No age-based differences are apparent in the Middle period sample, however, this could be an effect of the small number of non-individual interments for the subadult sample.

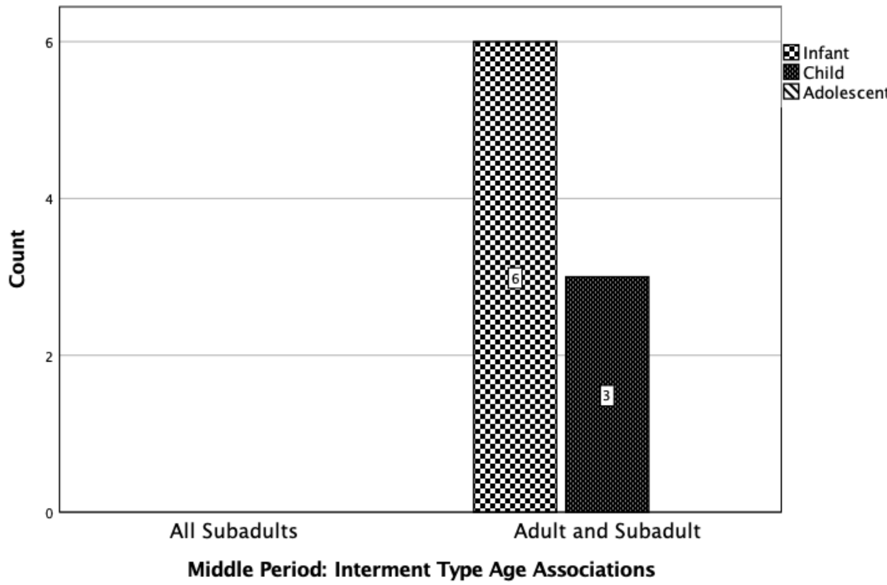

Figure 6.58. Bar graph of interment type age association for Middle Period infant, child, and adolescent burials.

Table 6.60. Frequency Count and Percentage of Interment Type Age Association for Middle Period Infant, Child, and Adolescent Burials

Middle Period: Interment Type Age Association	Infant		Child		Adolescent	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
All Subadults	0	0.0 %	0	0.0 %	0	0.0 %
Adult and Subadult	6	100.0 %	3	100.0 %	0	0.0 %
Total	**6**	**100 %**	**3**	**100 %**	**0**	**–**

Interment Type Age Association for Infant, Child, and Adolescent Burials by Island and Mainland Contexts

The following two analyses convey rates for interment type age association in island infant, child, and adolescent burials (Figure 6.59 and Table 6.61) and mainland infant, child, and adolescent burials (Figure 6.60 and Table 6.62). For island contexts, a Fischer's Exact test for independence (n = 21, p = 0.012) revealed a statistically significant difference between interment type age association and island infant, child, and adolescent burials. In this case, all infant burials are buried with adults, while child and adolescent burials are equally split between being buried with other subadults and adults. For island contexts, there does appear to be some age-based differences between infants and the other two subadult age groups.

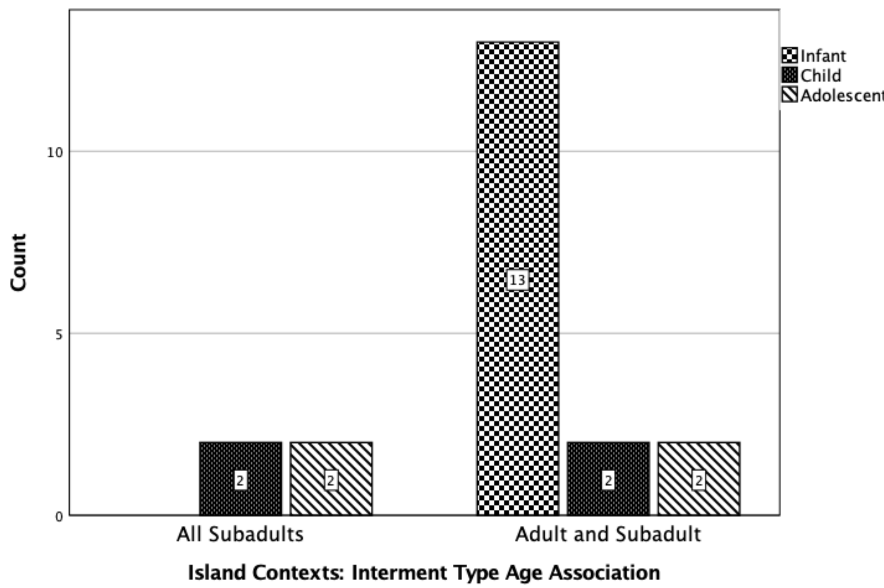

Figure 6.59. Bar graph of interment type age association for island contexts by infant, child, and adolescent burials.

Table 6.61. Frequency Count and Percentage of Interment Type Age Association for Island Contexts by Infant, Child, and Adolescent Burials

Island Contexts: Interment Type Age Association	Infant		Child		Adolescent	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
All Subadults	0	0.0 %	2	50.0 %	2	50.0 %
Adult and Subadult	13	100.0 %	2	50.0 %	2	50.0 %
Total	**13**	**100 %**	**4**	**100 %**	**4**	**100 %**

For mainland contexts infant, child, and adolescent burials (Figure 6.60 and Table 6.62), statistical testing for independence could not be computed due to the variable being a constant. Regarding patterning for the mainland contexts subadult sample (n = 6), all infant and child burials are interred with adults, while there are no cases of adolescent burials being interred with adults or other subadults. More variation is seen in island contexts subadult burials for interment type age association than in the mainland contexts subadult sample.

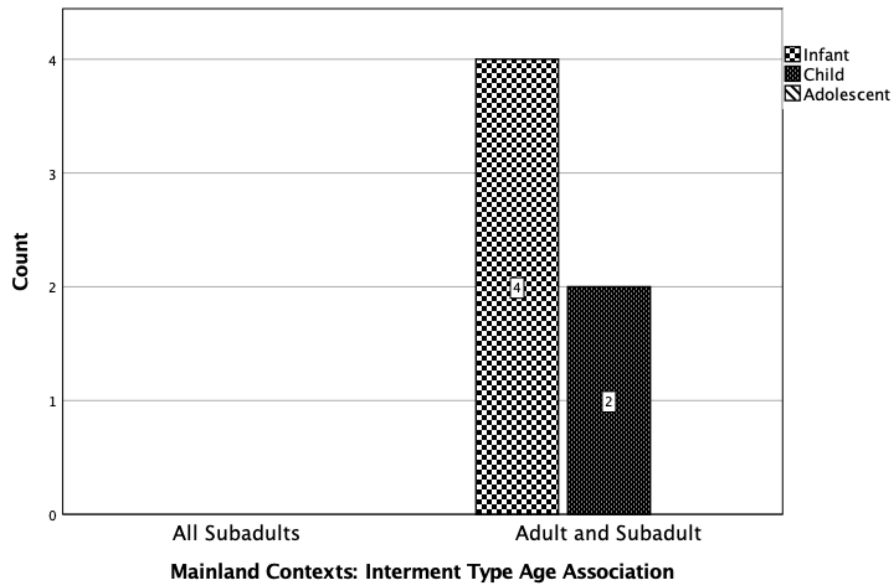

Figure 6.60. Bar graph of interment type age association for mainland contexts by infant, child, and adolescent burials.

Table 6.62. Frequency Count and Percentage of Interment Type Age Association for Mainland Contexts by Infant, Child, and Adolescent Burials

Mainland Contexts: Interment Type Age Association	Infant		Child		Adolescent	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
All Subadults	0	0.0 %	0	0.0 %	0	0.0 %
Adult and Subadult	4	100.0 %	2	100.0 %	0	0.0 %
Total	**4**	**100 %**	**2**	**100 %**	**0**	**–**

Summary of Findings for Variable 5: Interment Type Age Association

Three analyses for interment type age association resulted in statistically significant results, all infant, child, and adolescent burials (Table 6.58), Early period infant, child, and adolescent burials (Table 6.59), and island contexts infant, child, and adolescent burials (Table 6.61). All of these analyses have infant interments occurring only with adults, while child and adolescent burials occur with both adults and other subadults. In most cases, there is a trend where adolescent burials achieve proportions most similar to those seen in adult burials. There seems to be clear indications of age-graded differences for the three age groups in the aforementioned analyses. Two analyses, infant, child, and adolescent burials from the Middle period (Table 6.60) and mainland contexts (Table 6.62), had constant values, so statistical testing could not be conducted. In both of these analyses, there were no adolescent burials interred with either adults or other subadults, and all infant and child interments took place with adults.

Additionally, structural zeroes rendered statistical analysis impossible for all iterations of subadult/adult analyses (Tables 6.52–6.54, 6.56–6.57). The patterns for these analyses, however, are incredibly similar throughout, and visually indicate clear age-based differences in proportions for different age association types in interments. Subadult burials have higher proportions of burials with adults than they do with other subadults, while adults have nearly equal splits between burials with other adults and burials with subadults. Combined with the data examining infant, child, and adolescent burials, there are clear age-based differences, occurring between subadult and adult burials, and between infant, child, and adolescent burials for age associations in interments.

Analysis of Variable 6: Grave Depth

This section presents the analyses conducted for grave depth, which was recorded in inches, as measured from the ground surface level to the top of the skull.

Grave Depth for All Burials by Time Period

In the following analysis, data from Early and Middle period burials for grave depth (Figure 6.61 and Table 6.63) are analyzed to establish a diachronic baseline. A Mann-Whitney U test (U = 29,094.50, z = -2.76, p = 0.006, r = 0.11) revealed a highly significant statistical difference in grave depth between Early (Md = 30.00, n = 162) and Middle period (Md = 28.00, n = 421) burials. Median values between the Early and Middle period samples are very similar, however, there are some distinct differences between the ranges, interquartile ranges (IQR), and outlier patterning. Comparing the overall ranges and IQRs between the two samples, the Early period has a larger total range than the Middle period for grave depth, while the IQRs are largely comparable between the two samples, albeit with the Middle period burials being slightly shallower. When patterns in outliers (°) and extreme outliers (*) are compared, the Early period sample showcases a distinct break between the two groups, while the Middle period sample appears to have more continuity in burial depth by comparison. The patterns in these data respectively indicate that while the majority of both Early and Middle period samples shared similar patterns in burial depth, the Early period sample revealed more distinct and separate outlier groups than the Middle period sample. This pattern could be indicative of a more restricted segment of the Early period population having the resources and/or cultural ability to be buried deeper than the majority of the population, while the Middle period sample appears to have a more cohesive portion of the population with grave depths markedly deeper than the majority of burials from the Early period sample.

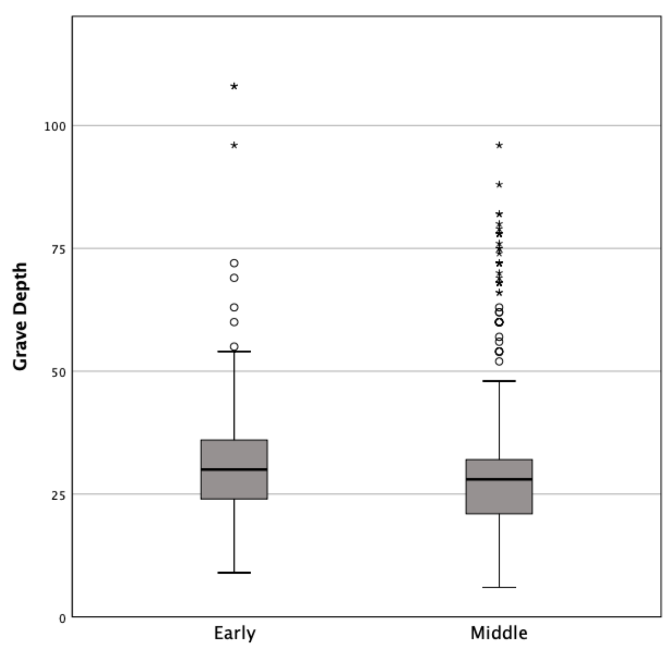

Figure 6.61. Boxplot for grave depth comparing Early and Middle period burials.

Table 6.63. Independent-Samples Mann-Whitney *U* Test Summary Statistics for Grave Depth of All Burials by Time Period

Grave Depth	Early Period	Middle Period
n	162	421
Median	30.00	28.00
Mean Rank	322.90	280.11

Grave Depth by Subadult and Adult Burials

Subadult and adult burials are analyzed here to establish an age-comparative baseline for grave depth (Figure 6.62 and Table 6.64). A Mann-Whitney *U* test (U = 24,253.50, z = -0.62, p = 0.537, r = 0.03) did not reveal a statistically significant difference in grave depth between subadult (Md = 30.00, n = 114) and adult (Md = 30.00, n = 442) burials. While both subadult and adult burials have equal median grave depths, there are some notable differences in their overall distributions. Adult burials have a larger overall range than subadult burials, while the IQR for subadults is markedly larger than that for adults. When outliers are taken into consideration, those belonging to both subadult adult burials are closely clustered together, respectively, with only a few very deep adult burials extending past the range of outliers for subadults. Altogether, these patterns suggest that there was a slight preponderance for subadult burials to be buried more deeply than adults in terms of overall frequency, however, the deepest burials belonged to adults and not to subadults.

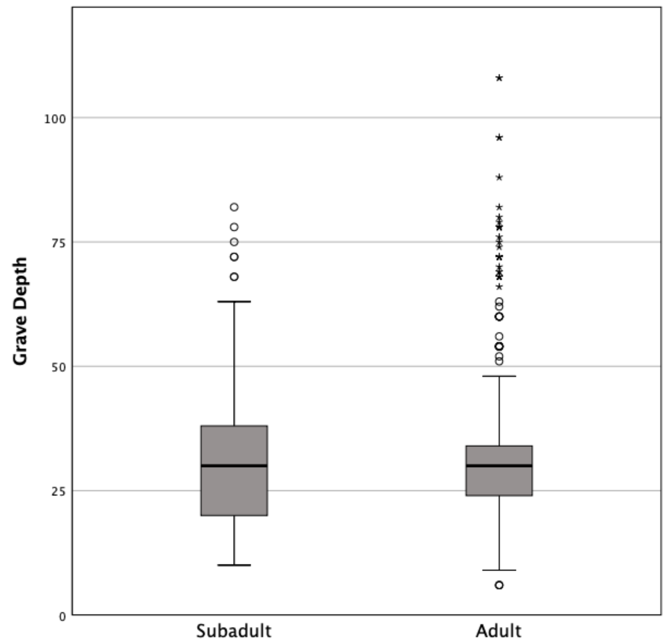

Figure 6.62. Boxplot for grave depth comparing subadult and adult burials.

Table 6.64. Independent-Samples Mann-Whitney *U* Test Summary Statistics for Grave Depth of All Burials by Subadult and Adult Burials

Grave Depth	Subadult	Adult
n	114	442
Median	30.00	30.00
Mean Rank	286.75	276.37

Grave Depth for Subadult and Adult Burials Comparing Time Period

Data from Early period subadult and adult burials for grave depth are analyzed first (Figure 6.63 and Table 6.65), followed by Middle period subadult and adult data (Figure 6.64 and Table 6.66) to provide a point of comparison between age groups diachronically. A Mann-Whitney *U* test (U = 2,490.50, z = -0.97, p = 0.330, r = 0.08) did not reveal a statistically significant difference in grave depth between Early period subadult (*Md* = 34.00, n = 55) and adult (*Md* = 30.00, n = 100) burials. Although the difference in grave depth between Early period subadults and adults is not statistically significant, the majority of subadults are buried four inches deeper than the majority of adult burials. Both the ranges and IQRs for subadult and adult burials are very similar in spread (the median value notwithstanding), however, the deepest burials belong to adults. While subadult burials are more frequently buried deeper than adult burials, the deepest burials belong to adults, likely indicating that burials of great depth (extreme outliers) were only available to a select few adults, perhaps indicating an achieved component to this aspect of funerary ritual. Alternatively, it is also possible that high-ranking adult individuals such as elites or chiefs with inherited status could be represented in the small number of deeply buried adults.

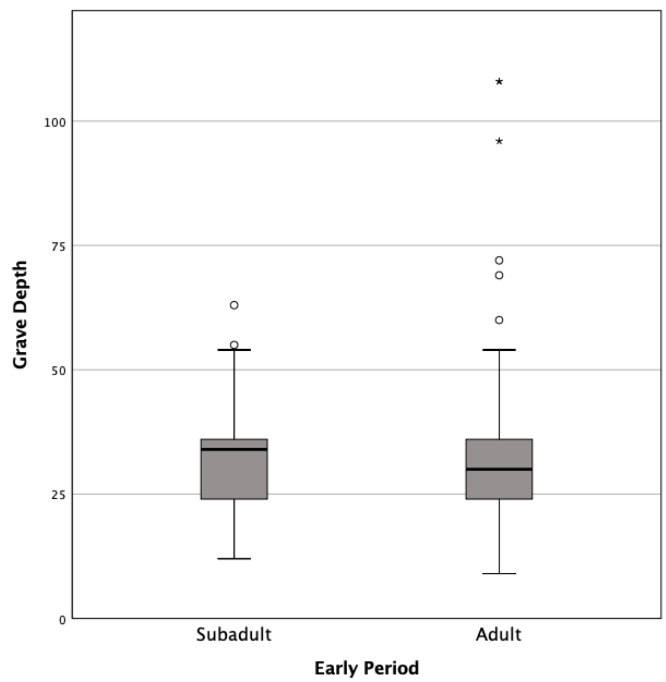

Figure 6.63. Boxplot for grave depth comparing Early period subadult and adult burials.

Table 6.65. Independent-Samples Mann-Whitney *U* Test Summary Statistics for Grave Depth of Early Period Subadult and Adult Burials

Early Period: Grave Depth	**Subadult**	**Adult**
n	55	100
Median	34.00	30.00
Mean Rank	82.72	75.41

For the Middle period sample (Figure 6.64 and Table 6.66), a Mann-Whitney *U* test (U = 11,134.50, z = 1.28, p = 0.201, r = 0.06) did not reveal a statistically significant difference in grave depth between Middle period subadult (Md = 24.00, n = 59) and adult (Md = 30.00, n = 342) burials. The majority of Middle period adult burials have grave depths six inches deeper than the majority of subadult burials, and the IQRs for both age groups also appear quite different between the two age groups as a result. On the other hand, the overall ranges between the two groups are fairly comparable, and even though adult burials have outliers much more frequently than subadult burials, the deepest burials again belong to adults. As with trends in the Early period sample, these patterns may indicate that the deepest burials, belonging to adults, could be indicative of an achieved aspect of mortuary ritual, which subadults do not appear to be able to surpass in terms of grave depth. As discussed above, it is also possible that this patterning may be indicating inherited status for high-ranking society members, like elites or chiefs.

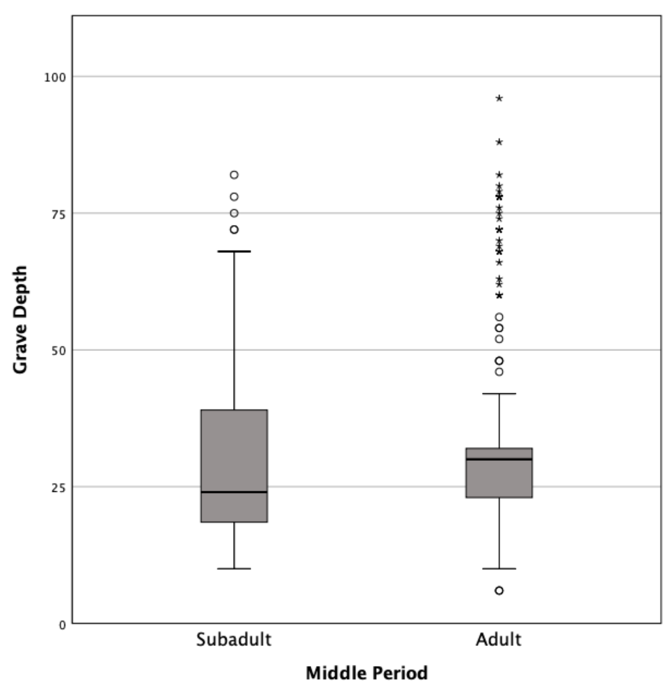

Figure 6.64. Boxplot for grave depth comparing Middle period subadult and adult burials.

Table 6.66. Independent-Samples Mann-Whitney *U* Test Summary Statistics for Grave Depth of Middle Period Subadult and Adult Burials

Middle Period: Grave Depth	Subadult	Adult
n	59	342
Median	24.00	30.00
Mean Rank	183.28	204.06

Grave Depth for All Burials by Island and Mainland Context

For this analysis, data from island and mainland contexts burials (Figure 6.65 and Table 6.67) are analyzed in order to convey a baseline for grave depth in burials between geographic contexts. A Mann-Whitney *U* test (U = 16,650.00, z = -11.55, $p < 0.001$, r = 0.48) revealed a highly significant statistical difference in grave depth between island (*Md* = 36.00, n = 209) and mainland (*Md* = 26.00, n = 374) contexts. Comparing grave depths between the two contexts, median values indicate that the majority of burials from island contexts are buried 10 inches deeper than the majority of burials from mainland contexts. The ranges and IQRs for the island sample indicate a greater degree of variation present in burial depth for this sample, as compared to the mainland sample, which is more truncated in nature. Based on these results, burials from island contexts are consistently buried more deeply than those from mainland contexts.

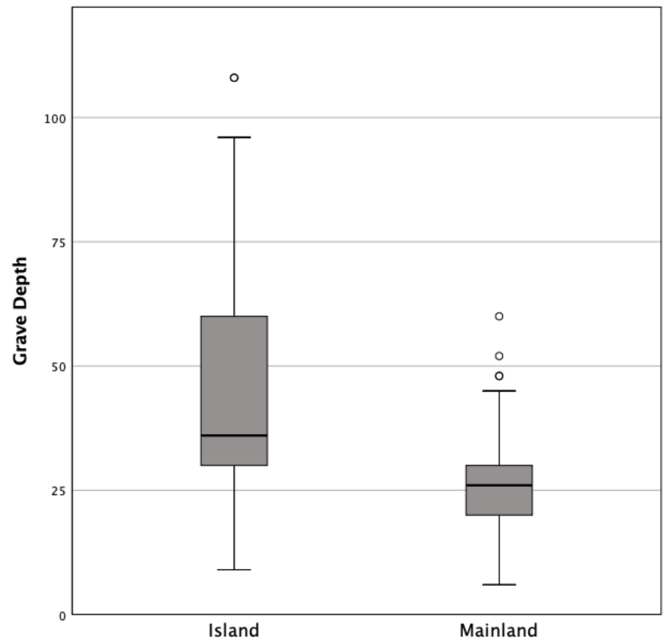

Figure 6.65. Boxplot for grave depth comparing island and mainland context burials.

Table 6.67. Independent-Samples Mann-Whitney *U* Test Summary Statistics for Grave Depth of All Burials by Island and Mainland Contexts

Grave Depth	Island Contexts	Mainland Contexts
n	209	374
Median	36.00	26.00
Mean Rank	399.33	232.02

Grave Depth for Subadult and Adult Burials by Island and Mainland Contexts

The following analyses provide the results for grave depth in island contexts subadult and adult burials (Figure 6.66 and Table 6.68) and mainland contexts subadult and adult burials (Table 7.31) to assist in making geographic-based comparisons between these age groups. For the island contexts sample (Table 6.68), a Mann-Whitney *U* test (U = 14,740.00, z = 0.88, p = 0.377, r = 0.06) did not reveal a statistically significant difference in grave depth between island contexts subadult (Md = 36.00, n = 67) and adult (Md = 36.00, n = 139) burials. For the island contexts sample, both subadult and adult burials share a median depth of 36 inches, however, the ranges and IQRs differ somewhat between the two age groups. The most pronounced difference between the age groups is that adult burials are more heavily skewed to having a larger frequency of burials at shallow depths with a few cases of exceptionally deep graves, while the subadult distribution is more symmetric in nature. Akin to patterns seen in the Early and Middle period samples, the deepest burials again belong to adults and not subadults in the island contexts sample.

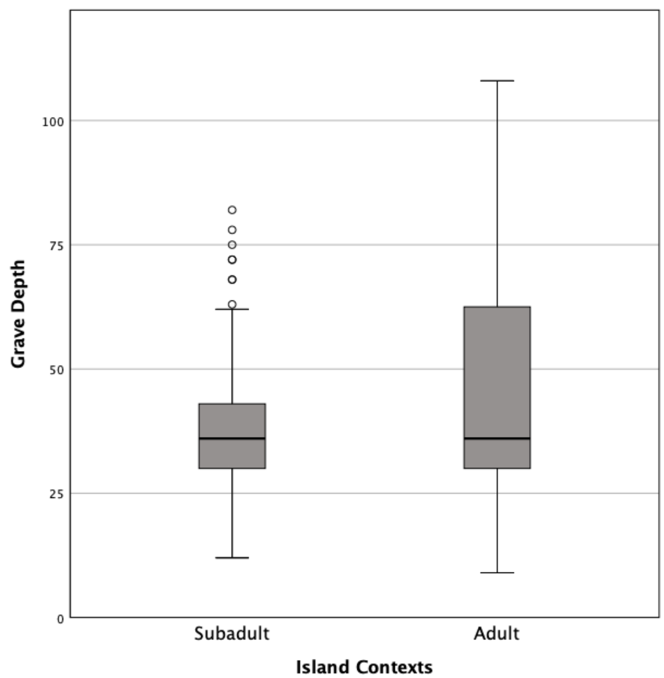

Figure 6.66. Boxplot for grave depth comparing island context subadult and adult burials.

Table 6.68. Independent-Samples Mann-Whitney *U* Test Summary Statistics for Grave Depth of Island Contexts Subadult and Adult Burials

Island Contexts: Grave Depth	**Subadult**	**Adult**
n	67	139
Median	36.00	36.00
Mean Rank	98.22	106.04

For the mainland contexts sample (Figure 6.67 and Table 6.69), a Mann-Whitney *U* test (U = 9,292.50, z = 3.39, p = 0.001, r = 0.18) revealed a highly significant statistical difference in grave depth between mainland contexts subadult (Md = 21.00, n = 47) and adult (Md = 27.00, n

= 303) burials. The most significant difference is that the majority of mainland adults are buried six inches deeper than subadults. Moreover, the adult sample indicates a higher frequency of deeper burials than in the subadult sample, with the deepest burials again belonging to adults. The overall range and IQR for adult burials indicate a higher degree of variation in burial depth for adults, and less variation evident in subadult burials. Altogether, there appears to be an age-based difference in grave depth for the sample of burials from mainland contexts.

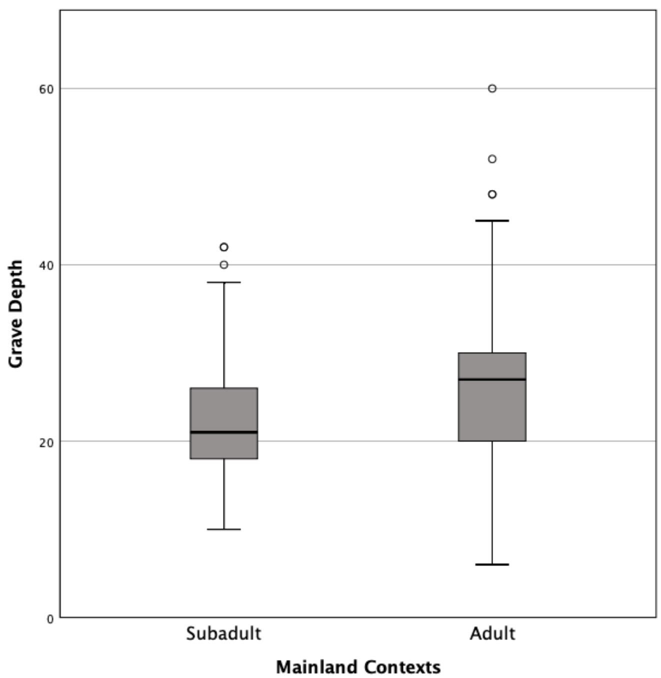

Figure 6.67. Boxplot for grave depth comparing mainland context subadult and adult burials.

Table 6.69. Independent-Samples Mann-Whitney *U* Test Summary Statistics for Grave Depth of Mainland Contexts Subadult and Adult Burials

Mainland Contexts: Grave Depth	**Subadult**	**Adult**
n	47	303
Median	21.00	27.00
Mean Rank	129.29	182.67

Grave Depth for Infant, Child, and Adolescent Burials

To investigate potential age-based patterns in subadult burials, infant, child, and adolescent burials are analyzed regarding grave depth (Figure 6.68 and Table 6.70). A Kruskal-Wallis test (χ^2 [2, *n* = 113] = 10.66, *p* = 0.005) revealed a highly significant statistical difference in grave depth between infant (*n* = 51), child (*n* = 42), and adolescent (*n* = 20) burials. Considering the data for the three subadult age groups broadly, infant and adolescent burials appear to be much more similar to one another than either group is to child burials. Half of all infant and adolescent burials have grave depths of 33 or more inches, while half of all child burials have depths of only 21 or more inches. Child burials, having the lowest median value, are skewed toward having a higher frequency of burials at shallower depths than either infants or adolescents, the latter of which are more symmetric in shape by comparison. At this level of analysis, there does appear to be some level of differential treatment for grave depth that is based on age.

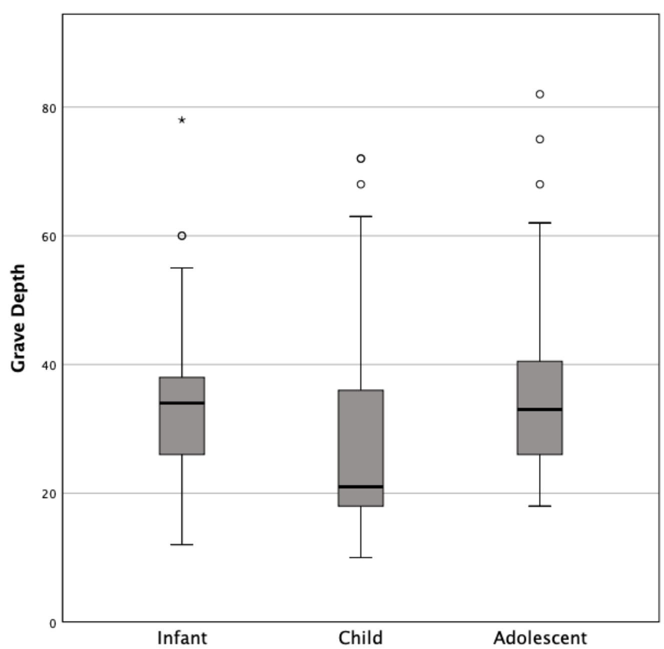

Figure 6.68. Boxplot for grave depth comparing infant, child, and adolescent burials.

Table 6.70. Independent-Samples Kruskal-Wallis Test Summary Statistics for Grave Depth of All Subadults by Infant, Child, and Adolescent Burials

Grave Depth	Infant	Child	Adolescent
n	51	42	20
Median	34.00	21.00	33.00
Mean Rank	63.59	44.06	67.38

Grave Depth for Infant, Child, and Adolescent Burials by Time Period

The following two analyses are designed to provide a point of diachronic comparison for grave depth in subadults, examining infant, child, and adolescent burials for Early (Table 6.71) and Middle periods (Table 6.72). For the Early period sample (Figure 6.69 and Table 6.71), a Kruskal-Wallis test (χ^2 [2, n = 54] = 0.81, p = 0.667) did not reveal a statistically significant difference in grave depth between Early period infant (n = 33), child (n = 10), and adolescent (n = 11) burials. For the Early period, infant, child, and adolescent burials appear to have very similar treatment for grave depth. Median values for all three subadult age groups are very close in nature, as are the respective IQRs. Child and adolescent burials have the most similar overall distribution, which is fairly symmetric in shape, while infant burials are skewed slightly towards having a higher frequency of deeper burials. The only outlier present belongs to a child burial, however, it is comparable in depth to the deepest infant burial. Considering these three age groups together, there does not appear to be differential treatment based on age between infant, child, and adolescent burials for the Early period subadult sample.

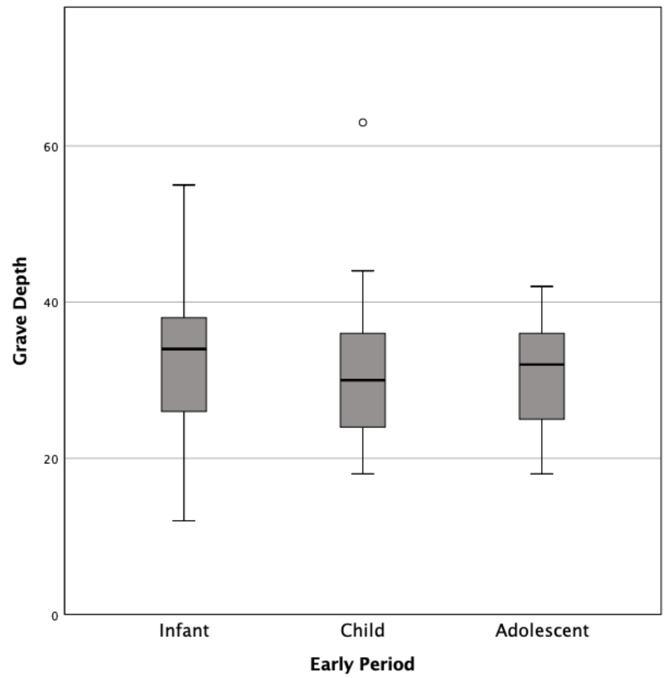

Figure 6.69. Boxplot for grave depth comparing Early period infant, child, and adolescent burials.

Table 6.71. Independent-Samples Kruskal-Wallis Test Summary Statistics for Grave Depth of Early Period Infant, Child, and Adolescent Burials

Early Period: Grave Depth	Infant	Child	Adolescent
n	33	10	11
Median	34.00	30.00	32.00
Mean Rank	29.02	25.50	24.77

For the Middle period sample (Figure 6.70 and Table 6.72), a Kruskal-Wallis test (χ^2 [2, *n* = 59] = 12.38, *p* = 0.002) revealed a highly significant statistical difference in grave depth between Middle period infant (*n* = 18), child (*n* = 32), and adolescent (*n* = 9) burials. Child burials have the shallowest median grave depth, followed by infant burials, and the deepest graves are found in adolescent burials. While all three age groups are skewed toward having a higher frequency of shallower burials, adolescents have the deepest burials of the three age groups, and children the least. The ranges, IQRs, and outlier patterns do not indicate a clear pattern linking the three age groups in treatment for grave depth, however, given that adolescent burials have the deepest graves of the three subadult age groups, this may indicate their treatment to be most socially similar to that of adults than to the other subadult age groups.

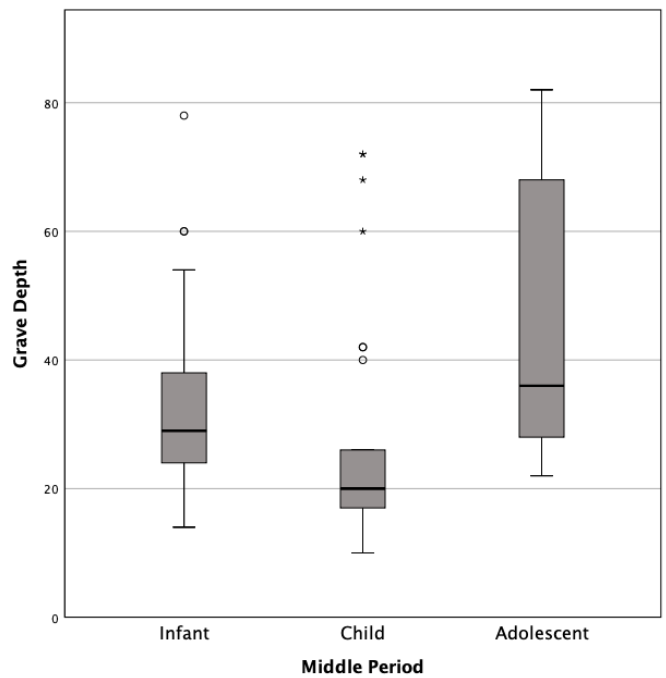

Figure 6.70. Boxplot for grave depth comparing Middle period infant, child, and adolescent burials.

Table 6.72. Independent-Samples Kruskal-Wallis Test Summary Statistics for Grave Depth of Middle Period Infant, Child, and Adolescent Burials

Middle Period: Grave Depth	**Infant**	**Child**	**Adolescent**
n	18	32	9
Median	29.00	20.00	36.00
Mean Rank	35.03	23.27	43.89

Grave Depth for Infant, Child, and Adolescent Burials by Island and Mainland Contexts

These final two analyses convey the results for subadult burials from island (Figure 6.71 and Table 6.73) and mainland contexts (Figure 6.72 and Table 6.74) in order to evaluate potential geographic-based patterns between infant, child, and adolescent burials for grave depth. For Kruskal-Wallis test (χ^2 [2, n = 67] = 1.35, p = 0.509) did not reveal a statistically significant difference in grave depth between island contexts infant (n = 38), child (n = 15), and adolescent (n = 14) burials. Considering grave depth for infant, child, and adolescent burials from island contexts, the medians are equal, indicating that half of all subadults had graves 36 inches or deeper. Child and adolescent burials are skewed towards having higher frequencies of shallower burials (adolescents more so than children), while infant burials are more symmetric in shape by comparison. Adolescent burials again are the deepest of the three age groups, which could potentially link their burial treatment in terms of grave depth to being more similar to adults than to other subadults. Altogether, the data do not indicate age-based differential treatment for grave depth in subadult burials.

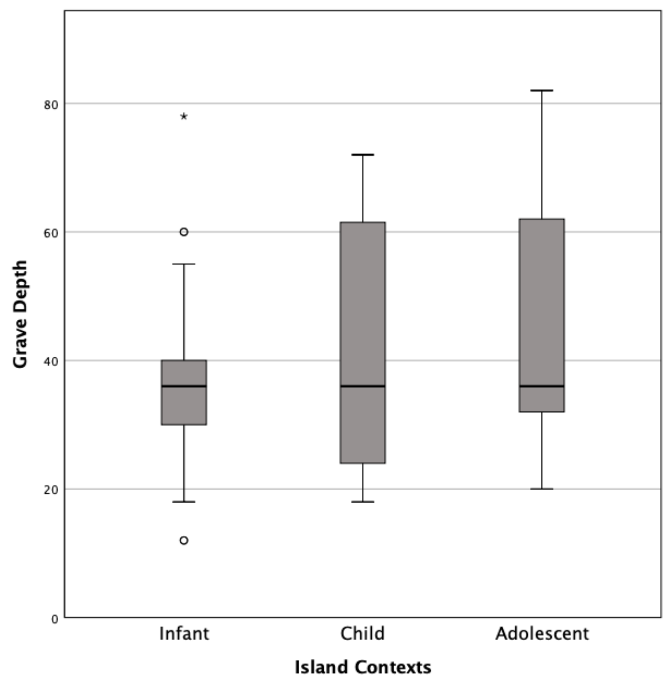

Figure 6.71. Boxplot for grave depth comparing island context infant, child, and adolescent burials.

Table 6.73. Independent-Samples Kruskal-Wallis Test Summary Statistics for Grave Depth of Island Contexts Infant, Child, and Adolescent Burials

Island Contexts: Grave Depth	Infant	Child	Adolescent
n	38	15	14
Median	36.00	36.00	36.00
Mean Rank	32.18	33.73	39.21

For the mainland contexts sample (Figure 6.72 and Table 6.74), a Kruskal-Wallis test (χ^2 [2, n = 46] = 5.91, p = 0.052) did not reveal a statistically significant difference in grave depth between mainland contexts infant (n = 38), child (n = 15), and adolescent (n = 14) burials, however, the p-value is approaching significance. For mainland contexts, the median values for grave depth are fairly comparable between the three age groups, however, child burials have the lowest median value for grave depth. Child burials are skewed towards a higher frequency of burials with deeper graves, while infant and adolescent burials are fairly symmetric in shape by comparison. Infant burials have the broadest overall range compared to the other two age groups, however, child burials have the deepest burials in the form of the extreme outliers present. For the mainland contexts subadult sample, there does appear to be some level of age-based differential treatment for the three subadult age groups, however, it has not reached statistical significance.

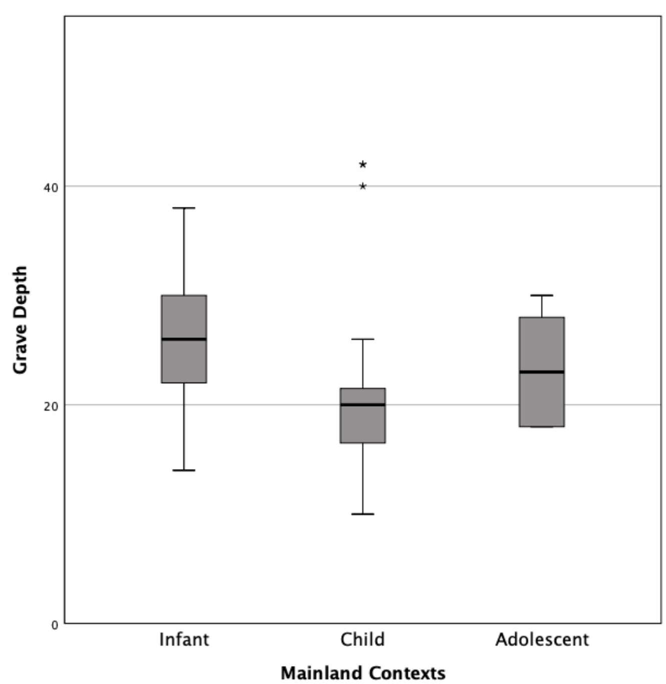

Figure 6.72. Boxplot for grave depth comparing mainland context infant, child, and adolescent burials.

Table 6.74. Independent-Samples Kruskal-Wallis Test Summary Statistics for Grave Depth of Mainland Contexts Infant, Child, and Adolescent Burials

Mainland Contexts: Grave Depth	Infant	Child	Adolescent
n	13	27	6
Median	26.00	20.00	23.00
Mean Rank	30.00	19.54	27.25

Summary of Findings for Variable 6: Grave Depth

Five of the 12 analyses performed for grave depth yielded statistically significant results, all burials by time period (Table 6.63), all burials by geographic context (Table 6.67), mainland contexts subadult/adult burials (Table 6.69), all infant, child, and adolescent burials (Table 6.70), and Middle period infant, child, and adolescent burials (Table 6.72). Between time periods, Early period burials tend to be buried deeper at a higher frequency than in the Middle period, while between geographic contexts, there are proportionally more burials from island contexts buried deeper than those from mainland contexts. Considering differences between subadult and adult burials from the mainland sample, adults are more frequently buried deeper than are subadults. For the analysis of all infant, child, and adolescent burials, infant and adolescent burials are more similar to one another and have higher proportions of deeper burials than what is seen for child burials. A similar pattern is seen for Middle period subadults, where infant and adolescent burials are more similar to one another and have grave depths that are deeper than child burials, however, adolescents show even more variation than infant burials, and the data indicate that they had deeper burials at higher frequencies than even their fairly comparable infant counterparts.

Although not statistically significant, one analysis had a *p*-value that was approaching significance, infant, child, and adolescent burials from mainland contexts (Table 6.74). The results of this analysis revealed a pattern, again for age-based differentiation in grave depth, however, contrary to the other significant subadult only analyses, infant burials exhibit the most variation and have a higher frequency of deeper graves than either adolescent or child burials, although they are most similar to adolescent burials over child burials. The remaining statistically insignificant results did not indicate that marked age-based differences were present in island or Early period contexts. The results of the aforementioned analyses suggest that more variation was present in subadult burials from Middle period and mainland contexts, and that adults from Middle period and mainland contexts were consistently buried deeper than their subadult counterparts.

Analysis of Variable 7: Presence/Absence of Grave Features

Data regarding grave features, defined as objects used to mark the location of a particular grave, were recorded in the form of presence/absence data to establish broad trends for this particular variable. Grave features comprise stone slabs, cairns, and large whale bone elements (e.g., ribs, scapulae, and vertebrae). It should be noted that grave features made from organic materials, such as decorated wooden posts, are recorded in ethnographic literature, however, no examples of these were encountered in the excavation records for burials in this analysis, which is likely an effect of post-depositional processes. Grave posts, along with other organic items, do not preserve well in open-air sites due to the climate present on the Santa Barbara Channel coast. Additionally, grave features were not analyzed further (i.e., at the level of stone slab, cairn, and whale bone elements) due to the extremely limited nature of these materials found in subadult graves.

Presence/Absence of Grave Features for All Burials by Time Period

The following analysis conveys the results regarding presence/absence of grave features from Early and Middle period burials (Figure 6.73 and Table 7.37), thus establishing a diachronic baseline. A Pearson chi-square test for independence (n = 526, χ^2 = 38.62, p < 0.001) revealed a highly significant statistical difference between presence/absence of grave features and time period. Middle period burials had grave features over five times as often as did burials from the Early period. At this level of analysis, it appears that grave features were a much more common phenomenon later in time.

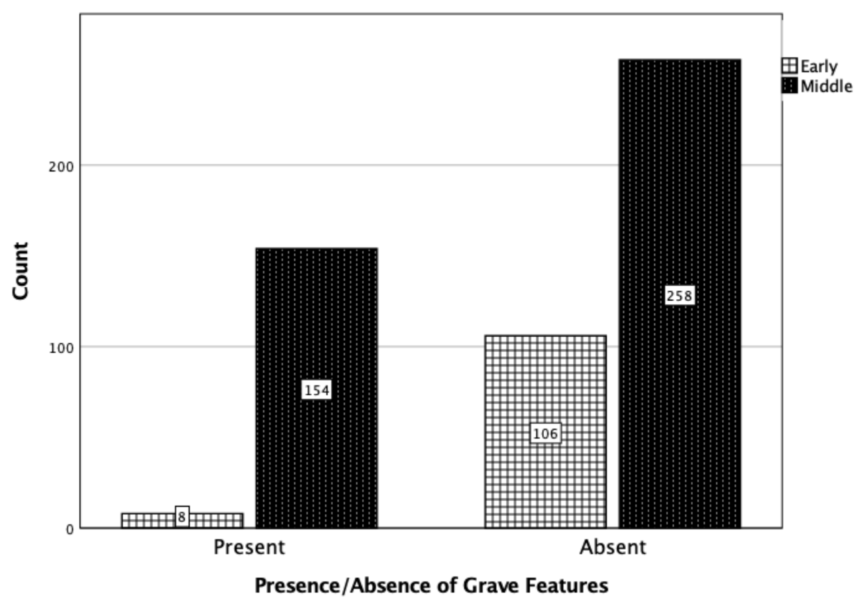

Figure 6.73. Bar graph for presence/absence of grave features for all burials by time period.

Table 6.75. Frequency Count and Percentage for Presence/Absence of Grave Features for All Burials by Time Period

Presence/Absence of Grave Features	Early Period		Middle Period	
	Frequency	Percent	Frequency	Percent
Present	8	7.0 %	154	37.4 %
Absent	106	93.0 %	258	62.6 %
Total	**114**	**100 %**	**412**	**100 %**

Presence/Absence of Grave Features by Subadult and Adult Burials

To take into account potential age-based differences for presence/absence of grave features, subadult and adult burials are analyzed to determine a baseline (Figure 6.74 and Table 6.76). A Pearson chi-square test for independence (n = 469, $\chi^2 = 20.74$, $p < 0.001$) revealed a highly significant statistical difference between presence/absence of grave features and subadult/adult burials. Considering the subadult/adult age division for all burials, adults had grave features over five-and-one-half-times as often as subadult burials. At this broad level of analysis, it appears that adult burials have grave features incorporated into their burial contexts at much higher frequencies than subadults.

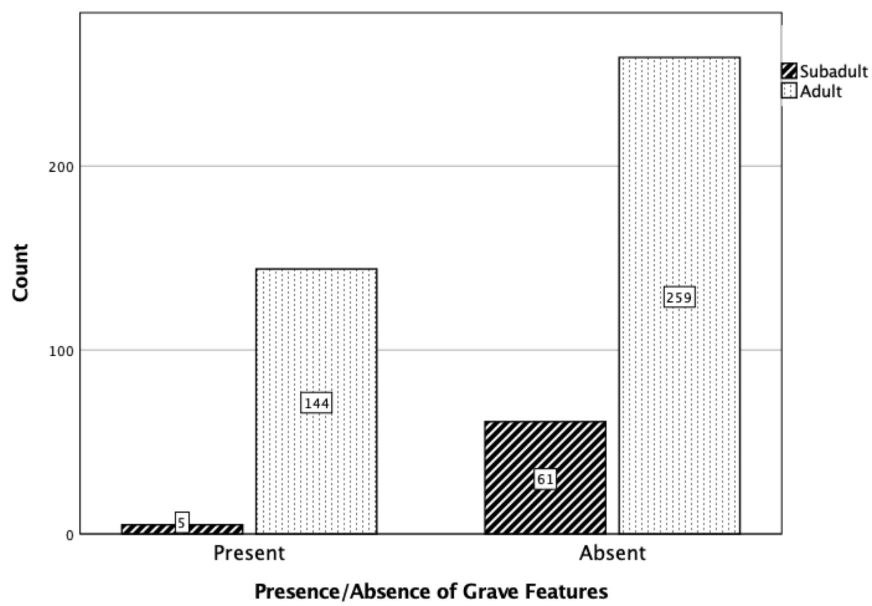

Figure 6.74. Bar graph for presence/absence of grave features for subadult and adult burials.

Table 6.76. Frequency Count and Percentage for Presence/Absence of Grave Features for Subadult and Adult Burials

Presence/Absence of Grave Features	Subadult		Adult	
	Frequency	Percent	Frequency	Percent
Present	5	7.6 %	144	35.7 %
Absent	61	92.4 %	259	64.3 %
Total	**66**	**100 %**	**403**	**100 %**

Presence/Absence of Grave Features for Subadult and Adult Burials Comparing Time Period

In order to further examine trends in subadult and adult burials, diachronically, Early period subadult and adult burial data are analyzed first for presence/absence of grave features (Figure 6.75 and Table 6.77), followed by Middle period subadult and adult burial data (Figure 6.76 and Table 6.78). For the Early period sample, a Fischer's Exact test for independence (n = 95, $\chi^2 = 1.09$, $p = 0.590$) did not reveal a statistically significant difference between presence/absence of grave features and Early period subadult/adult burials. For the Early period sample, there are no cases of grave features for subadults, and only a small proportion of adults who have grave features. These results indicate that Early period adults were more frequent recipients of grave features, however, it still seems to be a rather restricted aspect of mortuary custom given its relatively low proportional value.

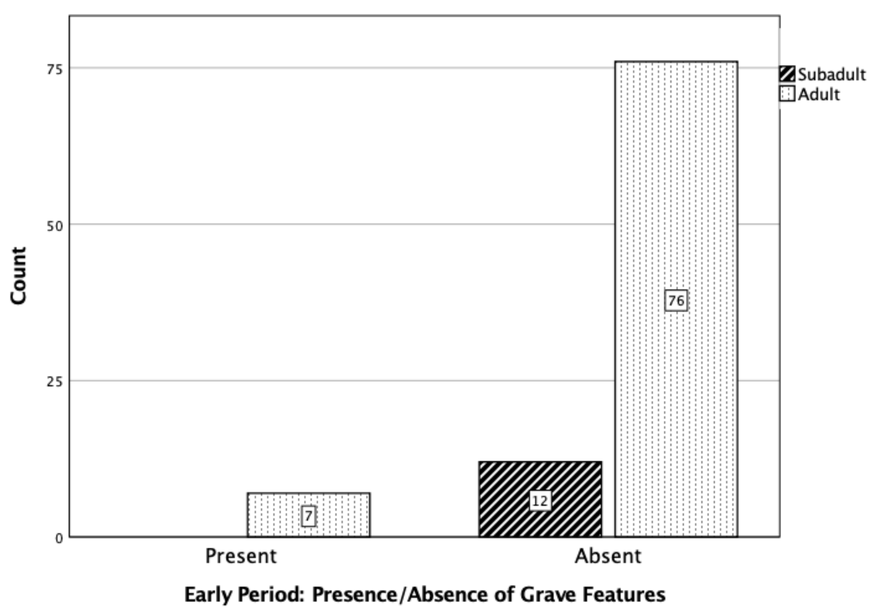

Figure 6.75. Bar graph for presence/absence of grave features for Early period subadult and adult burials.

Table 6.77. Frequency Count and Percentage for Presence/Absence of Grave Features for Early Period Subadult and Adult Burials

Early Period: Presence/Absence of Grave Features	Subadult		Adult	
	Frequency	Percent	Frequency	Percent
Present	0	0.0 %	7	8.4 %
Absent	12	100.0 %	76	91.6 %
Total	**12**	**100 %**	**83**	**100 %**

For the Middle period sample (Figure 6.76 and Table 6.78), a Pearson chi-square test for independence (n = 374, χ^2 = 22.09, p < 0.001) revealed a highly significant statistical difference between presence/absence of grave features and Middle period subadult/adult burials. Middle period adults had grave features over four-and-one-half times as often as subadults, however, there is a small proportion of the subadult sample who are associated with grave features, so this factor does not appear to be restricted to only adult burials. Compared to the Early period sample, adults from both time periods are much more likely to have grave features associated with their burial contexts, however, this may have been a more restricted phenomenon in the Early period for subadults than in the Middle period.

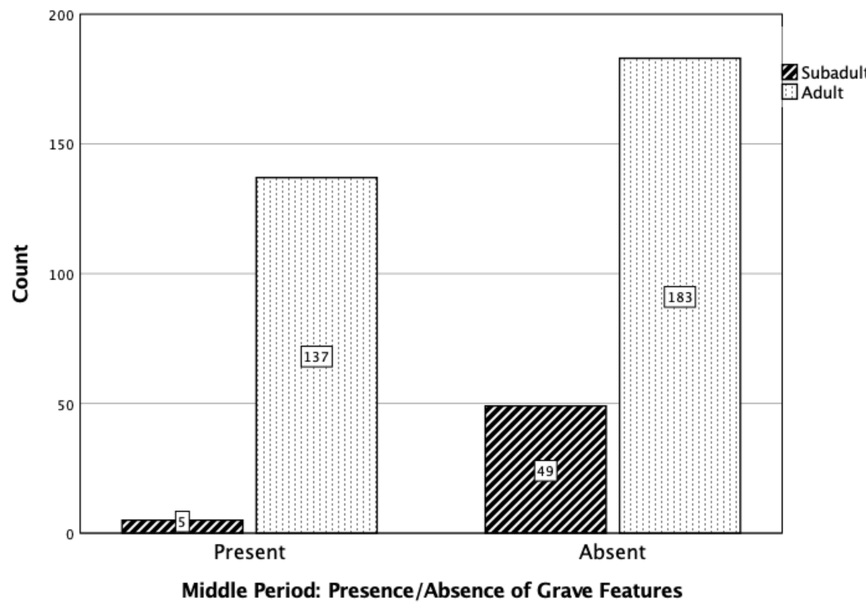

Figure 6.76. Bar graph for presence/absence of grave features for Middle period subadult and adult burials.

Table 6.78. Frequency Count and Percentage for Presence/Absence of Grave Features for Middle Period Subadult and Adult Burials

Middle Period: Presence/Absence Of Grave Features	Subadult		Adult	
	Frequency	Percent	Frequency	Percent
Present	5	9.3 %	137	42.8 %
Absent	49	90.7 %	183	57.2 %
Total	**54**	**100 %**	**320**	**100 %**

Presence/Absence of Grave Features for All Burials by Island and Mainland Context

The analysis that follows provides a point of geographic comparison for presence/absence of grave features, exhibiting the results for island and mainland contexts (Figure 6.77 and Table 7.79). A Pearson chi-square test for independence (n = 526, χ^2 = 39.05, p < 0.001) revealed a highly significant statistical difference between presence/absence of grave features and geographic context. Mainland burials had grave features 11 times more frequently than for island burials. At this level of analysis, grave features appear to be much more restricted in island contexts than is evident on the mainland.

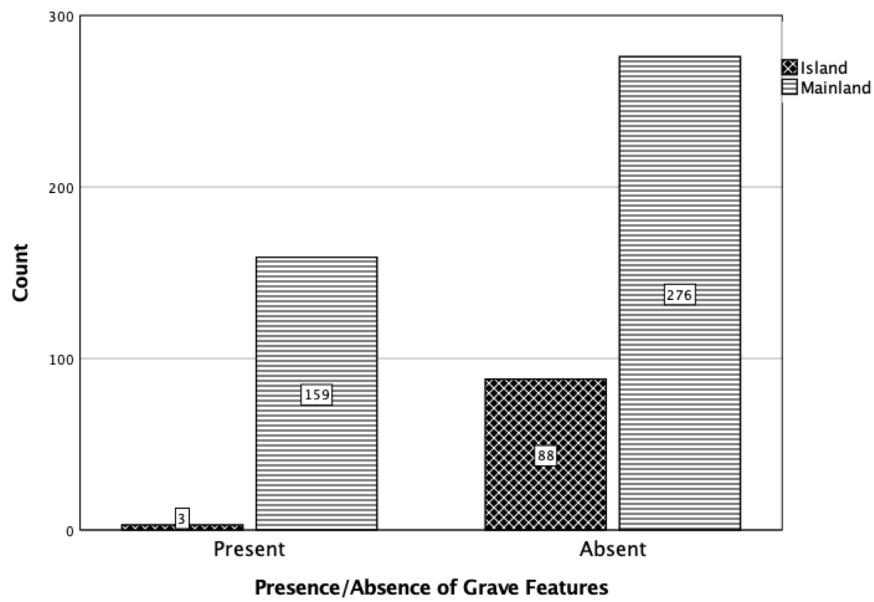

Figure 6.77. Bar graph for presence/absence of grave features for all burials by island and mainland context.

Table 6.79. Frequency Count and Percentage for Presence/Absence of Grave Features for All Burials by Island and Mainland Context

Presence/Absence of Grave Features	Island		Mainland	
	Frequency	Percent	Frequency	Percent
Present	3	3.3 %	159	36.6 %
Absent	88	96.7 %	276	63.4 %
Total	**91**	**100 %**	**435**	**100 %**

Presence/Absence of Grave Features for Subadult and Adult Burials by Island and Mainland Contexts

To further investigate potential patterns for presence/absence of grave features in subadult and adult burials, samples from island (Figure 6.78 and Table 6.80) and mainland contexts (Figure 6.79 and Table 6.81) are analyzed. A Fischer's Exact test for independence (n = 79, p = 1.000) did not reveal a statistically significant difference between presence/absence of grave features and island subadult/adult burials. These results indicate that adult burials have grave features more frequently than subadults, however, this appears to be a highly restricted funerary custom, as evidenced by the very small proportion of adults with grave features present.

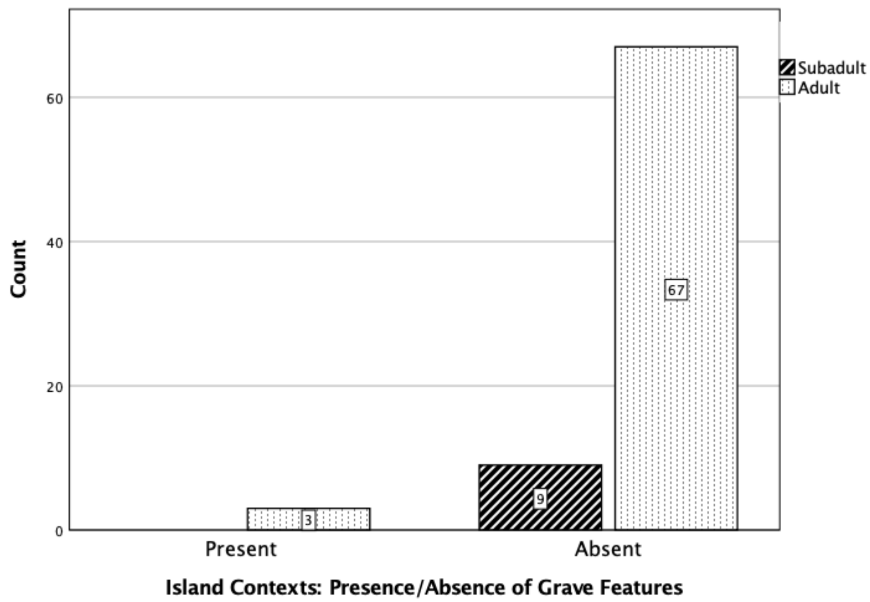

Figure 6.78. Bar graph for presence/absence of grave features for island contexts by subadult and adult burials.

Table 6.80. Frequency Count and Percentage for Presence/Absence of Grave Features for Island Contexts by Subadult and Adult Burials

Island Contexts: Presence/Absence of Grave Features	Subadult		Adult	
	Frequency	Percent	Frequency	Percent
Present	0	0.0 %	3	4.3 %
Absent	9	100.0 %	67	95.7 %
Total	**9**	**100 %**	**70**	**100 %**

This analysis details the results for presence/absence of grave features in the mainland contexts sample of subadult and adult burials (Figure 6.79 and Table 6.81). A Pearson's chi-square test for independence (n = 390, $\chi^2 = 23.42$, $p < 0.001$) revealed a highly significant statistical difference between presence/absence of grave features and mainland subadult/adult burials. Adults have grave features nearly five times as often as subadults in mainland burials, indicating at least in part an age-based trend for this funerary custom. Comparing both geographic contexts, the above results indicate that a greater overall proportion of the mainland burial sample had grave features associated with their burials than the island sample, and more mainland subadults were associated with grave features than island subadults. At some level, age does seem to be a factor in grave features being present in burials between geographic contexts.

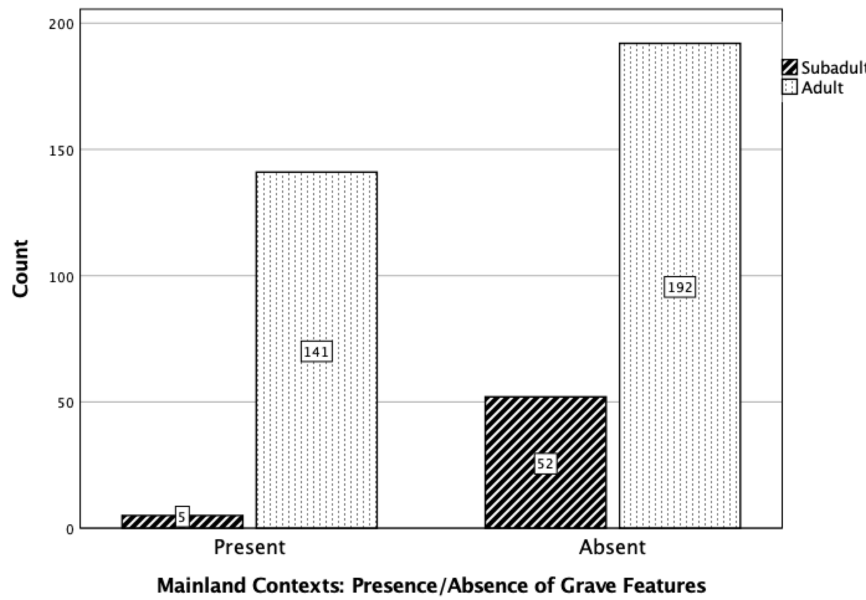

Figure 6.79. Bar graph for presence/absence of grave features for mainland contexts by subadult and adult burials.

Table 6.81. Frequency Count and Percentage for Presence/Absence of Grave Features for Mainland Contexts by Subadult and Adult Burials

Mainland Contexts: Presence/Absence of Grave Features	Subadult		Adult	
	Frequency	Percent	Frequency	Percent
Present	5	8.8 %	141	42.3 %
Absent	52	91.2 %	192	57.7 %
Total	**57**	**100 %**	**333**	**100 %**

Presence/Absence of Grave Features for Infant, Child, and Adolescent Burials

The results of this analysis provide a closer examination for presence/absence of grave features in subadult burials, as reflected in the three established subadult age groups (Figure 6.80 and Table 6.82). A Fischer's Exact test for independence (n = 65, p = 0.312) did not reveal a statistically significant difference between presence/absence of grave features and infant, child, and adolescent burials. Although no statistically significant difference is identified, there are some potential patterns, where the proportion for presence of grave features appears to decrease gradually as age increases. This pattern will be interpreted with extreme caution given the small number of subadults with grave features overall.

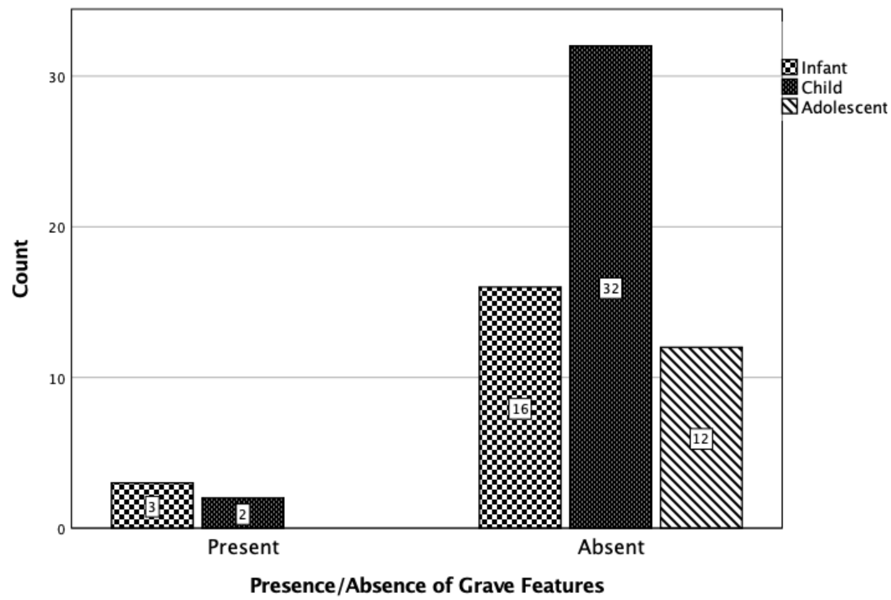

Figure 6.80. Bar graph for presence/absence of grave features for infant, child, and adolescent burials.

Table 6.82. Frequency Count and Percentage for Presence/Absence of Grave Features for Infant, Child, and Adolescent Burials

Presence/Absence of Grave Features	Infant		Child		Adolescent	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Present	3	15.8 %	2	5.9 %	0	0.0 %
Absent	16	84.2 %	32	94.1 %	12	100.0 %
Total	**19**	**100 %**	**34**	**100 %**	**12**	**100 %**

Presence/Absence of Grave Features for Infant, Child, and Adolescent Burials by Time Period

To take differences for time period into account, the following two analyses convey the results for presence/absence of grave features in infant, child, and adolescent burials from the Early (Figure 6.81 and Table 6.83) and Middle periods (Figure 6.82 and Table 6.84). For the Early period subadult sample (n = 11), there were no cases of grave features being present in any subadult burial, so statistical testing could not be conducted. There does not appear to be any age-based differentiation in presence of grave features for the Early period subadult sample.

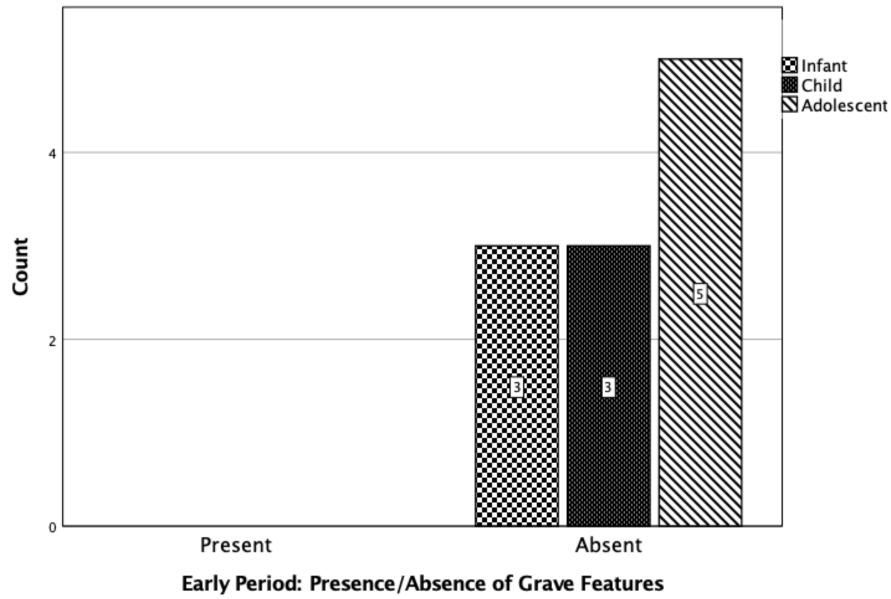

Figure 6.81. Bar graph for presence/absence of grave features for Early Period infant, child, and adolescent burials.

Table 6.83. Frequency Count and Percentage for Presence/Absence of Grave Features for Early Period Infant, Child, and Adolescent Burials

Early Period: Presence/Absence of Grave Features	Infant		Child		Adolescent	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Present	0	0.0 %	0	0.0 %	0	0.0 %
Absent	3	100.0 %	3	100.0 %	5	100.0 %
Total	**3**	**100 %**	**3**	**100 %**	**5**	**100 %**

This analysis displays the results for presence/absence of grave features in infant, child, and adolescent burials from the Middle period (Figure 6.82 and Table 6.84). A Fischer's Exact test for independence (n = 54, p = 0.388) did not reveal a statistically significant difference between presence/absence of grave features and Middle period infant, child, and adolescent burials. Again, the proportional value for presence of grave features in infant, child, and adolescent burials appears to decrease gradually as age increases. This patterning reveals that infants more frequently are associated with grave features than either child or adolescent burials from the Middle period. When compared to the Early period sample of subadults, age-based differentiation, albeit insignificant statistically, is present in the Middle period, but not earlier in time.

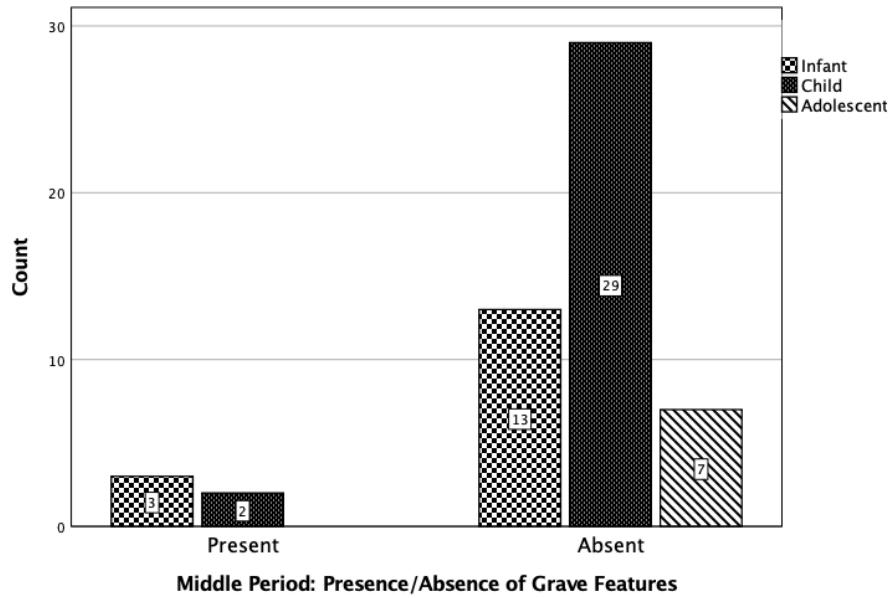

Figure 6.82. Bar graph for presence/absence of grave features for Middle Period infant, child, and adolescent burials.

Table 6.84. Frequency Count and Percentage for Presence/Absence of Grave Features for Middle Period Infant, Child, and Adolescent Burials

Middle Period: Presence/Absence of Grave Features	Infant		Child		Adolescent	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Present	3	18.8 %	2	6.5 %	0	0.0 %
Absent	13	81.3 %	29	93.5 %	7	100.0 %
Total	**16**	**100 %**	**31**	**100 %**	**7**	**100 %**

Presence/Absence of Grave Features for Infant, Child, and Adolescent Burials by Island and Mainland Contexts

Concluding the series of analyses for presence/absence of grave features, data from infant, child, and adolescent burials are established for island (Figure 6.83 and Table 6.85) and mainland contexts (Figure 6.84 and Table 6.86). For the island subadult sample (n = 9), statistical tests of independence could not be computed because the variable is constant. Again, no age-based differentiation in presence of grave features is seen, however this pattern will be interpreted conservatively due to the small sample size.

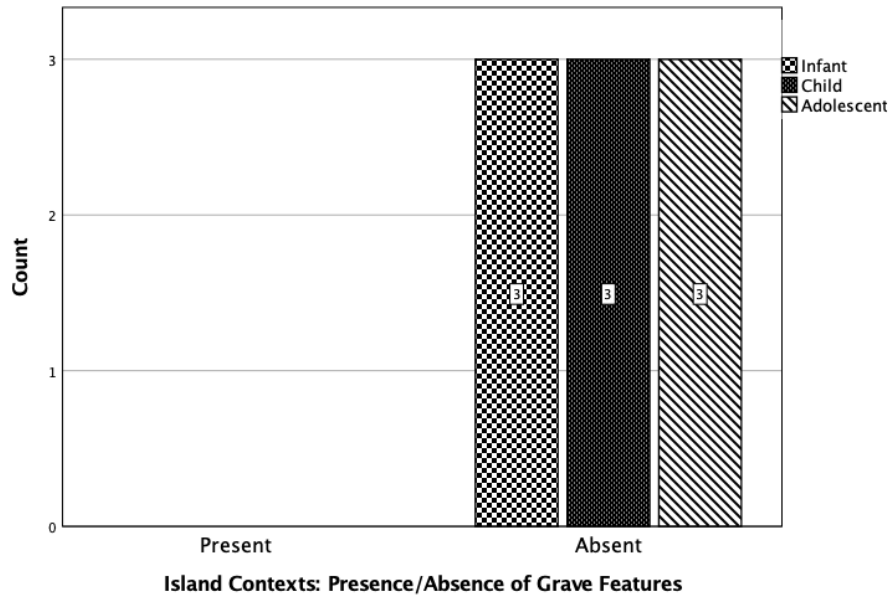

Figure 6.83. Bar graph for presence/absence of grave features for island contexts by infant, child, and adolescent burials.

Table 6.85. Frequency Count and Percentage for Presence/Absence of Grave Features for Island Contexts by Infant, Child, and Adolescent Burials

Island Contexts: Presence/Absence of Grave Features	Infant		Child		Adolescent	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Present	0	0.0 %	0	0.0 %	0	0.0 %
Absent	3	100.0 %	3	100.0 %	3	100.0 %
Total	**3**	**100 %**	**3**	**100 %**	**3**	**100 %**

Lastly, this analysis provides the results for presence/absence of grave features in the mainland sample of infant, child, and adolescent burials (Figure 6.84 and Table 6.86). A Fischer's Exact test for independence (n = 56, p = 0.282) did not reveal a statistically significant difference between presence/absence of grave features and mainland infant, child, and adolescent burials. Although not statistically significant, the patterning for presence of grave features in the mainland sample appears to decrease in frequency as age increases. Comparing the two geographic contexts, there appears to be an insignificant difference for presence of grave features in the mainland sample of subadults, however, no difference is apparent in the island sample.

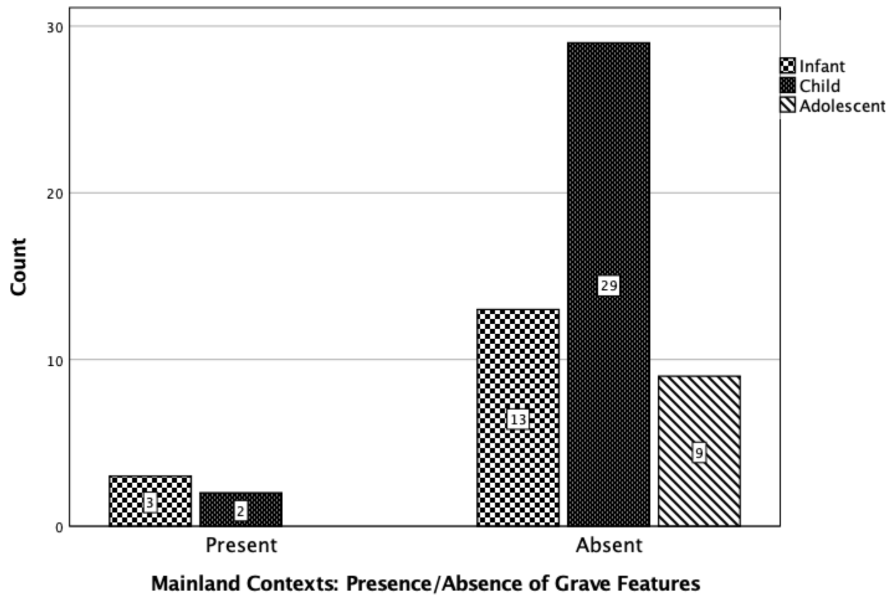

Figure 6.84. Bar graph for presence/absence of grave features for mainland contexts by infant, child, and adolescent burials.

Table 6.86. Frequency Count and Percentage for Presence/Absence of Grave Features for Mainland Contexts by Infant, Child, and Adolescent Burials

Mainland Contexts: Presence/Absence of Grave Features	Infant		Child		Adolescent	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Present	3	18.8 %	2	6.5 %	0	0.0 %
Absent	13	81.3 %	29	93.5 %	9	100.0 %
Total	**16**	**100 %**	**31**	**100 %**	**9**	**100 %**

Summary of Findings for Variable 7: Presence/Absence of Grave Features

For the analyses of grave features, five of the 12 total analyses revealed highly significant statistical results, all burials by time period (Table 6.75), all burials by subadult/adult burials (Table 6.76), Middle period subadult/adult burials (Table 6.78), all burials by geographic context (Table 6.79), and mainland contexts subadult/adult burials (Table 6.81). The primary trends evident in the analysis of grave features indicate that grave features were far more common in the Middle period, than in the Early period, as well as being more prevalent in mainland contexts than in island contexts. Both Middle period and mainland contexts analyses revealed a pattern where adults more frequently were associated with grave features than were subadults.

Considering the remainder of the statistically insignificant analyses, for both island contexts and Early period analyses, there were no cases of subadults being associated with grave features. Adults from the Early period had lower frequencies for presence of grave features than Middle period adults, and a similar pattern is seen between island and mainland contexts adults, where island contexts adults have lower proportions for grave features being present. There do not appear to be age-based differences for presence of grave features in the Early period or in burials from island contexts. Overall, it appears that grave features were more highly restricted earlier in time, and in island contexts.

Analysis of Variable 8: Presence/Absence of Burial Pigmentation

Burial pigmentation, the intentional decoration of the body with pigment, was a fairly widespread Chumash burial practice (Orr 1968). Pigment most commonly took the form of red and/or black pigment located on the head and/or abdomen of the deceased. Data regarding burial pigmentation was recorded in the form of presence/absence categories.

Presence/Absence of Burial Pigmentation for All Burials by Time Period

This analysis establishes a baseline for the presence/absence of burial pigmentation in Early and Middle periods, to ascertain broad patterns for this variable diachronically (Figure 6.85 and Table 6.87). A Pearson's chi-square test for independence (n = 654, χ^2 = 128.83, p < 0.001) revealed a highly significant statistical difference between presence/absence of burial pigmentation and time period. When considering the relationship between Early and Middle period burials, the Early period sample had pigmented burials more frequently than those lacking pigmentation, but for the Middle period, the reverse is true, with lack of burial pigmentation being more common. Proportionally, the Early period sample has a division between presence/absence of burial pigmentation closer to an even split than is evident in the Middle period sample, which has a much larger differential present. Burials in the Early period received pigmentation over three-and-one-half times more frequently than Middle period burials. At this level of analysis, the results indicate that burial pigmentation was a more widespread practice in the Early period, but appears to become more restricted in the Middle period.

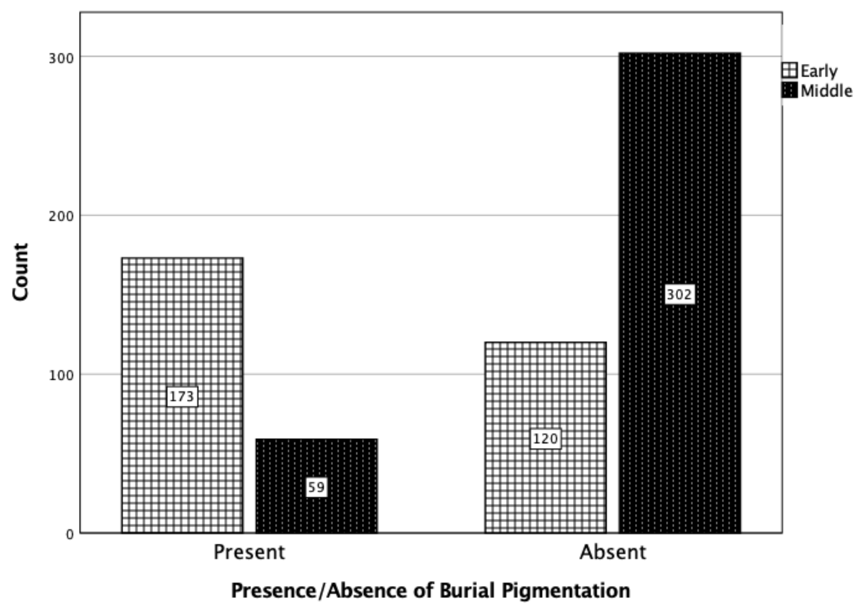

Figure 6.85. Bar graph for presence/absence of burial pigmentation for all burials by time period.

Table 6.87. Frequency Count and Percentage for Presence/Absence of Burial Pigmentation for All Burials by Time Period

Presence/Absence of Burial Pigmentation	Early Period		Middle Period	
	Frequency	Percent	Frequency	Percent
Present	173	59.0 %	59	16.3 %
Absent	120	41.0%	302	83.7 %
Total	**293**	**100 %**	**361**	**100 %**

Presence/Absence of Burial Pigmentation by Subadult and Adult Burials

To establish an age-comparative baseline for the presence/absence of burial pigmentation, subadult and adult burial data are analyzed (Figure 6.86 and Table 6.88). A Pearson's chi-square test for independence (n = 614, χ^2 = 26.91, p < 0.001) revealed a highly significant statistical difference between presence/absence of burial pigmentation and subadult/adult burials. Subadult burials have a slightly greater proportion of pigmented burials than non-pigmented burials, while adults have non-pigmented burials occurring approximately two-and-one-half times as often as pigmented burials. Between the two age groups, subadults have pigmented burials nearly twice as frequently as adults with pigmented burials. The results for these two age groups appear to indicate an age-based difference in presence of burial pigmentation at this level of analysis.

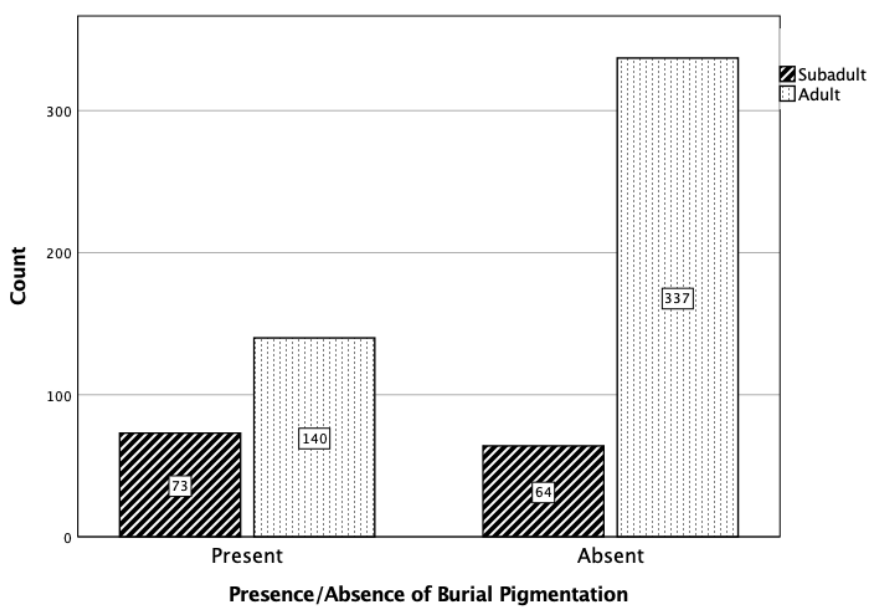

Figure 6.86. Bar graph for presence/absence of burial pigmentation for subadult and adult burials.

Table 6.88. Frequency Count and Percentage for Presence/Absence of Burial Pigmentation for Subadult and Adult Burials

Presence/Absence of Burial Pigmentation	Subadult		Adult	
	Frequency	**Percent**	**Frequency**	**Percent**
Present	73	53.3 %	140	29.4 %
Absent	64	46.7 %	337	70.6 %
Total	**137**	**100 %**	**477**	**100 %**

Presence/Absence of Burial Pigmentation for Subadult and Adult Burials by Time Period

This analysis establishes rates for the presence/absence of burial pigmentation in Early period subadult and adult burials (Figure 6.87 and Table 6.89) to facilitate diachronic comparisons between these two age groups, with the Middle period sample (Figure 6.88 and Table 6.90). For the Early period sample, a Pearson's chi-square test for independence (n = 279, $\chi^2 = 0.71$, $p = 0.400$) did not reveal a statistically significant difference between presence/absence of burial pigmentation and Early period subadult/adult burials. For Early period subadult and adult burials, the two groups appear to be more similar to one another than they are different. Both subadult and adult burials have burial pigmentation occurring approximately one-and-one-half times more frequently than burials lacking pigmentation. For the Early period, there does not appear to be an age-based difference in presence of burial pigmentation between subadult and adult burials.

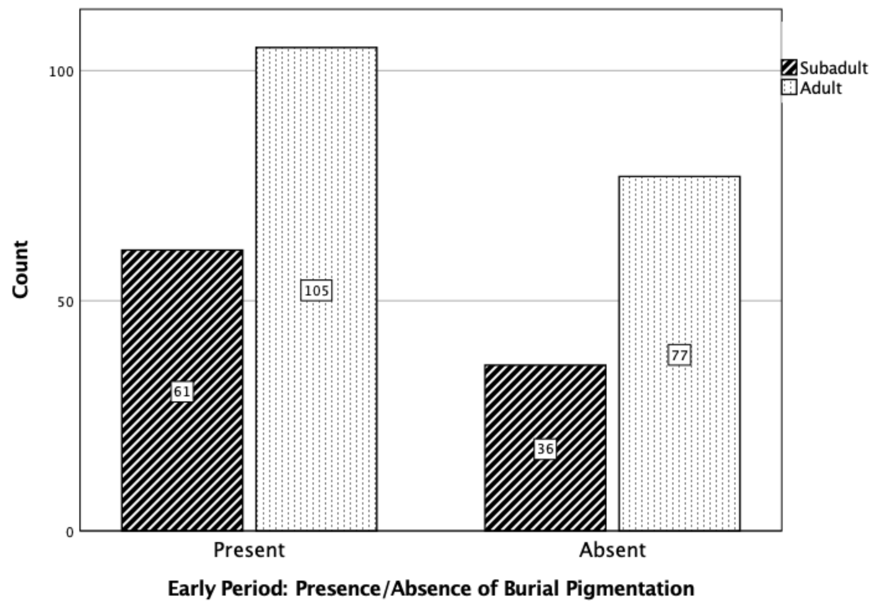

Figure 6.87. Bar graph for presence/absence of burial pigmentation for Early period subadult and adult burials.

Table 6.89. Frequency Count and Percentage for Presence/Absence of Burial Pigmentation for Early Period Subadult and Adult Burials

Early Period: Presence/Absence of Burial Pigmentation	**Subadult**		**Adult**	
	Frequency	**Percent**	**Frequency**	**Percent**
Present	61	62.9 %	105	57.7 %
Absent	36	37.1 %	77	42.3 %
Total	**97**	**100 %**	**182**	**100 %**

For the Middle period sample (Figure 6.88 and Table 6.90), a Pearson's chi-square test for independence (n = 335, $\chi^2 = 9.61$, p = 0.004) revealed a highly significant statistical difference between presence/absence of burial pigmentation and Middle period subadult/adult burials. For subadults, non-pigmented burials occur over twice as frequently as pigmented burials, while for adults, absence of pigmentation is over seven times more common than burials with pigmentation. Although subadult and adult burials share similar patterning, Middle period subadult burials have pigmented burials occurring over two-and-one-half times more frequently than Middle period adult burials with pigmentation. For the Middle period, there does appear to be an age-based differentiation in treatment for burial pigmentation between subadult and adult burials.

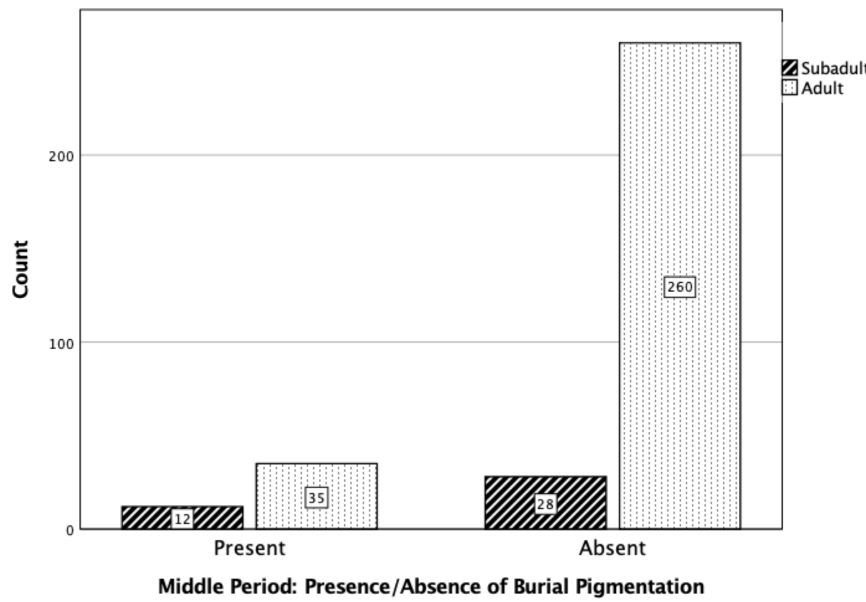

Figure 6.88. Bar graph for presence/absence of burial pigmentation for Middle period subadult and adult burials.

Table 6.90. Frequency Count and Percentage for Presence/Absence of Burial Pigmentation for Middle Period Subadult and Adult Burials

Middle Period: Presence/Absence of Burial Pigmentation	**Subadult**		**Adult**	
	Frequency	**Percent**	**Frequency**	**Percent**
Present	12	30.0 %	35	11.9 %
Absent	28	70.0 %	260	88.1 %
Total	**40**	**100 %**	**295**	**100 %**

Presence/Absence of Burial Pigmentation for All Burials by Island and Mainland Contexts

The following analysis establishes a baseline for the presence/absence of burial pigmentation in island and mainland burials, to ascertain broad patterns for this variable at a relative geographic level (Figure 6.89 and Table 6.91). A Pearson's chi-square test for independence (n = 654, χ^2 = 149.12, p < 0.001) revealed a highly significant statistical difference between presence/absence of burial pigmentation and geographic context. For island burials, there is a slightly larger proportion of pigmented burials than those lacking pigmentation, while for the mainland, burials lacking pigmentation occurred eight times more frequently than pigmented burials. Between the two contexts, island contexts have pigmented burials occurring five times more frequently than for burials from the mainland. At this level of analysis, there appears to be a significantly greater proportions of pigmented burials occurring in island contexts than in burials from the mainland.

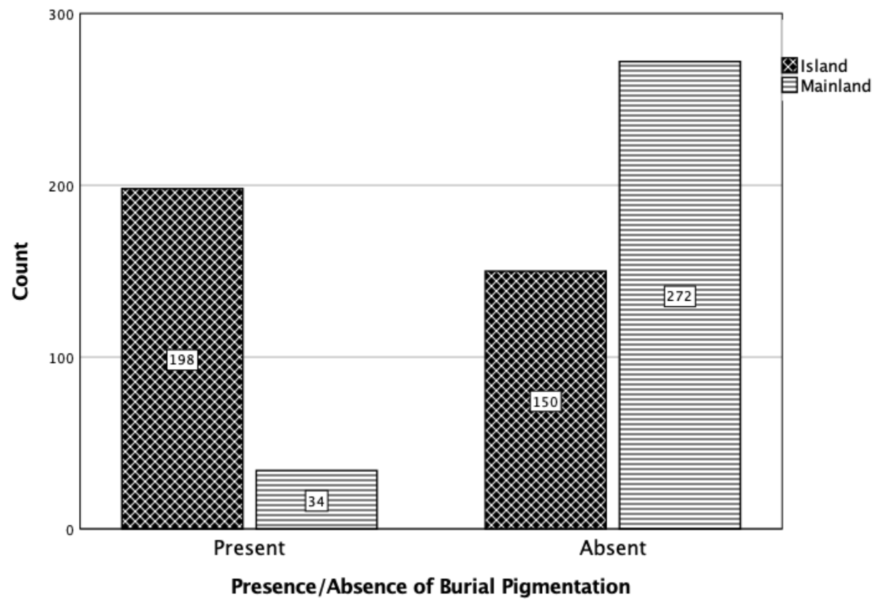

Figure 6.89. Bar graph for presence/absence of burial pigmentation for all burials by island and mainland context.

Table 6.91. Frequency Count and Percentage for Presence/Absence of Burial Pigmentation for All Burials by Island and Mainland Context

Presence/Absence of Burial Pigmentation	Island		Mainland	
	Frequency	Percent	Frequency	Percent
Present	198	56.9 %	34	11.1 %
Absent	150	43.1 %	272	88.9 %
Total	**348**	**100 %**	**306**	**100 %**

Presence/Absence of Burial Pigmentation for Subadult and Adult Burials by Island and Mainland Contexts

To facilitate context-based comparisons between subadult and adult burials, island burial data for presence/absence of burial pigmentation are analyzed for subadult and adult burials

(Figure 6.90 and Table 6.92), followed by subadult and adult mainland burial data (Figure 6.91 and Table 6.93). A Pearson's chi-square test for independence (n = 334, χ^2 = 2.97, p = 0.085) did not reveal a statistically significant difference between presence/absence of burial pigmentation and island contexts subadult/adult burials. Both age groups have pigmented burials occurring slightly more frequently than non-pigmented burials, and there is no marked difference in proportions between the two age groups. For island burials, there does not appear to be differential treatment based on age for presence of burial pigmentation.

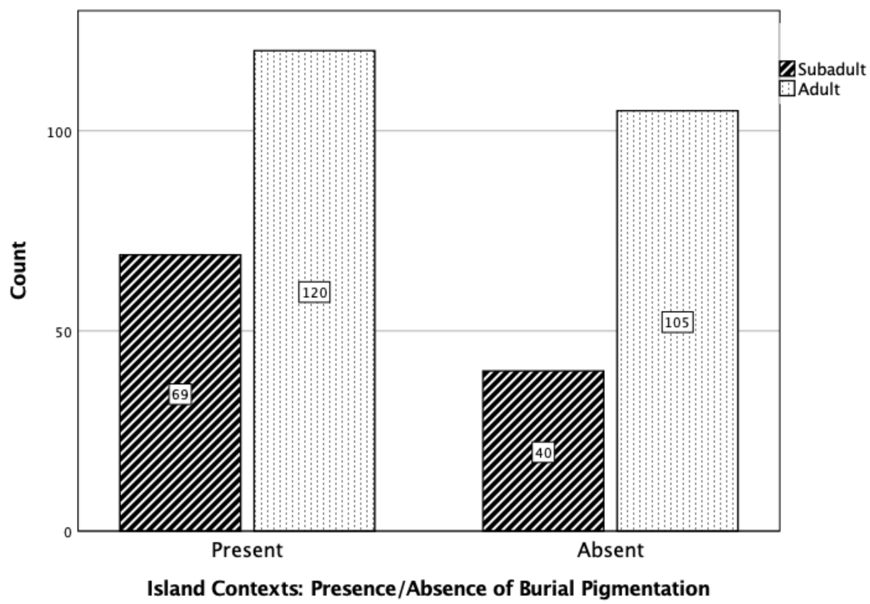

Figure 6.90. Bar graph for presence/absence of grave features for island contexts by subadult and adult burials.

Table 6.92. Frequency Count and Percentage for Presence/Absence of Burial Pigmentation for Island Contexts by Subadult and Adult Burials

Island Contexts: Presence/Absence of Burial Pigmentation	Subadult		Adult	
	Frequency	Percent	Frequency	Percent
Present	69	63.3 %	120	53.3 %
Absent	40	36.7 %	105	46.7 %
Total	**109**	**100 %**	**225**	**100 %**

For the mainland contexts sample (Figure 6.91 and Table 6.93), a Pearson's chi-square test for independence (n = 280, χ^2 = 1.30, p = 0.255) did not reveal a statistically significant difference between presence/absence of burial pigmentation and mainland subadult/adult burials. Proportions for presence/absence of burial pigmentation are similar between subadult and adult burials, however, subadults have pigmented burials nearly twice as often as adults. Although the differences between the age groups are not statistically significant, there does appear to be a trend where mainland subadults have pigmented burials more frequently than adults.

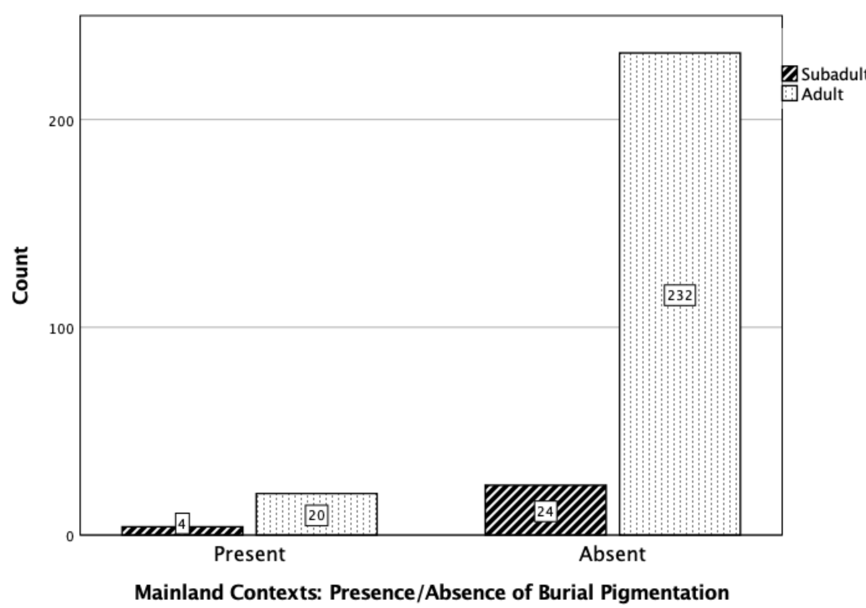

Figure 6.91. Bar graph for presence/absence of burial pigmentation for mainland contexts by subadult and adult burials.

Table 6.93. Frequency Count and Percentage for Presence/Absence of Burial Pigmentation for Mainland Contexts by Subadult and Adult Burials

Mainland Contexts: Presence/Absence of Burial Pigmentation	Subadult		Adult	
	Frequency	Percent	Frequency	Percent
Present	4	14.3 %	20	7.9 %
Absent	24	85.7 %	232	92.1 %
Total	**28**	**100 %**	**252**	**100 %**

Presence/Absence of Burial Pigmentation for Infant, Child, and Adolescent Burials

In order to facilitate finer granulation in the analysis of subadult burials, rates for presence/absence of burial pigmentation in infant, child, and adolescent burials are established (Figure 6.92 and Table 6.94). A Pearson's chi-square test for independence (n = 137, χ^2 = 10.01, p = 0.006) revealed a highly significant statistical difference between presence/absence of burial pigmentation and infant, child, and adolescent burials. Pigmented burials are most common in infant burials, and least common in adolescent burials. There appears to be a pattern where presence of burial pigmentation decreases as age increases. At this level of analysis, there appears to be age-differential treatment in burial pigmentation between infant, child, and adolescent burials.

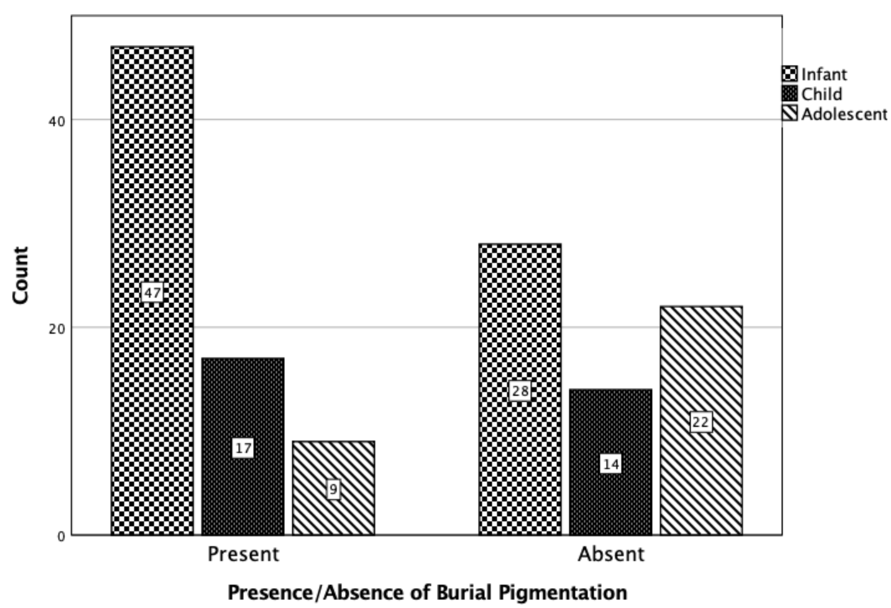

Figure 6.92. Bar graph for presence/absence of burial pigmentation for infant, child, and adolescent burials.

Table 6.94. Frequency Count and Percentage for Presence/Absence of Burial Pigmentation for Infant, Child, and Adolescent Burials

Presence/Absence of Burial Pigmentation	**Infant**		**Child**		**Adolescent**	
	Frequency	**Percent**	**Frequency**	**Percent**	**Frequency**	**Percent**
Present	47	62.7 %	17	54.8 %	9	29.0 %
Absent	28	37.3 %	14	45.2 %	22	71.0 %
Total	**75**	**100 %**	**31**	**100 %**	**31**	**100 %**

Presence/Absence of Burial Pigmentation for Infant, Child, and Adolescent Burials by Time Period

The following analysis establishes the rates for presence/absence of burial pigmentation in Early period infant, child, and adolescent burials (Figure 6.93 and Table 6.95). A Fischer's Exact test for independence (n = 97, p = 0.003) revealed a highly significant statistical difference between presence/absence of burial pigmentation and Early Period infant, child, and adolescent burials. The proportional values for burial pigmentation are most similar between infant and child burials, with pigmented burials occurring over two time more frequently than non-pigmented burials. For adolescent burials, there is a relative reversal of this pattern, where adolescents have non-pigmented burials over twice as frequently as pigmented burials. An age-based difference in treatment appears to be present in the Early period, where infant and child burials are treated more similarly to one another than either is to adolescent burials.

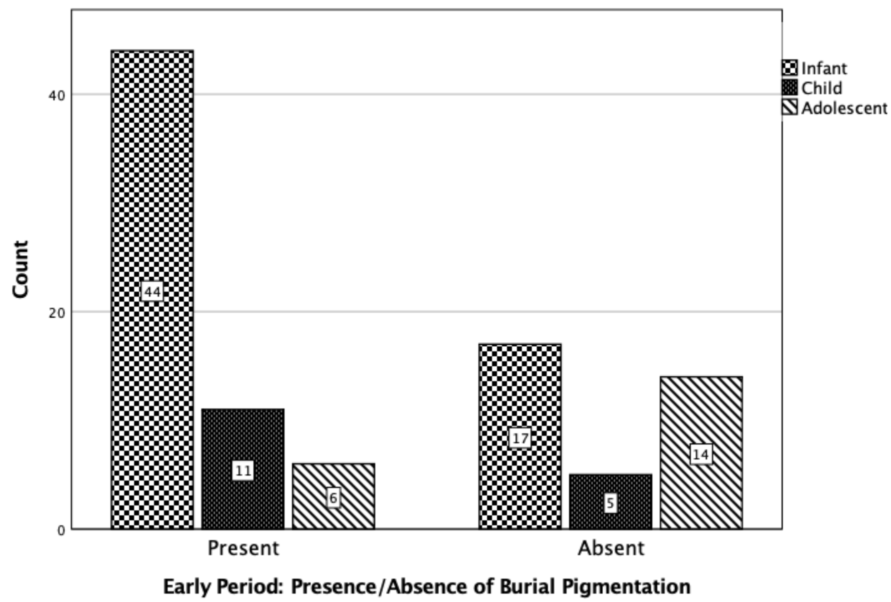

Figure 6.93. Bar graph for presence/absence of burial pigmentation for Early period infant, child, and adolescent burials.

Table 6.95. Frequency Count and Percentage for Presence/Absence of Burial Pigmentation for Early Period Infant, Child, and Adolescent Burials

Early Period: Presence/Absence of Burial Pigmentation	Infant		Child		Adolescent	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Present	44	72.1 %	11	68.8 %	6	30.0 %
Absent	17	27.9 %	5	31.3 %	14	70.0 %
Total	**61**	**100 %**	**16**	**100 %**	**20**	**100 %**

This analysis establishes the rates for presence/absence of burial pigmentation in Middle period infant, child, and adolescent burials (Figure 6.94 and Table 6.96). A Fischer's Exact test for independence (n = 40, p = 0.626) did not reveal a statistically significant difference between presence/absence of burial pigmentation and Middle Period infant, child, and adolescent burials. Between the three age groups, child burials have pigmented burials slightly more frequently than infant or adolescent burials, however the difference is not significant. There does not appear to be a marked difference in treatment of Middle period subadults based on distinctions in age.

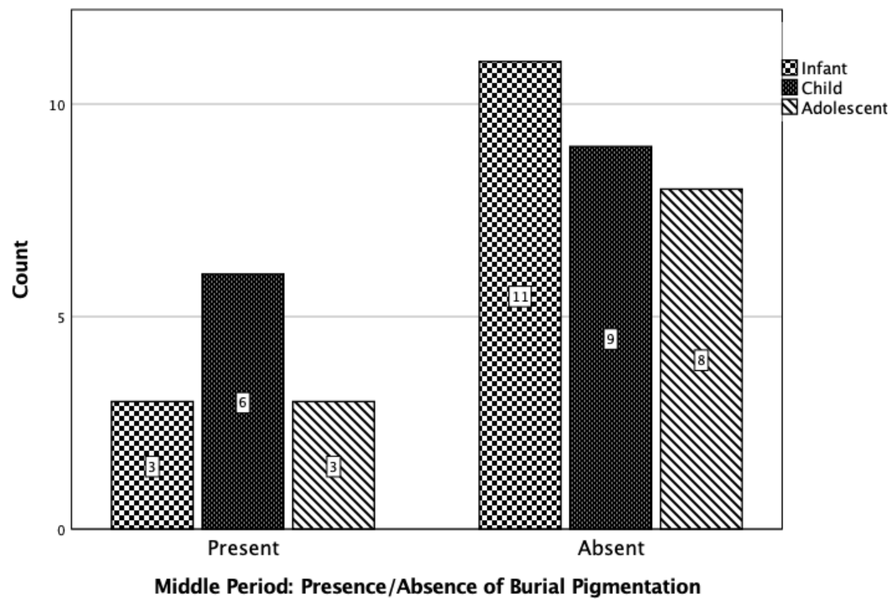

Figure 6.94. Bar graph for presence/absence of burial pigmentation for Middle period infant, child, and adolescent burials.

Table 6.96. Frequency Count and Percentage for Presence/Absence of Burial Pigmentation for Middle Period Infant, Child, and Adolescent Burials

Middle Period: Presence/Absence of Burial Pigmentation	Infant		Child		Adolescent	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Present	3	21.4 %	6	40.0 %	3	27.3 %
Absent	11	78.6 %	9	60.0 %	8	72.7 %
Total	**14**	**100 %**	**15**	**100 %**	**11**	**100 %**

Presence/Absence of Burial Pigmentation for Infant, Child, and Adolescent Burials by Island and Mainland Contexts

To facilitate context-based comparisons for subadult burials, island data for presence/absence of burial pigmentation in infant, child, and adolescent burials are analyzed (Figure 6.95 and Table 6.97), followed by mainland infant, child, and adolescent burials (Figure 6.96 and Table 6.98). For island subadults, a Pearson's chi-square test for independence (n = 109, $\chi^2 = 10.30$, $p = 0.005$) revealed a highly significant statistical difference between presence/absence of burial pigmentation and infant, child, and adolescent burials. For island contexts, infant and child burials have more similar patterning for burial pigmentation than either group does to the adolescent age group. Both infant and child age groups have pigmented burials occurring over two times as often as burials without pigmentation, and for adolescents, non-pigmented burials occur nearly twice as frequently as pigmented burials. There does appear to be a difference in treatment for island subadults based on age, with infant and child burials having the most similar treatment to one another, and adolescent burials having a relative reversal of the patterns seen in the former two age groups.

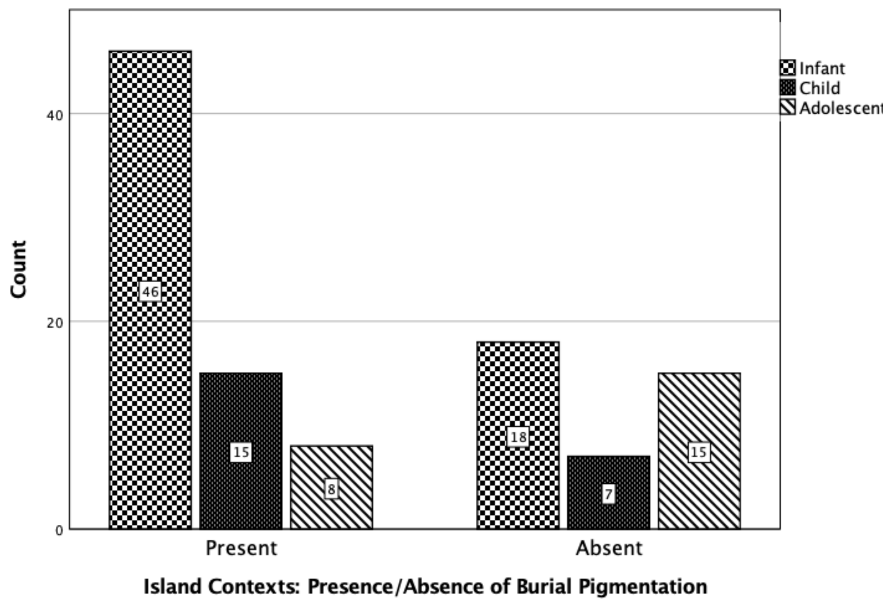

Figure 6.95. Bar graph for presence/absence of burial pigmentation for island contexts by infant, child, and adolescent burials.

Table 6.97. Frequency Count and Percentage for Presence/Absence of Burial Pigmentation for Island Contexts by Infant, Child, and Adolescent Burials

Island Contexts: Presence/Absence of Burial Pigmentation	Infant		Child		Adolescent	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Present	46	71.9 %	15	68.2 %	8	34.8 %
Absent	18	28.1 %	7	31.8 %	15	65.2 %
Total	**64**	**100 %**	**22**	**100 %**	**23**	**100 %**

This analysis establishes the rates for presence/absence of burial pigmentation in mainland infant, child, and adolescent burials (Figure 6.96 and Table 6.98). A Fischer's Exact test for independence ($n = 28$, $p = 0.807$) did not reveal a statistically significant difference between presence/absence of burial pigmentation and mainland subadult/adult burials. The three mainland subadult age groups all have non-pigmented burials occurring more frequently than pigmented burials. Proportions between infant and adolescent burials are slightly more comparable to one another than either is to the proportions for child burials. The differences between these three subadult age groups is minimal, and again not considered to be significant.

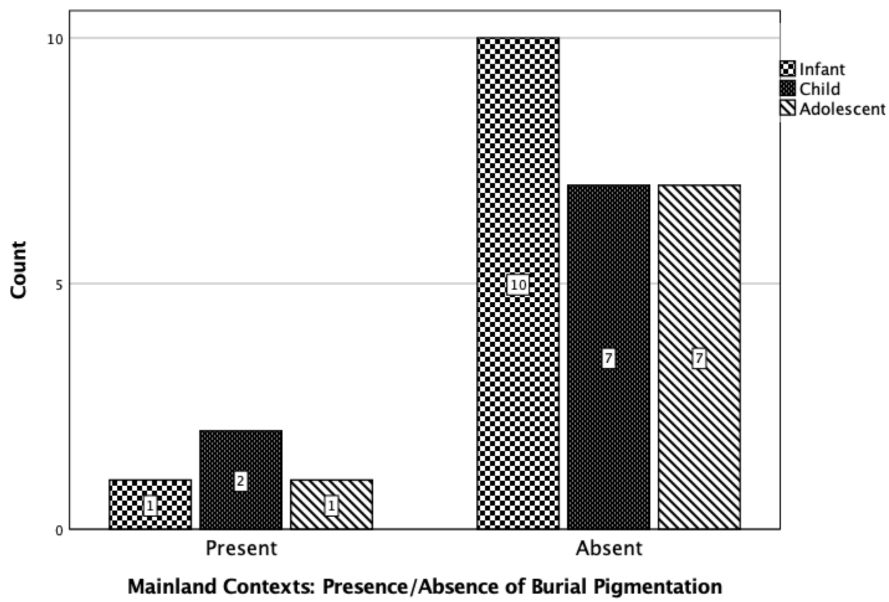

Figure 6.96. Bar graph for presence/absence of burial pigmentation for mainland contexts by infant, child, and adolescent burials.

Table 6.98. Frequency Count and Percentage for Presence/Absence of Burial Pigmentation for Mainland Contexts by Infant, Child, and Adolescent Burials

Mainland Contexts: Presence/Absence of Burial Pigmentation	**Infant**		**Child**		**Adolescent**	
	Frequency	**Percent**	**Frequency**	**Percent**	**Frequency**	**Percent**
Present	1	9.1 %	2	22.2 %	1	12.5 %
Absent	10	90.9 %	7	77.8 %	7	87.5 %
Total	**11**	**100 %**	**9**	**100 %**	**8**	**100 %**

Summary of Findings for Variable 8: Presence/Absence of Burial Pigmentation

Seven of the 12 total analyses performed to investigate rates for presence/absence of burial pigmentation yielded highly significant statistical results, including all burials by time period (Table 6.87), all burials by subadult/adult burials (Table 6.88), Middle period subadult/adult burials (Table 6.90), all burials by geographic context (Table 6.91), all subadult burials by infant, child, and adolescent burials (Table 6.94), Early period infant, child, and adolescent burials (Table 6.95), and island contexts infant, child, and adolescent burials (Table 6.97). Pigmented burials were more common in the Early period and also in burials from island contexts. Generally, subadults more frequently had pigmented burials than adults, and specifically in Middle period burials, subadult burials had higher frequencies of burial pigmentation than adult burials. A general trend revealed in the analysis for the three subadult age divisions was that pigmented burials appear to become gradually less common as age increases. During the Early period, infant and child burials are more similar to one another than to adolescent burials, and infant and child burials both had higher frequencies of pigmented burials than adolescents; both trends are also true for the island contexts analysis.

The remaining analyses did not indicate statistically significant results, however, these analyses revealed patterns indicating lack of age-based treatment for burial pigmentation. Early period and island subadult and adult burials received similar treatment for pigmented burials, and mainland contexts and Middle period infant, child, and adolescent burials largely had similar treatment for burial pigmentation as well. These patterns aid in supporting the idea that pigmented burials were more widespread in Early period, where subadults and adults received similar treatment, however, this became more restricted in the Middle period, as subadult burials more commonly received burial pigmentation over adults and the proportions for both age groups are lower than what is seen in the Early period sample. A similar pattern is evident between island and mainland contexts as well. Age-based treatment within the subadult sample is also evident, where in the Early period and in island contexts infant and child burials have very similar treatments to one another, which differ drastically from adolescent burials. For Middle period and mainland burials, there does not appear to be age-based differential treatment for infant, child, and adolescent burials. Overall, these results indicate that burial pigmentation became more restricted for all age groups and there was also less age-based differentiation evident in subadult burials over time as well.

Summary of Findings and Conclusion

This section concludes the analyses conducted for eight variables relating to the physical body of the deceased. The primary findings for each variable are reiterated briefly here in the order in which they were originally presented.

Variable 1 Findings: Burial Position

Extended burials are more common in the Middle period than they are in the Early period, while seated and semi-flexed burials are more common in the Early period but decrease in popularity by the Middle period. Between age groups overall, there is more variation evident in the burial positions of subadults burials and less variation in adult burials.

Variable 2 Findings: Body Side

In the Early period, the most common body side is supine, while the least common is prone, however, in the Middle period this trend is reversed, with supine burials being the least common and prone burials becoming the most common type. A pattern of note evident in subadult burials from island contexts in particular is that frequency of the prone position appears to decrease as age increases. Overall, there appears to be a greater degree of variation in body side for island subadults than mainland subadults.

Variable 3 Findings: Burial Direction

West-oriented burials are the most common direction in the Early period, which changes in the Middle period to east-oriented burials being the most common direction. Between the geographic contexts, island burials were largely west-oriented and had more south-oriented burials than those from mainland contexts, the burials of which were primarily east-oriented and had comparably few south-oriented burials.

Variable 4 Findings: Interment Type

For all analyses, the most common interment type was single, followed at substantially smaller proportions by dual and multiple interments, respectively. In Early period and also in island contexts, there are higher proportions of dual and multiple interments than in Middle period or mainland contexts. Subadults from both Early period and island contexts are more frequently a part of dual interments than are adults, whereas both subadult and adult burials have comparable rates for multiple types. In comparison, subadult burials from Middle period and mainland contexts have higher rates for both dual and multiple interment types than adults.

Variable 5 Findings: Interment Type Age Association

For both time periods and geographic contexts, a trend was present where subadult burials more frequently were a part of adult and subadult interments, as opposed to being buried with another subadult. For adults, there generally was a pattern present where about half of adult burials were buried with another adult, and half with a subadult. Another pattern emerged for subadults, in all analyses, where non-single infant interments occurred only with an adult, while child and adolescent burials occurred with both other subadults as well as adults.

Variable 6 Findings: Grave Depth

There was a primary trend where both Early period and island contexts graves tended to be dug deeper than graves in Middle period and mainland contexts, respectively. Analyses of Middle period and mainland contexts samples indicated that significant differences were present between subadult and adult burials, as well as between infant, child, and adolescent burials, however, no significant differences were present between the age groups in Early period or island contexts.

Variable 7 Findings: Presence/Absence of Grave Features

Grave features appear to be more prevalent in Middle period and mainland contexts than they are in Early period or island contexts. Additionally, there were no subadult burials with grave features in the Early period or from island contexts, and for Middle period and mainland contexts, adult burials were more commonly associated with grave features than were subadult burials.

Variable 8 Findings: Presence/Absence of Burial Pigmentation

Pigmented burials were most common in the Early period, but were also highly prevalent in island contexts as well. Early period and island contexts burials had fairly equal rates for pigmentation between subadults and adults, however, for the Middle period and mainland contexts, subadults more frequently had burial pigmentation than did adults.

Concluding Thoughts

Cross-culturally, Binford (1971:22) identified age as one of the most common aspects that structured the way in which the body is disposed after death, and the variables addressed in this chapter were designed to capture many different facets of body disposal that directly relate to culturally conceived notions of appropriate burial. The resulting data from analyses presented in this chapter are used in Chapter 8 to provide a more culturally contextual discussion of the analytical results, and to place the patterns observed here within the greater understanding of Chumash mortuary patterns observed regionally. Burial position, body side, and burial direction data (Variables 1–3) are aimed at assessing whether or not subadults have greater variability than adults in their physical presentations, while interment type and interment type age association data (Variables 4 and 5) are designed to evaluate if subadults were more commonly a part of non-single interments than adults. Data regarding grave depth (Variable 6) are used in conjunction with total number of grave goods (Variable 12, presented in Chapter 7) to observe whether both subadults and adults share patterning for the most grave goods belonging to individuals with the deepest graves. Lastly, data for the presence of grave features and burial pigmentation (Variables 7 and 8) provide a proxy measure for "energy expenditure," which is designed to determine whether adolescent and adult burials have greater evidence for energy expenditure than infant or child burials. These analyses operate under the premise that those responsible for burying the dead made intentional choices regarding where, how, and in what manner the body was buried. Consequently, the final representation of the body within the mortuary context creates a socially contingent identity that is imparted onto the deceased by those responsible for the preparation of the body and burial rites (Gillespie 2001; Tung 2014). The archaeological visibility of the mortuary context thus allows for aspects of this social identity to be ascertained and compared between individuals.

The results presented in this chapter revealed different aspects of the body's position, side, orientation, grave depth, interment with or without other individuals, and if the body was pigmented or associated with grave features. Altogether, these analyses provided general baselines for treatment of Chumash burials over time, between geographic contexts, and among the different age groups. The trends observed for Variables 1–8 have developed an understanding of age-based differences in mortuary treatment that directly relate to the body's presentation in the burial context, however, an analysis for variables correlated with grave good patterning is still needed to develop a more nuanced conception of the prehistoric Chumash mortuary record. The following chapter (Chapter 7) provides the results for seven supplemental sets of analyses (Variables 9–15) conducted for variables that relate to the objects associated with the body of the deceased. These additional variable analyses provide information on presence of grave goods and beads, amounts of grave goods, number of material types, and presence of ceremonial paraphernalia, which provide another way to assess more material aspects of the Chumash burial program.

CHAPTER 7
Statistical Data for Variables Relating to Objects Associated with the Body of the Deceased

Chapter Organization

This chapter is the second data-driven chapter, which presents analyses conducted for variables relating to objects associated with the body of the deceased. This chapter begins with a brief discussion of the statistical limitations relating to this chapter's set of variables. The sections that follow proffer the results for an additional seven variables (15 variables in total): 1) presence/absence of grave goods, 2) number of non-ornament grave goods, 3) number of ornament grave goods, 4) total number of grave goods, 5) number of material types, 6) presence/absence of ceremonial paraphernalia, 7) presence/absence of beads.

For the variable analyses that follow, the same set of analyses are performed. Each section begins with a brief introduction that re-familiarizes the reader with the variable category, discussed initially in Chapter 5. Following that introduction, baselines for time period and subadult/adult age groups are established. Analyses are then presented separately, breaking up the subadult/adult sample into Early and Middle periods, to provide a point of comparison for the age groups diachronically. A geographic context baseline is then established, followed by analyses for subadult/adult burials separated into island and mainland contexts. To further investigate potential patterns within the subadult sample, the group is divided into infant, child, and adolescent burials, establishing a general baseline for the three age groups. From there, the three age groups are analyzed by Early and Middle periods, and then by island and mainland contexts. Each variable section is concluded with a brief summary of the statistical patterns evident in the tests performed for that variable. Additional data table summaries are available in Appendix E for the categorical variables discussed within this chapter.

Statistical Limitations for the Following Analyses

Sample sizes may differ between variable analyses due to the fact that excavation records may have not been able to provide sufficient data to fulfill every possible variable category. Analysis for categorical variables took the form of the Pearson's chi-square test for independence, however the Fischer's Exact test was used to assess significance for small samples ($n < 100$), or if 20 % or more of cells had values less than 5. Due to the non-parametric nature of the ordinal variables, Mann-Whitney *U* and Kruskal-Wallis tests were used as non-parametric alternatives to the parametric independent samples t-test and Analysis of Variance, respectively. To showcase the relative rarity of outliers and extreme outliers in each of the analyses, these cases were not removed from the visual representations of the data. Furthermore, these non-parametric tests were chosen because they use analyses based on median values, which are more stable with respect to exceptional values. For all analyses in this chapter, the significance level (α) was established at the 0.05 level, but analyses with *p*-values approaching this significance level are also noted.

Analysis of Variable 9: Presence/Absence of Grave Goods

The following section presents the analyses conducted for the ninth study variable, presence/absence of grave goods, to provide a general baseline for the frequency of grave good inclusion in Chumash burials. Grave goods are considered to be any object intentionally deposited with the deceased (Hamlin 2007:114), and a burial needed to have a minimum of one grave good to be coded as "present" for this set of analyses. A full list of grave good types is available in Appendix A.

Presence/Absence of Grave Goods for All Burials by Time Period

This analysis establishes a baseline for the presence/absence of grave goods for Early and Middle periods, to ascertain broad patterns for this variable diachronically (Figure 7.1 and Table 7.1). The Pearson chi-square test for independence (n = 836, $\chi^2 = 0.159$, p = 0.702) did not indicate a statistically significant difference between presence/absence of grave goods and time period. Both Early and Middle period samples have nearly identical proportions of presence/absence of grave goods, which, at this level of analysis, indicates that inclusion of grave goods in burial practice remained at a fairly constant level over time.

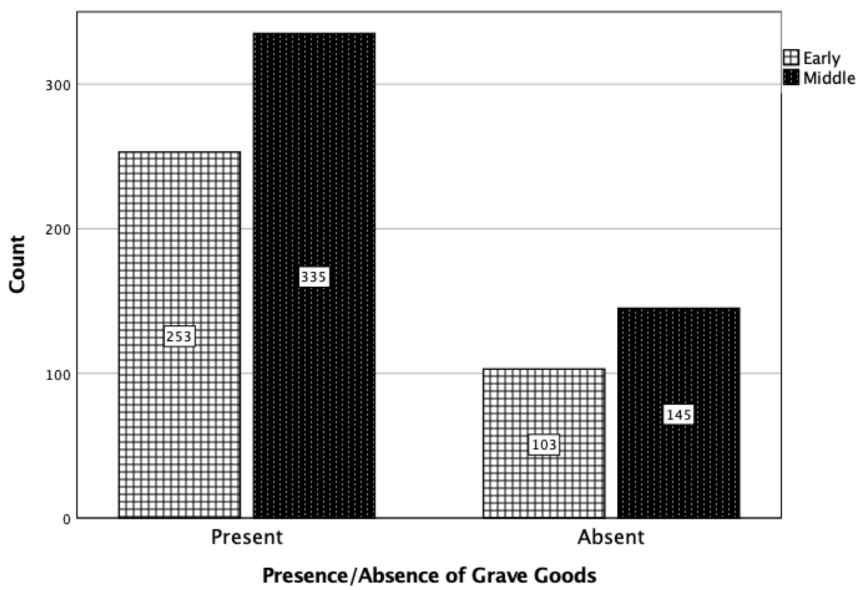

Figure 7.1. Bar graph of presence/absence of grave goods for all burials by time period.

Table 7.1. Frequency Count and Percentage of Presence/Absence of Grave Goods for All Burials by Time Period

Presence/Absence of Grave Goods	Early Period		Middle Period	
	Frequency	Percent	Frequency	Percent
Present	253	71.1 %	335	69.8 %
Absent	103	28.9 %	145	30.2 %
Total	**356**	**100 %**	**480**	**100 %**

Presence/Absence of Grave Goods by Subadult and Adult Burials

The following analysis establishes a baseline for the presence/absence of grave goods for subadult and adult burials (Figure 7.2 and Table 7.2). The Pearson chi-square test for independence (n = 777, χ^2 = 1.650, p = 0.216) did not indicate a statistically significant difference between presence/absence of grave goods and subadult/adult burials. These data indicate that subadult and adult burials have very similar proportions of presence/absence of grave goods, however the rate of presence of grave goods in subadult burials is slightly higher than the rate of presence of grave goods for adults. At this broad level of analysis, the inclusion of grave goods in subadult and adult burials occurred at similar rates, but presence of grave goods was slightly more prevalent in subadult burials over adult burials.

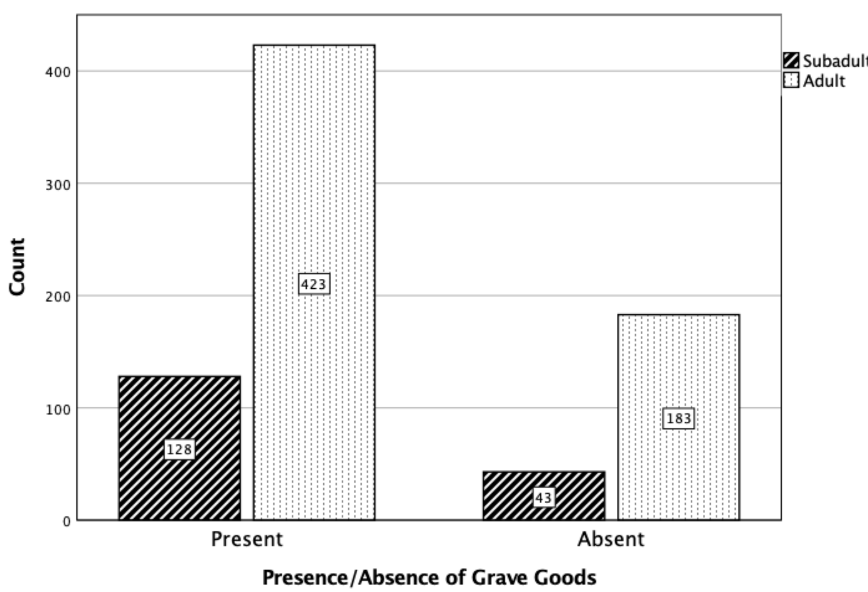

Figure 7.2. Bar graph of presence/absence of grave goods for subadult and adult burials.

Table 7.2. Frequency Count and Percentage of Presence/Absence of Grave Goods for Subadult and Adult Burials

Presence/Absence of Grave Goods	Subadult		Adult	
	Frequency	Percent	Frequency	Percent
Present	128	74.9 %	423	69.8 %
Absent	43	25.1 %	183	30.2 %
Total	**171**	**100 %**	**606**	**100 %**

Presence/Absence of Grave Goods for Subadult and Adult Burials by Time Period

This analysis considers the presence/absence of grave goods for Early period subadult and adult burials to facilitate comparisons between these two age groups, diachronically, with the Middle period sample (Figure 7.3 and Table 7.3). The Pearson chi-square test for independence (n = 336, χ^2 = 43.739, p = 0.066) did not indicate a statistically significant difference between presence/absence of grave goods and Early period subadult/adult burials, however the p-value is approaching significance. Early period subadult and adult proportions have the presence of grave goods predominant over the absence of grave goods, however, Early period subadult burials have a higher proportion of presence of grave goods than do Early period adult burials. Although this difference is not significant, there is a trend in the data where subadults more frequently have grave goods included in their burials than do adults from the same time period.

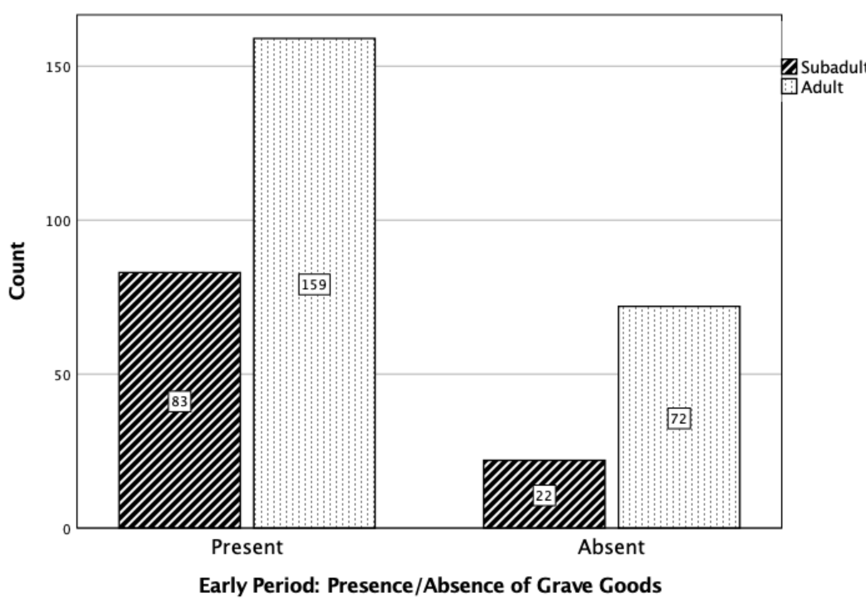

Figure 7.3. Bar graph of presence/absence of grave goods for Early period subadult and adult burials.

Table 7.3. Frequency Count and Percentage of Presence/Absence of Grave Goods for Early Period Subadult and Adult Burials

Early Period: Presence/Absence of Grave Goods	**Subadult**		**Adult**	
	Frequency	**Percent**	**Frequency**	**Percent**
Present	83	79.0 %	159	68.8 %
Absent	22	21.0 %	72	31.2 %
Total	**105**	**100 %**	**231**	**100 %**

The following analysis considers the presence/absence of grave goods for Middle period subadult and adult burials (Figure 7.4 and Table 7.4). The Pearson chi-square test for independence (n = 441, $\chi^2 = 0.132$, $p = 0.771$) did not indicate a statistically significant difference between presence/absence of grave goods and Middle period subadult/adult burials. The proportions of presence/absence for Middle period subadult and adult burials are nearly equal. This indicates that during the Middle period, rates of inclusion of grave goods were nearly identical between subadult and adult burials.

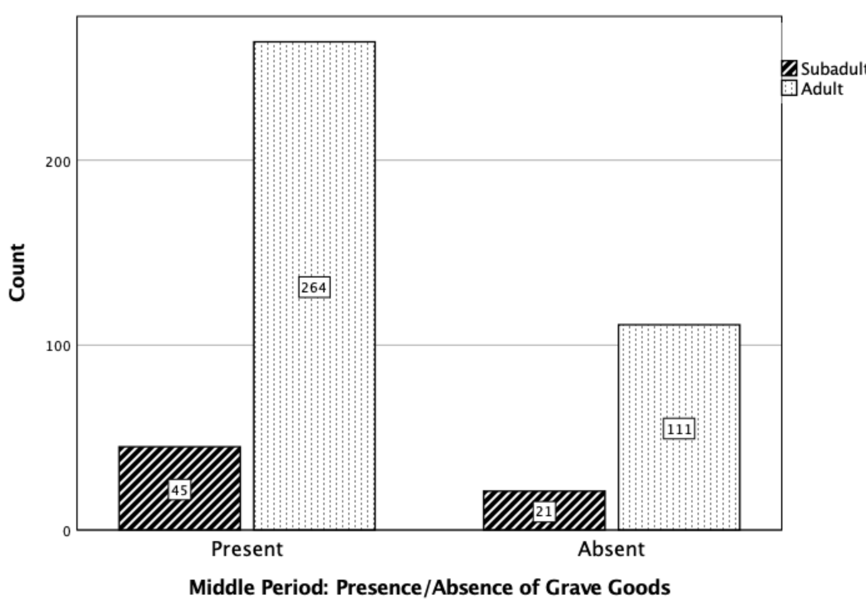

Figure 7.4. Bar graph of presence/absence of grave goods for Middle period subadult and adult burials.

Table 7.4. Frequency Count and Percentage of Burial Position for Middle Period Subadult and Adult Burials

Middle Period: Presence/Absence of Grave Goods	Subadult		Adult	
	Frequency	Percent	Frequency	Percent
Present	45	68.2 %	264	70.4 %
Absent	21	31.8 %	111	29.6 %
Total	**117**	**100 %**	**375**	**100 %**

Presence/Absence of Grave Goods for All Burials by Island and Mainland Contexts

The following analysis establishes a baseline for the presence/absence of grave goods between island and mainland contexts, to ascertain broad patterns for this variable at a relative geographic level (Figure 7.5 and Table 7.5). The Pearson chi-square test for independence (n = 836, $\chi^2 = 0.682$, $p = 0.449$) did not indicate a statistically significant difference between presence/absence of grave goods and geographic context. Burials from both island and mainland contexts had nearly equal proportions of presence/absence of grave goods, which indicates that inclusion of grave goods as part of burial practice occurred at very similar levels in both contexts.

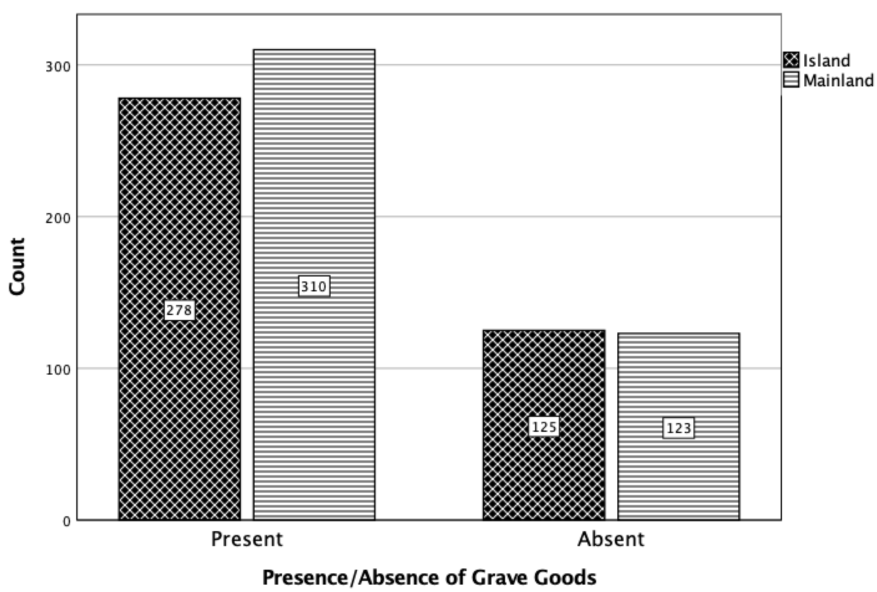

Figure 7.5. Bar graph of presence/absence of grave goods for all burials by island and mainland contexts.

Table 7.5. Frequency Count and Percentage of Presence/Absence of Grave Goods for All Burials by Island and Mainland Contexts

Presence/Absence of Grave Goods	Island		Mainland	
	Frequency	Percent	Frequency	Percent
Present	278	69.0 %	310	71.6 %
Absent	125	31.0 %	123	28.4 %
Total	**403**	**100 %**	**433**	**100 %**

Presence/Absence of Grave Goods for Subadult and Adult Burials by Island and Mainland Contexts

This analysis conveys the presence/absence of grave goods for island subadult and adult burials to facilitate relative geographic comparisons between these two age groups (Figure 7.6 and Table 7.6). The Pearson chi-square test for independence (n = 387, χ^2 = 4.691, p = 0.038) indicated a statistically significant difference between presence/absence of grave goods and island subadult/adult burials. Overall, both island subadult and adult burials had grave goods present in burial contexts more frequently than burials lacking grave goods, however, the difference between island subadult and adult burials here indicates that subadults had grave goods included in their burial contexts at rates significantly higher than adults.

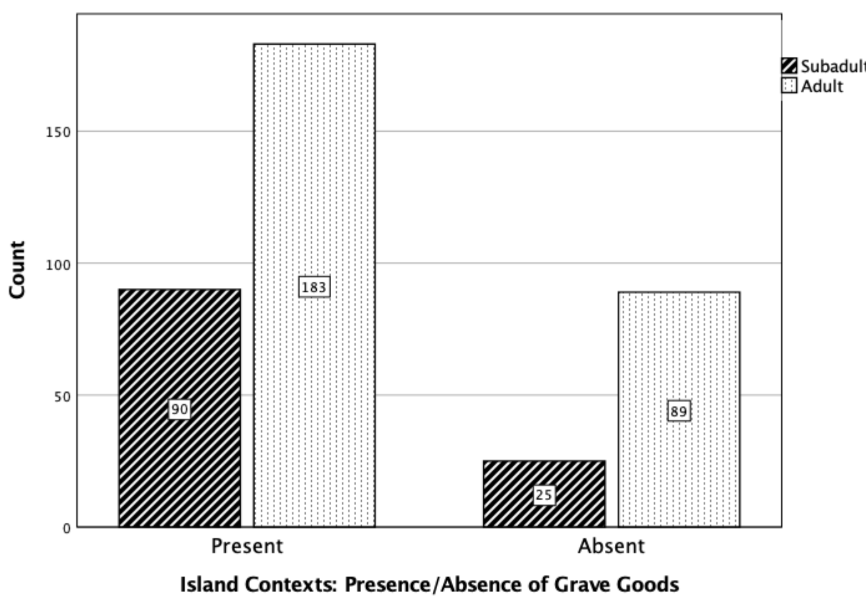

Figure 7.6. Bar graph of presence/absence of grave goods for island contexts by subadult and adult burials.

Table 7.6. Frequency Count and Percentage of Presence/Absence of Grave Goods for Island Contexts by Subadult and Adult Burials

Island Contexts: Presence/Absence of Grave Goods	Subadult		Adult	
	Frequency	Percent	Frequency	Percent
Present	90	78.3 %	183	67.3 %
Absent	25	21.7 %	89	32.7 %
Total	**115**	**100 %**	**272**	**100 %**

The following analysis establishes the presence/absence of grave goods for subadult and adult burials from mainland contexts (Figure 7.7 and Table 7.7). The Pearson chi-square test for independence (n = 390, $\chi^2 = 0.375$, p = 0.632) does not indicate a statistically significant difference between presence/absence of grave goods and subadult/adult burials from mainland contexts. The rates of presence/absence of grave goods are very similar between subadult and adult burials, which indicates that there was no discernable age-based difference in treatment for inclusion of grave goods in mainland burials.

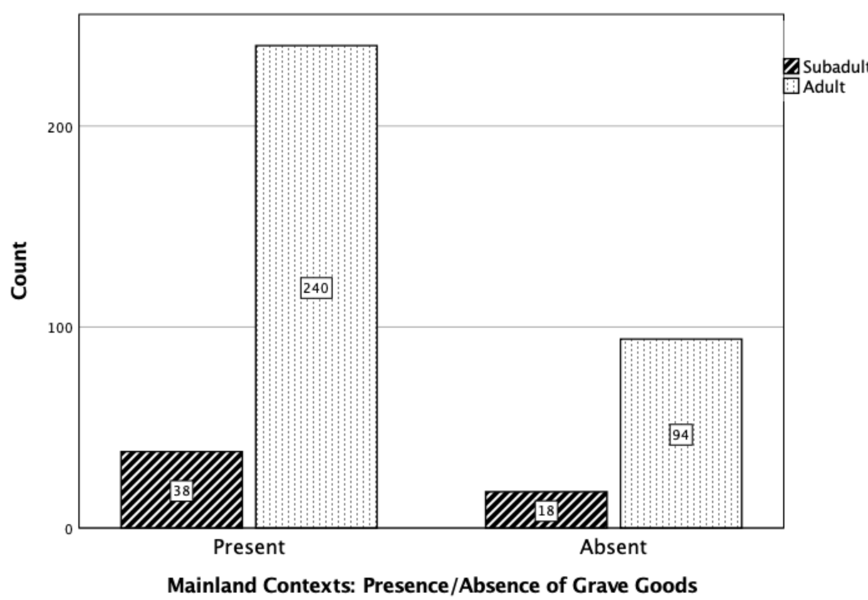

Figure 7.7. Bar graph of presence/absence of grave goods for mainland contexts by subadult and adult burials.

Table 7.7. Frequency Count and Percentage of Presence/Absence of Grave Goods for Mainland Contexts by Subadult and Adult Burials

Mainland Contexts: Presence/Absence of Grave Goods	**Subadult**		**Adult**	
	Frequency	**Percent**	**Frequency**	**Percent**
Present	38	67.9 %	240	71.9 %
Absent	18	32.1 %	94	28.1 %
Total	**56**	**100 %**	**334**	**100 %**

Presence/Absence of Grave Goods for Infant, Child, and Adolescent Burials

The following analysis serves to establish finer granulation in subadult burials by comparing infant, child, and adolescent burials for presence/absence of grave goods (Figure 7.8 and Table 7.8). The Pearson chi-square test for independence (n = 170, χ^2 = 2.072, p = 0.370) does not indicate a statistically significant difference between infant, child, and adolescent burials for the presence/absence of grave goods. Rates for presence of grave goods in infant and child burials are more similar to one another than they are to adolescent burials, however this difference is slight. The rate for presence of grave goods in adolescent burials is more similar to the rate of presence of grave goods for adult burials (Table 7.2), which may be indicative of adolescent burials having burial treatment more similar to adult burials than to infant or child burials.

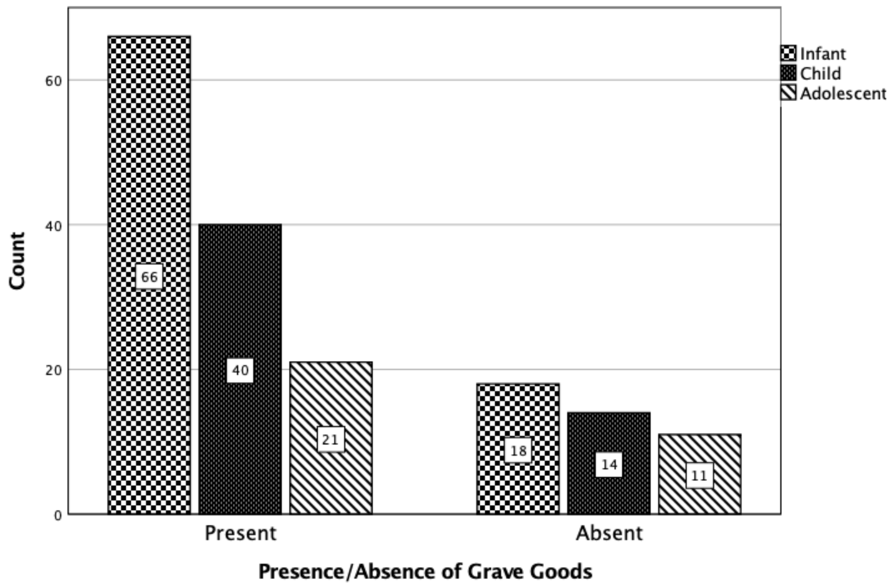

Figure 7.8. Bar graph of presence/absence of grave goods for infant, child, and adolescent burials.

Table 7.8. Frequency Count and Percentage of Presence/Absence of Grave Goods for Infant, Child and Adolescent Burials

Presence/Absence of Grave Goods	Infant		Child		Adolescent	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Present	66	78.6 %	40	74.1 %	21	65.6 %
Absent	18	24.1 %	14	25.9 %	11	34.4 %
Total	**84**	**100 %**	**54**	**100 %**	**32**	**100 %**

Presence/Absence of Grave Goods for Infant, Child, and Adolescent Burials by Time Period

The following analysis establishes the rates of presence/absence of grave goods for Early period infant, child, and adolescent burials (Figure 7.9 and Table 7.9). The Fischer's Exact test of independence (n = 104, p = 0.795) does not indicate a statistically significant difference between presence/absence of grave goods and Early period infant, child, and adolescent burials. All Early period subadult age groups have the presence of grave goods predominant over the absence of grave goods, but child and adolescent burials have more similar proportions to one another than they do to infant burials, however this difference is slight. The patterns for presence/absence of grave goods do not indicate any marked differences in treatment between Early period infant, child, or adolescent burials.

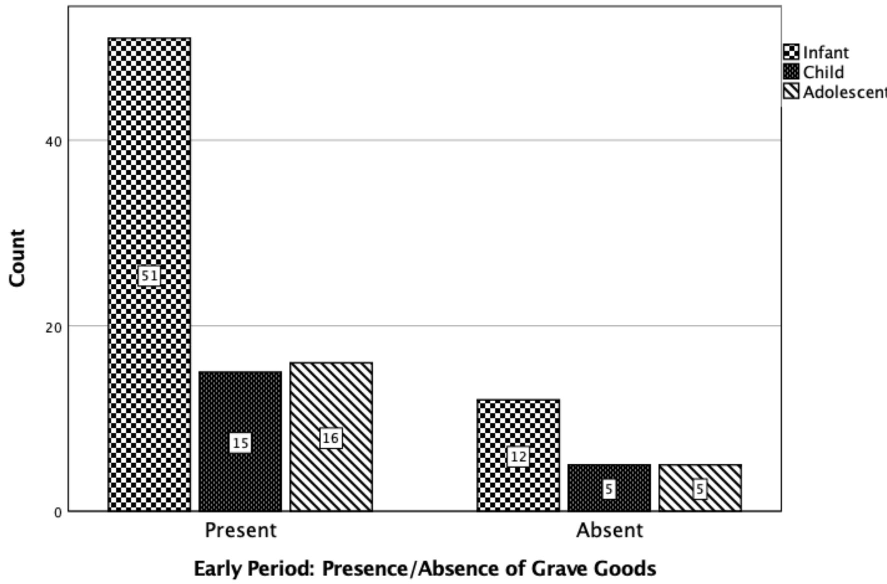

Figure 7.9. Bar graph of presence/absence of grave goods for Early Period infant, child, and adolescent burials.

Table 7.9. Frequency Count and Percentage of Presence/Absence of Grave Goods for Early Period Infant, Child and Adolescent Burials

Early Period: Presence/Absence of Grave Goods	Infant		Child		Adolescent	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Present	51	81.0 %	15	75.0 %	16	76.2 %
Absent	12	19.0 %	5	25.0 %	5	23.8 %
Total	**63**	**100 %**	**20**	**100 %**	**21**	**100 %**

This analysis establishes the rates for presence/absence of grave goods for Middle period infant, child, and adolescent burials (Figure 7.10 and Table 7.10). The Fischer's Exact test of independence (n = 66, p = 0.237) does not indicate a statistically significant difference between presence/absence of grave goods and Middle period infant, child, and adolescent burials. The proportions for presence of grave goods in infant and child burials are nearly equal to one another, with presence of grave goods predominant over absence of grave goods. Adolescent burials have a nearly equal split between presence and absence of grave goods, with a slightly higher proportion for absence of grave goods, which is the opposite for what is seen in infant and child burials. Middle period infant and child burials have very similar proportions to what is seen for Middle period adults (Table 7.4), indicating no marked difference. The difference in adolescent patterning is noted, but interpreted with extreme caution given the small adolescent sample size for the Middle period.

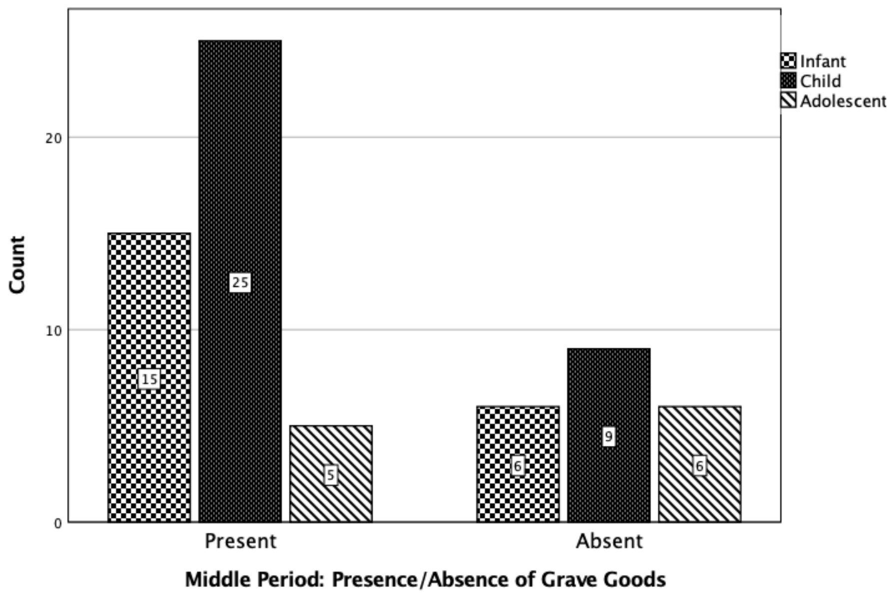

Figure 7.10. Bar graph of presence/absence of grave goods for Middle Period infant, child, and adolescent burials.

Table 7.10. Frequency Count and Percentage of Presence/Absence of Grave Goods for Middle Period Infant, Child, and Adolescent Burials

Middle Period: Presence/Absence of Grave Goods	**Infant**		**Child**		**Adolescent**	
	Frequency	**Percent**	**Frequency**	**Percent**	**Frequency**	**Percent**
Present	15	71.4 %	25	73.5 %	5	45.5 %
Absent	6	28.6 %	9	26.5 %	6	54.5 %
Total	**21**	**100 %**	**34**	**100 %**	**11**	**100 %**

Presence/Absence of Grave Goods for Infant, Child, and Adolescent Burials by Island and Mainland Contexts

The following analysis conveys rates for presence/absence of grave goods in island infant, child, and adolescent burials (Figure 7.11 and Table 7.11). The Pearson chi-square test for independence (n = 115, χ^2 = 1.282, p = 0.549) does not indicate a statistically significant difference between presence/absence of grave goods and island infant, child, and adolescent burials. The rates for presence of grave goods for infant and child burials are nearly equal to one another, whereas the rate for adolescent burials is nearly equal to the rate of presence of grave goods for island adult burials (Table 7.6). This patterning, although not statistically significant, seems to indicate that adolescent burials follow more closely patterns seen in adult burials than infant or child burials.

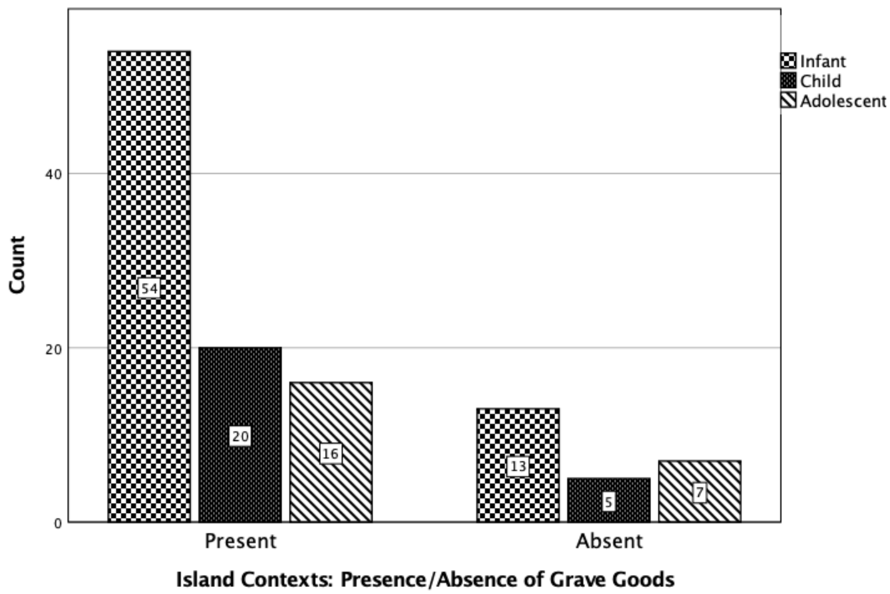

Figure 7.11. Bar graph of presence/absence of grave goods for island contexts by infant, child, and adolescent burials.

Table 7.11. Frequency Count and Percentage of Presence/Absence of Grave Goods for Island Contexts by Infant, Child, and Adolescent Burials

Island Contexts: Presence/Absence of Grave Goods	Infant		Child		Adolescent	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Present	54	80.6 %	20	80.0 %	16	69.6 %
Absent	13	19.4 %	5	20.0 %	7	30.4 %
Total	**67**	**100 %**	**25**	**100 %**	**23**	**100 %**

This analysis establishes the rates for presence/absence of grave goods for mainland infant, child, and adolescent burials (Figure 7.12 and Table 7.12). The Fischer's Exact test of independence (n = 55, p = 0.794) does not indicate a statistically significant difference between presence/absence of grave goods and mainland infant, child, and adolescent burials. Rates for presence of grave goods for infant and child burials are nearly equal, while adolescent burials have nearly an equal split, favoring grave goods being present. Rates for inclusion of grave goods in infant and child burials are extremely similar to those seen in the sample of mainland adults (Table 7.7). As with the Middle period analysis of the subadult sample, the difference in adolescent patterning is noted, but interpreted with extreme caution given the small sample size.

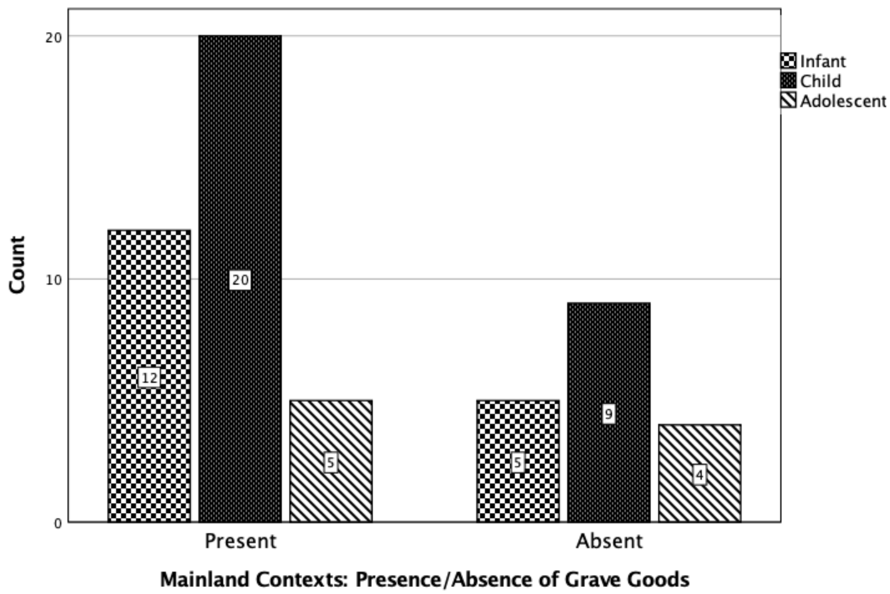

Figure 7.12. Bar graph of presence/absence of grave goods for mainland contexts by infant, child, and adolescent burials.

Table 7.12. Frequency Count and Percentage of Presence/Absence of Grave Goods for Mainland Contexts by Infant, Child, and Adolescent Burials

Mainland Contexts: Presence/Absence of Grave Goods	**Infant**		**Child**		**Adolescent**	
	Frequency	**Percent**	**Frequency**	**Percent**	**Frequency**	**Percent**
Present	12	70.6 %	20	69.0 %	5	55.6 %
Absent	5	29.4 %	9	31.0 %	4	44.4 %
Total	**17**	**100 %**	**29**	**100 %**	**9**	**100 %**

Summary of Findings for Variable 9: Presence/Absence of Grave Goods

The only analysis that yielded statistically significant results was for island contexts subadult and adult burials (Table 7.6). Island contexts subadult burials had a significantly higher rate for presence of grave goods than island contexts adult burials. For the remaining 11 statistical analyses performed for presence/absence of grave goods, there were no statistically significant differences identified, however it should be noted that one of these analyses was approaching significance. The only analysis that yielded a p-value approaching significance was for Early period subadult and adult burials. The results of this analysis (Table 7.3) showcase a similar pattern, where Early period subadult burials have higher rates for presence of grave goods than adult burials.

Even though majority of analyses for presence/absence of grave goods lack statistically significant results, there are two patterns of note: 1) infant and child burials have nearly equal rates for presence of grave goods, while adolescent burials more closely mirror rates for adult burials, and 2) infant and child burials have nearly equal rates for presence of grave goods, while adolescent burials have rates that are not similar to adult burials nor the other subadult burials. The first pattern is present in the analysis for all subadult burials by infant, child, and adolescent burials (Table 7.8) and also in the analysis of island contexts infant, child and adolescent burials (Table 7.11). The second pattern is evident in the Middle period analysis of infant, child, and adolescent burials (Table 7.10), as well as the mainland analysis of infant, child, and adolescent burials (Table 7.12). The latter pattern evident in the two aforementioned analyses could be an effect of small sample size, rather than an age-based difference. Overall, since the majority of analyses do not exhibit statistically significant results, it seems that, for the most part, the inclusion of grave goods occurred at very similar rates over time, between geographic contexts, for subadult and adult burials.

Analysis of Variable 10: Number of Non-Ornament Grave Goods

Variable 10, number of non-ornament grave goods, and Variable 11, number of ornament grave goods, are designed to provide a more nuanced analysis for Variable 12, total number of grave goods. Chumash burials often have large amounts of ornament grave goods, and patterning may be obscured with analysis only of the total number of grave goods for burials. The following analyses conducted for number of non-ornament grave goods record the numeric count of grave goods in direct association with the deceased that do not fall under the ornamentation category (see Appendix A:Table A.2). Categories of non-ornament artifacts include general/unspecified, food procurement, food preparation, shelter, clothing, ceremonial paraphernalia, simple processing and fabrication, and complex processing and manufacturing. All other non-ornament grave goods were recorded in whole integers only, based on the minimum number of items (MNI).

Number of Non-Ornament Grave Goods for All Burials by Time Period

In order to establish a diachronic baseline for the number of non-ornament grave goods included in burial contexts, data from the Early and Middle periods are analyzed (Figure 7.13 and Table 7.13). A Mann-Whitney U test ($U = 77890.50$, $z = 1.82$, $p = 0.069$, $r = 0.07$) did not reveal a statistically significant difference in the number of non-ornament grave goods between the Early period ($Md = 0.00$, $n = 325$) and the Middle period ($Md = 1.00$, $n = 447$) burials, however, it should be noted that the p-value is approaching significance. Ranges (barring outlier [°] and extreme outliers [*]) and interquartile ranges (IQR) are very similar between the two time periods, and the median values differ only by one non-ornament grave good, revealing more similarities than differences at this level of analysis. The Early period sample is skewed slightly toward more burials with smaller numbers of non-ornament grave goods, while the Middle period sample has a more symmetric distribution by comparison. The most pronounced difference between the two periods is in the largest extreme outlier, respective to period, which is more pronounced in the Early period sample than in the Middle period sample. Although the difference is slight and not statistically significant, there is a minor trend for the majority of

Middle period burials to have slightly more non-ornament grave goods than for the majority of the Early period sample.

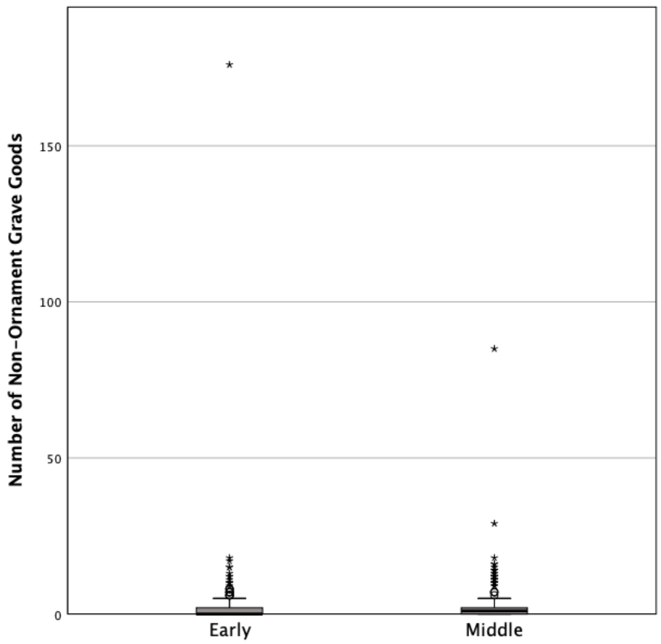

Figure 7.13. Boxplot for number of non-ornament grave goods comparing Early and Middle period burials.

Table 7.13. Independent-Samples Mann-Whitney *U* Test Summary Statistics for the Number of Non-Ornament Grave Goods for All Burials by Time Period

Number of Non-Ornament Grave Goods	Early Period	Middle Period
n	325	447
Median	0.00	1.00
Mean Rank	370.34	398.25

Number of Non-Ornament Grave Goods by Subadult and Adult Burials

To establish an age-comparative baseline for the number of non-ornament grave goods, subadult and adult burial data are analyzed (Figure 7.14 and Table 7.14). A Mann-Whitney *U* test (U = 46114.00, z = 0.75, p = 0.453, r = 0.03) did not reveal a statistically significant difference in the number of non-ornament grave goods between subadult (Md = 0.00, n = 325) and adult (Md = 1.00, n = 447) burials. Both subadult and adult burials share an equal median value for number of non-ornament grave goods, along with similar ranges (barring outlier and extreme outlier values) and IQRs to one another. Both age groups have fairly symmetric distributions, with the main difference between them being the largest extreme outlier, where one subadult case has far more non-ornament grave goods than the individual with the largest number of non-ornament grave goods in the adult sample. Given the rarity of the cases with non-ornament grave goods as extreme outliers, subadult and adult patterns for non-ornaments generally appear to be more similar than different.

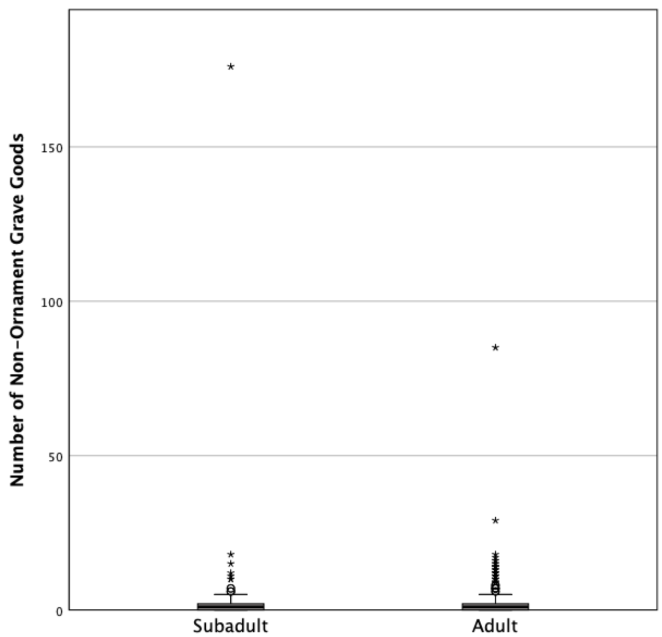

Figure 7.14. Boxplot for number of non-ornament grave goods comparing subadult and adult burials.

Table 7.14. Independent-Samples Mann-Whitney *U* Test Summary Statistics for the Number of Non-Ornament Grave Goods for All Burials by Subadult and Adult Burials

Number of Non-Ornament Grave Goods	Subadult	Adult
n	160	556
Median	1.00	1.00
Mean Rank	348.29	361.44

Number of Non-Ornament Grave Goods for Subadult and Adult Burials by Time Period

To facilitate comparisons between subadult and adult burials diachronically, Early period subadult and adult burial data are analyzed (Figure 7.15 and Table 7.15), followed by Middle period subadult and adult burial data (Figure 7.16 and Table 7.16). For the Early period sample, a Mann-Whitney U test ($U = 10244.00$, $z = -0.16$, $p = 0.872$, $r = 0.01$) did not reveal a statistically significant difference in the number of non-ornament grave goods between Early period subadult ($Md = 1.00$, $n = 101$) and adult ($Md = 0.00$, $n = 205$) burials. Although the difference is very small, the majority of subadults received at least one non-ornament grave good in comparison to adults, the majority of which receive none. Early period subadult data are more symmetric in their distribution, while adult data are skewed towards having more individuals without any non-ornament grave goods. The primary difference between the two age groups is the most extreme outlier for the subadult age group, which clearly indicates the overall rarity of large numbers of non-ornament grave goods being present in Early period burials for both subadults and adults.

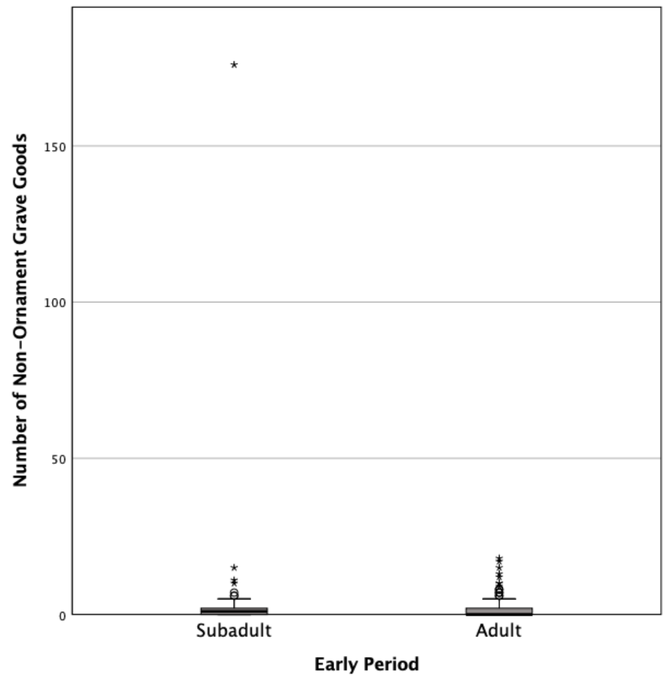

Figure 7.15. Boxplot for number of non-ornament grave goods comparing Early period subadult and adult burials.

Table 7.15. Independent-Samples Mann-Whitney *U* Test Summary Statistics for the Number of Non-Ornament Grave Goods by Early Period Subadult and Adult Burials

Early Period: Number of Non-Ornament Grave Goods	**Subadult**	**Adult**
n	101	205
Median	1.00	0.00
Mean Rank	154.57	152.97

For the Middle period sample of subadult and adult burials (Figure 7.16 and Table 7.16), a Mann-Whitney *U* test ($U = 10891.00$, $z = 0.67$, $p = 0.505$, $r = 0.03$) did not reveal a statistically significant difference in the number of non-ornament grave goods between Middle period subadult ($Md = 1.00$, $n = 59$) and adult ($Md = 1.00$, $n = 351$) burials. While both age groups share a median value, similar IQRs, and symmetric distributions, the primary difference lies in the spread of the data, particularly in the extreme outliers evident in the adult sample. For the Middle period sample, there are only cases for adults having incredibly large numbers of non-ornament grave goods, which are altogether extremely rare even in the adult sample. There is very little in the way of an age-based difference present in the Middle period sample of subadult and adult burials for the number of non-ornament grave goods, suggesting that both age groups were treated very similarly during the Middle period. Given that the only cases of extremely high numbers of non-ornaments are found in adult burials, this could potentially indicate an achieved component to burials with exceptionally large amounts of non-ornaments, at least in the Middle period. When compared with the Early period sample, there is a greater difference—albeit not a statistically significant one—between subadult and adult burials, with a larger frequency of subadult burials receiving one or more non-ornament grave goods than Early period adult burials.

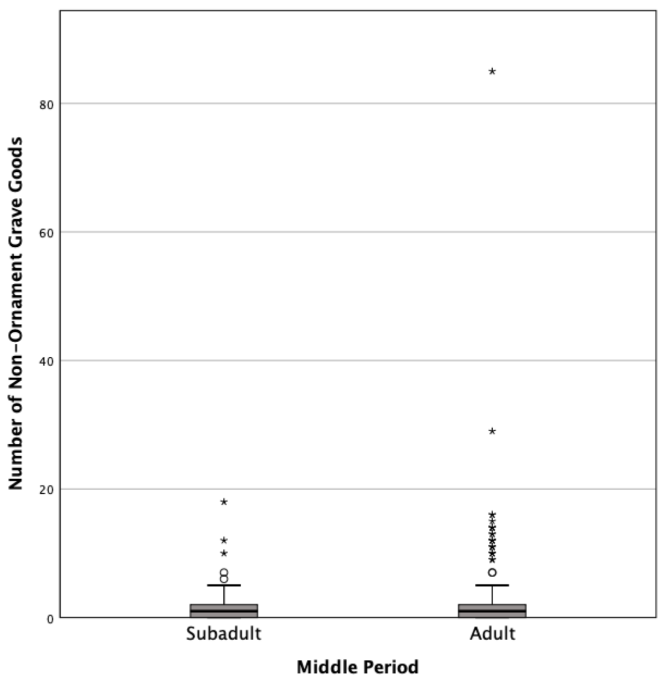

Figure 7.16. Boxplot for number of non-ornament grave goods comparing Middle period subadult and adult burials.

Table 7.16. Independent-Samples Mann-Whitney *U* Test Summary Statistics for the Number of Non-Ornament Grave Goods by Middle Period Subadult and Adult Burials

Middle Period: Number of Non-Ornament Grave Goods	Subadult	Adult
n	59	351
Median	1.00	1.00
Mean Rank	196.41	207.03

Number of Non-Ornament Grave Goods for All Burials by Island and Mainland Contexts

In order to establish a baseline between contexts, burials from both island and mainland contexts are analyzed (Figure 7.17 and Table 7.17). A Mann-Whitney *U* test (U = 83100.00, z = 3.02, p = 0.003, r = 0.11) resulted in a highly significant statistical difference in the number of non-ornament grave goods between island (Md = 0.00, n = 366) and mainland (Md = 1.00, n = 406) burials. While the median differences between the two geographic contexts are only separated by one non-ornament grave good, there are some notable differences in the distribution of extreme outliers, as well as the overall sample distributions. For island contexts, the data are largely skewed towards the majority of burials having no non-ornaments, while the mainland sample is more symmetric in distribution by comparison. The largest extreme outlier for the island sample is markedly larger than the largest extreme outlier for the mainland sample, however, outliers of such extreme value are incredibly rare in both samples. Overall, the results of this analysis convey a highly significant statistical difference in the number of non-ornament grave goods included in burials between island and mainland contexts, however, the real world significance appears to be fairly limited in nature.

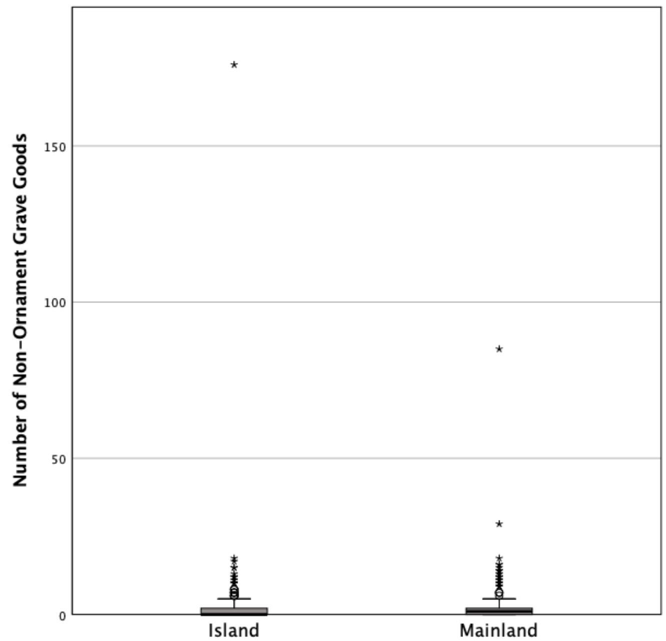

Figure 7.17. Boxplot for number of non-ornament grave goods comparing island and mainland context burials.

Table 7.17. Independent-Samples Mann-Whitney *U* Test Summary Statistics for the Number of Non-Ornament Grave Goods for All Burials by Island and Mainland Contexts

Number of Non-Ornament Grave Goods	Island Contexts	Mainland Contexts
n	366	406
Median	0.00	1.00
Mean Rank	362.45	408.18

Number of Non-Ornament Grave Goods for Subadult and Adult Burials by Island and Mainland Contexts

To facilitate context-based comparisons between subadult and adult burials, island data are analyzed for subadult and adult burials (Figure 7.18 and Table 7.18), followed by mainland subadult and adult burial data (Figure 7.19 and Table 7.19). For island contexts, a Mann-Whitney *U* test (U = 12761.00, z = -0.38, p = 0.703, r = 0.02) did not reveal a statistically significant difference in the number of non-ornament grave goods between island subadult (*Md* = 0.00, n = 366) and adult (*Md* = 1.00, n = 406) burials. While a subadult has the greatest number of non-ornament grave goods for the entire island sample, when the spreads of both samples are compared, they are rather comparable, with the most notable difference being their respective distributions. Island subadults have a fairly symmetric distribution, while adults have a distribution that is skewed towards more individuals having no non-ornament grave goods. The island subadult with the most non-ornaments in the entire sample showcases an individual given special treatment, far above any other individual in the sample, but also highlights the extreme rarity of such treatment overall.

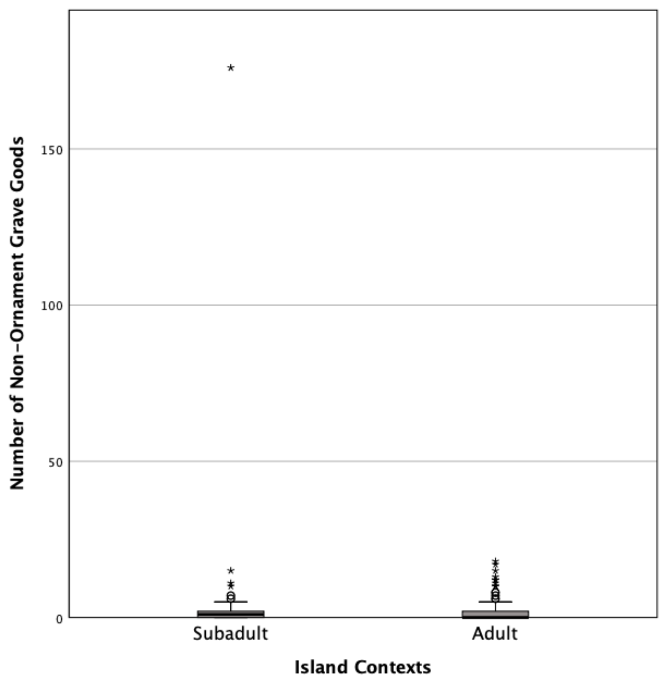

Figure 7.18. Boxplot for number of non-ornament grave goods comparing island context subadult and adult burials.

Table 7.18. Independent-Samples Mann-Whitney *U* Test Summary Statistics for the Number of Non-Ornament Grave Goods by Island Contexts Subadult and Adult Burials

Island Contexts: Number of Non-Ornament Grave Goods	**Subadult**	**Adult**
n	108	242
Median	1.00	0.00
Mean Rank	178.34	174.23

For the mainland contexts sample of subadult and adult burials (Figure 7.19 and Table 7.19), a Mann-Whitney *U* test (U = 8698.00, z = 0.79, p = 0.431, r = 0.04) did not reveal a statistically significant difference in the number of non-ornament grave goods between mainland subadult (*Md* = 0.00, *n* = 52) and adult (*Md* = 1.00, *n* = 314) burials. The median is the same for both subadult and adult burials, with half of both age groups having at least one non-ornament grave good, however, there are some notable differences in the ranges, IQRs, and outliers between the two age groups. The mainland adult sample has both a larger range and IQR than the subadult sample, while also having the most extreme outliers, when compared to subadults. Additionally, even though the median values are the same for both age groups, the distributions differ slightly, with subadult burials having a more symmetric distribution, while adult burials are skewed towards more individuals having lower numbers of non-ornament grave goods, but with a few individuals having exceptionally large numbers of non-ornaments. Altogether, the data do not support the idea that there was age-based differentiation in non-ornament grave goods for the mainland sample.

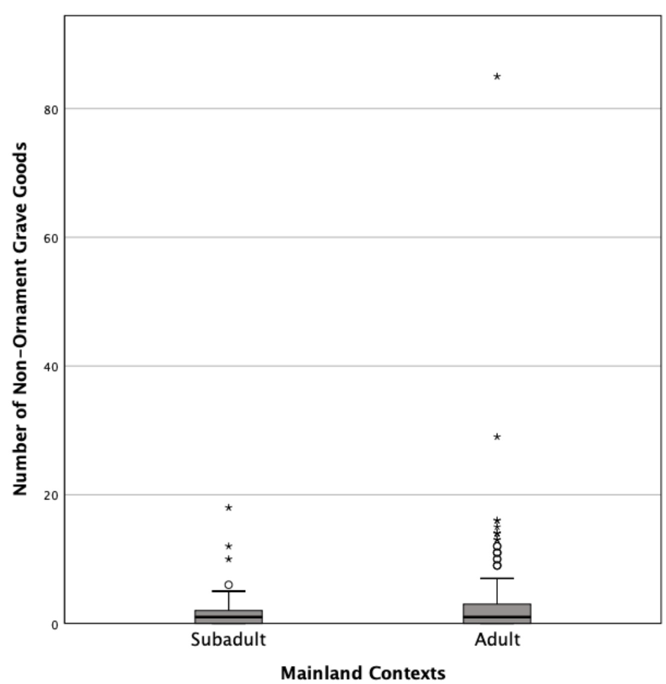

Figure 7.19. Boxplot for number of non-ornament grave goods comparing mainland context subadult and adult burials.

Table 7.19. Independent-Samples Mann-Whitney *U* Test Summary Statistics for the Number of Non-Ornament Grave Goods by Mainland Contexts Subadult and Adult Burials

Mainland Contexts: Number of Non-Ornament Grave Goods	Subadult	Adult
n	52	314
Median	1.00	1.00
Mean Rank	173.23	185.20

Number of Non-Ornament Grave Goods for Infant, Child, and Adolescent Burials

To further assess potential differences in subadult burials, the number of non-ornament grave goods are analyzed for infant, child, and adolescent burials (Figure 7.20 and Table 7.20). A Kruskal-Wallis test (χ^2 [2, n = 159] = 0.66, p = 0.718) did not reveal a statistically significant difference in the number of non-ornament grave goods between infant (n = 79), child (n = 49), and adolescent (n = 31) burials. Generally, infant and child burials are most similar to one another, sharing a median value, while adolescent burials are the most dissimilar to the other two age groups, having both a smaller median and a case with the largest number of non-ornaments. While infant and child burials are the most similar overall, infant burials have a distribution that is skewed towards more cases of individuals with small numbers of non-ornaments, while the sample of child burials has a more symmetric distribution. Comparatively, the distribution of the adolescent sample is more skewed towards individuals having no non-ornaments, while the extreme outlier for the adolescent sample showcases the rarity of receiving such large numbers of non-ornaments for the entire subadult sample.

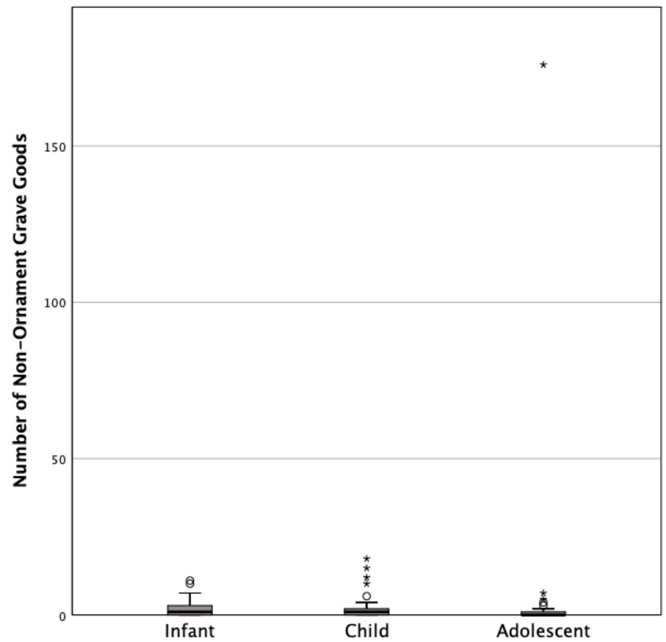

Figure 7.20. Boxplot for number of non-ornament grave goods comparing infant, child, and adolescent burials.

Table 7.20. Independent-Samples Kruskal-Wallis Test Summary Statistics for the Number of Non-Ornament Grave Goods for All Subadults by Infant, Child, and Adolescent Burials

Number of Non-Ornament Grave Goods	Infant	Child	Adolescent
n	79	49	31
Median	1.00	1.00	0.00
Mean Rank	81.67	80.86	74.39

Number of Non-Ornament Grave Goods for Infant, Child, and Adolescent Burials by Time Period

To facilitate diachronic comparisons between infant, child, and adolescent burials, Early period subadult data are analyzed (Figure 7.21 and Table 7.21), followed by Middle period subadult data (Figure 7.22 and Table 7.22). A Kruskal-Wallis test (χ^2 [2, *n* = 100] = 0.06, *p* = 0.971) did not reveal a statistically significant difference in the number of non-ornament grave goods between Early period infant (*n* = 59), child (*n* = 20), and adolescent (*n* = 21) burials. Early period infant and adolescent burials share a median value of having one non-ornament, while child burials have a median slightly lower than these two age groups. The distributions of these three age groups differ from each other, with infant burials having a relatively symmetric distributions, child burials being skewed toward having more individuals with low numbers of non-ornaments, and adolescent burials are skewed toward having more individuals with larger numbers of non-ornaments. The most extreme outlier is in the adolescent sample, however, the comparatively very large numbers of non-ornaments interred with that individual showcase the rarity of such a practice, and suggest that this individual received special treatment that was not afforded to other subadults. Based on these results, there does not seem to be any substantial age-based difference in burial treatment for Early period infant, child, and adolescent burials for the number of non-ornament grave goods included in burial assemblages.

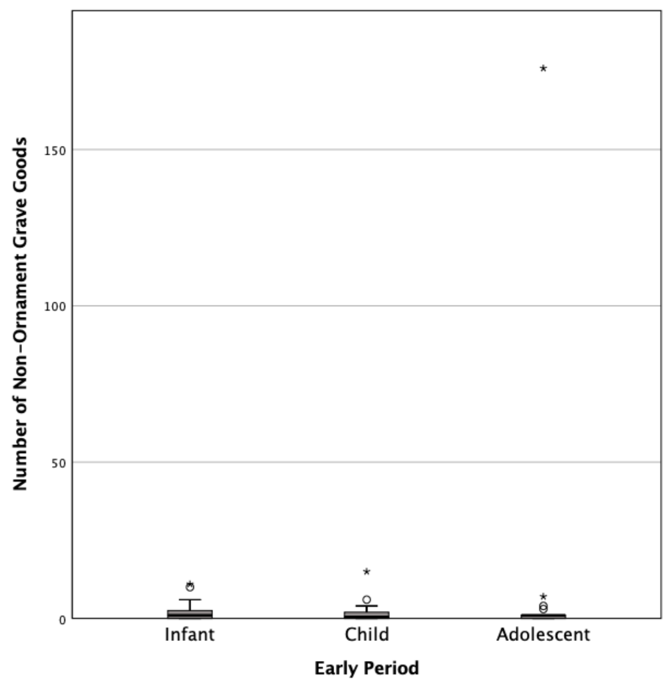

Figure 7.21. Boxplot for number of non-ornament grave goods comparing Early period infant, child, and adolescent burials.

Table 7.21. Independent-Samples Kruskal-Wallis Test Summary Statistics for the Number of Non-Ornament Grave Goods by Early Period Infant, Child, and Adolescent Burials

Early Period: Number of Non-Ornament Grave Goods	**Infant**	**Child**	**Adolescent**
n	59	20	21
Median	1.00	0.50	1.00
Mean Rank	51.03	49.95	49.52

For the Middle period sample of infant, child, and adolescent burials (Figure 7.22 and Table 7.22), a Kruskal-Wallis test (χ^2 [2, n = 59] = 1.30, p = 0.521) did not reveal a statistically significant difference in the number of non-ornament grave goods between Middle period infant (n = 20), child (n = 29), and adolescent (n = 10) burials. Both infant and child burials have a median of one non-ornament, while the median for adolescent burials is zero. Child burials have the largest spread of data (including outliers), which are skewed towards a higher number of cases with comparatively large numbers of non-ornaments. Infant and adolescent burials on the other hand, despite the difference in medians, are both skewed towards having more burials with lower numbers of non-ornaments. Child burials in the Middle period have the most cases of outlier and extreme outliers than either of the other two age groups, however, the low median values for all subadult age groups indicate that the outliers present in the child sample are more indicative of special treatment for a few burials than they are for that age group on the whole. When the three subadult age groups are compared between time periods, although neither analysis revealed statistically significant results, there seems to be a more recognizable difference in treatment for subadults in the Middle period than in the Early period.

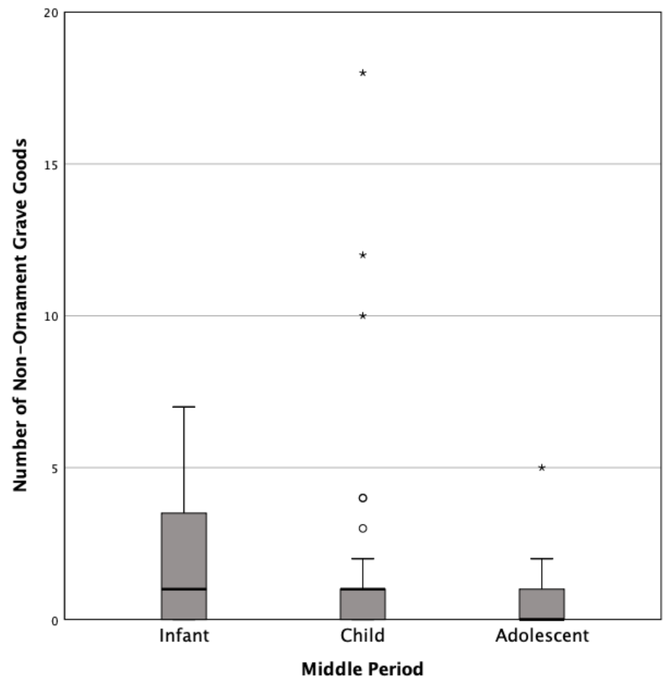

Figure 7.22. Boxplot for number of non-ornament grave goods comparing Middle period infant, child, and adolescent burials.

Table 7.22. Independent-Samples Kruskal-Wallis Test Summary Statistics for the Number of Non-Ornament Grave Goods by Middle Period Infant, Child, and Adolescent Burials

Middle Period: Number of Non-Ornament Grave Goods	**Infant**	**Child**	**Adolescent**
n	20	29	10
Median	1.00	1.00	0.00
Mean Rank	32.05	30.33	24.95

Number of Non-Ornament Grave Goods for Infant, Child, and Adolescent Burials by Island and Mainland Contexts

To facilitate context-based comparisons for subadult burials, island contexts data for infant, child, and adolescent burials are analyzed (Figure 7.23 and Table 7.23), followed by mainland contexts infant, child, and adolescent burials (Figure 7.24 and Table 7.24). A Kruskal-Wallis test (χ^2 [2, n = 108] = 0.87, p = 0.648) did not reveal a statistically significant difference in the number of non-ornament grave goods between island contexts infant (n = 63), child (n = 23), and adolescent (n = 22) burials. Infant and child burials appear to be overall more similar to one another, including sharing a median value of one non-ornament, compared to adolescent burials that have a median of zero. The differences in the distributions of the three age groups is perhaps more telling of the differences between them, as child burials have the most symmetric distribution compared to infant and adolescent burials, which are both skewed toward having more burials with larger numbers of non-ornaments. Additionally, the adolescent sample has a case of a notable extreme outlier, the rarity of which marks this adolescent burial as a particularly special case, and not within the realm of "normal" treatment received by other adolescents or other subadult burials, more generally. Although some minor differences are present within the island subadult sample, the results of this analysis do not support age-based differentiation in treatment.

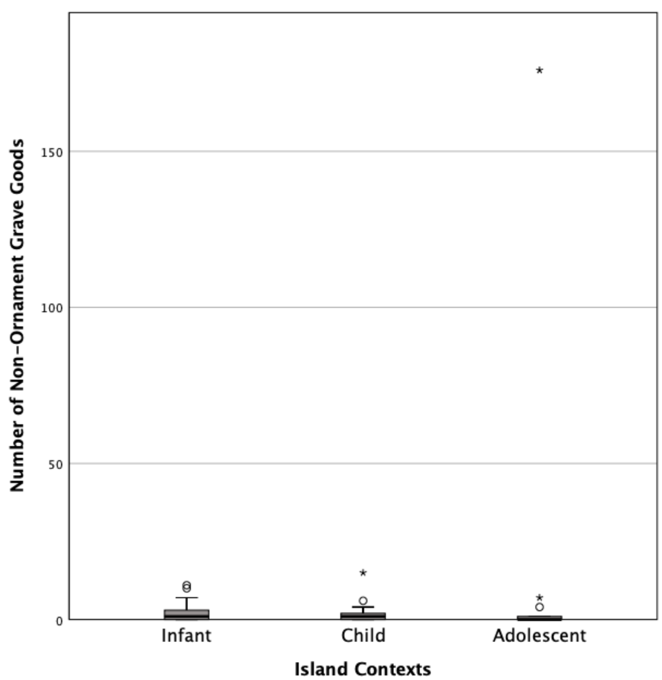

Figure 7.23. Boxplot for number of non-ornament grave goods comparing island context infant, child, and adolescent burials.

Table 7.23. Independent-Samples Kruskal-Wallis Test Summary Statistics for the Number of Non-Ornament Grave Goods by Island Contexts Infant, Child, and Adolescent Burials

Island Contexts: Number of Non-Ornament Grave Goods	**Infant**	**Child**	**Adolescent**
n	63	23	22
Median	1.00	1.00	0.00
Mean Rank	56.24	54.52	49.50

For mainland infant, child, and adolescent burials (Figure 7.24 and Table 7.24), a Kruskal-Wallis test (χ^2 [2, n = 51] = 0.004, p = 0.998) did not reveal a statistically significant difference in the number of non-ornament grave goods between infant (n = 16), child (n = 26), and adolescent (n = 9) burials. All three mainland subadult age groups share a median value of one non-ornament, however, infant and adolescent treatment appears to be more similar than either is to child burials. The distributions of both infant and adolescent burials are fairly symmetric in shape, while child burials are skewed toward having more individuals with higher numbers of non-ornaments, which is also evident in the presence of outliers and extreme outliers for this age group. While the differences in distribution and outliers between the three age groups is noted, the results do not support an age-based difference in treatment for mainland subadults regarding the number of non-ornament grave goods. When subadults from both geographic contexts are compared, island adolescent burials have less similar treatment to infant and child burials than the latter two groups have with one another, and for mainland contexts, all three age groups are very similar albeit with child burials having outliers present.

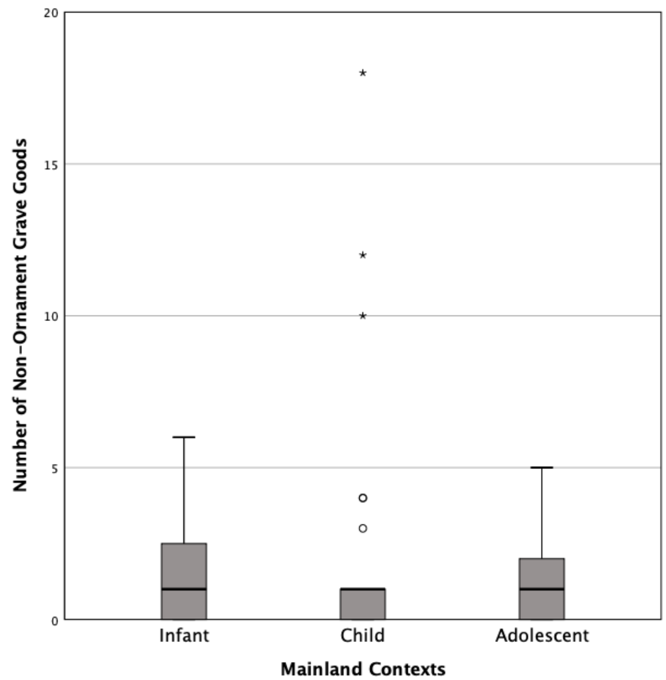

Figure 7.24. Boxplot for number of non-ornament grave goods comparing mainland context infant, child, and adolescent burials.

Table 7.24. Independent-Samples Kruskal-Wallis Test Summary Statistics for the Number of Non-Ornament Grave Goods by Mainland Contexts Infant, Child, and Adolescent Burials

Mainland Contexts: Number of Non-Ornament Grave Goods	**Infant**	**Child**	**Adolescent**
n	16	26	9
Median	1.00	1.00	1.00
Mean Rank	26.16	25.98	25.78

Summary of Findings for Variable 10: Number of Non-Ornament Grave Goods

For the analysis of non-ornament grave goods, only one test revealed highly significant statistical results, which was for all burials by context (Table 7.17). The most notable difference was evident between contexts, where the majority of island contexts burials were not interred with any non-ornament grave goods, compared to half of mainland contexts burials being interred with at least one non-ornament grave good. The difference in median number of non-ornaments, in analyses where one was present, usually differed by only one count, which is likely signifying very little in the way of real-world difference for this variable. On the whole, mean rank values between the two contexts also indicated that mainland burials had more cases with larger numbers of non-ornament grave goods than island contexts burials. The other 11 analyses did not yield statistically significant results, however, one analysis, all burials by period (Table 7.13), resulted in a *p*-value that was approaching significance. Between time periods, Middle period burials were more likely to be buried with one or more non-ornament grave goods than were Early period burials. The mean rank difference between the two time periods is less extreme than that for the aforementioned analysis, however Middle period burials do have a higher mean rank.

Although not statistically significant, there was one pattern of note when subadult burials were compared by infant, child, and adolescent burials (Table 7.20). This pattern was evident in the similarities for median and mean rank values for both infant and child burials, where half of both age groups had one or more non-ornament grave goods, at nearly equivalent mean rank values. However, adolescent burials did not follow this pattern, but instead had a lower mean rank value than either of the other two age groups, and half of all adolescent burials did not have any non-ornament grave goods present in burial contexts. This same pattern is also seen in the Middle period sample of subadult burials (Table 7.22) and in the island contexts subadult sample (Table 7.23). Overall, treatment of subadult burials is very similar within-group, with the exception of adolescent burials in a few of the analyses, which tentatively indicates an age-based difference in burial treatment for adolescent burials.

Analysis of Variable 11: Number of Ornament Grave Goods

Variable 11 records the remaining types of grave goods, falling under the ornamentation category, and the analyses presented in this section are complementary to those conducted for Variable 10, number of non-ornament grave goods. The category of ornamentation follows that defined by Hudson and Blackburn (1985) and includes objects such as beads, pendants, rings, and other ornament types (refer to Appendix A:Table A.1 for a full list of ornamentation artifact types). As with Variable 10, data for ornament grave goods were collected as whole integers only, based on the MNI.

Number of Ornament Grave Goods for All Burials by Time Period

In the following analysis, data from Early and Middle period burials for number of ornament grave goods are analyzed to establish a diachronic baseline (Figure 7.25 and Table 7.25). A Mann-Whitney *U* test (U = 35,234.00, $z = -9.471$, $p < 0.001$, $r = 0.37$) revealed a highly significant statistical difference in the number of ornament grave goods between Early period ($Md = 1.00$, $n = 323$) and Middle period ($Md = 0.00$, $n = 345$) burials. While the difference in the means between the two time periods is only in one ornament, there are more burials in the Early period sample that have significantly more ornaments than those in the Middle period sample, despite the fact that the Middle period sample has a more extreme outlier. These results indicate a marked difference between the time periods, where inclusion of ornament grave goods was more prevalent and found at higher rates throughout the Early period, however, the inclusion of large numbers of ornaments appears to become more restricted in the Middle period.

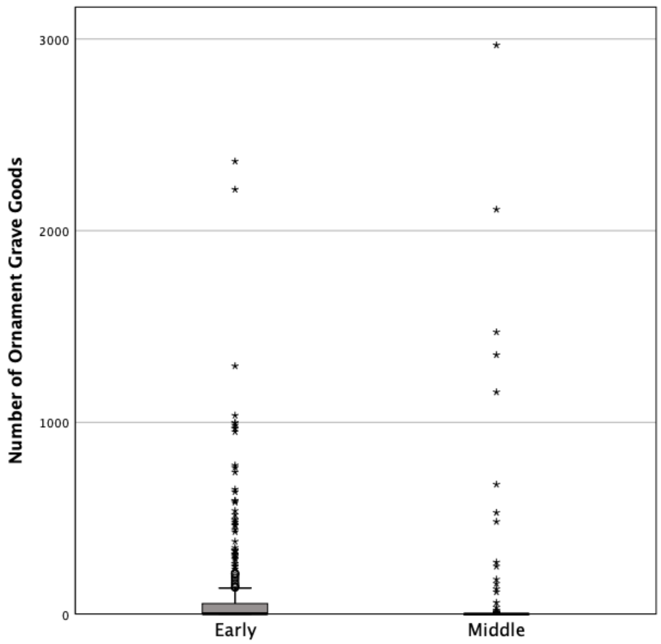

Figure 7.25. Boxplot for number of ornament grave goods comparing Early and Middle period burials.

Table 7.25. Independent-Samples Mann-Whitney *U* Test Summary Statistics for the Number of Ornament Grave Goods for All Burials by Time Period

Number of Ornament Grave Goods	Early Period	Middle Period
n	323	345
Median	1.00	0.00
Mean Rank	397.92	275.13

Number of Ornament Grave Goods by Subadult and Adult Burials

Subadult and adult burials are analyzed here to establish an age-comparative baseline for the number of ornament grave goods found in burial assemblages (Figure 7.26 and Table 7.26). A Mann-Whitney *U* test (U = 25,252.00, z = -6.23, $p < 0.001$, r = 0.25) revealed a highly significant statistical difference in the number of ornament grave goods between subadult (Md = 3.00, n = 150) and adult (Md = 0.00, n = 478) burials. For both age groups, the distributions are skewed toward having more burials with low numbers of ornaments, however, the subadult sample has a higher frequency of burials with exceptionally large numbers of ornaments than the adult sample. Additionally, the subadult sample also has an outlier with the largest number of ornaments for the entire sample, however, this particular outlier appears to be a case for special treatment given the apparent infrequency of such a high numbers of ornaments, especially for subadults. At this level of analysis, these data reveal a clear age-based difference between the rates for inclusion of ornament grave goods in subadult and adult burials.

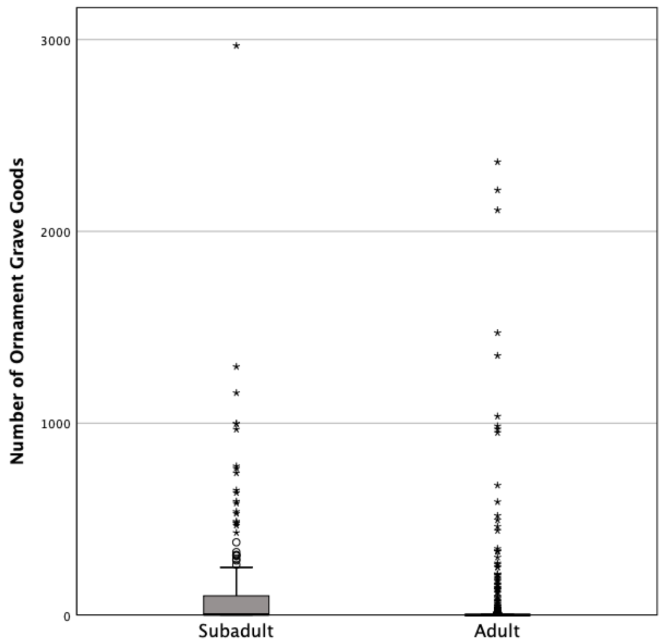

Figure 7.26. Boxplot for number of ornament grave goods comparing subadult and adult burials.

Table 7.26. Independent-Samples Mann-Whitney *U* Test Summary Statistics for the Number of Ornament Grave Goods for All Burials by Subadult and Adult Burials

Number of Ornament Grave Goods	**Subadult**	**Adult**
n	150	478
Median	3.00	0.00
Mean Rank	385.15	292.33

Number of Ornament Grave Goods for Subadult and Adult Burials by Time Period

Data from Early period subadult and adult burials for number of ornament grave goods are analyzed first (Figure 7.27 and Table 7.27), followed by Middle period subadult and adult data (Figure 7.28 and Table 7.28) to provide a point of comparison between age groups diachronically. For the Early period sample, a Mann-Whitney *U* test ($U = 6{,}922.00$, $z = -4.697$, $p < 0.001$, $r = 0.27$) revealed a highly significant statistical difference in the number of ornament grave goods between Early period subadult ($Md = 32.00$, $n = 99$) and adult ($Md = 0.00$, $n = 205$) burials. While both age groups are skewed toward having larger frequencies of low numbers of ornaments, there is a clear difference between the age groups where subadult burials more frequently receive large numbers of ornaments than do adults. Although the two most extreme outliers for adults have numbers of ornaments that far exceed the most extreme subadult outlier, these burials appear to be very special cases that are not representative of overall adult burial treatment. Overall, this analysis reveals a very clear age-based pattern where Early period subadult burials were interred with ornament grave goods at significantly higher rates than adult burials.

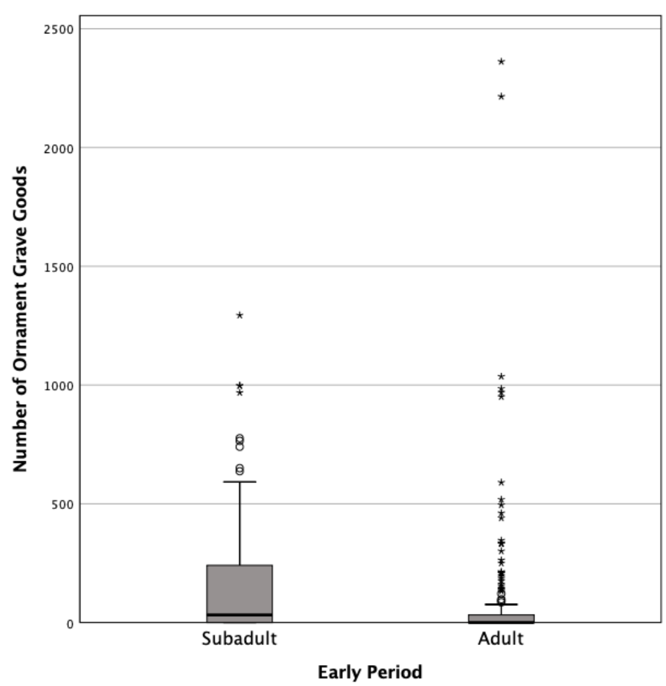

Figure 7.27. Boxplot for number of ornament grave goods comparing Early period subadult and adult burials.

Table 7.27. Independent-Samples Mann-Whitney *U* Test Summary Statistics for the Number of Ornament Grave Goods by Early Period Subadult and Adult Burials

Early Period: Number of Ornament Grave Goods	**Subadult**	**Adult**
n	99	205
Median	32.00	0.00
Mean Rank	185.08	136.77

For the Middle period sample of subadult and adult burials (Figure 7.28 and Table 7.28), a Mann-Whitney *U* test ($U = 6{,}461.50$, $z = -1.11$, $p = 0.268$, $r = 0.06$) did not reveal a statistically significant difference in the number of ornament grave goods between Middle period subadult ($Md = 0.00$, $n = 51$) and adult ($Md = 0.00$, $n = 273$) burials. While both subadult and adult burials have a median value of zero ornaments, there is a slight preponderance for subadult burials to have more ornaments than adults overall, however, this difference is not statistically significant. For both age groups, the frequency with which burials were interred with large numbers of ornaments is fairly uncommon, indicating that those burials likely represented special cases that were not based primarily on the age of the interred individual. When the samples from both time periods are compared, a clear age-based difference in treatment is evident in the Early period, however, it does not continue into the Middle period.

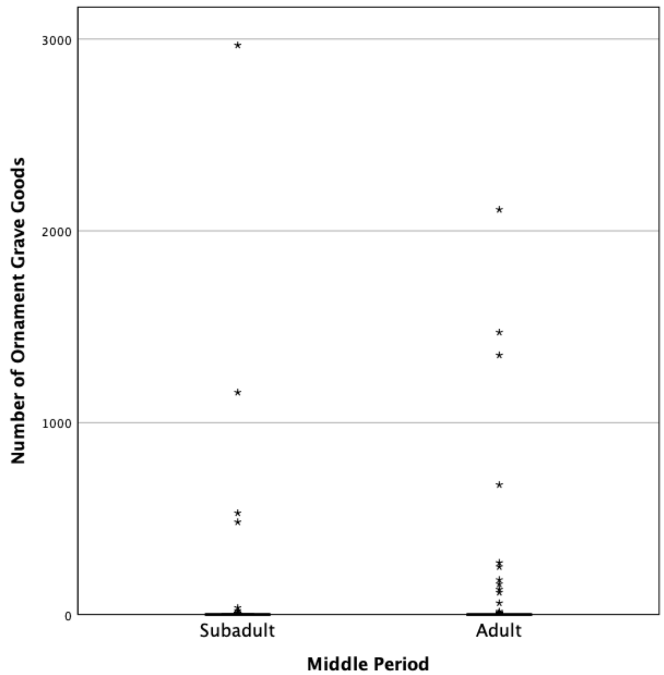

Figure 7.28. Boxplot for number of ornament grave goods comparing Middle period subadult and adult burials.

Table 7.28. Independent-Samples Mann-Whitney *U* Test Summary Statistics for the Number of Ornament Grave Goods by Middle Period Subadult and Adult Burials

Middle Period: Number of Ornament Grave Goods	**Subadult**	**Adult**
n	51	273
Median	0.00	0.00
Mean Rank	172.30	160.67

Number of Ornament Grave Goods for All Burials by Island and Mainland Contexts

For this analysis, data from island and mainland burials are analyzed in order to convey a baseline for number of ornament grave goods in burials between geographic contexts (Figure 7.29 and Table 7.29). A Mann-Whitney *U* test (U = 36,188.50, z = -8.98, p < 0.001, r = 0.35) revealed a highly significant statistical difference in the number of ornament grave goods between island (*Md* = 1.00, n = 354) and mainland contexts (*Md* = 0.00, n = 314) burials. Although the median value between the contexts differs only by one ornament, the island contexts sample has a greater frequency of burials with large numbers of ornaments than the mainland contexts sample. By comparison, the lower frequency of burials with large numbers of ornaments in the mainland sample may be indicative of a greater restriction on individuals who could receive ornaments in such numbers. From these data, it is apparent that there is a slight geographic-based difference in treatment for inclusion of ornament grave goods in burial contexts.

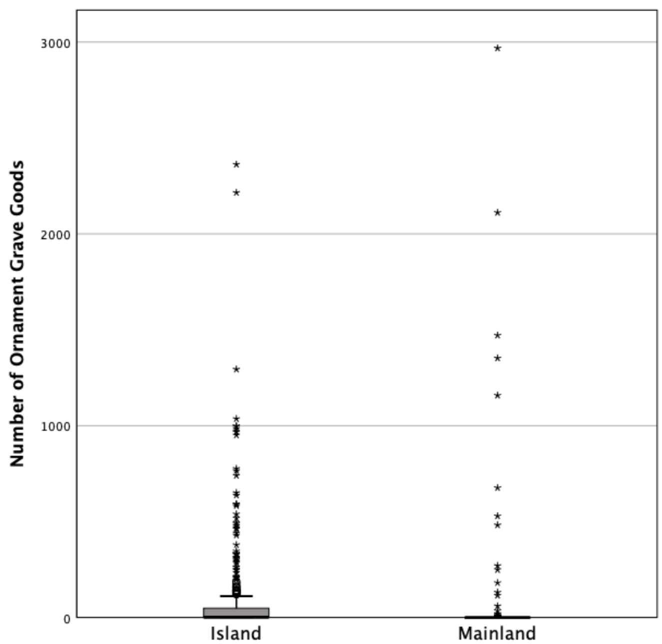

Figure 7.29. Boxplot for number of ornament grave goods comparing island and mainland context burials.

Table 7.29. Independent-Samples Mann-Whitney *U* Test Summary Statistics for the Number of Ornament Grave Goods for All Burials by Island and Mainland Contexts

Number of Ornament Grave Goods	Island Contexts	Mainland Contexts
n	354	314
Median	1.00	0.00
Mean Rank	389.27	272.75

Number of Ornament Grave Goods for Subadult and Adult Burials by Island and Mainland Contexts

The following analyses provide the results for number of ornament grave goods for island contexts subadult and adult burials (Figure 7.30 and Table 7.30) and mainland contexts subadult and adult burials (Figure 7.31 and Table 7.31) to assist in making geographic-based comparisons between these age groups. For the island contexts sample, a Mann-Whitney U test ($U = 8{,}124.00$, $z = -5.15$, $p < 0.001$, $r = 0.28$) revealed a highly significant statistical difference in the number of ornament grave goods between island subadult ($Md = 25.00$, $n = 104$) and adult ($Md = 0.00$, $n = 234$) burials. While both samples are skewed toward having a higher frequency of burials with low numbers of ornaments, the subadult sample has a significantly higher frequency of burials with larger numbers of ornaments than adults. Although the two outlier burials with the largest numbers of ornaments both belong to adults, the relative rarity of burials with numbers of ornaments that large likely indicate that these individuals were given special treatment not afforded to other individuals. Overall, there is a marked age-based difference in the number of ornament grave goods included in island subadult and adult burials.

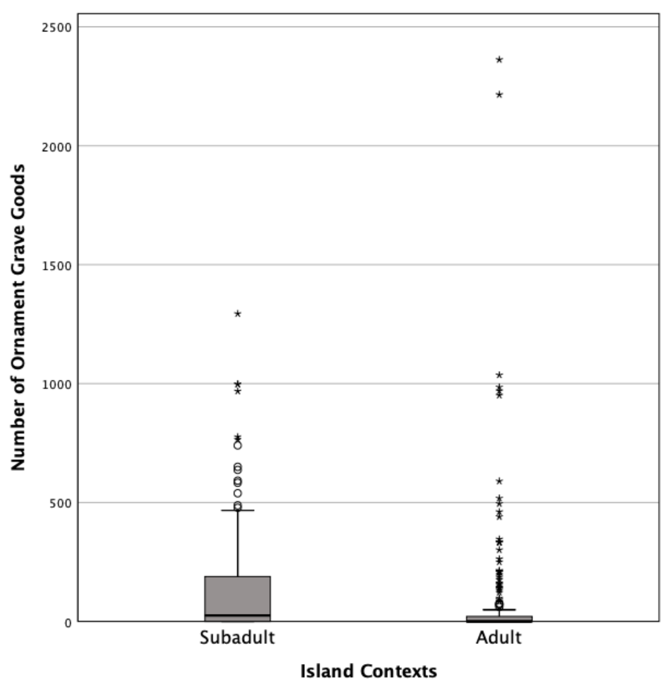

Figure 7.30. Boxplot for number of ornament grave goods comparing island context subadult and adult burials.

Table 7.30. Independent-Samples Mann-Whitney *U* Test Summary Statistics for the Number of Ornament Grave Goods by Island Contexts Subadult and Adult Burials

Island Contexts: Number of Ornament Grave Goods	**Subadult**	**Adult**
n	104	234
Median	25.00	0.00
Mean Rank	208.38	152.22

For subadult and adult burials from mainland contexts (Figure 7.31 and Table 7.31), a Mann-Whitney *U* test (U = 5,378.50, z = -0.62, p = 0.537, r = 0.04) did not reveal a statistically significant difference in the number of ornament grave goods between mainland subadult (Md = 0.00, n = 46) and adult (Md = 0.00, n = 244) burials. For both mainland age groups, the median value for ornaments is zero suggesting relatively equal treatment for both age groups for the majority of the population. Additionally, there are relatively few outliers, likely indicating that the individuals who received comparatively large numbers of ornaments received special treatment not afforded to the majority of the population, age notwithstanding. Altogether, the results from this analysis indicate that for mainland contexts there was no discernable difference, based on age, for the number of ornament grave goods included in burials. When both contexts are compared, there is a much more marked age-based difference for number of ornament grave goods for island burials, which does not extend to the mainland sample.

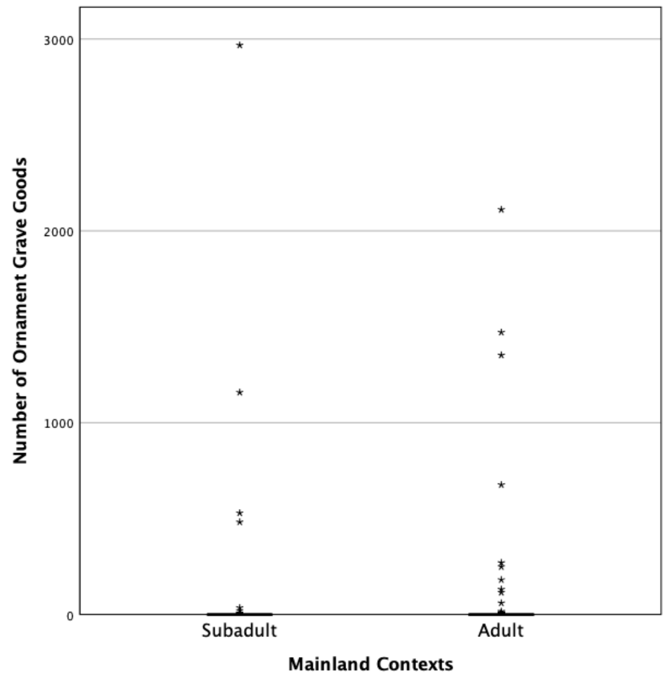

Figure 7.31. Boxplot for number of ornament grave goods comparing mainland context subadult and adult burials.

Table 7.31. Independent-Samples Mann-Whitney *U* Test Summary Statistics for the Number of Ornament Grave Goods by Mainland Contexts Subadult and Adult Burials

Mainland Contexts: Number of Ornament Grave Goods	**Subadult**	**Adult**
n	46	244
Median	0.00	0.00
Mean Rank	150.58	144.54

Number of Ornament Grave Goods for Infant, Child, and Adolescent Burials

To investigate potential age-based patterns in subadult burials, infant, child, and adolescent burials are analyzed regarding the number of ornament grave goods included in their respective burial contexts (Figure 7.32 and Table 7.32). A Kruskal-Wallis test (χ^2 [2, n = 149] = 4.03, p = 0.133) did not reveal a statistically significant difference in the number of ornament grave goods between infant (n = 72), child (n = 46), and adolescent (n = 31) burials. A general observation for all three age groups is that the distributions are all skewed toward a higher frequency of burials with low numbers of ornaments, however, infant burials have the largest median value, receiving markedly more ornaments than child or adolescent burials. Even though the differences between the three age groups are not statistically significant, there is a clear trend where infant burials receive more ornament grave goods at a higher rate than what is seen for child or adolescent burials.

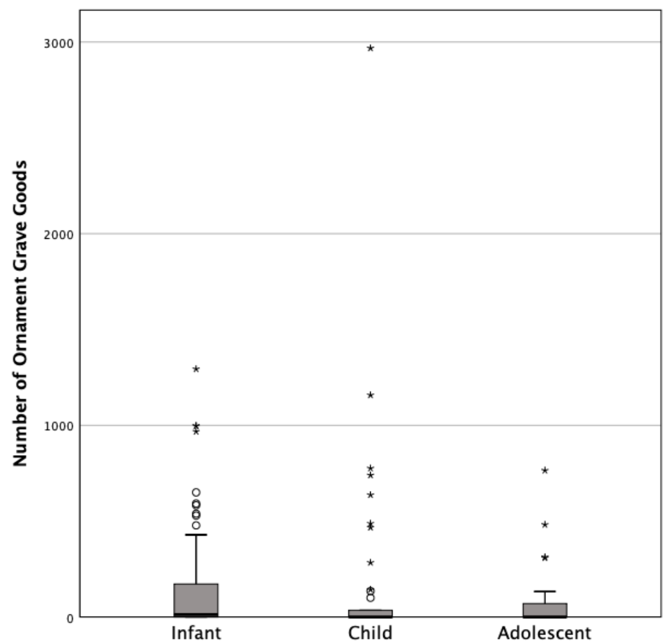

Figure 7.32. Boxplot for number of ornament grave goods comparing infant, child, and adolescent burials.

Table 7.32. Independent-Samples Kruskal-Wallis Test Summary Statistics for the Number of Ornament Grave Goods for All Subadults by Infant, Child, and Adolescent Burials

Number of Ornament Grave Goods	Infant	Child	Adolescent
n	72	46	31
Median	12.50	0.00	0.00
Mean Rank	81.98	67.42	70.03

Number of Ornament Grave Goods for Infant, Child, and Adolescent Burials by Time Period

The following two analyses are designed to provide a point of diachronic comparison for subadults, examining infant, child, and adolescent burials for Early (Figure 7.33 and Table 7.33) and Middle periods (Figure 7.34 and Table 7.34). A Kruskal-Wallis test (χ^2 [2, n = 98] = 0.46, p

= 0.794) did not reveal a statistically significant difference in the number of ornament grave goods between Early period infant (*n* = 57), child (*n* = 20), and adolescent (*n* = 21) burials. Median values for all three Early period age groups are very similar, with both child and adolescent burials having equal median values of 32 ornaments, and infant burials having the highest median value of the three age groups at 39 ornaments. Although the spreads and arrangements of outliers differ between the subadult groups, the distributions for all three age groups is skewed toward having a higher frequency of burials with low numbers of ornaments. Altogether, there is no distinct difference between the three subadult age groups, indicating that Early period subadults were treated nearly identically for the number of ornament grave goods.

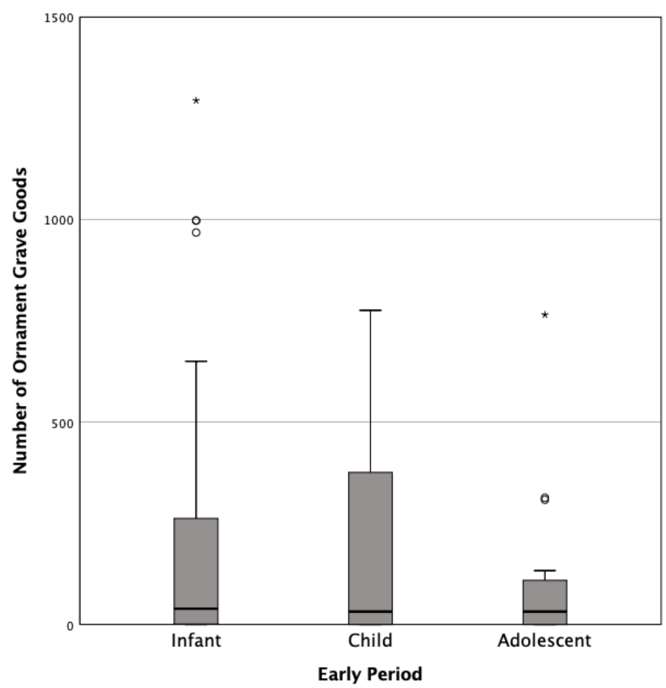

Figure 7.33. Boxplot for number of ornament grave goods comparing Early period infant, child, and adolescent burials.

Table 7.33. Independent-Samples Kruskal-Wallis Test Summary Statistics for the Number of Ornament Grave Goods by Early Period Infant, Child, and Adolescent Burials

Early Period: Number of Ornament Grave Goods	**Infant**	**Child**	**Adolescent**
n	57	20	21
Median	39.00	32.00	32.00
Mean Rank	50.44	50.70	45.81

For the sample of infant, child, and adolescent burials from the Middle period (Table 7.34), a Kruskal-Wallis test (χ^2 [2, n = 51] = 1.82, p = 0.402) did not reveal a statistically significant difference in the number of ornament grave goods between Middle period infant (n = 15), child (n = 26), and adolescent (n = 10) burials. The median value for all three age groups is zero, with infant and child burials having a slightly higher frequency of burials with larger numbers of ornaments than adolescent burials. The most extreme outlier is from the sample of child burials, however, given the infrequency of subadults having over 1,000 ornaments, the child with nearly 3,000 ornaments seems to be receiving special treatment above and beyond what other child burials, and subadults generally received in the Middle period. Overall, there does not appear to be a significant difference in treatment for subadults in the Early or Middle periods, however, when examined diachronically, Early period subadults were interred with larger amounts of ornament grave goods more frequently than Middle period subadults.

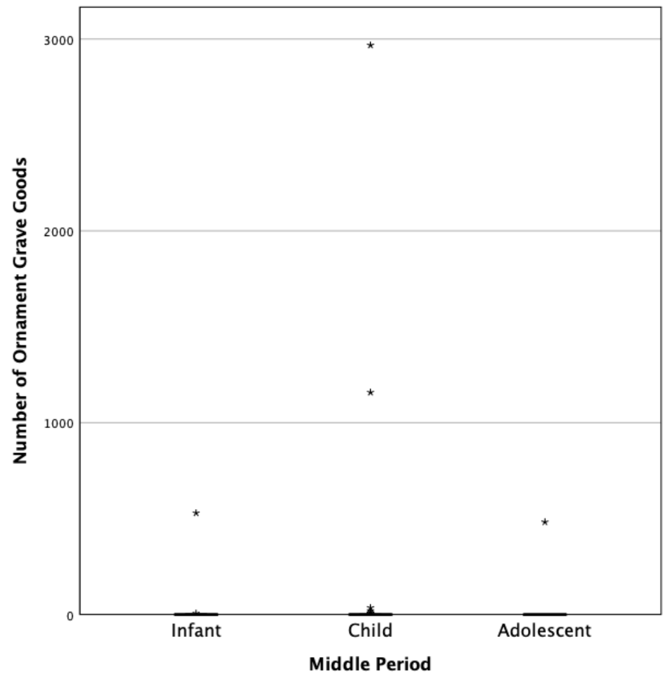

Figure 7.34. Boxplot for number of ornament grave goods comparing Middle period infant, child, and adolescent burials.

Table 7.34. Independent-Samples Kruskal-Wallis Test Summary Statistics for the Number of Ornament Grave Goods by Middle Period Infant, Child, and Adolescent Burials

Middle Period: Number of Ornament Grave Goods	Infant	Child	Adolescent
n	15	26	10
Median	0.00	0.00	0.00
Mean Rank	28.30	26.25	21.90

Number of Ornament Grave Goods for Infant, Child, and Adolescent Burials by Island and Mainland Contexts

These final two analyses convey the results for subadult burials from island (Figure 7.35 and Table 7.35) and mainland contexts (Figure 7.36 and Table 7.36) in order to evaluate potential geographic-based patterns between infant, child, and adolescent burials. A Kruskal-Wallis test (χ^2 [2, n = 104] = 0.47, p = 0.791) did not reveal a statistically significant difference in the number of ornament grave goods between island infant (n = 60), child (n = 22), and adolescent (n = 22) burials. Median values are fairly comparable between the three age groups, however, adolescents have the highest median number of ornaments at 27, and child burials have the lowest median at 18.50 ornaments. The distributions for all three age groups are also similar, as they are all skewed toward having a higher frequency of burials with low numbers of ornaments. It appears at this level of analysis that infant and child burials are more similar to one another than either group is to adolescent burials for number of ornaments, however, this difference is not statistically significant. Overall, the results of this analysis do not indicate any marked differences between the three subadult age groups, which suggests that subadults were treated similarly in terms of the number of ornaments included in island burial contexts.

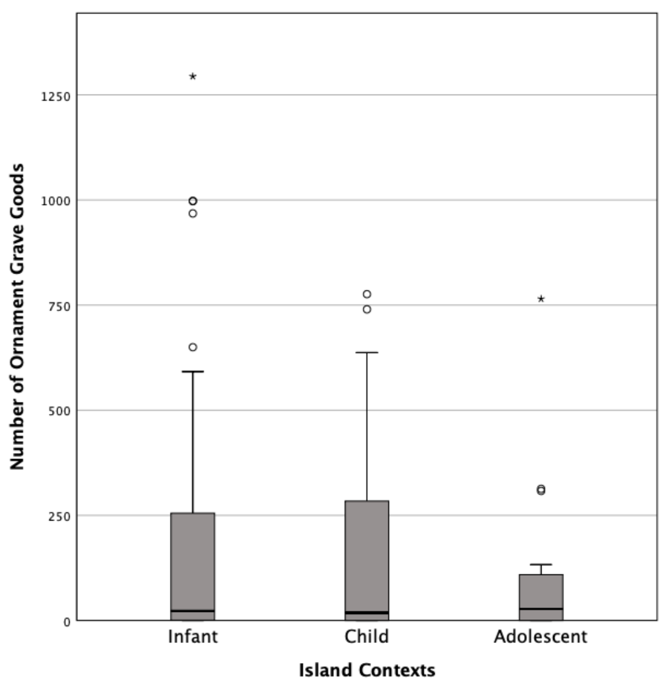

Figure 7.35. Boxplot for number of ornament grave goods comparing island context infant, child, and adolescent burials.

Table 7.35. Independent-Samples Kruskal-Wallis Test Summary Statistics for the Number of Ornament Grave Goods by Island Contexts Infant, Child, and Adolescent Burials

Island Contexts: Number of Ornament Grave Goods	**Infant**	**Child**	**Adolescent**
n	60	22	22
Median	22.50	18.50	27.50
Mean Rank	53.80	52.73	48.73

For the sample of subadults from mainland contexts (Figure 7.36 and Table 7.36), a Kruskal-Wallis test (χ^2 [2, n = 45] = 0.98, p = 0.612) did not reveal a statistically significant difference in the number of ornament grave goods between mainland infant (n = 12), child (n = 24), and adolescent (n = 9) burials. All three age groups share a median value of zero ornaments, however, infant and child burials have a slightly higher frequency of burials with larger numbers of ornaments than adolescent burials. The most notable extreme outlier is present in the burial of a child, however, the distribution of data points indicates that this individual received treatment in terms of large numbers of ornaments that was not afforded to other child burials or even other subadult burials more generally in mainland contexts. Altogether, mainland contexts subadult burial data indicates that there was no discernable age-based difference for number of ornament grave goods. Considering subadult data from both contexts, there does not seem to be any difference in the treatment of subadult for their respective context, however, there is a notable difference present in the treatment of subadults between geographic contexts.

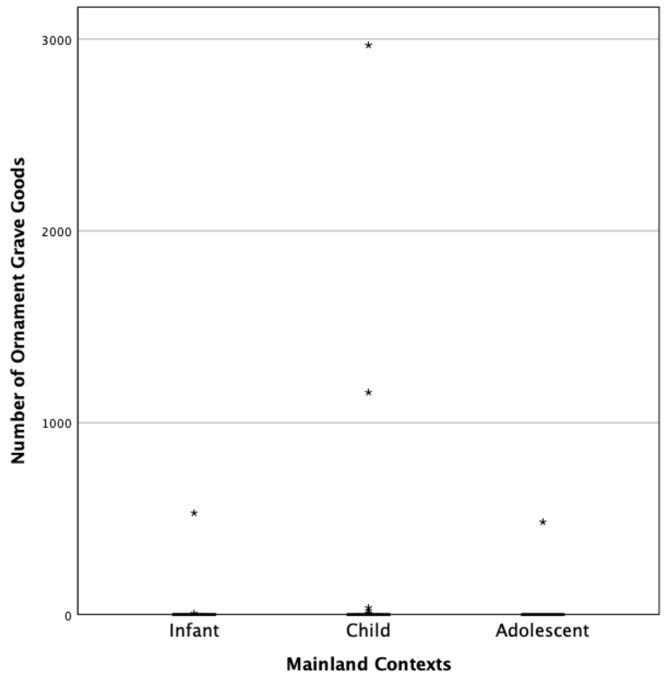

Figure 7.36. Boxplot for number of ornament grave goods comparing mainland context infant, child, and adolescent burials.

Table 7.36. Independent-Samples Kruskal-Wallis Test Summary Statistics for the Number of Ornament Grave Goods by Mainland Contexts Infant, Child, and Adolescent Burials

Mainland Contexts: Number of Ornament Grave Goods	**Infant**	**Child**	**Adolescent**
n	12	24	9
Median	0.00	0.00	0.00
Mean Rank	24.42	23.33	20.22

Summary of Findings for Variable 11: Number of Ornament Grave Goods

In the previous tests examining the number of ornament grave goods included in burial contexts, there were five analyses that yielded highly significant statistical results, all burials by time period (Table 7.25), all burials by subadult/adult burials (Table 7.26), Early period subadult/adult burials (Table 7.27), all burials by context (Table 7.29), and island contexts subadult/adult burials (Table 7.30). Patterns found generally throughout these analyses were that burials from the Early period were interred with greater numbers of ornament grave goods at higher frequencies than the Middle period, and subadult burials generally had larger numbers of ornaments at higher rates than their adult counterparts, which was especially true for Early period subadults. Between contexts, island burials had more ornaments included in burial contexts than those from mainland contexts, and subadult burials from island contexts had greater numbers of ornaments at higher rates when compared to their adult counterparts, as well as their subadult counterparts from mainland contexts.

There seems to be a clear age-based pattern for number of ornaments interred with the deceased, where subadult burials from the Early period and for island contexts, received significantly more ornaments than adults, however, this pattern does not extend to Middle period or mainland contexts burials, which, for the most part, revealed equal age-based treatment. The remaining seven analyses did not yield statistically significant results, however, the most notable patterns were evident in the analysis of infant, child, and adolescent burials. These comparisons revealed that subadult burials received essentially equal treatment for the number of ornaments included in their burial contexts, respective to geographic context and time period.

Analysis of Variable 12: Total Number of Grave Goods

Total number of grave goods is the value generated based on the sum of the number of non-ornament grave goods (Variable 10) and the number of ornament grave goods (Variable 11). For a given burial to be included in analyses for Variable 12, it was required to have numeric grave good quantities of zero or greater for *both* Variables 10 and 11. Burials with an "unknown" number of grave goods for either Variable 10 and/or 11 were not included in this set of analyses.

Total Number of Grave Goods for All Burials by Time Period

The following analysis conveys the results regarding total number of grave goods recorded in burial assemblages from Early and Middle period burials (Figure 7.37 and Table 7.37), thus establishing a diachronic baseline. A Mann-Whitney U test ($U = 37{,}577.00$, $z = -7.06$, $p < 0.001$, $r = 0.27$) revealed a highly significant statistical difference in the total number of grave goods between Early ($Md = 4.00$, $n = 318$) and Middle period ($Md = 1.00$, $n = 342$) burials. The difference in the total number of grave goods is statistically significant between the two time periods even though the difference in median values is only three grave goods. Both Early and Middle period samples are skewed toward having a higher frequency of burials with low numbers of grave goods, however, the Early period sample has a higher frequency of burials with more exceptionally large numbers of grave goods than the Middle period sample. Even though the Middle period sample contains the most extreme outlier, it appears that burials receiving exceptionally large numbers of grave goods (respective to the majority of the sample) was more restricted in the Middle period than in the Early period. Overall, there is a clear diachronic difference in the total number of grave goods between Early and Middle periods, albeit a small one with respect to the median values.

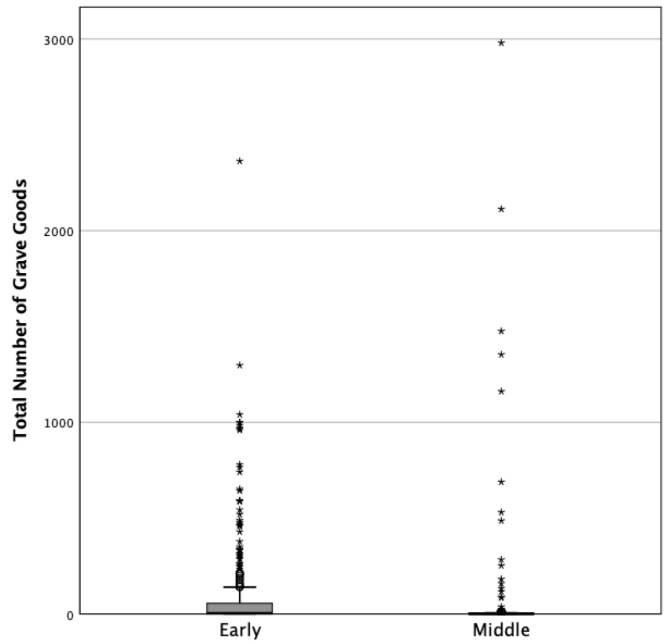

Figure 7.37. Boxplot for total number of grave goods comparing Early and Middle period burials.

Table 7.37. Independent-Samples Mann-Whitney *U* Test Summary Statistics for the Total Number of Grave Goods for All Burials by Time Period

Total Number of Grave Goods	Early Period	Middle Period
n	318	342
Median	4.00	1.00
Mean Rank	383.33	281.37

Total Number of Grave Goods by Subadult and Adult Burials

To take into account potential age-based differences for the total number of grave goods interred with individuals, subadult and adult burials are analyzed to determine a baseline (Figure 7.38 and Table 7.38). A Mann-Whitney *U* test (U = 26,702.50, z = -4.52, p < 0.001, r = 0.18) revealed a highly significant statistical difference in the total number of grave goods between subadult (Md = 5.00, n = 149) and adult (Md = 1.00, n = 471) burials. Both subadult and adult samples have distributions that are skewed toward having a higher frequency of burials with low numbers of grave goods, however, the subadult sample has a higher frequency of burials with exceptionally large numbers of grave goods than the adult sample. While it is slightly more common for adult burials to surpass subadult burials in terms of having more total numbers of grave goods (the most extreme subadult outlier notwithstanding), subadult burials clearly receive larger amounts of grave goods more consistently than adult burials. At this level of analysis, there appears to be a distinct age-based difference for total number of grave goods between subadult and adult burials.

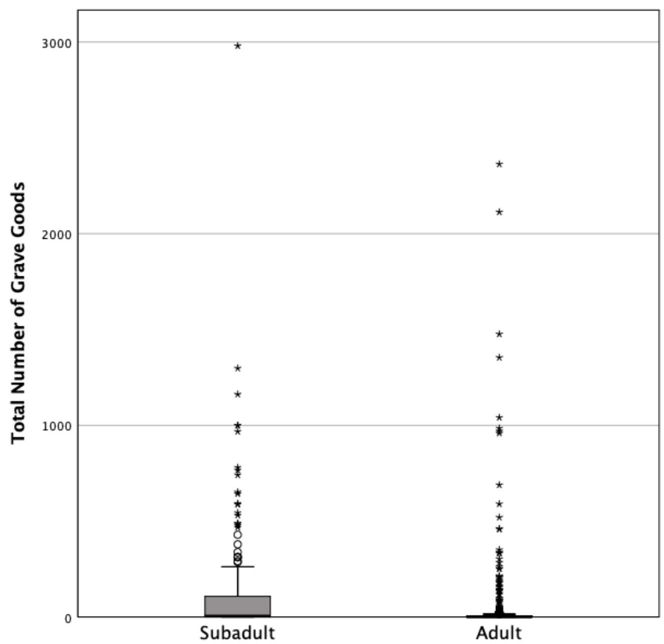

Figure 7.38. Boxplot for total number of grave goods comparing subadult and adult burials.

Table 7.38. Independent-Samples Mann-Whitney *U* Test Summary Statistics for the Total Number of Grave Goods for All Burials by Subadult and Adult Burials

Total Number of Grave Goods	**Subadult**	**Adult**
n	149	471
Median	5.00	1.00
Mean Rank	366.79	292.69

Total Number of Grave Goods for Subadult and Adult Burials by Time Period

In order to further examine trends in subadult and adult burials, diachronically, Early period subadult and adult burial data are analyzed first (Figure 7.39 and Table 7.39), followed by Middle period subadult and adult burial data (Figure 7.40 and Table 7.40). For the Early period sample, a Mann-Whitney U test (U = 6,957.50, z = -4.24, p < 0.001, r = 0.24) revealed a highly significant statistical difference in the total number of grave goods between Early period subadult (Md = 33.00, n = 99) and adult (Md = 3.00, n = 200) burials. In the Early period sample, both subadult and adult burials are skewed toward having larger frequencies of low numbers of grave goods, however, a clear difference between the age groups is evident where subadult burials more frequently receive large numbers of grave goods than do adults. While the adult sample has the most extreme outlier for the entire Early period sample, subadult burials clearly receive larger numbers of total grave goods more consistently than adults, and the rarity of the most extreme adult outlier is likely representative of an individual receiving non-normative treatment distinguishing them from other adults and subadults. Again, an age-based difference in burial treatment for total number of grave goods is present between Early period subadult and adult burials.

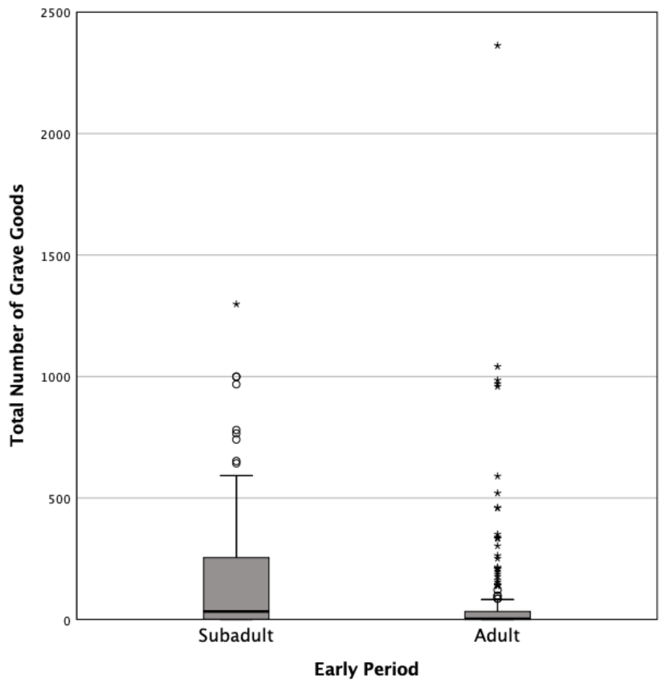

Figure 7.39. Boxplot for total number of grave goods comparing Early period subadult and adult burials.

Table 7.39. Independent-Samples Mann-Whitney *U* Test Summary Statistics for the Total Number of Grave Goods by Early Period Subadult and Adult Burials

Early Period: Total Number of Grave Goods	**Subadult**	**Adult**
n	99	200
Median	33.00	3.00
Mean Rank	179.72	135.29

For the sample of subadult and adult burials from the Middle period (Figure 7.40 and Table 7.40), a Mann-Whitney *U* test ($U = 7{,}046.50$, $z = 0.469$, $p = 0.639$, $r = 0.03$) did not reveal a statistically significant difference in the total number of grave goods between Middle period subadult ($Md = 1.00$, $n = 50$) and adult ($Md = 1.00$, $n = 271$) burials. For the Middle period sample, both subadult and adult burials have a median value of one grave good, however, the adult sample distribution is skewed toward having a higher frequency of burials with low amounts of grave goods, while at the same time having more exceptionally large amounts of grave goods than the more symmetric subadult sample. Although not statistically significant, there appears to be a slight preponderance for adult burials to more consistently receive exceptionally large amounts of grave goods than subadult burials. Overall, there does not appear to be an age-based difference for the total number of grave goods in Middle period burials. Examining the total number of grave goods diachronically, there does appear to be a clear age-based difference present in the Early period, which does not continue into the Middle period.

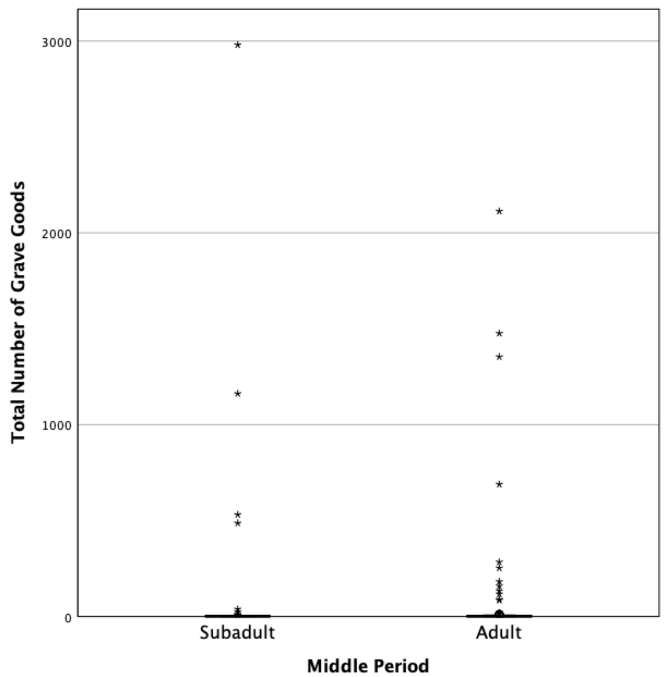

Figure 7.40. Boxplot for total number of grave goods comparing Middle period subadult and adult burials.

Table 7.40. Independent-Samples Mann-Whitney *U* Test Summary Statistics for the Total Number of Grave Goods by Middle Period Subadult and Adult Burials

Middle Period: Total Number of Grave Goods	**Subadult**	**Adult**
n	50	271
Median	1.00	1.00
Mean Rank	155.57	162.00

Total Number of Grave Goods for All Burials by Island and Mainland Contexts

The analysis that follows provides a point of geographic comparison for the number of grave goods interred with individuals, providing the results for island and mainland contexts

(Figure 7.41 and Table 7.41). A Mann-Whitney *U* test ($U = 41{,}320.50$, $z = -5.44$, $p < 0.001$, $r = 0.21$) revealed a highly significant statistical difference in the total number of grave goods between island ($Md = 4.00$, $n = 350$) and mainland contexts ($Md = 1.00$, $n = 310$) burials. Even though the median value between the geographic contexts differs by only three grave goods, the island contexts sample has a greater frequency of burials with large numbers of grave goods than the mainland contexts sample. Between the two contexts, burials from the mainland appear to consistently receive far smaller amounts of grave goods than burials in island contexts, which could indicate a greater cultural restriction on which individuals could receive such large numbers of grave goods on the mainland. These results indicate a significant difference for the total number of grave goods interred with individuals between geographic contexts.

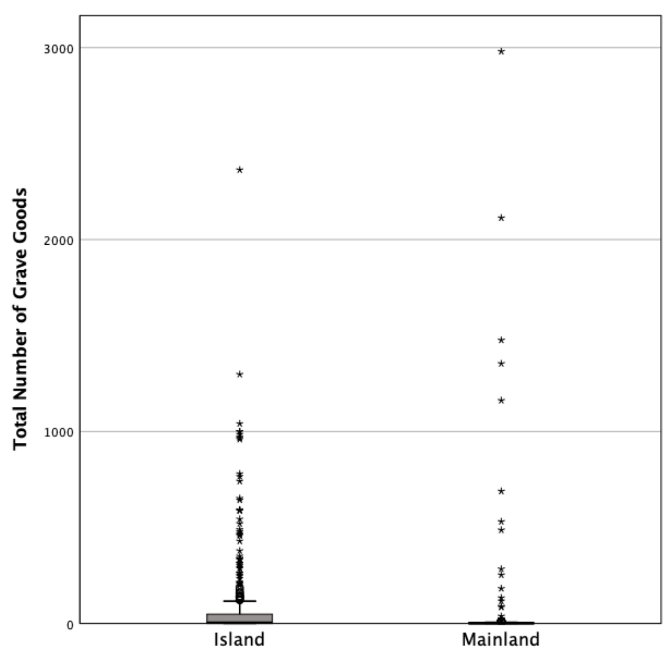

Figure 7.41. Boxplot for total number of grave goods comparing island and mainland context burials.

Table 7.41. Independent-Samples Mann-Whitney *U* Test Summary Statistics for the Total Number of Grave Goods for All Burials by Island and Mainland Contexts

Total Number of Grave Goods	Island Contexts	Mainland Contexts
n	350	310
Median	4.00	1.00
Mean Rank	367.44	288.79

Total Number of Grave Goods for Subadult and Adult Burials by Island and Mainland Contexts

To further investigate potential patterns for the total number of grave goods in subadult and adult burials, samples from island (Figure 7.42 and Table 7.42) and mainland contexts (Figure 7.43 and Table 7.43) are analyzed. A Mann-Whitney *U* test (U = 8,260.00, z = -4.62, p < 0.001, r = 0.25) revealed a highly significant statistical difference in the total number of grave goods between island subadult (*Md* = 27.00, n = 104) and adult (*Md* = 2.00, n = 230) burials. While both island subadult and adult samples are skewed toward having a higher frequency of burials with smaller amounts of grave goods, the subadult sample has a significantly higher frequency of burials with exceptionally large numbers of grave goods than the adult sample. Even though the most extreme outlier in the entire island sample comes from an adult burial, this individual appears to have received special treatment far above other adults and subadults, perhaps indicating a difference in status or achievement, rather than one necessarily based in age. For island burials, there is a notable age-based difference for the total number of grave goods interred in subadult and adult burials.

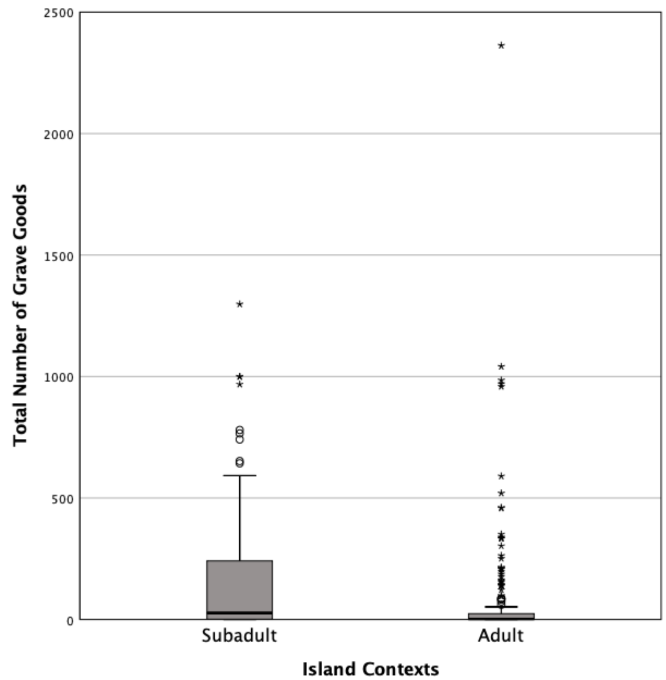

Figure 7.42. Boxplot for total number of grave goods comparing island context subadult and adult burials.

Table 7.42. Independent-Samples Mann-Whitney U Test Summary Statistics for the Total Number of Grave Goods by Island Contexts Subadult and Adult Burials

Island Contexts: Total Number of Grave Goods	**Subadult**	**Adult**
n	104	230
Median	27.00	2.00
Mean Rank	203.08	151.41

This analysis details the results for the mainland sample of subadult and adult burials (Figure 7.43 and Table 7.43). A Mann-Whitney *U* test (U = 5,832.00, z = 0.83, p = 0.405, r = 0.05) did not reveal a statistically significant difference in the total number of grave goods between mainland subadult (*Md* = 4.00, *n* = 45) and adult (*Md* = 1.00, *n* = 241) burials. For mainland contexts, both subadults and adults share a median of one for total grave goods, which at face value suggests fairly equal treatment between the age groups. When the distributions for each age group are examined, however, the distribution of the adult sample is skewed toward a higher frequency of burials with low numbers of grave goods, while the subadult sample distribution reflects skewness in the opposite direction, with a higher frequency of burials with larger numbers of grave goods. Despite this patterning, the difference between the two age groups is not statistically significant, and overall, there does not appear to be an age-based difference in treatment for the total number of grave goods in the mainland sample. Comparing the two contexts, island burials appear to have a marked age-based difference while mainland burials appear to be treated more equally by comparison for total number of grave goods.

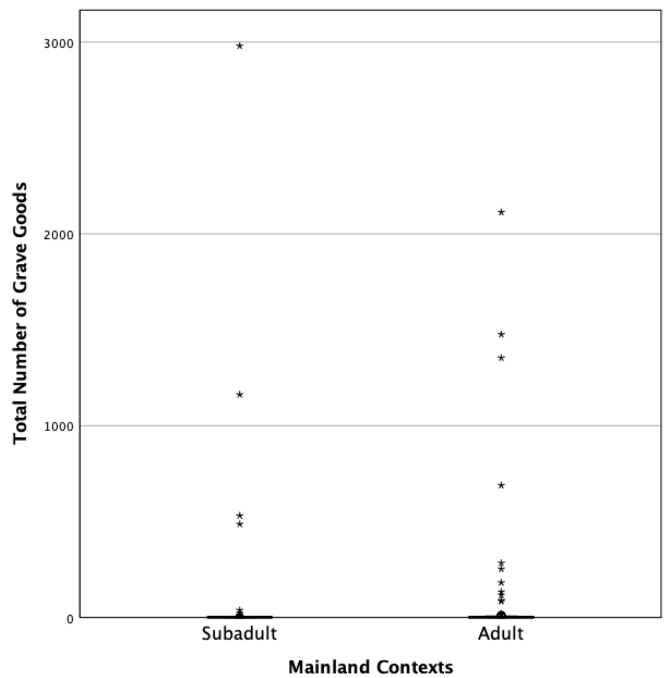

Figure 7.43. Boxplot for total number of grave goods comparing mainland context subadult and adult burials.

Table 7.43. Independent-Samples Mann-Whitney *U* Test Summary Statistics for the Total Number of Grave Goods by Mainland Contexts Subadult and Adult Burials

Mainland Contexts: Total Number of Grave Goods	**Subadult**	**Adult**
n	45	241
Median	1.00	1.00
Mean Rank	134.40	145.20

Total Number of Grave Goods for Infant, Child, and Adolescent Burials

The results of this analysis provide a closer examination for total number of grave goods in subadult burials, as reflected in the three established subadult age groups (Figure 7.44 and Table 7.44). A Kruskal-Wallis test (χ^2 [2, n = 148] = 2.25, p = 0.324) did not reveal a statistically significant difference in the total number of grave goods between infant (n = 72), child (n = 45), and adolescent (n = 31) burials. The overall distributions for the three age groups are skewed toward having higher frequencies of burials with smaller amounts of grave goods, however, the median value for infant burials clearly indicates that this age group received larger amounts of grave goods than child or adolescent burials. The most extreme outlier for the entire subadult sample is a child burial, however, this particular case appears to be demonstrative of special treatment that was not afforded to other subadults, and does not suggest a pattern in treatment that is based in subadult age. Despite these statistically insignificant differences, there seems to be a moderate trend where infant burials are interred with larger amounts of grave goods more frequently than child or adolescent burials.

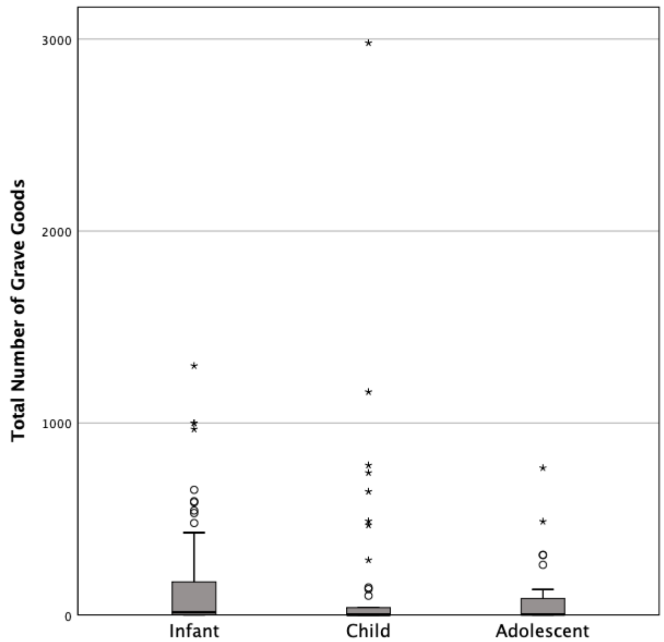

Figure 7.44. Boxplot for total number of grave goods comparing infant, child, and adolescent burials.

Table 7.44. Independent-Samples Kruskal-Wallis Test Summary Statistics for the Total Number of Grave Goods for All Subadults by Infant, Child, and Adolescent Burials

Total Number of Grave Goods	Infant	Child	Adolescent
n	72	45	31
Median	14.00	1.00	3.00
Mean Rank	79.85	69.01	70.05

Total Number of Grave Goods for Infant, Child, and Adolescent Burials by Time Period

To take differences in time period into account, the following two analyses convey the results for total number of grave goods for infant, child, and adolescent burials from the Early (Figure 7.45 and Table 7.45) and Middle periods (Figure 7.46 and Table 7.46). A Kruskal-Wallis test (χ^2 [2, n = 98] = 0.29, p = 0.865) did not reveal a statistically significant difference in the total number of grave goods between Early period infant (n = 57), child (n = 20), and adolescent (n = 21) burials. For all Early period subadults, median values for all three age groups are quite similar, with both child and adolescent burials having equal medians of 33 grave goods, and infant burials having the highest median at 39 grave goods. Although the spreads and outlier configurations differ somewhat between the subadult groups, all three age groups have distributions that are skewed toward having a higher frequency of burials with low numbers of ornaments. Despite this overall similarity in distribution, child burials have a slight preponderance for having a higher frequency of burials with exceptionally large numbers of grave goods, compared to infant and adolescent burials, however, this difference is not statistically significant. Altogether, these results suggest that age-based differential treatment appears to be minimal-to-nonexistent for Early period subadult burials, indicating that these age groups were treated on relatively similar footing for total number of grave goods.

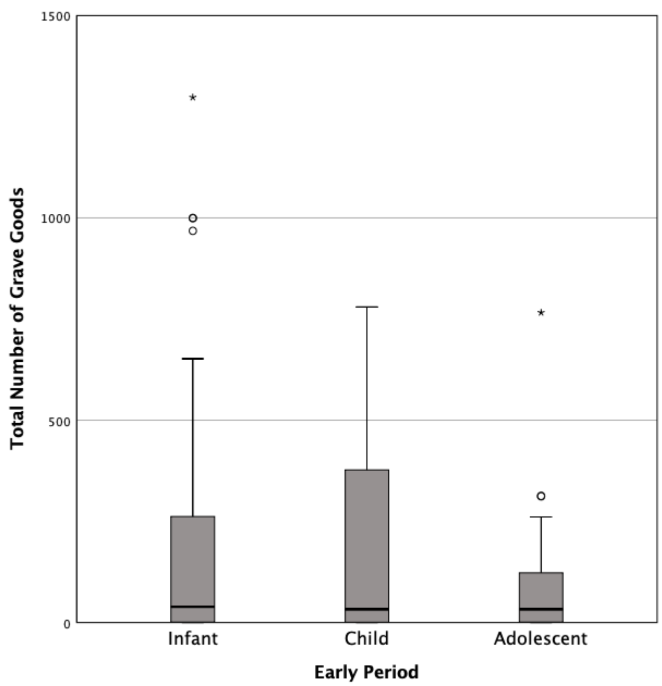

Figure 7.45. Boxplot for total number of grave goods comparing Early period infant, child, and adolescent burials.

Table 7.45. Independent-Samples Kruskal-Wallis Test Summary Statistics for the Total Number of Grave Goods by Early Period Infant, Child, and Adolescent Burials

Early Period: Total Number of Grave Goods	**Infant**	**Child**	**Adolescent**
n	57	20	21
Median	39.00	33.00	33.00
Mean Rank	50.13	50.75	46.60

This analysis displays the results for total number of grave goods in infant, child, and adolescent burials from the Middle period (Figure 7.46 and Table 7.46). A Kruskal-Wallis test (χ^2 [2, n = 50] = 1.42, p = 0.491) did not reveal a statistically significant difference in the total number of grave goods between Middle period infant (n = 15), child (n = 25), and adolescent (n = 10) burials. While all three subadult age groups have a median of one for total number of grave goods, infant and child burials have a higher frequencies of burials with large amounts of grave goods than adolescent burials. Considering the distributions of the three age groups, infant and adolescent burials are both skewed toward having a higher frequency of burials with low amounts of grave goods, while child burials are more symmetrically distributed. Of the three age groups, infants have a greater frequency of burials that receive exceptionally large amounts of grave goods than either adolescent or child burials. Child burials on the other hand have the most extreme outliers for the entire Middle period subadult sample, however, the infrequency of child burials with over 1,000 grave goods indicates these children received special treatment of some kind, rather than there being a strong case for age-based differentiation. Overall, these results indicate no statistically identifiable difference in age-based treatment for these three age groups in the Middle period. Comparing subadults diachronically, infant, child, and adolescent burials are treated similarly to one another for total number of grave goods, respective to time period, but differ somewhat between periods.

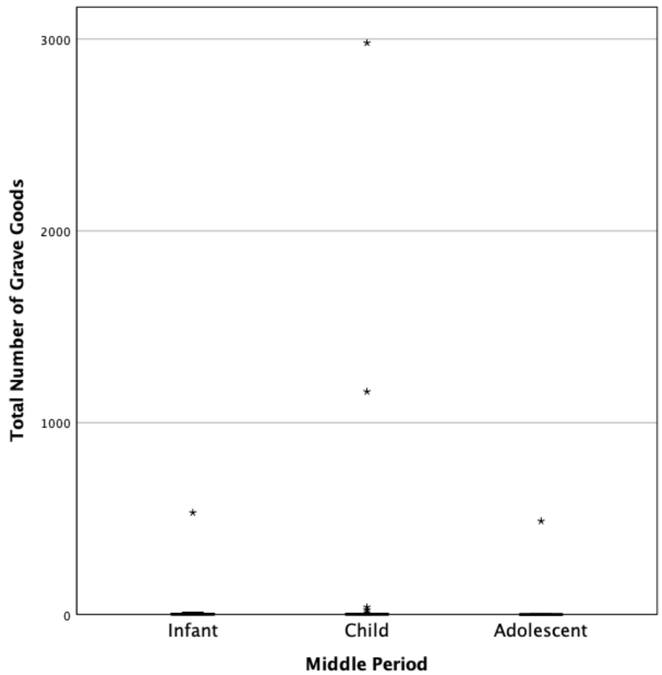

Figure 7.46. Boxplot for total number of grave goods comparing Middle period infant, child, and adolescent burials.

Table 7.46. Independent-Samples Kruskal-Wallis Test Summary Statistics for the Total Number of Grave Goods by Middle Period Infant, Child, and Adolescent Burials

Middle Period: Total Number of Grave Goods	**Infant**	**Child**	**Adolescent**
n	15	25	10
Median	1.00	1.00	0.00
Mean Rank	26.40	26.82	20.85

Total Number of Grave Goods for Infant, Child, and Adolescent Burials by Island and Mainland Contexts

Concluding the series of analyses for total number of grave goods, data from infant, child, and adolescent burials are established for island (Figure 7.47 and Table 7.47) and mainland contexts (Figure 7.48 and Table 7.48). For island subadults, a Kruskal-Wallis test (χ^2 [2, n = 104] = 0.48, p = 0.787) did not reveal a statistically significant difference in the total number of grave goods between island infant (n = 60), child (n = 22), and adolescent (n = 22) burials. All three age groups have fairly comparable medians, however, adolescents have the highest median number of grave goods at 28.50, while infant and child burials have slightly lower medians at

25.50 grave goods. Overall distributions for island subadults are similar, as all three age groups are skewed towards having higher frequencies of burials with smaller amounts of grave goods, however, infant and child burials have slightly higher frequencies of burials with exceptionally large amounts of grave goods compared to adolescent burials. Even though adolescent burials appear more dissimilar to infant and child burials, this apparent difference is not statistically significant. The results of this analysis do not indicate any distinct differences in the treatment of island infant, child, and adolescent burials for the total number of grave goods.

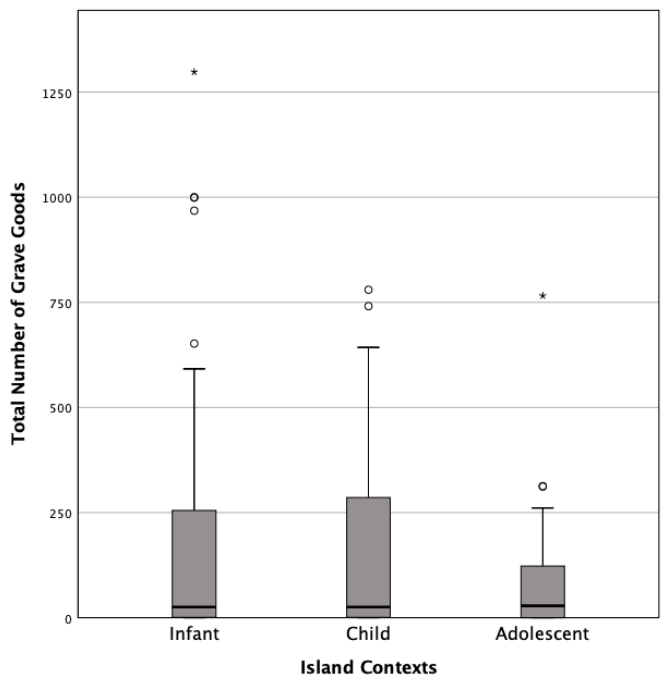

Figure 7.47. Boxplot for total number of grave goods comparing island context infant, child, and adolescent burials.

Table 7.47. Independent-Samples Kruskal-Wallis Test Summary Statistics for the Total Number of Grave Goods by Island Contexts Infant, Child, and Adolescent Burials

Island Contexts: Total Number of Grave Goods	**Infant**	**Child**	**Adolescent**
n	60	22	22
Median	25.50	25.50	28.50
Mean Rank	53.66	53.25	48.59

Lastly, this analysis provides the results for the mainland sample of infant, child, and adolescent burials (Figure 7.48 and Table 7.48). A Kruskal-Wallis test (χ^2 [2, n = 44] = 0.02, p = 0.989) did not reveal a statistically significant difference in the total number of grave goods between mainland infant (n = 12), child (n = 23), and adolescent (n = 9) burials. All three age groups share a median value of one for total number of grave goods, however, child burials have a higher frequency of burials with larger numbers of grave goods than infant burials, which have a higher frequency of burials with smaller numbers of grave goods, and adolescent burials, which are fairly symmetric in distribution. Despite these somewhat minor differences in overall distribution of data, no statistically significant difference indicating age-based differentiation in total number of grave goods is found to exist between the three mainland subadult age groups. Comparing subadult data from both contexts, there are barely discernable differences in island subadults, and very minor differences in mainland subadults, indicating that between geographic contexts there is no substantial evidence to support age-based differential treatment for subadults, respective to geographic context for total number of grave goods.

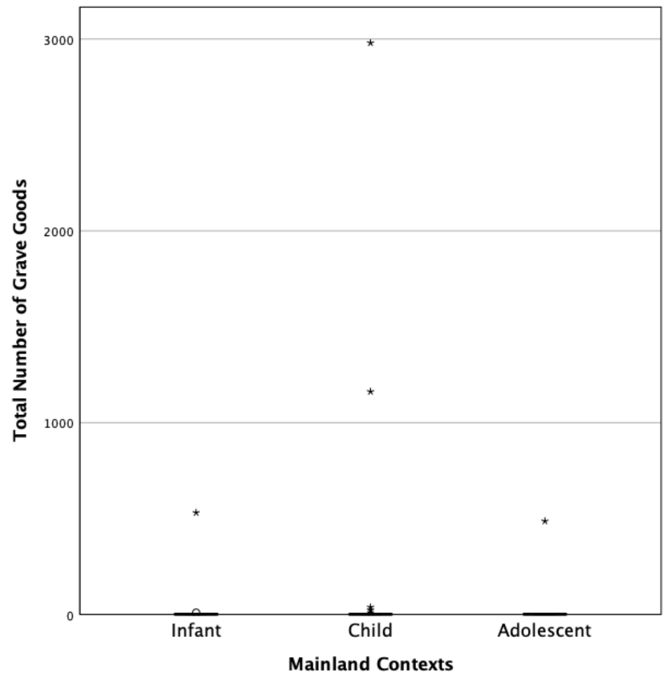

Figure 7.48. Boxplot for total number of grave goods comparing mainland context infant, child, and adolescent burials.

Table 7.48. Independent-Samples Kruskal-Wallis Test Summary Statistics for the Total Number of Grave Goods by Mainland Contexts Infant, Child, and Adolescent Burials

Mainland Contexts: Total Number of Grave Goods	**Infant**	**Child**	**Adolescent**
n	12	23	9
Median	1.00	1.00	1.00
Mean Rank	22.21	22.76	22.22

Summary of Findings for Variable 12: Total Number of Grave Goods

Five of the analyses—investigating the total number of grave goods—had highly significant statistical results, which were all burials by time period (Table 7.37), all burials by subadult/adult burials (Table 7.38), Early period subadult/adult burials (Table 7.39), all burials by geographic context (Table 7.41), and island contexts subadult/adult burials (Table 7.42). The primary patterns revealed by these analyses show a marked age-based difference in total number of grave goods between Early period subadult and adult burials, a temporal difference with Early period burials having more grave goods than Middle period burials, and a geographic difference where island contexts burials have more grave goods than mainland contexts burials.

For the analyses that did not reveal statistically significant differences, some clear patterns are observed. There is a strong trend for Middle period and mainland contexts burials, where subadult and adult burials have no distinct difference in total number of grave goods. Considering the suite of analyses investigating the total number of grave goods for infant, child, and adolescent burials, there are some minor differences evident for subadults between time periods and geographic contexts. Despite these apparent differences, comparing the three subadult age groups within context and within time period, infant, child, and adolescent burials are remarkably similar to one another, respectively. This indicates that there was no substantial evidence for differential treatment within the subadult sample for infant, child, and adolescent burials for total number of grave goods.

Analysis of Variable 13: Number of Material Types

Number of material types is designed to assess a degree of diversity in burial contexts. Data on five possible grave good material types—stone, shell, bone (faunal), organic, and composite—were collected for each burial with grave goods present. Both worked and unworked artifacts/ecofacts falling under the stone, shell, bone, and organic categories were included. Composite objects were those that comprised two or more material types, however, presence of functional and/or decorative elements (e.g., asphaltum, pigment/paint) did not necessitate a composite material type (see discussion for Variable 13 in Chapter 5 for specific examples). A minimum of one artifact per material type (e.g., an assemblage comprising one shell bead and three stone arrowheads would be coded as the burial having two material types, shell and stone) was necessary to record it as being present in a particular burial context.

Number of Material Types for All Burials by Time Period

This analysis establishes a baseline for the number of material types included in Early and Middle period burials (Figure 7.49 and Table 7.49), to ascertain broad patterns for this variable diachronically. A Mann-Whitney U test (U = 75,797.00, z = -1.54, p = 0.125, r = 0.05) did not reveal a statistically significant difference in the number of material types between Early (Md = 1.00, n = 344) and Middle period (Md = 1.00, n = 469) burials. Considering the overall spreads, distributions, and medians for each time period, there is no distinct difference for the number of material types included in burial contexts. Ultimately, these results indicate that there was no marked diachronic difference for the number of material types included in burial contexts.

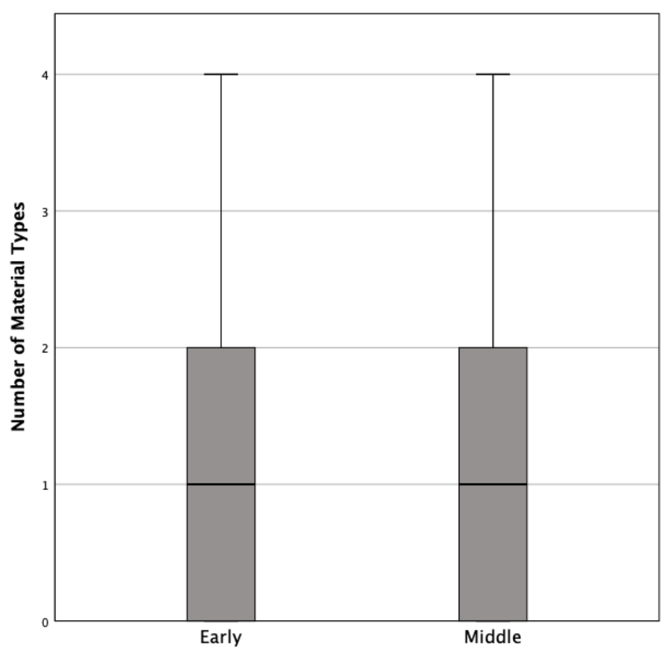

Figure 7.49. Boxplot for total number of material types comparing Early and Middle period burials.

Table 7.49. Independent-Samples Mann-Whitney *U* Test Summary Statistics for the Number of Material Types for All Burials by Time Period

Number of Material Types	Early Period	Middle Period
n	344	469
Median	1.00	1.00
Mean Rank	421.16	396.61

Number of Material Types by Subadult and Adult Burials

To establish an age-comparative baseline for number of material types, subadult and adult burial data are analyzed (Figure 7.50 and Table 7.50). A Mann-Whitney *U* test (U = 43,397.00, z = -2.32, p = 0.021, r = 0.08) revealed a statistically significant difference in the number of material types between subadult (Md = 1.00, n = 165) and adult (Md = 1.00, n = 593) burials. Comparing number of material types between subadult and adult burials, both age groups share a median of one material type, as well as having very similar overall spreads of data. Based on the results of this age-comparative analysis, there was no significant difference in treatment for the number of material types based on age.

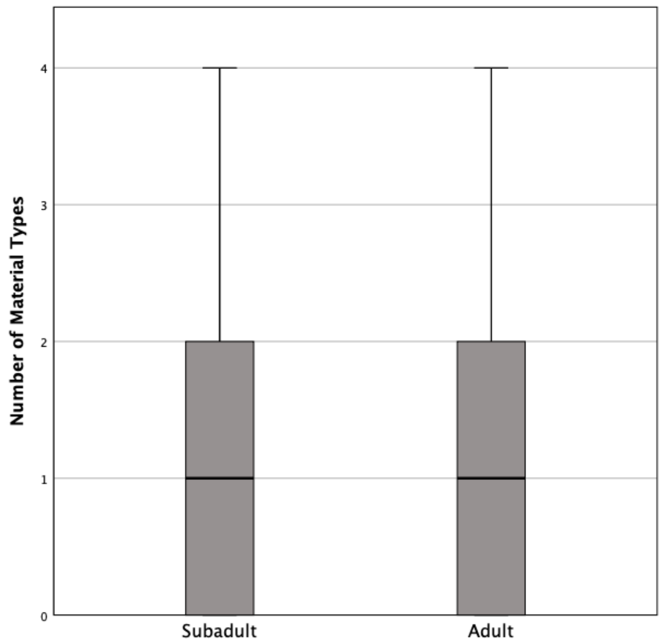

Figure 7.50. Boxplot for total number of material types comparing subadult and adult burials.

Table 7.50. Independent-Samples Mann-Whitney *U* Test Summary Statistics for the Number of Material Types for All Burials by Subadult and Adult Burials

Number of Material Types	Subadult	Adult
n	165	593
Median	1.00	1.00
Mean Rank	412.99	370.18

Number of Material Types for Subadult and Adult Burials by Time Period

This analysis considers the number of material types for Early period subadult and adult burials (Figure 7.51 and Table 7.51) in order to facilitate comparisons between these two age groups, diachronically, with the Middle period sample (Figure 7.52 and Table 7.52). A Mann-Whitney *U* test (U = 9,420.50, z = -2.50, p = 0.012, r = 0.14) revealed a statistically significant difference in the number of material types between Early period subadult (Md = 1.00, n = 101) and adult (Md = 1.00, n = 224) burials. While both age groups share a median value of one, the two age groups differ in terms of their overall distributions. For adults, the distribution is fairly symmetric, while for subadults it is more skewed toward having a higher frequency of burials with low numbers of material types, as well as a few cases for exceptionally high numbers of material types. Despite the median values being equal, a pattern is evident where Early period subadult burials more consistently receive a wider array of material types than do adult burials.

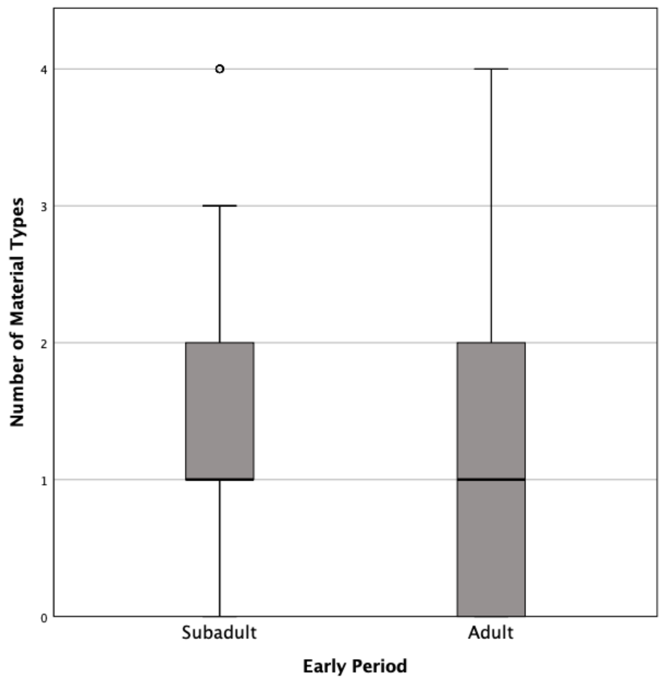

Figure 7.51. Boxplot for total number of material types comparing Early period subadult and adult burials.

Table 7.51. Independent-Samples Mann-Whitney *U* Test Summary Statistics for the Number of Material Types by Early Period Subadult and Adult Burials

Early Period: Number of Material Types	**Subadult**	**Adult**
n	101	224
Median	1.00	1.00
Mean Rank	181.73	154.56

For the Middle period sample of subadult and adult burials (Figure 7.52 and Table 7.52), a Mann-Whitney *U* test (U = 11,822.00, z = 0.02, p = 0.987, r = 0.001) did not reveal a statistically significant difference in the number of material types between Middle period subadult (*Md* = 1.00, n = 64) and adult (*Md* = 1.00, n = 369) burials. For the Middle period sample, both age groups have equal medians, as well as nearly identical spreads and distributions for number of material types. This patterning indicates that there is no discernable age-based difference in treatment for subadult and adult burials regarding number of material types for the Middle period sample. Based on these two analyses, half of all burials, irrespective of time period, had one or more material types present, however, Early period subadults had a greater diversity of material types over Early period adults, while for Middle period burials there was no discernable difference.

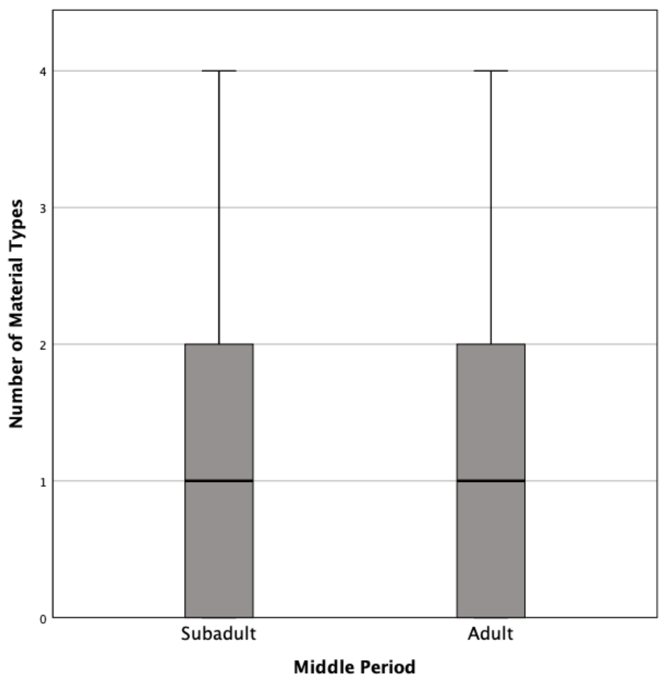

Figure 7.52. Boxplot for total number of material types comparing Middle period subadult and adult burials.

Table 7.52. Independent-Samples Mann-Whitney *U* Test Summary Statistics for the Number of Material Types by Middle Period Subadult and Adult Burials

Middle Period: Number of Material Types	**Subadult**	**Adult**
n	64	369
Median	1.00	1.00
Mean Rank	216.78	217.04

Number of Material Types for All Burials by Island and Mainland Contexts

The following analysis establishes a baseline for the number of material types between island and mainland contexts, to ascertain broad patterns for this variable at a relative geographic level (Figure 7.53 and Table 7.53). A Mann-Whitney U test (U = 75,805.50, z = -2.09, p = 0.036, r = 0.07) revealed a statistically significant difference in the number of material types between island (Md = 1.00, n = 392) and mainland contexts (Md = 1.00, n = 421) burials. The number of material types between island and mainland contexts appear very similar in their shared median value, as well as their overall distribution and spreads. Even though there is a statistically significant difference between the two contexts, it does not appear that the difference has any real-world significance.

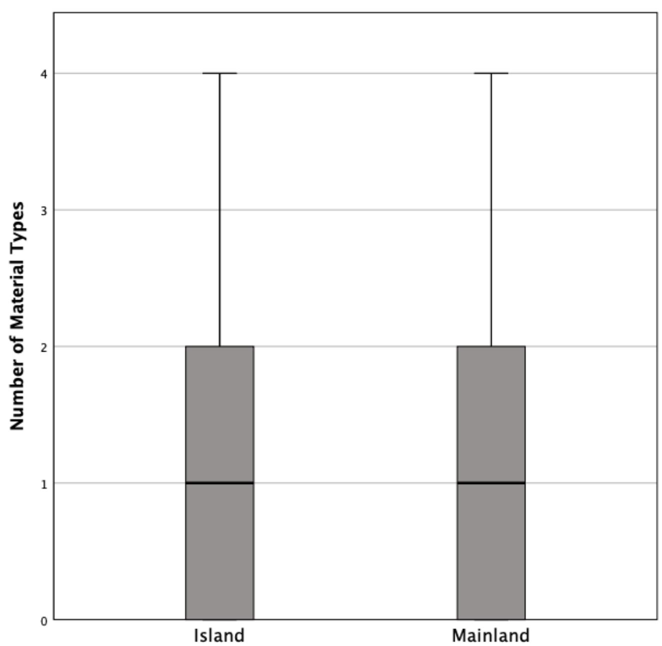

Figure 7.53. Boxplot for total number of material types comparing island and mainland context burials.

Table 7.53. Independent-Samples Mann-Whitney *U* Test Summary Statistics for the Number of Material Types for All Burials by Island and Mainland Contexts

Number of Material Types	Island Contexts	Mainland Contexts
n	392	421
Median	1.00	1.00
Mean Rank	424.12	391.06

Number of Material Types for Subadult and Adult Burials by Island and Mainland Contexts

To facilitate context-based comparisons between subadult and adult burials, island contexts data are analyzed (Figure 7.54 and Table 7.54), followed by mainland subadult and adult burial data (Figure 7.55 and Table 7.55). A Mann-Whitney *U* test (U = 12,090.00, z = -2.82, p = 0.005, r = 0.15) revealed a highly significant statistical difference in the number of material types between island subadult (Md = 2.00, n = 111) and adult (Md = 1.00, n = 265) burials. For island contexts, subadult and adult burials differ primarily in their median value and their overall distributions. Subadult burials have a slightly higher median than adult burials, and the distribution of material types for subadults is skewed more toward exceptionally large values, whereas adult burials are more symmetric in their distribution. Although the difference is fairly modest, there is an apparent age-based difference for number of material types in island burials, where subadults have a greater diversity of material types present in burial assemblages than adults.

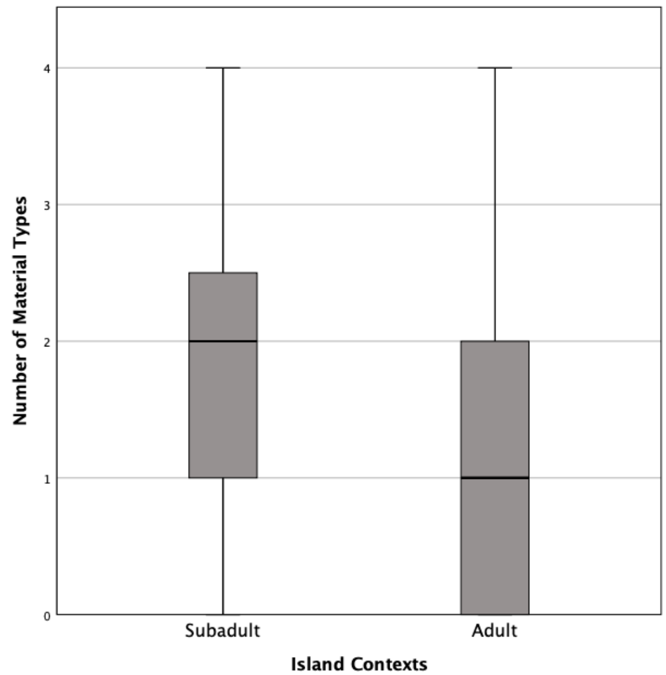

Figure 7.54. Boxplot for total number of material types comparing island context subadult and adult burials.

Table 7.54. Independent-Samples Mann-Whitney *U* Test Summary Statistics for the Number of Material Types by Island Contexts Subadult and Adult Burials

Island Contexts: Number of Material Types	Subadult	Adult
n	111	265
Median	2.00	1.00
Mean Rank	212.08	178.62

For the mainland contexts sample of subadult and adult burials (Figure 7.55 and Table 7.55), a Mann-Whitney *U* test (U = 9,488.00, z = 0.89, p = 0.374, r = 0.05) did not reveal a statistically significant difference in the number of material types between island subadult (*Md* = 1.00, n = 54) and adult (*Md* = 1.00, n = 328) burials. For mainland contexts, both subadult and adult burials share a median value of one for number of material types, however, the two age groups differ somewhat in their overall distributions. While subadult burials are skewed toward having a higher frequency of burials with larger numbers of material types, adult burials have a fairly symmetric distribution. Despite these minor differences, these results do not indicate an age-based difference in treatment between mainland subadult and adult burials for number of material types.

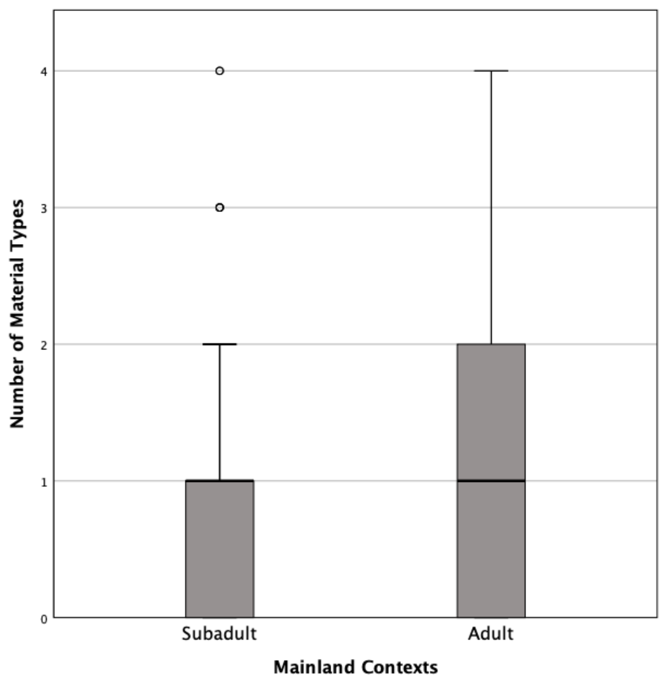

Figure 7.55. Boxplot for total number of material types comparing mainland context subadult and adult burials.

Table 7.55. Independent-Samples Mann-Whitney *U* Test Summary Statistics for the Number of Material Types by Mainland Contexts Subadult and Adult Burials

Mainland Contexts: Number of Material Types	**Subadult**	**Adult**
n	54	328
Median	1.00	1.00
Mean Rank	179.80	193.43

Number of Material Types for Infant, Child, and Adolescent Burials

This analysis serves to establish a finer granulation in subadult burials by comparing the number of material types included in burial assemblages across infant, child, and adolescent burials (Figure 7.56 and Table 7.56). A Kruskal-Wallis test (χ^2 [2, n = 164] = 2.15, p = 0.341) did not reveal a statistically significant difference in the number of material types between infant (*n*

= 79), child (*n* = 53), and adolescent (*n* = 32) burials. While all three age groups share a median value of one for number of material types, infant and child burials are more similar in distribution than either group is to the distribution of adolescent burials. Infant and child burials are both skewed toward having higher frequencies of burials with smaller numbers of material types, albeit with a few cases of exceptionally high numbers of material types, while adolescent burials are more symmetric in nature by comparison. Although adolescent burials appear most dissimilar from the other two age groups, there is no statistically significant difference in the distributions between the three age groups, which suggests there was not any marked difference in burial treatment between the three subadult age groups.

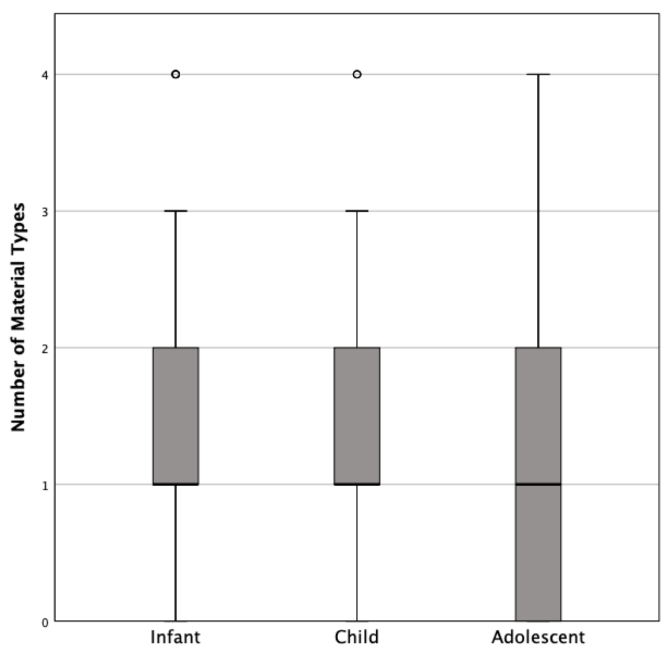

Figure 7.56. Boxplot for total number of material types comparing infant, child, and adolescent burials.

Table 7.56. Independent-Samples Kruskal-Wallis Test Summary Statistics for the Number of Material Types for All Subadults by Infant, Child, and Adolescent Burials

Number of Material Types	Infant	Child	Adolescent
n	79	53	32
Median	1.00	1.00	1.00
Mean Rank	87.25	80.88	73.45

Number of Material Types for Infant, Child, and Adolescent Burials by Time Period

The following analysis establishes the number of material types for Early period infant, child, and adolescent burials (Figure 7.57 and Table 7.57). A Kruskal-Wallis test (χ^2 [2, n = 100] = 0.52, p = 0.771) did not reveal a statistically significant difference in the number of material types between Early period infant (n = 59), child (n = 20), and adolescent (n = 21) burials. For the Early period sample, the overall distributions between the three age groups are remarkably similar, however, infant burials have a slightly different distribution than child or adolescent burials. While child and adolescent burials have distributions that are skewed toward higher frequencies of burials with low material type diversity, infant burials are skewed in the opposite direction, with a higher frequency of burials with high material type diversity. Despite this minor difference in distribution for infant burials, there is no statistically significant difference identified in number of material types for Early period subadult burials.

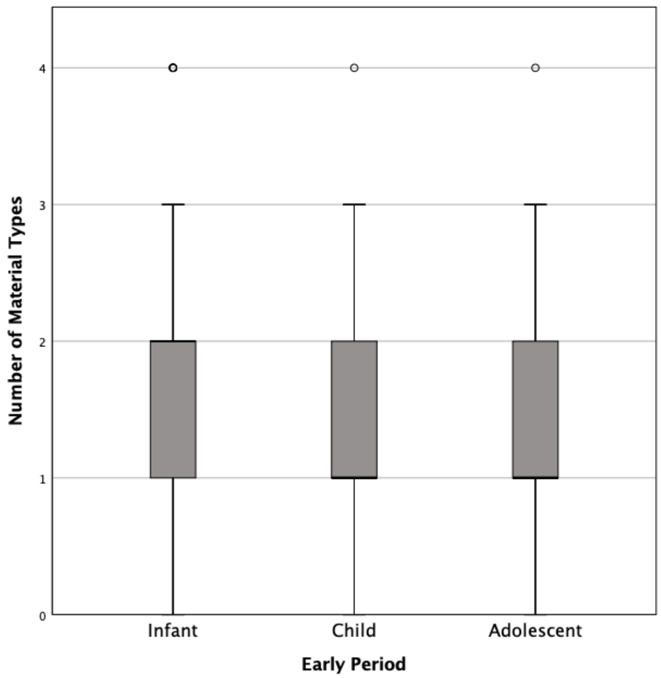

Figure 7.57. Boxplot for total number of material types comparing Early period infant, child, and adolescent burials.

Table 7.57. Independent-Samples Kruskal-Wallis Test Summary Statistics for the Number of Material Types by Early Period Infant, Child, and Adolescent Burials

Early Period: Number of Material Types	**Infant**	**Child**	**Adolescent**
n	59	20	21
Median	2.00	1.00	1.00
Mean Rank	52.14	48.88	47.43

This analysis establishes the number of material types for Middle period infant, child, and adolescent burials (Figure 7.58 and Table 7.58). A Kruskal-Wallis test (χ^2 [2, n = 64] = 2.58, p = 0.276) did not reveal a statistically significant difference in the number of material types between Middle period infant (n = 20), child (n = 33), and adolescent (n = 11) burials. For the Middle period sample, there is a statistically insignificant pattern where adolescent burials have a distribution that is less similar to infant or child burials, which are more similar to one another. While infant and child burials share a median value of one material type, adolescent burials have a median of zero material types. Additionally, infant and child burials both have fairly symmetric distributions, whereas adolescent burials are skewed toward having higher frequencies of burials with low numbers of material types. While these patterns appear to set adolescent burial apart, no statistically significant difference was found to exist between the three Middle period subadult age groups. When the samples are compared diachronically, there is an insignificant pattern for Early period subadults, where infant burials have a greater diversity of material types than child or adolescent burials, while for Middle period burials, an insignificant pattern also exists where infant and child burials are most similar to one another and have higher material type diversity than adolescent burials. In both cases, however, these trends are not strong enough to be considered statistically significant.

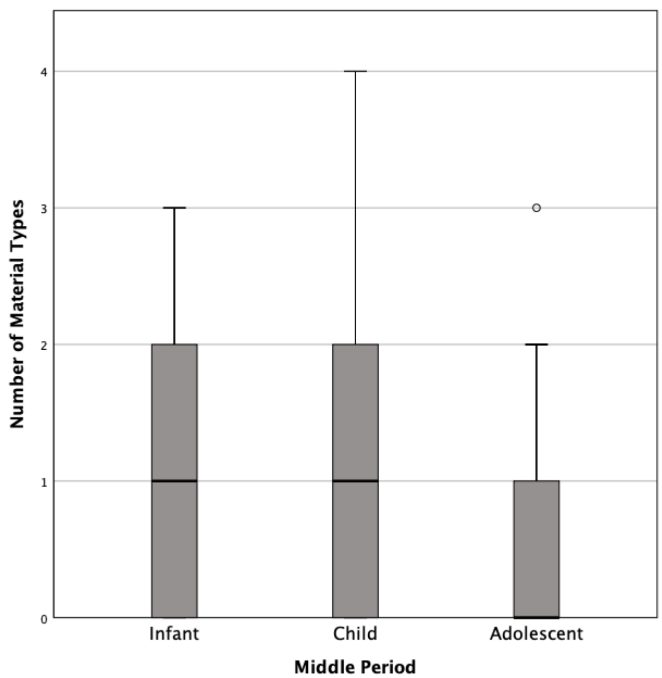

Figure 7.58. Boxplot for total number of material types comparing Middle period infant, child, and adolescent burials.

Table 7.58. Independent-Samples Kruskal-Wallis Test Summary Statistics for the Number of Material Types by Middle Period Infant, Child, and Adolescent Burials

Middle Period: Number of Material Types	Infant	Child	Adolescent
n	20	33	11
Median	1.00	1.00	0.00
Mean Rank	33.70	34.36	24.73

Number of Material Types for Infant, Child, and Adolescent Burials by Island and Mainland Contexts

To facilitate geographic comparisons for subadults, island data for infant, child, and adolescent burials are analyzed (Figure 7.59 and Table 7.59), which is followed by the analysis of mainland infant, child, and adolescent burial data (Figure 7.60 and Table 7.60). A Kruskal-Wallis test (χ^2 [2, n = 111] = 0.96, p = 0.619) did not reveal a statistically significant difference in the number of material types between island infant (n = 63), child (n = 25), and adolescent (n = 23) burials. In the island sample, the IQRs of infant and child burials for number of material types are the most similar to one another, however, the distributions infant and adolescent burials share more similarities in skewness, as they are both fairly symmetric in shape, while child burials are skewed toward having a higher frequency of burials with low numbers of material types. Despite these minor differences, infant burials only differ in their median value by one additional material type compared to child and adolescent burials. Based on these results, there is a slight preponderance for infant burials to receive a higher diversity of material types than child or adolescent burials, however, this is not a statistically significant difference.

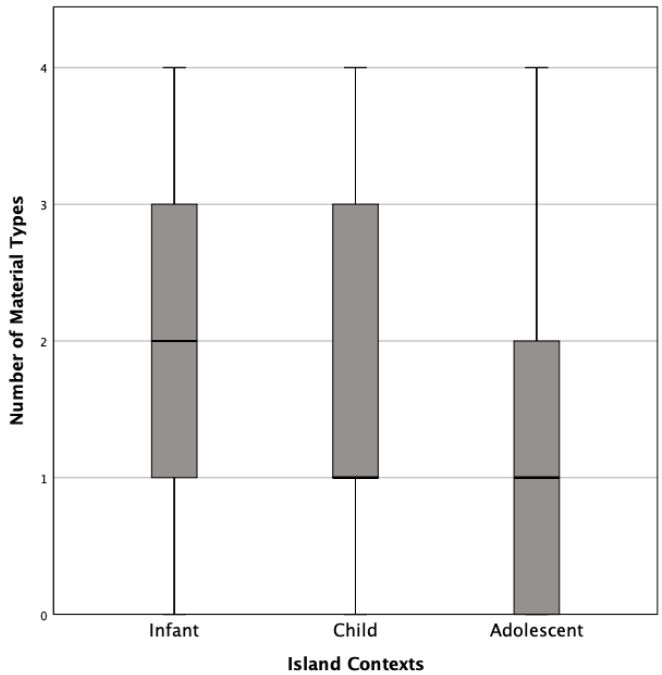

Figure 7.59. Boxplot for total number of material types comparing island context infant, child, and adolescent burials.

Table 7.59. Independent-Samples Kruskal-Wallis Test Summary Statistics for the Number of Material Types by Island Contexts Infant, Child, and Adolescent Burials

Island Contexts: Number of Material Types	**Infant**	**Child**	**Adolescent**
n	63	25	23
Median	2.00	1.00	1.00
Mean Rank	57.71	56.90	50.35

This analysis establishes the number of material types for mainland infant, child, and adolescent burials (Figure 7.60 and Table 7.60). A Kruskal-Wallis test (χ^2 [2, n = 53] = 1.07, p = 0.586) did not reveal a statistically significant difference in the number of material types between mainland infant (n = 16), child (n = 28), and adolescent (n = 9) burials. All three age groups share a median value of one material type, and they also have largely similar distributions. Infant and child burials have the most similar distributions to one another, however, all three age groups are skewed toward having higher frequencies of burials with comparatively large numbers of material types. For mainland subadult burials, the data do not support there being an age-based difference in treatment for number of material types. Comparing subadult burials between both contexts, there appears to be a slight preponderance for infant burials having more diversity in material type, however, treatment for mainland subadult burials shows no substantive difference in treatment between the three age groups.

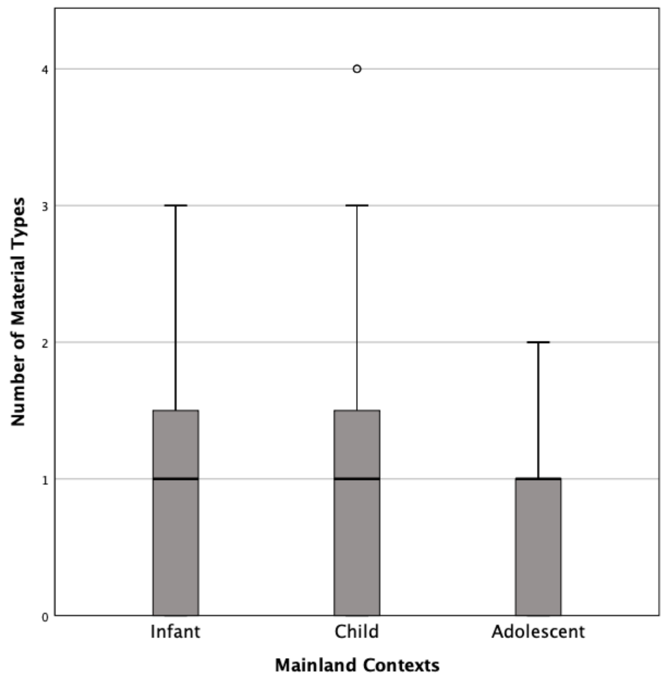

Figure 7.60. Boxplot for total number of material types comparing mainland context infant, child, and adolescent burials.

Table 7.60. Independent-Samples Kruskal-Wallis Test Summary Statistics for the Number of Material Types by Mainland Contexts Infant, Child, and Adolescent Burials

Mainland Contexts: Number of Material Types	**Infant**	**Child**	**Adolescent**
n	16	28	9
Median	1.00	1.00	1.00
Mean Rank	27.53	28.14	22.50

Summary of Findings for Variable 13: Number of Material Types

Of the 12 analyses investigating differences in the number of material types by geographic, diachronic, and age-based comparisons, two analyses yielded highly significant results, Early period subadult/adult burials (Table 7.51) and island contexts subadult/adult burials (Table 7.54), while two analyses revealed statistically significant results, all burials by subadult/adult burials (Table 7.50) and all burials by geographic context (Table 7.53). For subadult and adult burials, as well as for Early period subadult and adult burials, both age groups, respectively, have equal median values, however, subadult burials have a markedly higher diversity and frequency for number of material types than do adults. A similar pattern is also seen for island and mainland contexts burials, where median values between the two contexts are equal, however, the island contexts sample has a higher diversity for number of material types than the mainland contexts sample. A different pattern is seen for island contexts subadult and adult burials, where there is clear age-based differential treatment for subadult burials.

The remaining eight analyses did not reveal any statistically significant differences, however, some patterns worthy of note were observed for infant, child, and adolescent burials. Differences between time periods and between contexts were the most striking, and there were some insignificant differences in burial treatment observed in Early period infant burials, Middle period adolescent burials, and also for island period infant burials. Mainland contexts subadults had no discernable age-based differential treatment in the number of material types included in burial assemblages.

Analysis of Variable 14: Presence/Absence of Ceremonial Paraphernalia

The category for ceremonial paraphernalia used in this study follows that which was defined by Hudson and Blackburn (1986). These are objects for ceremonial or non-secular purposes, which include the both ritual paraphernalia and musical instruments. Objects of ritual paraphernalia include charmstones, crystals, and effigies, whereas musical instruments include whistles and rattles (see Appendix A:Table A.2 for all ceremonial paraphernalia artifact types). These analyses serve to provide a general measure for prevalence of at least one object of ceremonial paraphernalia in burial assemblages to assess trends between age groups, between the Early and Middle periods, and between island and mainland contexts.

Presence/Absence of Ceremonial Paraphernalia for All Burials by Time Period

In the following analysis, data from Early and Middle period burials are analyzed for presence/absence of ceremonial paraphernalia to establish a diachronic baseline (Figure 7.61 and Table 7.61). The Pearson chi-square test for independence (n = 588, χ^2 = 7.673, p = 0.007) revealed a highly significant statistical difference between presence/absence of ceremonial paraphernalia and time period. Although the majority of burials for both the Early and Middle periods are lacking ceremonial paraphernalia in burial contexts, there is a larger proportion of Middle period burials that have ceremonial paraphernalia interred with the deceased. When compared to the Early period, Middle period burials have ceremonial paraphernalia nearly twice as frequently as Early period burials.

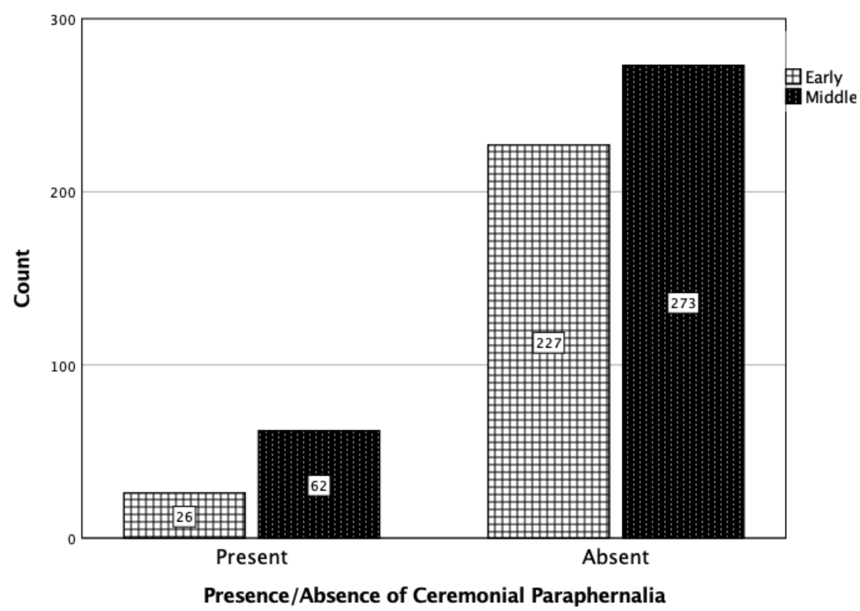

Figure 7.61. Bar graph of presence/absence of ceremonial paraphernalia for all burials by time period phase.

Table 7.61. Frequency Count and Percentage of Presence/Absence of Ceremonial Paraphernalia for All Burials by Time Period

Presence/Absence of Ceremonial Paraphernalia	Early Period		Middle Period	
	Frequency	Percent	Frequency	Percent
Present	26	10.3 %	62	18.5 %
Absent	227	89.7 %	273	81.5 %
Total	**253**	**100 %**	**335**	**100 %**

Presence/Absence of Ceremonial Paraphernalia by Subadult and Adult Burials

Subadult and adult burials are analyzed here to establish an age-comparative baseline for presence/absence of ceremonial paraphernalia (Figure 7.62 and Table 7.62). The Pearson chi-square test for independence (n = 550, $\chi^2 = 0.029$, p = 0.888) did not indicate a statistically significant difference between presence/absence of ceremonial paraphernalia and subadult/adult burials. Subadult and adult burials have approximately equal proportions for presence/absence of ceremonial paraphernalia, which indicates that, at this broad level of analysis, age does not seem to be a significant factor in the inclusion of ceremonial paraphernalia in burial contexts.

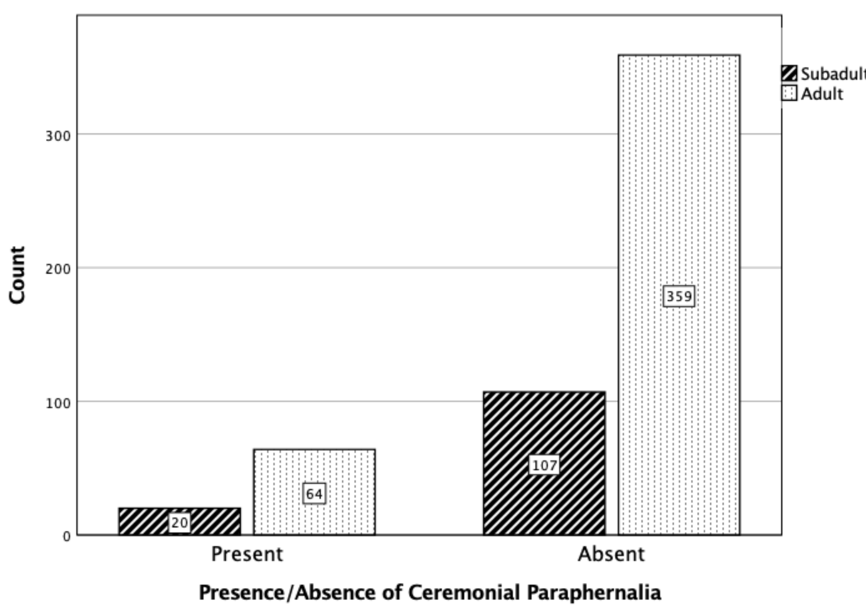

Figure 7.62. Bar graph of presence/absence of ceremonial paraphernalia for subadult and adult burials.

Table 7.62. Frequency Count and Percentage of Presence/Absence of Ceremonial Paraphernalia for Subadult and Adult Burials

Presence/Absence of Ceremonial Paraphernalia	Subadult		Adult	
	Frequency	Percent	Frequency	Percent
Present	20	15.7 %	64	15.1 %
Absent	107	84.3 %	359	84.9 %
Total	**127**	**100 %**	**423**	**100 %**

Presence/Absence of Ceremonial Paraphernalia for Subadult and Adult Burials by Time Period

Data from Early period subadult and adult burials for presence/absence of ceremonial paraphernalia are analyzed first (Figure 7.63 and Table 7.63), followed by Middle period subadult and adult data (Figure 7.64 and Table 7.64) to provide a point of comparison between age groups diachronically. The Pearson chi-square test for independence (n = 241, χ^2 = 4.015, p = 0.072) did not indicate a statistically significant difference between presence/absence of ceremonial paraphernalia and Early period subadult/adult burials, however it should be noted that the p-value is approaching significance. The majority of both Early period subadult and adult burials lack ceremonial paraphernalia in burial contexts, with subadult burials having ceremonial paraphernalia nearly twice as frequently as adult burials. Although the p-value has not reached statistical significance, this difference appears to have real world significance, with Early period subadults being interred with ceremonial paraphernalia more frequently than adults.

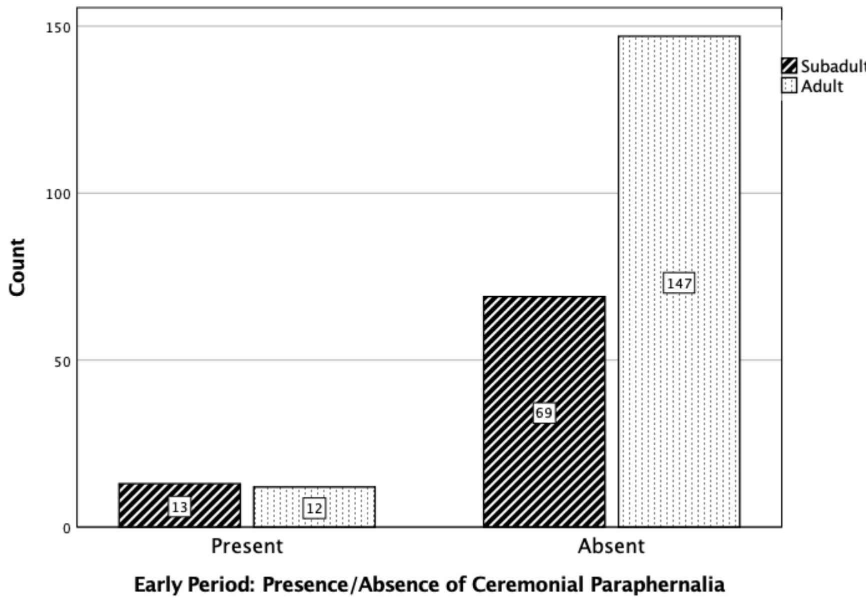

Figure 7.63. Bar graph of presence/absence of ceremonial paraphernalia for Early period subadult and adult burials.

Table 7.63. Frequency Count and Percentage of Presence/Absence of Ceremonial Paraphernalia for Early Period Subadult and Adult Burials

Early Period: Presence/Absence of Ceremonial Paraphernalia	Subadult		Adult	
	Frequency	Percent	Frequency	Percent
Present	13	15.9 %	12	7.5 %
Absent	69	84.1 %	147	92.5 %
Total	**82**	**100 %**	**159**	**100 %**

For the Middle period sample (Figure 7.64 and Table 7.64), the Pearson chi-square test for independence (n = 309, χ^2 = 0.427, p = 0.550) does not indicate a statistically significant difference between presence/absence of ceremonial paraphernalia and subadult/adult burials. The proportions of presence/absence of ceremonial paraphernalia for Middle period subadult and adult burials are very similar, with ceremonial paraphernalia being included in adult burials slightly more frequently than for subadult burials. This indicates that, during the Middle period, adults and subadults were interred with ceremonial paraphernalia at very similar rates, which indicates that age was not a significant factor in the inclusion of these objects in burial contexts.

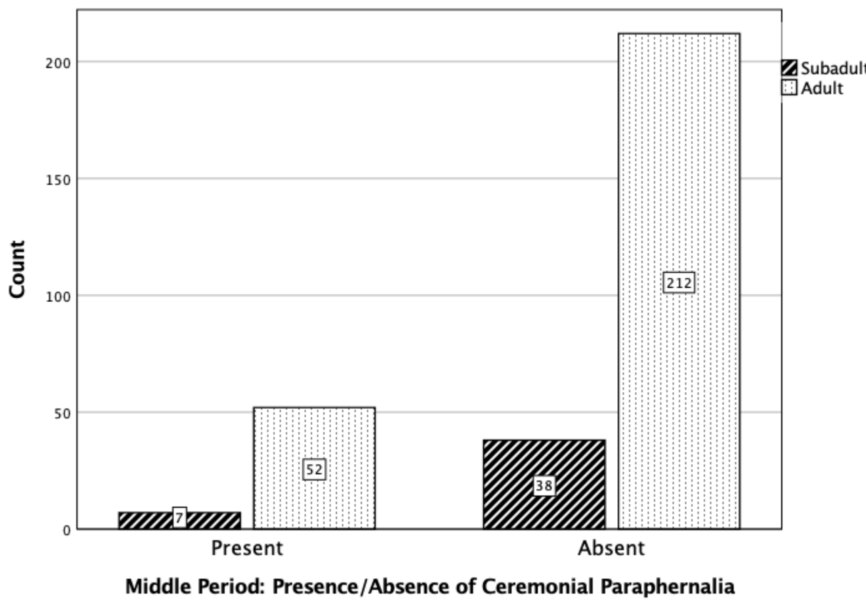

Figure 7.64. Bar graph for presence/absence of ceremonial paraphernalia for Middle period subadult and adult burials.

Table 7.64. Frequency Count and Percentage for Presence/Absence of Ceremonial Paraphernalia for Middle Period Subadult and Adult Burials

Middle Period: Presence/Absence of Ceremonial Paraphernalia	**Subadult**		**Adult**	
	Frequency	**Percent**	**Frequency**	**Percent**
Present	7	15.6 %	52	19.7 %
Absent	38	84.4 %	212	80.3 %
Total	**45**	**100 %**	**264**	**100 %**

Presence/Absence of Ceremonial Paraphernalia for All Burials by Island and Mainland Contexts

For this analysis, data from island and mainland burials are analyzed in order to convey a baseline rates of presence/absence of ceremonial paraphernalia in burials between geographic contexts (Figure 7.65 and Table 7.65). The Pearson chi-square test for independence (n = 588, χ^2 = 8.519, p = 0.004) indicated a highly significant statistical difference between presence/absence of ceremonial paraphernalia and geographic context. Mainland burials were interred with ceremonial paraphernalia nearly twice as frequently as island burials. This patterning indicates that geographic context was a significant factor in the inclusion of ceremonial paraphernalia in burial contexts.

Figure 7.65. Bar graph for presence/absence of ceremonial paraphernalia for all burials by island and mainland contexts.

Table 7.65. Frequency Count and Percentage for Presence/Absence of Ceremonial Paraphernalia for All Burials by Island and Mainland Contexts

Presence/Absence of Ceremonial Paraphernalia	**Island**		**Mainland**	
	Frequency	**Percent**	**Frequency**	**Percent**
Present	29	10.4 %	59	19.0 %
Absent	249	89.6 %	251	81.0 %
Total	**278**	**100 %**	**310**	**100 %**

Presence/Absence of Ceremonial Paraphernalia for Subadult and Adult Burials by Island and Mainland Contexts

The following two analyses provide the results for presence/absence of ceremonial paraphernalia in island subadult and adult burials (Figure 7.66 and Table 7.66) and mainland subadult and adult burials (Figure 7.67 and Table 7.67) to assist in making geographic-based comparisons between these age groups. For island contexts, the Pearson chi-square test (n = 272, $\chi^2 = 4.233$, $p = 0.054$) did not indicate a statistically significant difference between presence/absence of ceremonial paraphernalia and subadult/adult burials, however, it should be noted that the p-value is approaching significance. The majority of both subadult and adult burials have ceremonial paraphernalia absent from burial contexts, however, subadult burials have ceremonial paraphernalia about twice as frequently as adult burials. Although the *p*-value has not reached statistical significance, this difference appears to have real world significance, with island subadults being interred with ceremonial paraphernalia more frequently than adults. This patterning tentatively indicates that age could be a factor in the inclusion of ceremonial paraphernalia for island burials.

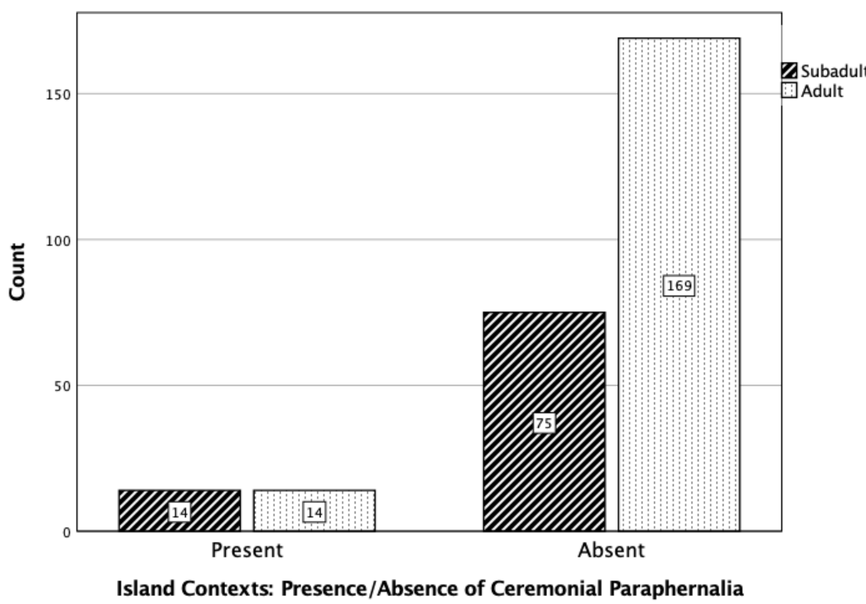

Figure 7.66. Bar graph of presence/absence of ceremonial paraphernalia for island contexts by subadult and adult burials.

Table 7.66. Frequency Count and Percentage of Presence/Absence of Ceremonial Paraphernalia for Island Contexts by Subadult and Adult Burials

Island Contexts: Presence/Absence of Ceremonial Paraphernalia	**Subadult**		**Adult**	
	Frequency	**Percent**	**Frequency**	**Percent**
Present	14	15.7 %	14	7.7 %
Absent	75	84.3 %	169	92.3 %
Total	**89**	**100 %**	**183**	**100 %**

For subadult and adult burials from mainland contexts (Figure 7.67 and Table 7.67), the Pearson chi-square test (n = 278, χ^2 = 0.519, p = 0.524) does not indicate a statistically significant difference for presence/absence of ceremonial paraphernalia. The proportions for presence/absence of ceremonial paraphernalia in mainland subadult and adult burials are very similar, with ceremonial paraphernalia being included in adult burials slightly more frequently than for subadult burials. This indicates that, for mainland contexts, adults and subadults were interred with ceremonial paraphernalia at very similar rates, which likely indicates that age was not a significant factor in the inclusion of these objects in mainland burials.

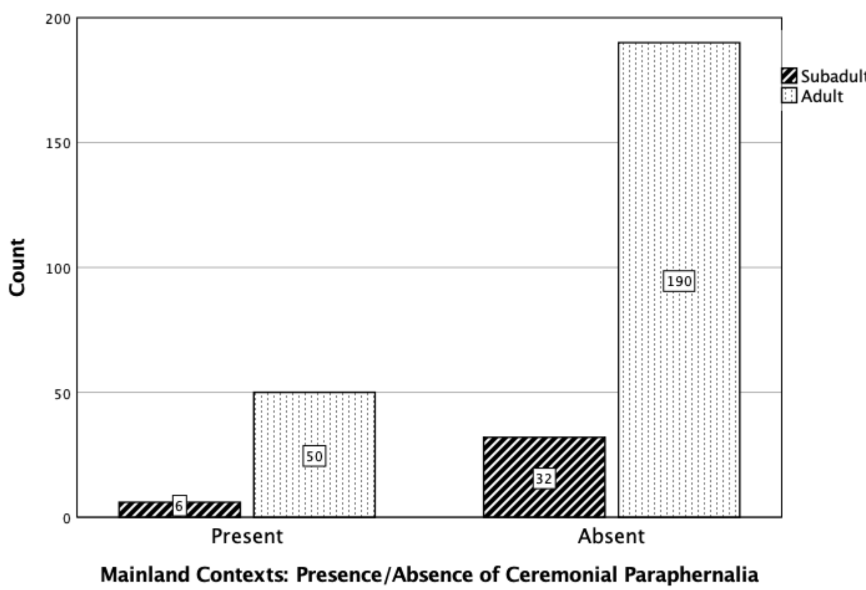

Figure 7.67. Bar graph of presence/absence of ceremonial paraphernalia for mainland contexts by subadult and adult burials.

Table 7.67. Frequency Count and Percentage of Presence/Absence of Ceremonial Paraphernalia for Mainland Contexts by Subadult and Adult Burials

Mainland Contexts: Presence/Absence of Ceremonial Paraphernalia	**Subadult**		**Adult**	
	Frequency	**Percent**	**Frequency**	**Percent**
Present	6	15.8 %	50	20.8 %
Absent	32	84.2 %	190	79.2 %
Total	**38**	**100 %**	**240**	**100 %**

Presence/Absence of Ceremonial Paraphernalia for Infant, Child, and Adolescent Burials

To investigate potential age-based patterns in subadult burials, infant, child, and adolescent burials are analyzed regarding the presence/absence of ceremonial paraphernalia (Figure 7.68 and Table 7.68). The Pearson chi-square test for independence (n = 126, χ^2 = 3.883, p = 0.124) does not indicate a statistically significant difference between infant, child, and adolescent burials for the presence/absence of ceremonial paraphernalia. Although not statistically significant, the patterning for rates of presence/absence of ceremonial paraphernalia tentatively indicates that the presence of ceremonial paraphernalia increases with subadult age, with infant burials having the lowest proportion of ceremonial paraphernalia and adolescent burials having the highest proportion.

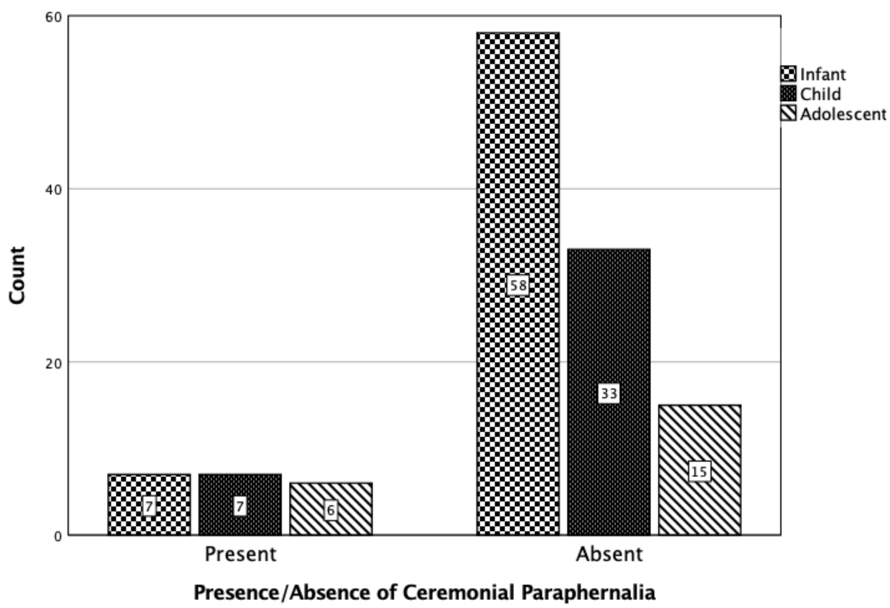

Figure 7.68. Bar graph for presence/absence of ceremonial paraphernalia for infant, child, and adolescent burials.

Table 7.68. Frequency Count and Percentage for Presence/Absence of Ceremonial Paraphernalia for Infant, Child and Adolescent Burials

Presence/Absence of Ceremonial Paraphernalia	**Infant**		**Child**		**Adolescent**	
	Frequency	**Percent**	**Frequency**	**Percent**	**Frequency**	**Percent**
Present	7	10.8 %	7	17.5 %	6	28.6 %
Absent	58	89.2 %	33	82.5 %	15	71.4 %
Total	**65**	**100 %**	**40**	**100 %**	**21**	**100 %**

Presence/Absence of Ceremonial Paraphernalia for Infant, Child, and Adolescent Burials by Time Period

The following two analyses are designed to provide a point of diachronic comparison for subadults, examining rates for presence/absence of ceremonial paraphernalia in infant, child, and adolescent burials for Early (Figure 7.69 and Table 7.69) and Middle periods (Figure 7.70 and Table 7.70). The Fischer's Exact test of independence (n = 81, p = 0.438) does not indicate a statistically significant difference between presence/absence of ceremonial paraphernalia and Early period infant, child, and adolescent burials. Although the differences present are not statistically significant, there appears to be a trend where presence of ceremonial paraphernalia increases with subadult age. Early period infant burials have the smallest proportion of ceremonial paraphernalia, while adolescent burials have the largest proportion.

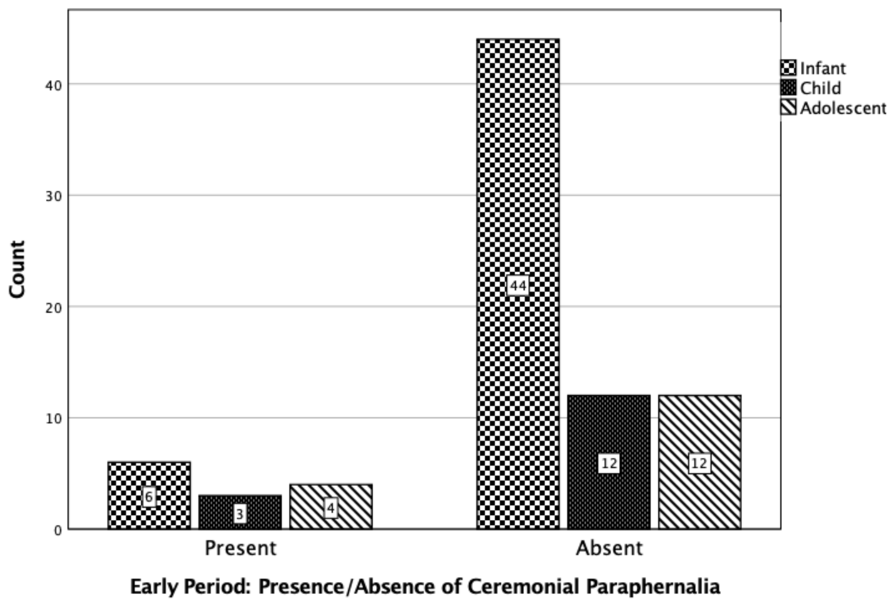

Figure 7.69. Bar graph for presence/absence of ceremonial paraphernalia for Early Period infant, child, and adolescent burials.

Table 7.69. Frequency Count and Percentage for Presence/Absence of Ceremonial Paraphernalia for Early Period Infant, Child and Adolescent Burials

Early Period: Presence/Absence of Ceremonial Paraphernalia	**Infant**		**Child**		**Adolescent**	
	Frequency	**Percent**	**Frequency**	**Percent**	**Frequency**	**Percent**
Present	6	12.0 %	3	20.0 %	4	25.0 %
Absent	44	88.0 %	12	80.0 %	12	75.0 %
Total	**50**	**100 %**	**15**	**100 %**	**16**	**100 %**

For the sample of infant, child, and adolescent burials from the Middle period (Figure 7.70 and Table 7.70), the Fischer's Exact test of independence (n = 45, p = 0.233) did not indicate a statistically significant difference between presence/absence of ceremonial paraphernalia and Middle period infant, child, and adolescent burials. Again, although this patterning is not statistically significant, it is very similar to what is seen for Early period subadults (Table 7.69), with the presence of ceremonial paraphernalia in burials gradually increasing with subadult age.

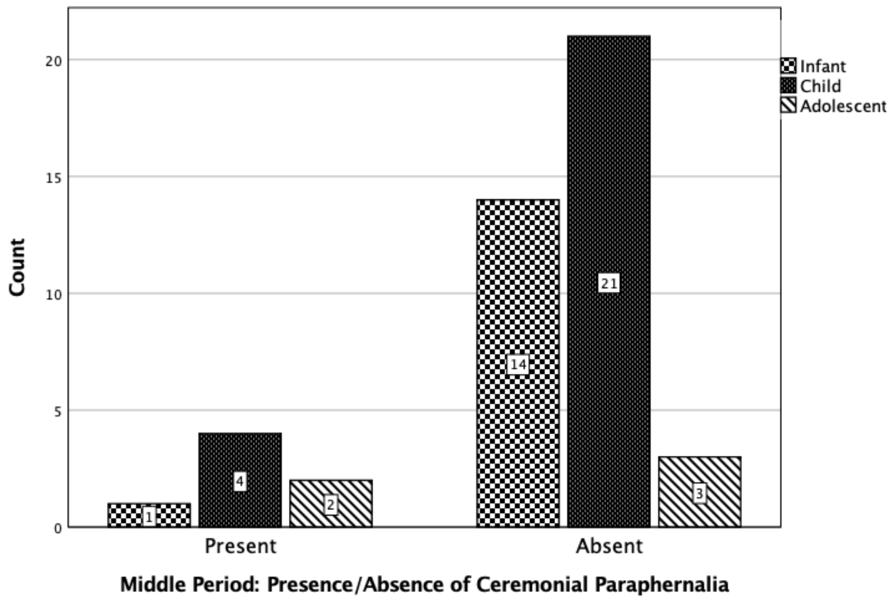

Figure 7.70. Bar graph for presence/absence of ceremonial paraphernalia for Middle Period infant, child, and adolescent burials.

Table 7.70. Frequency Count and Percentage for Presence/Absence of Ceremonial Paraphernalia for Middle Period Infant, Child, and Adolescent Burials

Middle Period: Presence/Absence of Ceremonial Paraphernalia	Infant		Child		Adolescent	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Present	1	6.7 %	4	16.0 %	2	40.0 %
Absent	14	93.3 %	21	84.0 %	3	60.0 %
Total	**15**	**100 %**	**25**	**100 %**	**5**	**100 %**

Presence/Absence of Ceremonial Paraphernalia for Infant, Child, and Adolescent Burials by Island and Mainland Contexts

These final two analyses convey the results for presence/absence of ceremonial paraphernalia in subadult burials from island (Figure 7.71 and Table 7.71) and mainland contexts (Figure 7.72 and Table 7.72) in order to evaluate potential geographic-based patterns between infant, child, and adolescent burials. The Fischer's Exact test of independence (n = 89, p = 0.191) did not indicate a statistically significant difference between presence/absence of ceremonial paraphernalia and island infant, child, and adolescent burials. Although not statistically significant, the results reveal a pattern where presence of ceremonial paraphernalia appears to increase gradually with subadult age, where infant burials have the lowest proportion of ceremonial paraphernalia and adolescent burials have the highest proportion.

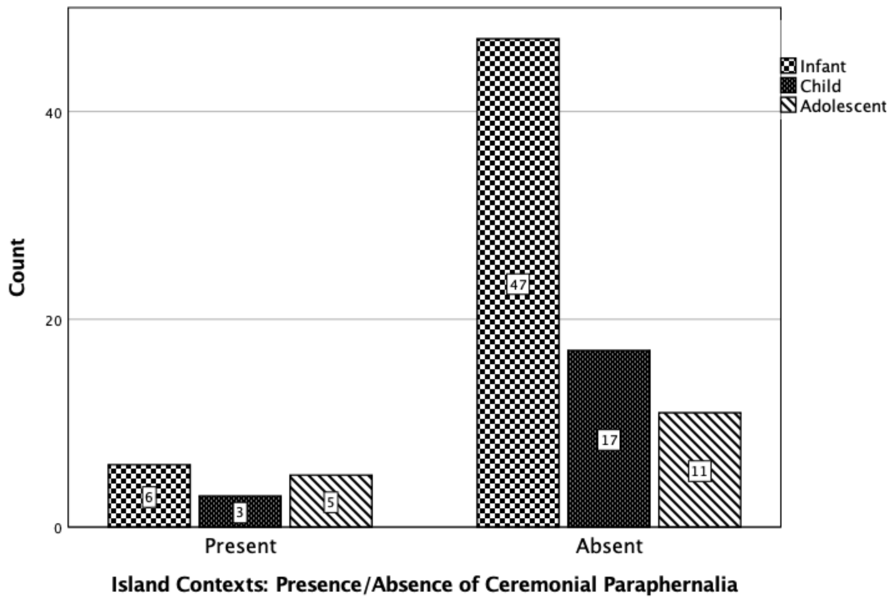

Figure 7.71. Bar graph of presence/absence of ceremonial paraphernalia for island contexts by infant, child, and adolescent burials.

Table 7.71. Frequency Count and Percentage of Presence/Absence of Ceremonial Paraphernalia for Island Contexts by Infant, Child, and Adolescent Burials

Island Contexts: Presence/Absence of Ceremonial Paraphernalia	Infant		Child		Adolescent	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Present	6	11.3 %	3	15.0 %	5	31.3 %
Absent	47	88.7 %	17	85.0 %	11	68.8 %
Total	**53**	**100 %**	**20**	**100 %**	**16**	**100 %**

For the mainland subadult sample (Figure 7.72 and Table 7.72), the Fischer's Exact test of independence (n = 37, p = 0.701) did not indicate a statistically significant difference between presence/absence of ceremonial paraphernalia and mainland infant, child, and adolescent burials. Similar patterning to island contexts subadult burials (Table 7.71) is seen here, with presence of ceremonial paraphernalia increasing with age. One difference of note is that the mainland subadult sample has equal rates for presence of ceremonial paraphernalia for child and adolescent burials, which could be an effect of the small adolescent sample size.

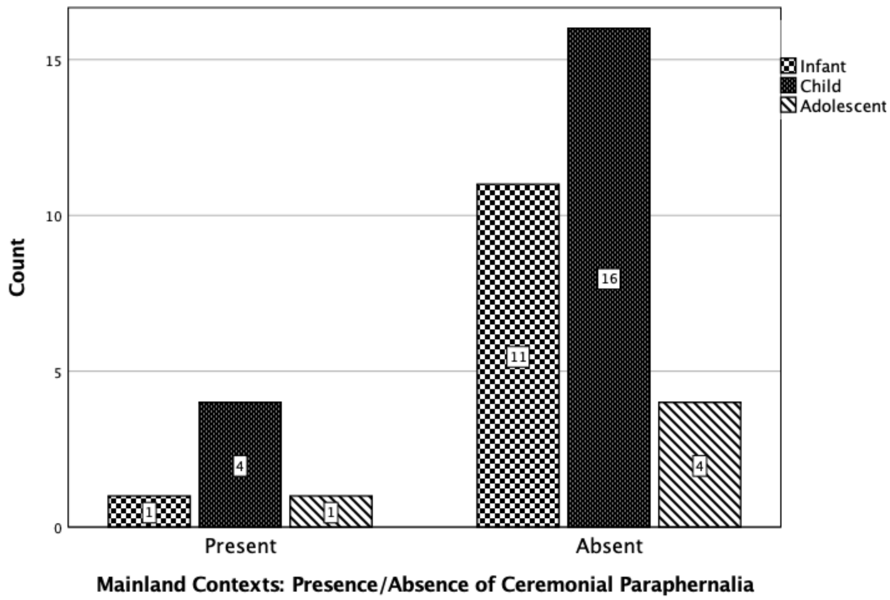

Figure 7.72. Bar graph for presence/absence of ceremonial paraphernalia for mainland contexts by infant, child, and adolescent burials.

Table 7.72. Frequency Count and Percentage for Presence/Absence of Ceremonial Paraphernalia for Mainland Contexts by Infant, Child, and Adolescent Burials

Mainland Contexts: Presence/Absence of Ceremonial Paraphernalia	Infant		Child		Adolescent	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Present	1	8.3 %	4	20.0 %	1	20.0 %
Absent	11	91.7 %	16	80.0 %	4	80.0 %
Total	**12**	**100 %**	**20**	**100 %**	**5**	**100 %**

Summary of Findings for Variable 14: Presence/Absence of Ceremonial Paraphernalia

There were two analyses that yielded highly significant statistical results for presence of ceremonial paraphernalia, all burials by time period (Table 7.61) and all burials by context (Table 7.65). Middle period burials had a higher frequency for presence of ceremonial paraphernalia, a pattern which also held true for mainland contexts burials. For the remaining 10 analyses, there were no statistically significant differences, however two of these analyses were approaching significance, Early period and Island contexts subadult/adult burials (Tables 7.63 and 7.66, respectively). The patterning for these two analyses is very similar, with subadult burials having ceremonial paraphernalia present in burial contexts approximately twice as frequently as adult burials.

Although majority of analyses for presence/absence of ceremonial paraphernalia lack statistically significant results, there was one notable pattern evident only when subadult burials were divided into infant, child, and adolescent age groups. For all iterations of the subadult only analyses (Tables 7.68–7.72), a clear trend was present where the rate for presence of ceremonial paraphernalia increased incrementally as age increased. In all but one of these cases, infant burials had the smallest proportion for presence of ceremonial paraphernalia, while adolescent burials had the largest. The only exception (Table 7.68) followed the same basic patterning, however child and adolescent burials had equal proportions, which may be an effect of sample size. Even though these results are not statistically significant, the fact that this patterning is present throughout the subadult only analyses tentatively indicates some level of age-based patterning for the inclusion of ceremonial paraphernalia in burial contexts that spans both time periods and geographic contexts.

Analysis of Variable 15: Presence/Absence of Beads

Since beads, a subset of artifacts in the ornamentation category, were objects of importance throughout Chumash history, this set of analyses was designed to capture additional depth regarding the types of objects included within burial assemblages, separate from ornaments generally (Variable 11). Considering the presence of at least one bead allows for a general analysis of how widespread beads were in burial contexts of different age groups, time periods, and geographic contexts.

Presence/Absence of Beads for All Burials by Time Period

The following analysis conveys the results regarding presence/absence of beads recorded in burial assemblages from the Early and Middle periods (Figure 7.73 and Table 7.73), thus establishing a diachronic baseline. The Pearson chi-square test for independence (n = 793, χ^2 = 51.958, p < 0.001) resulted in a highly significant statistical difference between presence/absence of beads and time period. Early period burials have nearly twice the frequency for presence of beads than do Middle period burials. This patterning indicates that the frequency of beads being included in burial contexts dropped significantly over time, meaning a smaller, more restricted, segment of the population were being interred with beads.

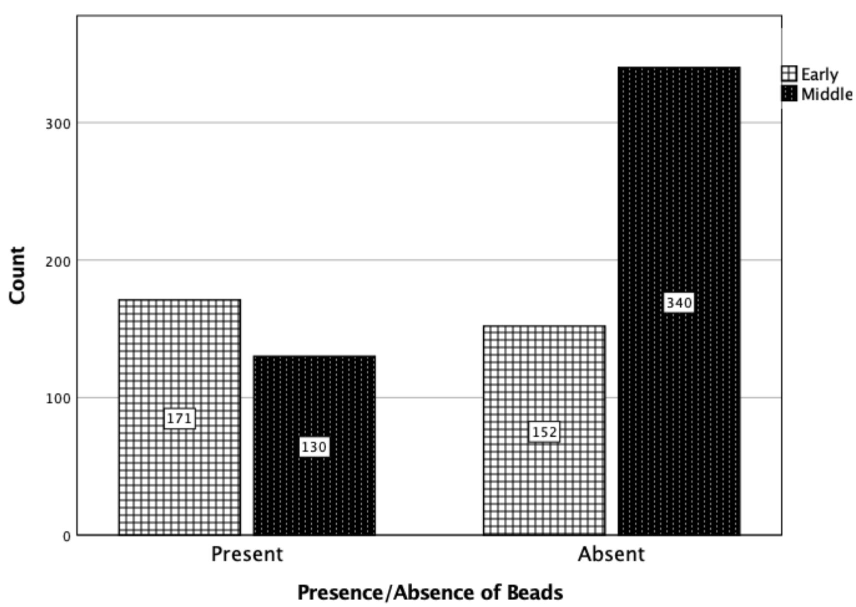

Figure 7.73. Bar graph for presence/absence of beads for all burials by time period.

Table 7.73. Frequency Count and Percentage for Presence/Absence of Beads for All Burials by Time Period

Presence/Absence of Beads	Early Period		Middle Period	
	Frequency	Percent	Frequency	Percent
Present	171	52.9 %	130	27.7 %
Absent	152	47.1 %	340	72.3 %
Total	**323**	**100 %**	**470**	**100 %**

Presence/Absence of Beads by Subadult and Adult Burials

To take into account potential age-based differences for the presence/absence of beads in burial contexts, subadult and adult burials are analyzed to determine a baseline (Figure 7.74 and Table 7.74). The Pearson chi-square test for independence (n = 740, χ^2 = 16.466, p < 0.001) resulted in a highly significant statistical difference between presence/absence of beads and subadult/adult burials. Subadults were interred with beads one-and-one half times more frequently than adult burials, with the majority of subadults having beads present in their burials, while the majority of adults lack beads. At this broad level of analysis, the frequency and patterning for subadult and adult burials suggests that age is a significant factor in the presence of beads in burial contexts.

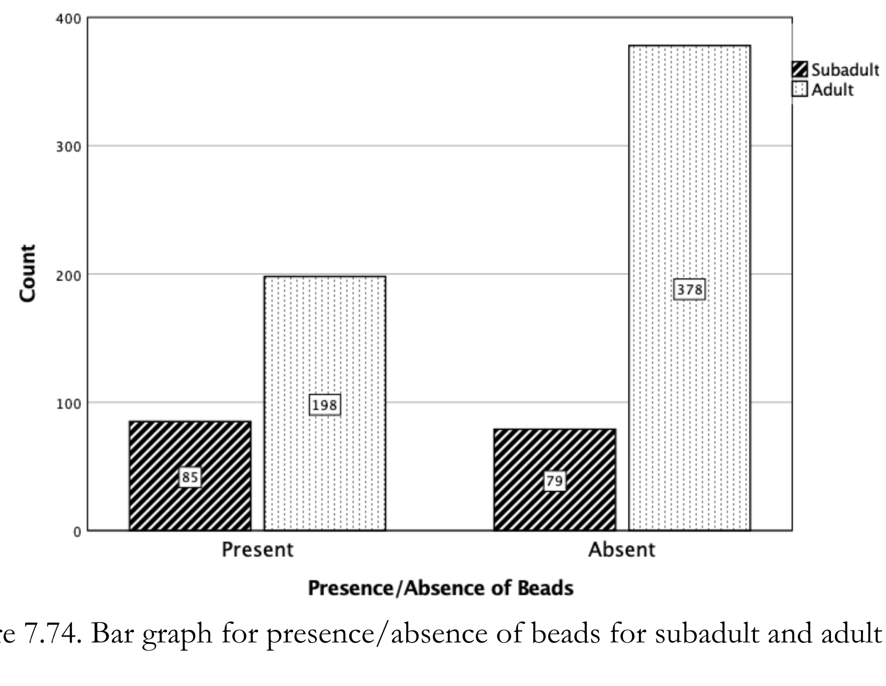

Figure 7.74. Bar graph for presence/absence of beads for subadult and adult burials.

Table 7.74. Frequency Count and Percentage for Presence/Absence of Beads for Subadult and Adult Burials

Presence/Absence of Beads	Subadult		Adult	
	Frequency	Percent	Frequency	Percent
Present	85	51.8 %	198	34.4 %
Absent	79	48.2 %	378	65.6 %
Total	**164**	**100 %**	**576**	**100 %**

Presence/Absence of Beads for Subadult and Adult Burials by Time Period

In order to further examine trends for presence/absence of beads in subadult and adult burials, diachronically, Early period subadult and adult burial data are analyzed first (Figure 7.75 and Table 7.75), followed by Middle period subadult and adult burial data (Figure 7.76 and Table 7.76). The Pearson chi-square test for independence (n = 309, χ^2 = 10.071, p = 0.002) resulted in a highly significant statistical difference between presence/absence of beads and Early period subadult/adult burials. Subadult burials had beads present nearly one-and-one-half times more frequently than adult burials, with the majority of subadults having beads present in their burials, and the majority of adults lacking beads. To qualify, although the majority of adult burials have beads absent from burial contexts, the frequency is nearly equally split between presence and absence. Nevertheless, the patterning and frequencies evident for the Early period indicate that age was a factor in the inclusion of beads in burial contexts, with a larger proportion of subadults being interred with beads than the proportion of adults being buried with beads.

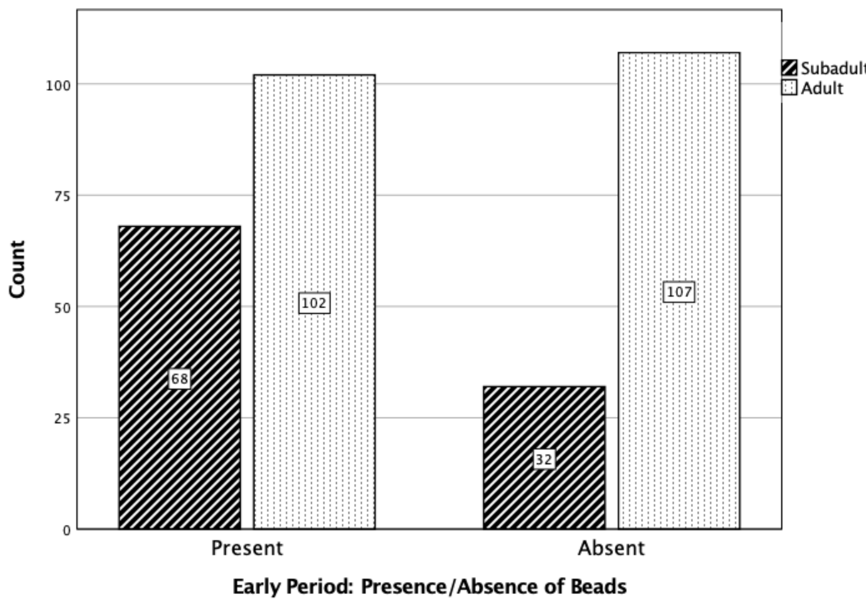

Figure 7.75. Bar graph for presence/absence of beads for Early period subadult and adult burials.

Table 7.75. Frequency Count and Percentage for Presence/Absence of Beads for Early Period Subadult and Adult Burials

Early Period: Presence/Absence of Beads	Subadult		Adult	
	Frequency	**Percent**	**Frequency**	**Percent**
Present	68	68.0 %	102	48.8 %
Absent	32	32.0 %	107	51.2 %
Total	**100**	**100 %**	**209**	**100 %**

For the Middle period sample (Figure 7.76 and Table 7.76), the Pearson chi-square test for independence (n = 431, $\chi^2 = 0.005$, p = 1.000) did not indicate a statistically significant difference between presence/absence of beads and subadult/adult burials. Rates for presence of beads in burial contexts is nearly equal between subadult and adult burials, with the majority of both groups lacking beads in burial contexts. The frequency and patterning for Middle period burials indicates that age does not seem to be a significant factor in the inclusion of beads in burial contexts. A difference is evident here for the age groups between the two time periods, where a larger proportion of Early period subadults have beads than adults, however, this trend does not carry over to the Middle period.

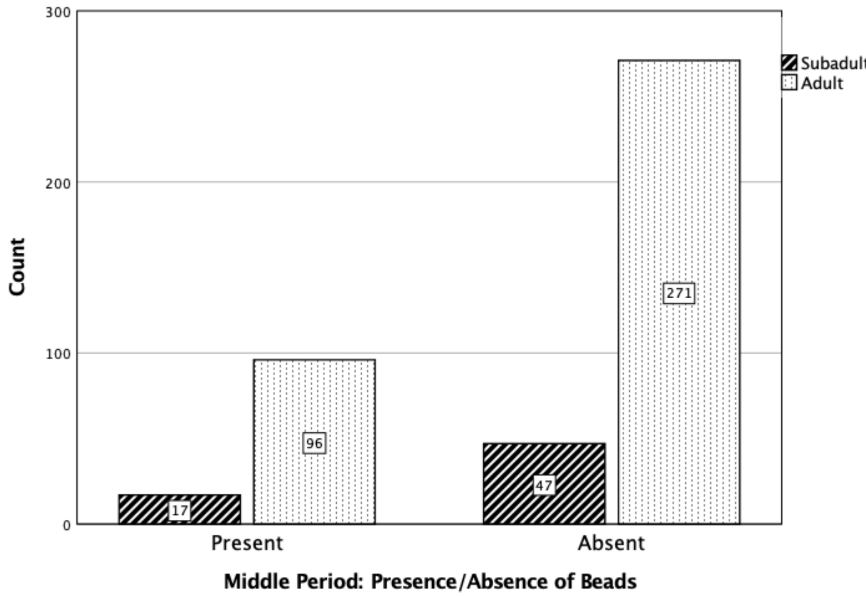

Figure 7.76. Bar graph of presence/absence of beads for Middle period subadult and adult burials.

Table 7.76. Frequency Count and Percentage of Presence/Absence of Beads for Middle Period Subadult and Adult Burials

Middle Period: Presence/Absence of Beads	**Subadult**		**Adult**	
	Frequency	**Percent**	**Frequency**	**Percent**
Present	17	26.6 %	96	26.2 %
Absent	47	73.4 %	271	73.8 %
Total	**64**	**100 %**	**367**	**100 %**

Presence/Absence of Beads for All Burials by Island and Mainland Contexts

The analysis that follows provides a point of geographic comparison for the presence/absence of beads, exhibiting the results for island and mainland contexts (Figure 7.77 and Table 7.77). The Pearson chi-square test for independence (n = 793, χ^2 = 59.941, p < 0.001) indicated a highly significant statistical difference between presence/absence of beads and context. Island burials have beads included in burial contexts over twice as frequently as mainland burials, and the majority of island burials have beads, while the majority of mainland burials lack beads. The proportions and patterning for this analysis indicate that beads were more frequently included in island burials than in mainland burials.

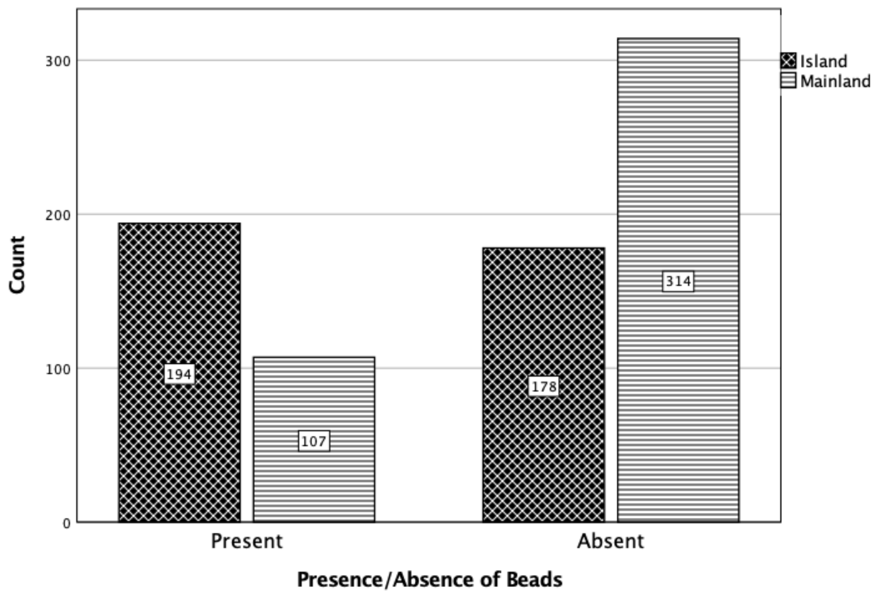

Figure 7.77. Bar graph of presence/absence of beads for all burials by island and mainland contexts.

Table 7.77. Frequency Count and Percentage of Presence/Absence of Beads for All Burials by Island and Mainland Contexts

Presence/Absence of Beads	**Island**		**Mainland**	
	Frequency	**Percent**	**Frequency**	**Percent**
Present	194	52.2 %	107	25.4 %
Absent	178	47.8 %	314	74.6 %
Total	**372**	**100 %**	**421**	**100 %**

Presence/Absence of Beads for Subadult and Adult Burials by Island and Mainland Contexts

To further investigate potential patterns in frequency for presence/absence of beads in subadult and adult burials, samples from island (Figure 7.78 and Table 7.78) and mainland contexts (Figure 7.79 and Table 7.79) are analyzed. The Pearson chi-square test for independence ($n = 361$, $\chi^2 = 11.232$, $p = 0.001$) indicated a highly significant statistical difference between presence/absence of beads and island subadult/adult burials. In island burial contexts, subadults have beads present nearly one-and-one-half times more frequently than do adults, with the majority of subadults having beads and the majority of adults lacking beads. The frequency and proportions of for subadult and adult burials indicate that age was a significant factor in the inclusion of beads for island burials.

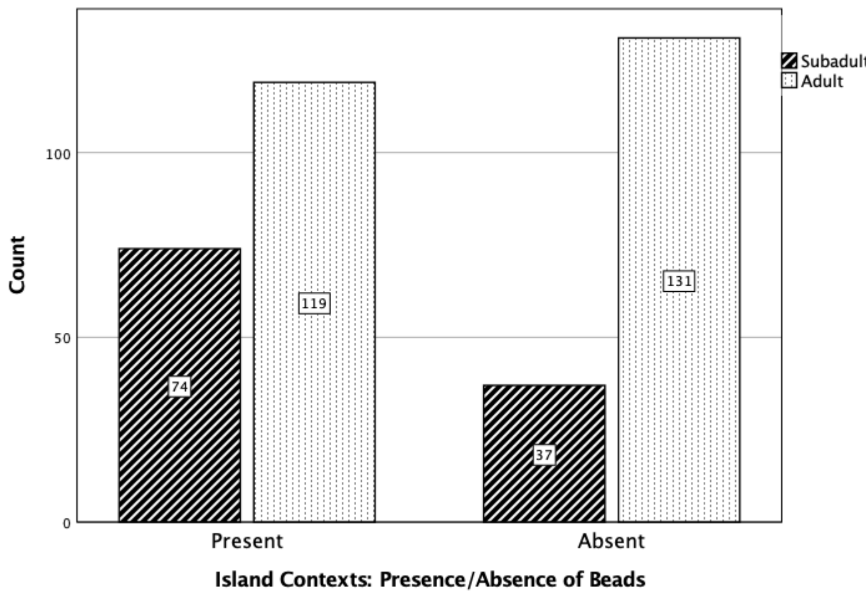

Figure 7.78. Bar graph for presence/absence of beads for island contexts by subadult and adult burials.

Table 7.78. Frequency Count and Percentage for Presence/Absence of Beads for Island Contexts by Subadult and Adult Burials

Island Contexts: Presence/Absence of Beads	Subadult		Adult	
	Frequency	Percent	Frequency	Percent
Present	74	66.7 %	119	47.6 %
Absent	37	33.3 %	131	52.4 %
Total	**111**	**100 %**	**250**	**100 %**

This analysis details the frequencies for presence/absence of beads in the mainland sample of subadult and adult burials (Figure 7.79 and Table 7.79). The Pearson chi-square test for independence (n = 379, $\chi^2 = 0.305$, p = 0.609) does not indicate a statistically significant difference between presence/absence of beads and subadult/adult burials from mainland contexts. The frequency for presence of beads is very similar between subadult and adult burials, which indicates that age was not a significant factor in the presence of beads in mainland burials.

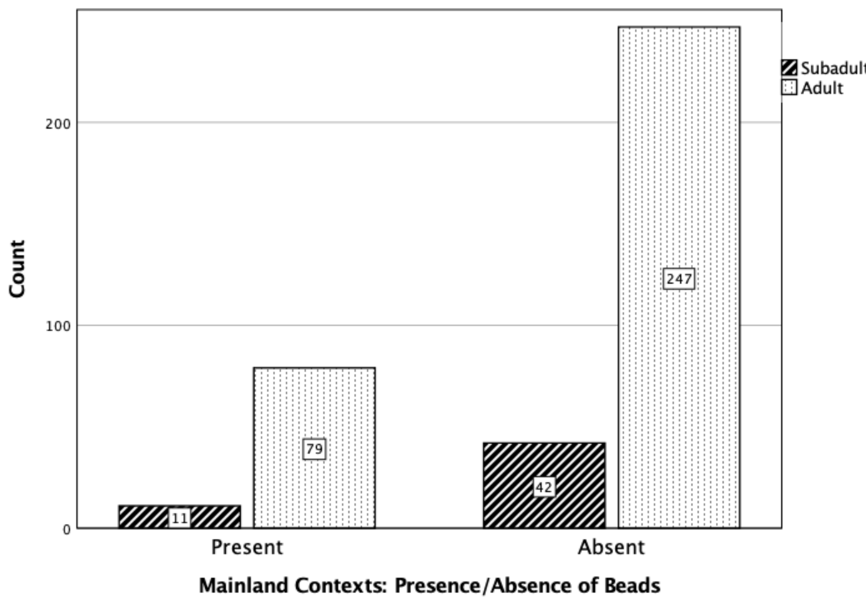

Figure 7.79. Bar graph for presence/absence of beads for mainland contexts by subadult and adult burials.

Table 7.79. Frequency Count and Percentage for Presence/Absence of Beads for Mainland Contexts by Subadult and Adult Burials

Mainland Contexts: Presence/Absence of Beads	Subadult		Adult	
	Frequency	**Percent**	**Frequency**	**Percent**
Present	11	20.8 %	79	24.2 %
Absent	42	79.2 %	247	75.8 %
Total	**53**	**100 %**	**326**	**100 %**

Presence/Absence of Beads for Infant, Child, and Adolescent Burials

The results of this analysis provide a closer examination for the frequencies for presence/absence of beads in subadult burials, as reflected in the three established subadult age groups (Figure 7.80 and Table 7.80). The Pearson chi-square test for independence (n = 163, χ^2 = 0.928, p = 0.640) does not indicate a statistically significant difference between infant, child, and adolescent burials for the presence/absence of beads. The frequency for presence/absence of beads is nearly an even split for the three subadult age groupings, which indicates similar treatment for infant, child, and adolescent burials in terms of the inclusion of beads in burial contexts.

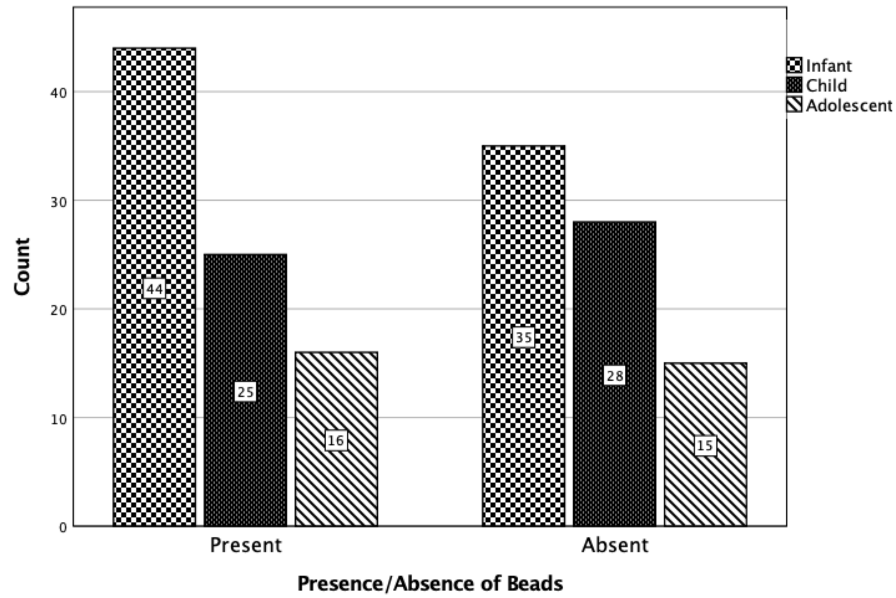

Figure 7.80. Bar graph of presence/absence of beads for infant, child, and adolescent burials.

Table 7.80. Frequency Count and Percentage of Presence/Absence of Beads for Infant, Child and Adolescent Burials

Presence/Absence of Beads	Infant		Child		Adolescent	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Present	44	55.7 %	25	47.2 %	16	51.6 %
Absent	35	44.3 %	28	52.8 %	15	48.4 %
Total	**79**	**100 %**	**53**	**100 %**	**31**	**100 %**

Presence/Absence of Beads for Infant, Child, and Adolescent Burials by Time Period

To take differences in time period into account, the following two analyses convey the frequencies for presence/absence of beads in infant, child, and adolescent burials from the Early (Figure 7.81 and Table 7.81) and Middle periods (Figure 7.82 and Table 7.82). The Fischer's Exact test of independence (n = 99, p = 1.000) does not indicate a statistically significant difference between presence/absence of beads and Early period infant, child, and adolescent burials. For the three subadult age groups, the rates for presence of beads are nearly identical, indicating a very similar treatment for infant, child, and adolescent burials regarding the inclusion of beads.

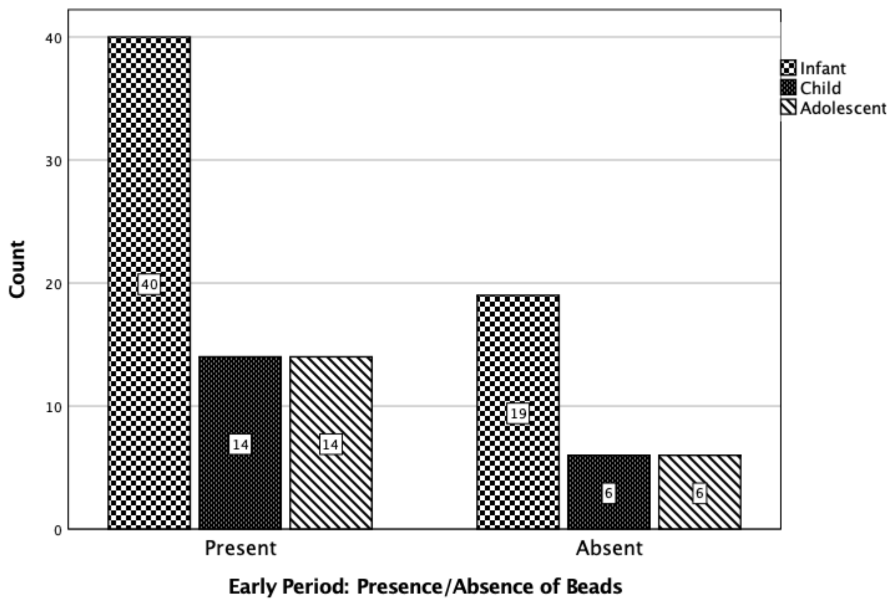

Figure 7.81. Bar graph for presence/absence of beads for Early Period infant, child, and adolescent burials.

Table 7.81. Frequency Count and Percentage for Presence/Absence of Beads for Early Period Infant, Child and Adolescent Burials

Early Period: Presence/Absence of Beads	**Infant**		**Child**		**Adolescent**	
	Frequency	**Percent**	**Frequency**	**Percent**	**Frequency**	**Percent**
Present	40	67.8 %	14	70.0 %	14	70.0 %
Absent	19	32.2 %	6	30.0 %	6	30.0 %
Total	**59**	**100 %**	**20**	**100 %**	**20**	**100 %**

This analysis displays the frequencies for presence/absence of beads in infant, child, and adolescent burials from the Middle period (Figure 7.82 and Table 7.82). The Fischer's Exact test of independence (n = 64, p = 0.475) does not indicate a statistically significant difference between presence/absence of beads and Middle period infant, child, and adolescent burials. The proportion of beads present in burial contexts is very similar for all three age groups, however, child burials have a slightly higher rate of beads being present than infant or adolescent burials. Again, this difference is not significant, so these data indicate that the three subadult age groups received similar burial treatment regarding the inclusion of beads.

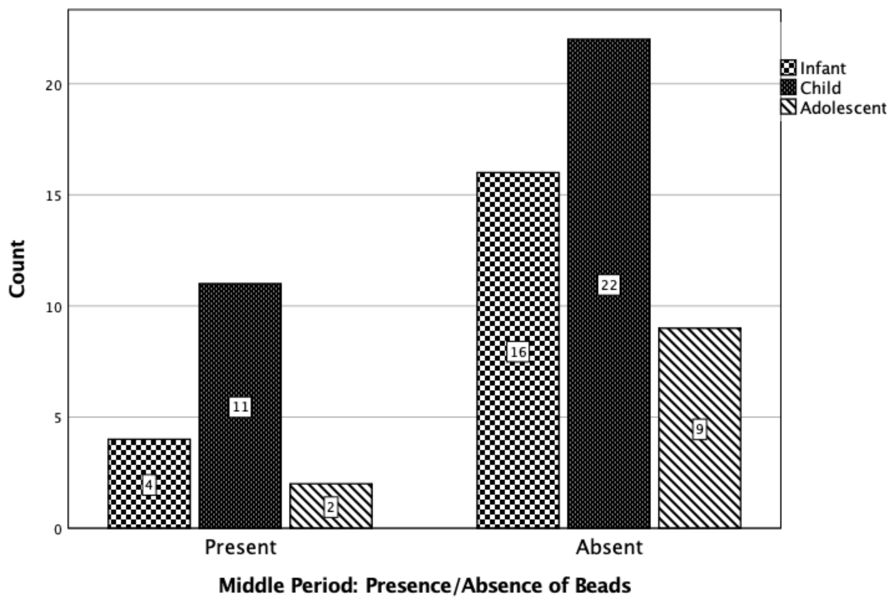

Figure 7.82. Bar graph for presence/absence of beads for Middle Period infant, child, and adolescent burials.

Table 7.82. Frequency Count and Percentage for Presence/Absence of Beads for Middle Period Infant, Child, and Adolescent Burials

Middle Period: Presence/Absence of Beads	**Infant**		**Child**		**Adolescent**	
	Frequency	**Percent**	**Frequency**	**Percent**	**Frequency**	**Percent**
Present	4	20.0 %	11	33.3 %	2	18.2 %
Absent	16	80.0 %	22	66.7 %	9	81.8 %
Total	**21**	**100 %**	**33**	**100 %**	**11**	**100 %**

Presence/Absence of Beads for Infant, Child, and Adolescent Burials by Island and Mainland Contexts

Concluding the series of analyses for presence/absence of beads, data from infant, child, and adolescent burials are established for island (Figure 7.83 and Table 7.83) and mainland contexts (Figure 7.84 and Table 7.84). The Pearson chi-square test for independence (n = 111, χ^2 = 0.413, p = 0.855) does not indicate a statistically significant difference between presence/absence of beads and island infant, child, and adolescent burials. The proportion of beads present in burial contexts is very similar for all three age groups, however, child burials have a slightly higher rate of beads being present than infant or adolescent burials. These data indicate that, in island contexts, the three subadult age groups received similar burial treatment regarding the inclusion of beads.

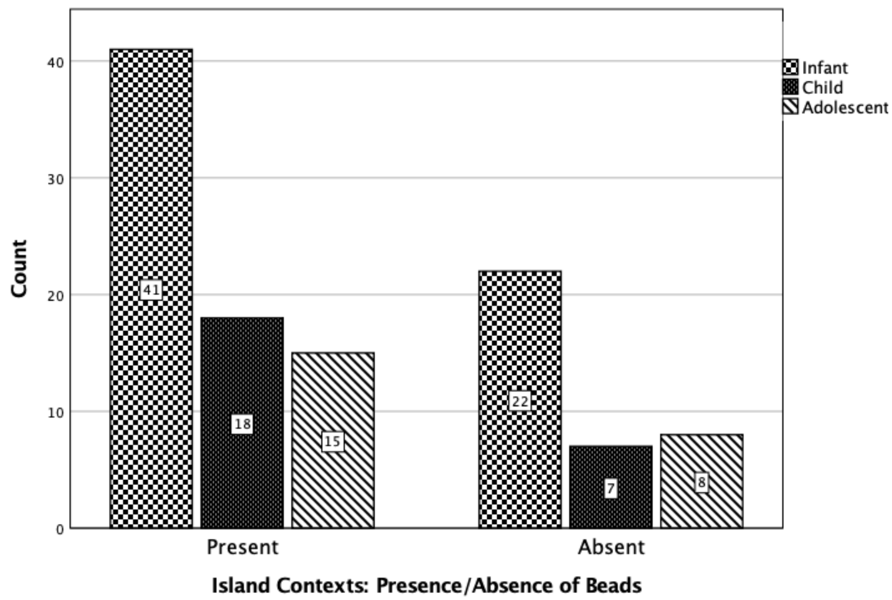

Figure 7.83. Bar graph for presence/absence of beads for island contexts by infant, child, and adolescent burials.

Table 7.83. Frequency Count and Percentage for Presence/Absence of Beads for Island Contexts by Infant, Child, and Adolescent Burials

Island Contexts: Presence/Absence of Beads	**Infant**		**Child**		**Adolescent**	
	Frequency	**Percent**	**Frequency**	**Percent**	**Frequency**	**Percent**
Present	41	65.1 %	18	72.0 %	15	65.2 %
Absent	22	34.9 %	7	28.0 %	8	34.8 %
Total	**63**	**100 %**	**25**	**100 %**	**23**	**100 %**

Lastly, this analysis provides the results for the mainland contexts sample of infant, child, and adolescent burials (Figure 7.84 and Table 7.84). The Fischer's Exact test of independence ($n = 52$, $p = 0.728$) does not indicate a statistically significant difference between presence/absence of beads and mainland infant, child, and adolescent burials. Although there is no clear similarity in frequency, the patterning for the majority of burials lacking beads is evident for the three subadult groups. When compared to the island sample, it is clear that the frequency for presence/absence of beads is opposite one another. As with the island sample, this seems to indicate that subadult age was not a significant factor for inclusion of beads in mainland burials.

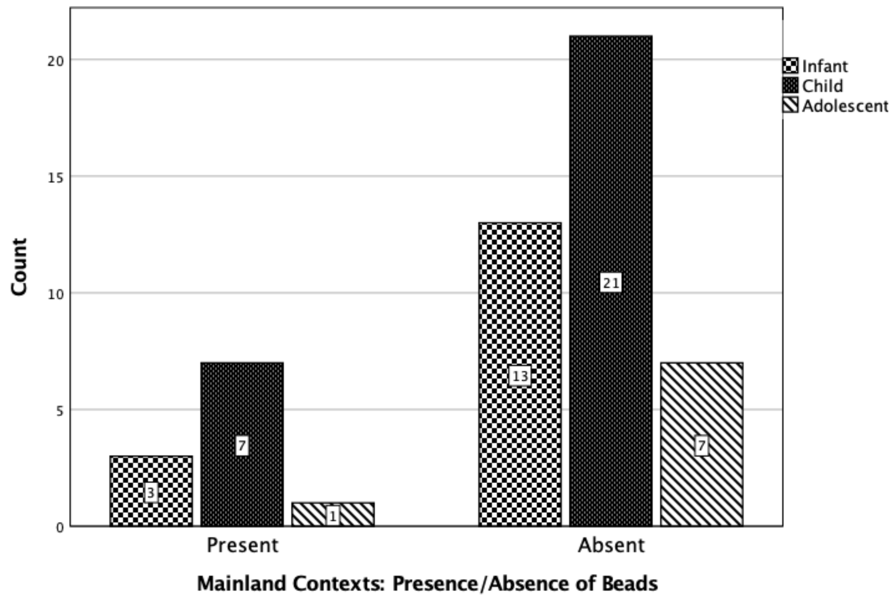

Figure 7.84. Bar graph for presence/absence of beads for mainland contexts by infant, child, and adolescent burials.

Table 7.84. Frequency Count and Percentage for Presence/Absence of Beads for Mainland Contexts by Infant, Child, and Adolescent Burials

Mainland Contexts: Presence/Absence of Beads	Infant		Child		Adolescent	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Present	3	18.8 %	7	25.0 %	1	12.5 %
Absent	13	81.3 %	21	75.0 %	7	87.5 %
Total	**16**	**100 %**	**28**	**100 %**	**8**	**100 %**

Summary of Findings for Variable 15: Presence/Absence of Beads

For the statistical analyses investigating the presence/absence of beads, five of the analyses resulted in highly significant statistical results. There were highly significant differences for all burials by Early and Middle periods (Table 7.73), for all burials by subadult and adult burials (Table 7.74), for Early period subadult and adult burials (Table 7.75), for all burials by context (Table 7.77), and for island contexts subadult and adult burials (Table 7.78). Subadult burials generally had a higher frequency for presence of beads than adults, but over time, the frequency of beads becomes relatively even between subadult and adult burials. Between contexts, island contexts subadults have a higher proportion for presence of beads than do adults, whereas for mainland contexts, rates between subadult and adult burials are very similar, with the majority not being interred with beads. The remaining seven analyses all revealed results that were not considered statistically significant.

Even though the majority of analyses did not indicate statistically significant results, attention should be drawn to the patterning for the three subadult age groups in terms of time period and geographic context. Diachronically, the majority of Early period subadult burials are interred with beads, which changes in the Middle period to the majority of burials not being interred with beads. A similar pattern is also seen between geographic contexts, with the majority of island contexts subadult burials having beads, while the majority of mainland contexts subadult burials do not have beads. Overall, these patterns indicate that all infant, child, and adolescent burials were treated similarly to one another in terms of frequencies of presence/absence of beads, respective to time period and context.

Summary of Findings and Conclusion

This chapter concludes the remaining analyses conducted, in total, for 15 different variables, which aimed to discern age-based treatment—at the subadult and adult level of comparison as well as at the infant, child, and adolescent level—of Chumash burials between island and mainland contexts, as well as through the Early and Middle periods. The primary findings for each variable are reiterated briefly here in the order in which they were originally presented.

Variable 9 Findings: Presence/Absence of Grave Goods

The frequency with which grave goods were included in burials did not significantly differ between time period, geographic context or subadult/adult age groups. The results of these analyses indicate that the act of including at least one grave good was a funerary practice that remained fairly stable in Chumash burial culture, without distinct differences in treatment based in time period, context, or age.

Variable 10 Findings: Number of Non-Ornament Grave Goods

Middle period and mainland contexts burials more frequently had burials with more non-ornament grave goods than Early period or island contexts burials, respectively. The differences between island and mainland context burials was more pronounced than the difference evident between Early and Middle period burials.

Variable 11 Findings: Number of Ornament Grave Goods

Overall patterns for inclusion of ornaments in burial contexts indicated that subadult burials received more ornaments than adults, especially in Early period and island contexts, while in both Middle period and mainland contexts burials, there were fewer differences evident between the two age groups, indicating more equal treatment. Additionally, the results demonstrate that Early period burials, on the whole, received greater quantities of ornaments than Middle period burials.

Variable 12 Findings: Total Number of Grave Goods

Early period burials generally had greater numbers of total grave goods than burials from the Middle period, whereas island contexts burials generally had more grave goods than mainland contexts burials. Within the Early period sample, an age-based difference was recognized between subadult and adult burials.

Variable 13 Findings: Number of Material Types

Between Early and Middle periods, the majority of both subadult and adult burials have at least one material type present, however, the variation present between Early period subadult and adult burials is more pronounced, with subadults generally having a greater diversity of material types. Between geographic contexts, an age-based difference is present in burials from island contexts, where the majority of subadults have two material types and adults only have one, however, no age-based difference is evident between mainland subadult and adult burials.

Variable 14 Findings: Presence/Absence of Ceremonial Paraphernalia

In both Early period and island contexts, subadults generally had objects of ceremonial paraphernalia twice as frequently as adult burials, while for Middle period and mainland contexts, the difference is much less pronounced, and adults have slightly higher proportions of ceremonial paraphernalia than subadults. An insignificant pattern of note, for both time periods and contexts, is that the frequency of ceremonial paraphernalia appears to increase as subadult age increases.

Variable 15 Findings: Presence/Absence of Beads

Between time periods, Early period subadults have higher proportions of burials with beads than adults, while frequencies of burials with beads are very similar between Middle period subadults and adults. In island subadult burials, there is a higher frequency of burials with beads present than in adult burials, while in mainland contexts, inclusion of beads appears to be more restricted, with the majority of all burials lacking beads at similar rates for both subadult and adult burials.

Concluding Thoughts

Patterns evident in both burial presentation and grave goods provide strong avenues to consider the relationships held between subadults and their caretakers/greater communities (Gillespie 2001:78). By analyzing data specifically relating to grave goods, the degree to which subadult burials align with patterns seen in adult burials can indicate aspects of their overall incorporation into society. The results of the analyses presented in this chapter are considered further in Chapter 8, which build upon these baselines to situate the data within a greater cultural context, as well as providing comparisons to other regional mortuary studies. Data for presence of grave goods (Variable 9) and presence of beads (Variable 15) are used to assess the frequencies at which subadults and adults receive beads, as well as grave goods more generally, while data recording the numbers of non-ornament (Variable 10) and ornament grave goods (Variable 11) are used to ascertain whether or not subadult and adult burials received these types of grave goods at similar frequencies to one another. Data for total number of grave goods (Variable 12) along with grave depth (Variable 6, presented in Chapter 6) are used to discern if the deepest graves have the most grave goods for both age groups, whereas the data for number of material types (Variable 13) are aimed at understanding whether or not subadult burials had greater diversity of grave good material types than adults. Lastly, data for presence of ceremonial paraphernalia (Variable 14) provide a quantifiable measure for assessing if infant and child burials have lower frequencies for ceremonial objects than adolescent or adult burials. Given that subadults are in a state of both biological and social fluctuation, the untimely natures of their deaths convey age-contingent treatment that can be assessed from their burial contexts, further situating them within their larger communities (Geller and Stockett Suri 2014).

The seven analytical variables presented in this chapter were focused on aspects of grave goods that were associated with the body of the deceased. These analyses examined frequencies and counts of grave goods, aspects of burial assemblage diversity in counts of material types, as well as frequencies for presence of ceremonial paraphernalia and beads. While the results observed for Variables 9–15 provided more detail regarding some age-based differentiation in grave good patterning, there is a need to assess additional ways in which these variables may have interacted. In the following chapter (Chapter 8), a contextualized discussion and interpretation of the statistical findings from Chapters 6 and 7 is presented, which delves deeper into the cultural significance for trends evident within this dataset. By considering aspects of the interplay of different variables analyzed in this study, a more complete picture of treatment of children in Chumash mortuary contexts can be developed, especially when these results are placed within the greater context of regional mortuary studies. Chapter 8 also examines the burial sample in more depth, discussing aspects of the study sample demography, as well as subadult morbidity and mortality rates compared to the greater burial population. The chapter concludes with a brief discussion of Chumash children in life and death, based on ethnographic sources, and also offers some future avenues for the study of subadults in the greater Santa Barbara Channel region.

CHAPTER 8
Interpretation and Discussion

Introduction

While burial practices have been known to differ dramatically between cultures, regions, and time periods, the treatment of children in the greater context of death frequently differs from treatment observed in adult burials. The widely held Western-influenced notion regarding children of all ages being fully incorporated as societal members was not necessarily shared by all cultures over time. Treatment of subadult bodies by their respective cultures at time of death and burial has been known to range from practices of intentional neonate/subadult death to careful and intentional subadult burials with grave goods rivaling that of adult burials. Practices such as child sacrifice attested in Inka contexts (Sillar 1994) and in Punic Carthage (Schwartz et al. 2012), intentional neonate death by exposure in Classical Rome (Grubbs 2013), or other forms of infanticide evident in Roman Britain (Gowland and Chamberlain 2002; Mays 1993), Carthage (Lee 1994), and Roman-Byzantine Israel (Smith and Kahlia 1992) may come across as abhorrent practices to a modern audience, however, maintaining a certain level of cultural relativity is necessary to objectively observe the wide-range of cultural practices that led to the availability of subadult remains in the archaeological record. More modern ethnographic examples provide evidence of differential ascription of personhood and burial treatment for subadults, such as cases where still-born children in many Melanesian societies were not afforded burial rites because they had not yet been initiated into society (Wedgwood 1927), and conversely, in north Australian Tiwi culture, deceased subadults received grave goods typically given to adults (Goodale 1971; Hart and Pilling 1960).

Archaeologically, child burials in the Early Bronze Age cemetery at Branč (Slovakia) also received grave goods indicating greater levels of wealth and labor expenditure than adults

(Shennan 1975), which is similar in some respects to patterns observed in this study. While grave goods are commonly found associated with subadult graves and provide a direct material correlation to adult community members, special burial modes and/or locations for subadult burials provide additional information for subadult treatment. For example, infants and young children at the New Kingdom site of Deir el Medina had a special cemetery area reserved for their burials, the location of which was not influenced by social status (Meskell 1999a). Burial modes in the form of jars and urns are attested for infant burials at the Mississippian Powers site (Welch 1998) as well as at Middle Bronze Age Canaan (Garroway 2012), and it was not uncommon for infants and children to be buried in household or settlement contexts, which was observed in Mokrin cemeteries (Rega 1997) and at Middle Bronze Age Canaan as well (Garroway 2012). In both the Mokrin and Canaan examples, infants and children are more commonly encountered within settlement and household contexts, so any subadult burials observed within the confines of the adult cemetery were indicative of special treatment by comparison.

Through space and time, the treatment of subadults in the realm of death varies greatly, and much variation is bound to occur across cultural boundaries that are not visible from the archaeological record alone. Nevertheless, the study of this variation, when situated within the respective cultural context, can be used to deepen knowledge and understanding of subadults archaeologically. One aim of this chapter is to provide further contextualization of the treatment of Chumash subadults in the Early and Middle periods. The chapter begins with a brief reiteration of the theoretical framework utilized in this study, followed by the significance of the research. Following that, the eight research questions introduced in Chapter 1 are examined in turn, each summarizing the original results for the variables addressed in the question and further interpreting their meaning in greater context. The results of the eight research questions are then used to situate prehistoric Chumash subadults within their greater social contexts. A demographic discussion of the study sample follows, which includes analyses of population profiles and subadult death ratios for each study site, further contextualizing the patterns observed. Coming after the demographic analyses, a brief overview of Chumash ethnographic accounts for children in life and death is given, which is followed by a discussion of further research on the topic. Finally, the chapter concludes with a brief summary of the main findings in the discussion of the eight research questions.

Interpreting Chumash Mortuary Contexts Using Concepts of Childhood, Personhood, and Practice

The preceding chapters have generated baselines for subadult burials regarding a wide array of variables, thus providing quantitative, statistical results for Early and Middle period Chumash mortuary contexts, which were largely missing or haphazardly addressed in the literature at this broad regional scale. The application of childhood theory in this study, involving frameworks of personhood and practice theories, has allowed for a rich picture of diachronic subadult mortuary customs to be developed, and also provides a greater understanding for the treatment of subadults in precontact Chumash settings. One of the primary underlying tenets for this study is based upon Ariès' (1962 [1960]) assertion that modern conceptions of children and childhood cannot be directly applied to the study of the past, and this study strives to follow other archaeological scholars that have adopted this idea (e.g., Baxter 2005, 2008; Halcrow and Tayles 2008; Kamp 2001, 2005; Lucy 2005; Prout 2000; Prout and James 1990; Sofaer Derevenski 2000), working diligently to interpret subadults within their respective cultural and temporal contexts.

Since the roots of archaeological childhood theory incorporate both social and biological aspects of subadults, the resulting data produced from the analyses in this study—in direct comparison with their adult counterparts—allow for connections to be made between both physical and material aspects of burial treatment and different age groups within the community. As such, applications of personhood and practice are crucial in refining the image of childhood, as they aid in assessing the level of incorporation of subadults in the greater community through readily observable traits evident in the mortuary record. Fowler's (2004:85) definition of personhood is based around the community-level view of what constitutes a "person," and for the purposes of this study, personhood is revealed through treatment in mortuary practice, and can be assessed further by comparing the mortuary treatments for individuals of different ages (Cerezo-Román 2013, 2015; Gillespie 2001). By analyzing burials at the broad subadult level, and also by breaking down this larger sample into three subadult age ranges, general trends for subadult burials can be assessed both at a broad and more nuanced level; this allows for the identification of burial trends, both physical and material, that may be age-based. These age-based differences may be indicative of ascription of personhood, as well as potential markers for changes in social identity, such as indirect markers for rites of passage, however, it is only by incorporating practice theory into mortuary analysis that the relationships between the deceased and the greater community can be assessed further.

One of the primary tenets of practice theory is Bourdieu's (1977 [1972]:72) notion of *habitus*, which is a useful tool in assessing habitual interactions at multiple societal levels, extending from individual to community practice. At the base level is the notion that what remains in the archaeological record is the result of the past actions and interactions of people. As such, personhood is guided by community practice on the day-to-day level, with mortuary rites and rituals one significant archaeological manifestation of this practice. Mortuary rites and rituals are inherently symbolic practices, and even though the direct meanings of particular body positioning or specific grave goods may never be known, the patterning among different members of the community may be ascertained to infer aspects of the relationships and connections between the deceased, as well as level of community involvement in the production of the mortuary record that remains to us (Charles and Buikstra 2002; Kus 2013; Panich 2105; Trinkhaus 1984).

The notion of individual and community-based agency surrounding the entire mortuary context cannot be overlooked. Those involved in activities relating to the burial context writ large—such as preparing the body for burial, digging the grave, performing burial rites, making and choosing grave goods—made specific choices that became immortalized in the archaeological record. Borrowing from the pragmatic wisdom of Mike Parker Pearson, "the dead do not bury themselves," and as such, it is the living members of the community—involved directly and indirectly with the burial of the deceased—that bestow a socially contingent identity upon the deceased in the resulting totality of the mortuary context (Gillespie 2001; Tung 2014). In the analysis of subadult burials specifically, their resulting mortuary identity is likely more telling about the relationship of the deceased with their family members, caretakers, and other community members than their own achieved social identity. However, the choices made by these fully incorporated adult members of society reverberate through these subadult mortuary contexts, providing a level of detail regarding appropriate burial treatment and community involvement.

Significance of Research

The many Chumash mortuary studies conducted in the region over the last century have done much to further collective knowledge of the pre-contact and contact era Chumash in the

Santa Barbara Channel region, however, the level to which these scholars have addressed the study of subadults is uneven. This study has been designed in such a way that the gaps and assumptions in previously conducted research inform the more detailed focus on subadults discussed herein, the principle aim of which is to further expand and refine collective knowledge for the treatment of subadults in pre-contact Chumash mortuary studies. The majority of studies that include subadults in their respective analyses present data supporting the idea that they had far greater variation (read: unequal treatment) than adult burials (see Gamble et al. 2001; Green 1999; L. King 1969, 1982; Martz 1984). The results of this study provide a nuanced view into the treatment of subadults, where it is clear that some aspects of burial practice operate on age-based distinctions, while others seem to be informed by other cultural aspects not necessarily determined by age of the deceased. The analyses conducted within this study not only provide a point of comparison between subadult and adult burials, but also provide analyses within the subadult sample, comparing three distinct age groupings, which allow for a more nuanced investigation into mortuary treatment of subadults.

The bulk of this chapter comprises a discussion based upon eight research questions (Table 8.1) formulated to address the gaps and assumptions in the research of pre-contact Chumash subadult burials, which are informed by the work of previous scholars (see Corbett 2007; Gamble 2017; Gamble et al. 2001; Green 1999; L. King 1969, 1982; Martz 1984). These questions cover both the physical presentation of the body as well as the material inclusions found within the associated burial context. By examining both physical and material aspects of the burial context, differences between subadult and adult burials, as well as between infant, child, and adolescent burials, can be more readily identified. These questions are designed to assess the variation present in the physical disposition of the deceased (Question 1), correlations between total number of grave goods and grave depth (Question 2), the presence and numbers of different types of grave goods (Questions 3 and 4), level of diversity in grave good material type and presence of ceremonial objects (Questions 5 and 6), the degree of expenditure (Question 7), and patterns within non-single interments (Question 8). By addressing these issues using a framework of childhood theory, informed by lenses of both personhood and practice, this study not only provides quantitative data to support and refute these long-held assumptions, but also situates these data within a relatively comprehensive, contextual analysis of subadults and Chumash childhood as evidenced in Early and Middle period mortuary contexts.

Table 8.1. List of Research Questions Covered in Discussion with Corresponding Variables Indicated

Number	Research Question	Variables Addressed
1	Do subadult burials have a higher degree of variability than adults in their respective burial programs, regarding burial position, body side, and burial direction?	1 - Burial Position 2 - Body Side 3 - Burial Direction
2	Do subadult and adult burials exhibit similar patterning for grave depth and total number of grave goods, where the deepest burials should also be the ones with the largest numbers of grave goods?	6 - Grave Depth 12 - Total Number of Grave Goods
3	Do subadults consistently receive grave goods at higher proportions than adults and have larger proportions of beads than do adults?	9 - Presence/Absence of Grave Goods 15 - Presence/Absence of Beads
4	Do subadult burials more frequently have larger amounts of ornaments as grave goods than adult burials, while amounts of non-ornament grave goods remain comparable between subadult and adult burials?	10 - Number of Non-Ornament Grave Goods 11 - Number of Ornament Grave Goods
5	Do subadults receive a wider diversity of grave good material types in their burial contexts than adults?	13 - Number of Material Types
6	Do infant and child burials have lower frequencies for ceremonial paraphernalia being present among their grave goods than adolescent and adult burials?	14 - Presence/Absence of Ceremonial Paraphernalia
7	Do adolescent and adult burials receive a higher degree of energy expenditure (grave features and burial pigmentation) than infant and child burials?	7 - Presence/Absence of Grave Features 8 - Presence/Absence of Burial Pigmentation
8	Are subadults (infants, particularly) more commonly part of dual or multiple interment types than adult burials?	4 - Interment Type 5 - Interment Type Age Association

Discussion and Interpretation of Research Questions

The following section provides a contextual discussion of the data resulting from the analyses presented in the previous two chapters (Chapters 6 and 7). The discussion is organized so that it addresses nine research questions (Table 8.1) that were developed to assess trends present in previously conducted Chumash mortuary studies against this larger more comprehensive dataset, as well as identified, yet statistically untested, assumptions regarding subadult treatment in Chumash mortuary contexts. For each section within the larger discussion, the research question is introduced and contextualized in terms of previous Chumash mortuary studies and their respective findings (or lack thereof). In addition, the expected patterns in statistical data are described that would indicate an affirmation of the research question. Then, a brief summary of the statistical findings and patterns are presented for each variable addressed in the research question, covering both time periods and geographic contexts. Finally, each section concludes with a discussion of how the data either affirm or deny the premise set out in the research question, along with some potential scenarios—drawn from archaeological and ethnographic cases—that could result in the patterns seen in the analyses.

Question 1: Do subadult burials have a higher degree of variability than adults in their respective burial programs, regarding burial position, body side, and burial direction?

Chumash scholars (e.g., Green 1999; L. King 1969, 1982; Martz 1984) have argued that subadult burials exhibited higher degrees of differentiation than adults in different aspects of burial treatment, such as burial position, body side, and burial direction. Martz (1984:98–99) posited that subadults were not yet fully integrated into society, so, based upon this assertion, it is expected that higher levels of homogeneity should be present in the treatment of adult burials (individuals who were fully incorporated into society) in comparison to subadult burials. To support this research question, there would need to be statistically significant differences present between subadult and adult burials for the variables burial position, body side, and burial direction, with a high degree of heterogeneity expected for the aforementioned variables between infant, child, and adolescent burials.

Burial Position: Data Patterns for Time Periods and Geographic Contexts

The first variable recorded the general position in which the body was interred. This variable category recorded a given burial as either flexed, extended, semi-flexed, or seated. The results of the statistical analyses conducted for burial position in Chapter 6 are reproduced below (Table 8.2). The results for analyses of burial position indicate some clear trends between time periods, geographic contexts, and age groups. Between the Early and Middle periods, extended burials become more popular as time progresses, while the popularity of seated and semi-flexed burials decreases over time. Patterns for island and mainland contexts mirror those seen in Early and Middle period samples, respectively, likely indicating that the results are more telling for time period than geographic context in this regard. The analyses between subadult and adult burials indicate that greater variation is evident in the burial positions of subadults, while adult burials exhibit a lesser degree of variation than subadult burials. The following discussion briefly summarizes the most pertinent results for burial position for time period and geographic context, noting the patterns that emerged for subadult and adult burials, as well as infant, child, and adolescent burials.

Table 8.2. Pearson Chi-Square and Fischer's Exact Results for Burial Position Indicating *P*-Value and Level of Statistical Significance Reached for All Analyses Conducted

Burial Position	***P*-Value**	**Level of Statistical Significance**
All Burials by Period	< 0.001	Highly Significant
All Burials by Subadult and Adult	0.026	Significant
Early Period Burials by Subadult and Adult	0.039	Significant
Middle Period Burials by Subadult and Adult	0.017	Significant
All Burials by Context	< 0.001	Highly Significant
Island Contexts Burials by Subadult and Adult	0.024	Significant
Mainland Contexts Burials by Subadult and Adult	0.009	Significant
All Subadult Burials by Infant, Child, and Adolescent	0.068	Not Significant
Early Period Burials by Infant, Child, and Adolescent	0.024	Significant
Middle Period Burials by Infant, Child, and Adolescent	0.678	Not Significant
Island Contexts Burials by Infant, Child, and Adolescent	0.035	Significant
Mainland Contexts Burials by Infant, Child, and Adolescent	0.890	Not Significant

Between subadult and adult burials in the Early period, a statistically significant difference (p = 0.039) is present, with the subadult age group exhibiting more variation in burial position than the adult age group. While flexed burials are the most common position for both age groups, perhaps the key difference is in the proportion of extended burials between the two groups. Extended burials are the least common type for adults, while it is the second most common position for subadults, present at over twice the proportion for adult burials. Investigating the statistically significant difference (p = 0.024) in the subadult group further, infant and child burials appear to have greater levels of variation than adolescent burials, the latter of which appear most similar to Early period adults than to the other two subadult age groups. Among the most notable differences among subadults are that child burials have the highest rates of extended burials, and that there are no cases of seated burials for infants. Although a statistically significant difference (p = 0.017) is present between Middle period subadult and adult burials, this difference lies primarily in the proportional value when the two age groups are compared and appears to have little real-world significance. Middle period subadults, overall, express more proportional variability in burial position when compared to adults, however, the general patterning remains the same for both subadults and adults.

Although no significant difference (*p* = 0.678) was present for Middle period infant, child, and adolescent burials, it should be noted that infant burials express the most variation in terms of burial position, while child and adolescent burials appear most similar to one another. Additionally, the proportions of extended burials decrease as age increases, while the proportions of seated burials increase with age.

The difference between island contexts subadult and adult burials for burial position was statistically significant (*p* = 0.024). While both age groups have flexed burials as the dominant position at similar proportions, the primary difference lies in the proportion of extended burials, where subadults have extended burials over twice as frequently as adult burials. Adult burials also have semi-flexed and seated burials at approximately twice the proportion of subadult burials. When island subadults are considered more closely, there is a statistically significant difference (*p* = 0.035) present for burial position between infant, child, and adolescent burials. Infant and child burials exhibit the highest level of variation for burial position, while adolescent burials appear most similar to the proportional values in island contexts adult burials. Child burials have the highest proportions for extended burials, but no cases of semi-flexed burials, and infants have no cases of seated burials. For mainland subadult and adult burials, there was a statistically significant difference (*p* = 0.009) for burial position. Both age groups have flexed burials as the most common type, however the proportional value for adults is higher than that for subadults. More variation is clearly evident in the subadult burial program, with rates for extended burials occurring at over twice the proportion and seated burials nearly four times the proportion of those positions in adult burials. Statistical testing did not reveal statistically significant differences (*p* = 0.890) between infant, child, and adolescent burials from mainland contexts. Patterning for burial position is incredibly similar for the three subadult age groups, however, infant burials do display the largest degree of variation in comparison to child and adolescent burials.

Body Side: Data Patterns for Time Periods and Geographic Contexts

Body side (Variable 2) was assessed based on the portion of the deceased's body that made contact with the bottom of the grave, and was recorded as either anatomical right, anatomical left, supine (face up), prone (face down), or seated. In the Early period sample, supine burials are the most common, while prone burials are the least common, and in the Middle period this trend is reversed, with prone burials becoming the most common type and supine burials the least common. Island and mainland contexts samples share patterning with Early and Middle period samples, respectively, which likely indicates that time period has a greater influence over this aspect of burial program than geographic context. Some interesting patterns are observed in the samples of subadults from both geographic contexts, namely that in island subadult burials the prone position appears to decrease as age increases, and overall, there appears to be more variation evident in subadult burials coming from island contexts than those from mainland contexts. The following discussion summarizes the statistical results (Table 8.3) for body side, providing the most pertinent details regarding the differences and similarities between subadult and adult age groups, as well as infant, child, and adolescent age groups, from both time periods and geographic contexts.

Table 8.3. Pearson Chi-Square and Fischer's Exact Results for Body Side Indicating *P*-Value and Level of Statistical Significance Reached for All Analyses Conducted

Body Side	***P*-Value**	**Level of Statistical Significance**
All Burials by Period	< 0.001	Highly Significant
All Burials by Subadult and Adult	0.055	Approaching Significance
Early Period Burials by Subadult and Adult	0.119	Not Significant
Middle Period Burials by Subadult and Adult	0.653	Not Significant
All Burials by Context	< 0.001	Highly Significant
Island Contexts Burials by Subadult and Adult	0.301	Not Significant
Mainland Contexts Burials by Subadult and Adult	0.056	Approaching Significance
All Subadult Burials by Infant, Child, and Adolescent	0.221	Not Significant
Early Period Burials by Infant, Child, and Adolescent	0.060	Approaching Significance
Middle Period Burials by Infant, Child, and Adolescent	0.229	Not Significant
Island Contexts Burials by Infant, Child, and Adolescent	0.049	Significant
Mainland Contexts Burials by Infant, Child, and Adolescent	0.942	Not Significant

There were no statistically significant differences present between subadult and adult burials for body side in either the Early (p = 0.119) or Middle (p = 0.653) period samples. There are, however, changes in burial programs evident between the two time periods, where supine burials are the dominant type for both subadult and adult burials from the Early period, while in the Middle period prone burials become the dominant type for both subadult and adult burials. When the three Early period subadult age groups are examined more closely, statistical testing revealed a nearly significant difference (p = 0.060) for body side. Infant, child, and adolescent burials from the Early period all have supine burials as the most common type, and there appears to be a pattern where anatomical left side burials appear to increase in popularity as age increases, while prone burials decrease in proportion with the increase in age. Although statistically significant differences were not identified (p = 0.229) in the Middle period subadult sample, another age-based trend was evident where the proportion of seated burials appears to increase with age.

No statistically significant difference (p = 0.301) was identified between island contexts subadult and adult burials. For both age groups, supine burials are the most common type, however, one notable pattern is that subadult burials take the prone position at twice the rate of adult burials. Considering potential differences within the subadult sample in more depth, there is a statistically significant difference ($p = 0.049$) present between island contexts infant, child, and adolescent burials for body side. Although all three age groups have supine burials as the most common type, child and adolescent burials are more similar to one another (and to island contexts adult burials) than they are to infant burials. When the three age groups are compared regarding the prone position, the aforementioned pattern becomes clearer, in that prone burials appear to decrease in proportion as age increases. For the analysis of mainland subadult and adult burials, the results approached a significant value ($p = 0.056$). Prone positions were the most common type for both age groups and supine the least common, however, one pattern of note is that subadult burials had over three times the rate for the seated position when compared to adult burials. Considering the three mainland subadult age groups, there was no statistically significant result ($p = 0.942$) obtained for body side. Infant, child, and adolescent burials had incredibly similar proportions for body side, with the exception of there being no cases of the anatomical left position for infants.

<u>Burial Direction: Data Patterns for Time Periods and Geographic Contexts</u>

For each case, burial direction (Variable 3) was assessed based on the direction of the head (or face in the case of seated burials), and each burial was assigned a direction based on the cardinal (North, South, East, and West) or intercardinal/ordinal (Northeast, Northwest, Southeast, and Southwest) point that most closely matched its direction. A summary of the statistical results and corresponding significance levels for the analysis of burial direction are reproduced below (Table 8.4), and the discussion that follows recapitulates the most relevant findings. The main trend for burial direction in the Early period is west-oriented burials, while in the Middle period this changes to east-oriented burials. Between the two geographic contexts, burials from island contexts typically are oriented west, while those from mainland contexts largely are oriented towards the east. One key difference between geographic contexts is in the proportion of south-oriented burials, which were far less common in the mainland sample.

Table 8.4. Pearson Chi-Square and Fischer's Exact Results for Burial Direction (Compass) Indicating *P*-Value and Level of Statistical Significance Reached for All Analyses Conducted

Burial Direction (Compass)	***P*-Value**	**Level of Statistical Significance**
All Burials by Period	0.002	Highly Significant
All Burials by Subadult and Adult	0.892	Not Significant
Early Period Burials by Subadult and Adult	0.470	Not Significant
Middle Period Burials by Subadult and Adult	0.188	Not Significant
All Burials by Context	0.010	Significant
Island Contexts Burials by Subadult and Adult	0.195	Not Significant
Mainland Contexts Burials by Subadult and Adult	0.005	Highly Significant
All Subadult Burials by Infant, Child, and Adolescent	0.020	Significant
Early Period Burials by Infant, Child, and Adolescent	0.099	Not Significant
Middle Period Burials by Infant, Child, and Adolescent	0.660	Not Significant
Island Contexts Burials by Infant, Child, and Adolescent	0.028	Significant
Mainland Contexts Burials by Infant, Child, and Adolescent	0.667	Not Significant

No significant difference was revealed in the analysis of burial direction for Early period subadult and adult burials ($p = 0.470$) or for Early period infant, child, and adolescent burials ($p = 0.099$). The primary trends evident in the Early period are that the two directions with the highest proportional values are west and east, with the southeast direction being generally the least common. One pattern of note, however, is that west-oriented burials generally have the highest proportions for all Early period age groups, with adolescent burials being the primary exception. No significant differences were found in burial position for the Middle period sample of subadult and adult burials ($p = 0.188$), or infant, child, and adolescent burials ($p = 0.660$). The southwest direction was most common for subadult burials, while east was most common for adult burials (and second-most common direction for subadult burials). For both age groups, southeast remained among the least common burial directions. The primary observation of note for subadult burial direction is that infant and adolescent burials follow the general trend of west- and east-oriented burials, respectively, being the most common type, while child burials predominantly have southwest-orientations.

The difference between island subadult and adult burials was not statistically significant ($p = 0.195$). Both age groups followed the trend of the dominant directionality following an east-west orientation, with east being dominant for subadults and west being dominant for adults. There was, however, a statistically significant difference present between infant, child, and adolescent burials ($p = 0.028$), where west was the most common direction for infant and child burials, and east was the most common direction for adolescents. Overall, the east-west directionality remained dominant for all island age groups, and southeast-oriented burials were generally the least common. Between the two contexts, there appears to be a shift in predominant burial direction, where a highly significant difference ($p = 0.005$) exists in mainland contexts. These results indicate that subadult burials are predominantly oriented in a southwest-direction, while adults most commonly have east-oriented burials. Between mainland infant, child, and adolescent burials, there is no statistically significant difference present ($p = 0.667$). Infant burials have west-oriented burials most frequently (sharing in the east-west directionality held by the majority of adult burials), while child and adolescent burials share a south-dominant orientation, with southwest and south, respectively, as the dominant directions for each. Child and adolescent burials from mainland contexts seem to deviate the most dramatically from infant and adult burials, as well as from all subadult and adult burials from island contexts.

Question 1: Discussion and Interpretation

Returning to Binford's (1971:22) oft-cited analysis of mortuary practice, he recognized—based on his broad, comparative ethnographic study—that age is one of the most common underlying factors that structure the way in which the body of the deceased is disposed, the form of the grave, as well as the location of the disposal. Out of the three variables assessed for this question, burial position was the strongest candidate indicating age-based differentiation between subadult and adult burials in the pre-contact Chumash burial program. Body side and burial direction yielded interesting patterns and results, however, the respective analyses did not indicate that age was a primary factor in their implementation.

Considering burial position diachronically, Early period subadults clearly exhibit greater variation in terms of patterning and proportions for burial position when compared to their adult counterparts. Although both groups have flexed burials as the most common type, subadults more frequently have extended burials than adults, while adults more frequently have semi-flexed and seated burials than subadults. In the Middle period, there is more variation in terms of proportional values between subadult and adult burials for burial position, however the patterning between both age groups is largely congruous. A common theme observed cross-culturally is that the interred individual is often laid out in an "attitude of repose," such as if they were sleeping (commonly flexed and extended positions), which often signify the coming rebirth after death or the position taken in the arrival in the land of the dead/ancestors (Parker Pearson 2000:54). Martz's (1984:126) research on the Middle period Trancas Canyon site indicated that all age groups shared the dominant burial position, which support these findings, however, in her study, she did not find a statistically significant difference between age and burial position. For both time periods, infant burials display the largest amount of variation for burial position when compared to child and adolescent burials.

Similar patterns were also identified in Corbett's (2007:189–190) mortuary analysis, however, he identified the greatest differences existing between infants[7] and adults at the onset

[7] Corbett (2007:187) defines the age group "infant" to be individuals less than one year of age, which differs from the parameters set out in this study.

of the Early period, compared to more significant differences being present between adults and subadults later in the Early period. C. King (1990:95) commented on similar patterns present at SCRI-333, where the earlier cemetery (sub-phase Eya) seemed to exhibit burial positions that mapped onto age of the deceased more so than the later (sub-phase Ez) cemetery. Both Corbett (2007:195) and C. King (1990:95) attribute these mortuary patterns to the transition from an achieved to ascribed system of sociopolitical organization. In L. King's (1982:96) analysis of the Medea Creek cemetery, she also identified age-based differentiation in burial position, where infants displayed the highest degree of variation when compared to subadult and adult burial positions.

For infant burials especially, burial position seems to have been heavily influenced by age of the deceased, which Martz (1984:99) attributes to not yet being fully incorporated into the community. If, as Martz suggests, these burials were orchestrated by the immediate family of the deceased and not the wider community, this level of variation should remain fairly constant for this age group, which the data support to a degree. One caveat to add here is that it would be unwise to dismiss the involvement of the wider community in the burial rites of these subadults. There is no direct evidence to support such a notion, and the level of variability in burial position for subadults could be linked to lineage affiliation or other types of social groupings that may be more relevant to individuals who had not been fully initiated into the community (Brumfiel 1992). Although some clear differences exist in the burial programs of subadult and adult positioning, it is clear that even the youngest individuals were carefully and intentionally interred, providing further evidence for ascription of personhood.

For this study, the analysis of body side did not yield statistically significant results that would strongly indicate that an age-based difference in burial treatment was present. There are, however, broad trends identifiable in the burial program that change over time, namely the dominant burial position, which was supine in the Early period and prone in the Middle period. Subadult burial patterns largely mimic the dominant pattern seen for adults, however, some interesting patterns emerged when subadults were analyzed at the level of infant, child, and adolescent age groups. For the Early period, anatomical left side burials become more popular for subadults as age increases, while the opposite is true for the prone position, which is seen to decrease with age. In the Middle period, subadult burials exhibit a trend where seated burials become more popular as subadult age increases. Although these trends did not yield statistically significant results, they do seem to indicate that certain body sides were preferred for subadults and adults, but not at the expense of the societally dominant side (respective of time period).

C. King's (1990:95) analysis of SCRI-333 led him to remark upon trends he noticed where adults most commonly had burial sides in the anatomical right, left, and seated positions, while infant, child, and adolescent burials more commonly had burial sides in prone and supine positions. The patterns remarked upon by C. King do not entirely hold true for the results of this analysis for the Early period, as subadults had nearly equal rates for anatomical left positions as adults and adults had greater proportions for supine positions than subadults. L. King's (1982:94) analysis of the Late period Medea Creek cemetery identified subadult burials most commonly taking an anatomical right side whereas for adults it was anatomical left, however, her analysis also takes sex into account for adult burials, which could provide another explanation for this variation. Corbett (2007:193) suggested that sub-regional differences may make up a portion of the variation, however, the results of his analysis suggest that it would be minimal at best.

Finally, the results for burial orientation based on compass direction yielded almost no statistically significant differences present between subadult and adult burials irrespective of time period or geographic context. The dominant burial direction does change over time, with Early period burials largely west-oriented, while Middle period burials are primarily east-oriented, and the patterns for island and mainland contexts map onto the patterns seen for Early and Middle periods, respectively. In Chumash culture, the land of the dead was associated with a westerly direction, toward Point Conception, which is one possibility for the majority of burials being oriented as such (Blackburn 1975). However, there are also cross-cultural trends for bodies to be oriented towards the east, which is a direction often associated with the rising sun and rebirth (Parker Pearson 2000:54). Although not the only potential interpretations of burial direction, these are certainly strong possibilities for the burial directions achieved in the majority of this study. The most interesting trend for the analysis of this variable is in the very low proportions of burials oriented towards the southeast. Some burials are oriented towards that direction, so it does not seem that it was a societal taboo, however, it does seem to be a direction that is largely avoided by the majority of the population. Another possibility, which has been observed cross-culturally, is that burial direction could be linked to seasonality of death, with burials oriented toward the position of the sun in a given season (Cross 1989; Petersen 2013; Rahtz 1978; Schulz 1970, 1981).

Overall, the results of this analysis do not support the idea that burial direction was an aspect of the pre-contact Chumash burial program based in differences of age. Corbett's (2007:189–190) analysis of Early and Middle period sites aligns with the patterns seen here, further supporting the notion that burial orientation was not primarily differentiated based on age of the deceased. These results somewhat contradict the patterns observed by L. King at the Late period cemetery of Medea Creek, where she suggests age-based differentiation was present for burial direction (1982:78), however, they do align with her observations that infants most commonly are oriented towards the west (1969:36, 1982:94). L. King (1969:94–96) posited that more variation was present in the burials of infants and small children due to their small size, and frequency in which they were interred in small containers like baskets. All-in-all, differences in investigative scope, sub-region, and time period may account for the results proffered by L. King.

<u>Problems Inherent in the Data for Question 1</u>

While the body position, body side, and burial orientation were variables recorded by all excavators in the study sample, there were instances in which the original recorders could not ascertain body position, body side, and/or burial direction for certain burials. In instances where taphonomic issues or disturbance from nearby burials rendered one or more of these variables probable or completely unable to be determined, these cases were identified as "unknown" for the purposes of this study and not included in the statistical analyses, so as to not potentially misattribute patterns in data for aspects of the burial program that could not be determined with a high degree of certainty. On that premise, not every burial had adequate information to be included in the analyses of body position, body side, and burial orientation, so the results of these analyses include only the burials that had these variables recorded with a high degree of certainty.

Question 2: Do subadult and adult burials exhibit similar patterning for grave depth and total number of grave goods, where the deepest burials should also be the ones with the largest numbers of grave goods?

Chumash scholars have spilled much ink discussing the potential material correlates for complex sociopolitical organization, among these are that deeper graves should contain greater amounts of grave goods, both of which are considered proxies for wealthy individuals of high status. Gamble and colleagues (2001:196) posited that a positive correlation should be seen between grave depth and "richness" in burial. For both the Middle period and Historic period cemeteries at Malibu, the authors identified a positive correlation between grave depth and number of artifacts (Gamble et al. 2001:197–201). For the purposes of this study, burial "richness" is assessed by the total number of grave goods (see Appendix A:Tables A.1 and A.2 for grave good types). Although sociopolitical organization is not the focus of this study, nor is the supposition of "wealth" onto grave depth or total number of grave goods, considering the interplay of these two variables can still provide useful information on pre-contact Chumash subadult and adult burial programs. For the data to affirm this question, a positive correlation is expected to be seen between grave depth and total number of grave goods for both subadult and adult burials, where the deepest burials are those that also have the largest numbers of grave goods. Otherwise, there should be distinct differences in the patterning (i.e., both groups will not have positive linear relationships) of the two aforementioned variables for subadult and adult burials.

<u>Grave Depth: Data Patterns for Time Periods and Geographic Contexts</u>

Grave depth (Variable 6) is defined as the distance, measured in inches, from ground surface to the top of the interred individual's head. Overall trends for grave depth indicate that both Early period and island burials have deeper graves than Middle period and mainland burials, respective of time period and geographic context. While trends between time periods and contexts revealed statistically significant results, when grave depth was analyzed by subadult and adult age groups, as well as by infant, child, and adolescent burials, significant and nearly significant results were largely limited to Middle period and mainland contexts. The statistical results are summarized below (Table 8.5) and the most essential patterns are briefly described in the following discussion.

Table 8.5. Mann-Whitney *U* and Kruskal-Wallis Results for Grave Depth Indicating *P*-Value and Level of Statistical Significance Reached for All Analyses Conducted

Grave Depth	*P*-Value	Level of Statistical Significance
All Burials by Period	0.006	Highly Significant
All Burials by Subadult and Adult	0.537	Not Significant
Early Period Burials by Subadult and Adult	0.330	Not Significant
Middle Period Burials by Subadult and Adult	0.201	Not Significant
All Burials by Context	< 0.001	Highly Significant
Island Contexts Burials by Subadult and Adult	0.377	Not Significant
Mainland Contexts Burials by Subadult and Adult	0.001	Highly Significant
All Subadult Burials by Infant, Child, and Adolescent	0.005	Highly Significant
Early Period Burials by Infant, Child, and Adolescent	0.667	Not Significant
Middle Period Burials by Infant, Child, and Adolescent	0.002	Highly Significant
Island Contexts Burials by Infant, Child, and Adolescent	0.509	Not Significant
Mainland Contexts Burials by Infant, Child, and Adolescent	0.052	Approaching Significance

Statistically significant results were not achieved for subadult and adult burials for either the Early ($p = 0.330$) or Middle ($p = 0.201$) periods, however, significant differences were present between samples from both time periods. In the Early period analysis of grave depth for subadult and adult burials, the majority of subadults were buried four inches deeper than adults (34 inches vs. 30 inches, respectively), and subadults exhibited greater variability in the distribution of values for grave depth. This strongly contrasts with the patterns seen in the Middle period sample for subadult and adult grave depth, where the majority of subadults are buried six inches shallower than adults (24 inches vs. 30 inches, respectively), and adults had marginally higher variation for burial depth compared to subadults. When the samples of infant, child, and adolescent burials are compared between time periods, a statistically significant difference is present in the Middle period subadult sample ($p = 0.002$), but not in the Early period subadult sample ($p = 0.667$). Early period subadults had very similar treatment for grave depth, with child burials being the shallowest (30 inches), followed by adolescent burials (32 inches), and infant burials being the deepest (34 inches). Early period infant burials also display the greatest degree of variation in burial depth, while the degree of variation present for child and adolescent burials is comparable to one another, but slightly less than infants. In the Middle period, a vastly different pattern is seen where adolescent burials have the deepest burials (36 inches) and the greatest degree of variation in grave depth, followed by infant burials (29 inches), and finally child burials (20 inches), which are the shallowest and display the lowest degree of variation in grave depth.

The difference between island and mainland grave depth is significant between contexts and also differs in the treatment of the age groups. For the sample of subadult and adult burials from island contexts, there was no significant difference (p = 0.377) in grave depth. In fact, the two age groups were remarkably similar, sharing the same median value for grave depth (36 inches) and having very little difference in variability between them. Island infant, child, and adolescent burials did not significantly differ (p = 0.509) from one another, with all three groups sharing the same median grave depth (36 inches). Adolescent burials had the most variability of the three subadult age groups, however, it was only slightly greater than infant or child burials, which were nearly equal to one another. For mainland subadult and adult burials, there was a highly significant different (p = 0.001) between the two age groups with adults being buried on average 6 inches deeper than subadults (26 inches and 20 inches, respectively) and adults had a markedly larger degree of variation in burial depth than subadults. There was a nearly significant difference (p = 0.052) present between infant, child, and adolescent burials from mainland contexts, infants were buried the deepest (26 inches), followed by adolescents (23 inches), and finally children (20 inches). The level of variability in grave depth was greatest in infant and adolescent burials, with child burials having a markedly lower degree of variability in grave depth.

Total Number of Grave Goods: Data Patterns for Time Periods and Geographic Contexts

The total number of grave goods (Variable 12) was determined based on the sum of the number of non-ornament and ornament grave goods (Variables 10 and 11), and only burials where counts of grave goods in both ornament and non-ornament categories could be accurately assessed (e.g., neither variable category had an "unknown" number of grave goods) were included in the analyses. Only the results for total number of grave goods are discussed in the following section, with the statistical results for each of the analyses performed summarized below (Table 8.6). Between time periods, Early period burials had greater numbers of grave goods than Middle period burials, and a marked age-based difference was recognized between Early period subadult and adult burials. Additionally, burials from island contexts generally have more grave goods than mainland contexts burials.

Table 8.6. Mann-Whitney *U* and Kruskal-Wallis Results for Total Number of Grave Goods Indicating *P*-Value and Level of Statistical Significance Reached for All Analyses Conducted

Total Number of Grave Goods	***P*-Value**	**Level of Statistical Significance**
All Burials by Period	< 0.001	Highly Significant
All Burials by Subadult and Adult	< 0.001	Highly Significant
Early Period Burials by Subadult and Adult	< 0.001	Highly Significant
Middle Period Burials by Subadult and Adult	0.639	Not Significant
All Burials by Context	< 0.001	Highly Significant
Island Contexts Burials by Subadult and Adult	< 0.001	Highly Significant
Mainland Contexts Burials by Subadult and Adult	0.405	Not Significant
All Subadult Burials by Infant, Child, and Adolescent	0.324	Not Significant
Early Period Burials by Infant, Child, and Adolescent	0.865	Not Significant
Middle Period Burials by Infant, Child, and Adolescent	0.491	Not Significant
Island Contexts Burials by Infant, Child, and Adolescent	0.787	Not Significant
Mainland Contexts Burials by Infant, Child, and Adolescent	0.989	Not Significant

Between the two time periods, there is a highly significant difference for total number of grave goods interred with Early and Middle period individuals. For the Early period a highly significant difference ($p < 0.001$) was present between age groups, where the majority of subadults have 30 more grave goods than adults (33 grave goods vs. 3 grave goods, respectively), and subadult burials have notably more variability for total number of grave goods. There was no significant difference ($p = 0.865$) between infant, child, and adolescent burials. Infants had the greatest numbers of grave goods (39 grave goods), while children and adolescents had marginally fewer (33 grave goods each); in terms of variability, infant and child burials had marginally greater variability than adolescent burials. For the Middle period sample, there was no significant difference between subadult and adult burials ($p = 0.639$) or between infant, child, and adolescent burials ($p = 0.491$) for total number of grave goods. All burials shared a median value (1 grave good), and levels of variability were very comparable between groups, with adults having just slightly more variability than subadults, and adolescents having slightly less variability than infant or child burials.

A highly significant difference is present between burials of all ages from island and mainland contexts. For subadult and adult burials from island contexts, there is a highly significant difference ($p < 0.001$), where the majority of subadults have 25 *more* grave goods than adults (27 grave goods vs. 2 grave goods, respectively), and subadults also have a markedly greater degree of variability in total number of grave goods. There was no statistically significant difference ($p = 0.787$) for the sample of island contexts subadults; the majority of adolescent burials have 3 more grave goods than infant or child burials (28.50 grave goods vs. 25.50 grave goods, respectively), however, adolescent burials have slightly less variability for total number of grave goods than infant or child burials. For mainland subadult and adult burials, no significant difference ($p = 0.405$) exists between the two age groups. Both subadult and adult burials have the same median value for total number of grave goods (1 grave good), and the degrees of variability are very similar between the two age groups. There was essentially no statistical difference present at all (p = 0.989) between mainland contexts infant, child, and adolescent burials for total number of grave goods.

Question 2: Discussion and Interpretation

In order to assess the shape and distribution for the entire sample of burials, histograms were produced for grave depth and total number of grave goods(refer to Appendix D:Figure D.1 and Appendix E:Figure E.1). Both variables had positively skewed bi-modal distributions, indicating that, for each variable, two distinct groups were present. For grave depth, the break between bimodal peaks was approximately 50 inches, and for total number of grave goods, the break between bimodal peaks was approximately 750 grave goods. These values were checked against Early/Middle and island/mainland samples, all of which followed the same general patterning, so the following discussion uses the same values to facilitate all diachronic and geographic comparisons. To further investigate patterns for these two variables, each of the temporal and geographic samples were examined for burials that had depths of 50 or more inches and 750 or greater grave goods (Table 8.7), the discussion that follows summarizes these results.

Table 8.7. Cross-Tabulation of Grave Depth and Number of Grave Goods for Time Period and Geographic Context

	Time Period				**Geographic Context**			
	Early Period n = 124		**Middle Period** n = 265		**Island Contexts** n = 141		**Mainland Contexts** n = 248	
	< 750 Grave Goods	**> 750 Grave Goods**	**< 750 Grave Goods**	**> 750 Grave Goods**	**< 750 Grave Goods**	**> 750 Grave Goods**	**< 750 Grave Goods**	**> 750 Grave Goods**
Grave Depth < 50 inches	110	3	244	0	106	3	248	0
Grave Depth > 50 inches	11	0	21	0	32	0	0	0

For the Early period sample, 124 burials had data for both grave depth and total number of grave goods. Of the 11 burials with graves at depths of 50 inches or greater, there were no burials that also had 750 or more grave goods. For the 113 burials with depths of less than 50 inches, only 3 burials had 750 or greater grave goods, 2 of these burials were subadults (1 infant and 1 adolescent). For the Middle period sample, there were 265 burials with data for both grave depth and total number of grave goods. Twenty-one burials had depths of 50 or more inches, however there were no cases for burials of any depth with 750 or more grave goods. For island contexts, there were 141 burials that possessed data for grave depth and total number of grave goods. As with the Early period sample, 3 burials had 750 or more grave goods (2 were subadults, 1 infant and 1 adolescent), however, they all were interred at depths of less than 50 inches. For mainland contexts, grave depth and total number of grave goods was available for 248 burials, however, there were no cases of burials 50 inches or deeper nor were there any cases of burials with 750 or more grave goods.

One of the limiting factors in this analysis was that grave depths were not consistently collected for all burials by excavators, so the sample size for burials with data for both grave depth and total number of grave goods is smaller than ideal, given the total sample size. Nevertheless, these data reveal some interesting trends for both time period and geographic context. Diachronically, there were very similar proportions for burials both over 50 inches and with fewer than 750 grave goods in Early (8.9 %, n = 11) and Middle (7.9 %, n = 21) periods. For those Early period burials, three of the eleven were subadults (2 infants and 1 child), while in the Middle period five of the twenty-one burials were subadults (2 infants, 1 child, and 2 adolescents), revealing similar proportions of subadults in each respective group. It seems that the segments of the burial population that were afforded these deeper burials, albeit receiving less than 750 grave goods, were fairly limited, but appear to cross-cut age distinctions, including both subadult and adult burials. This could potentially be indicative of particular social groupings (e.g., religious, economic, familial) for which deeper burials were a privilege the majority of the population was not afforded.

When the differences for geographic contexts are taken into account, there are no cases for any mainland sites with burials deeper than 50 inches or with more than 750 grave goods. Island contexts on the other hand have a larger proportion (22.7 %, n = 32) of burials deeper than 50 inches, when compared to the other subsamples for time period and context. The differences between the two contexts for grave depth may be more indicative of the geological conformation of the natural landscape than necessarily cultural reasons. For instance, the presence of colluvial and/or alluvial deposits (Brown 2009; Glassow et al. 2009; Schumann and Pigati 2019; Schumann et al. 2014) may also affect archaeologically accessible remains of cultural activities, which includes the depth to which burials may have been interred. Future research could focus more upon intra-site patterning to assess the degree to which such processes may have affected the archaeological record. Additionally, some of the mainland site excavations encountered an incredibly hard, clay subsoil approximately 30–40 inches below surface, into which burials could only superficially dug, which may provide rationale for patterns between mainland and island contexts.

To further examine the relationship between grave depth and total number of grave goods, scatterplots were generated for subadults and adults from the Early and Middle periods (Figures 8.1 and 8.2) and island and mainland contexts (Figures 8.5 and 8.6), as well as for infant, child, and adolescent burials from Early and Middle periods (Figures 8.3 and 8.4) and island and mainland contexts (Figures 8.7 and 8.8). Lines of best fit (and the corresponding R^2 values) are indicated on the scatterplots to aid the reader in assessing the general correlations between the two variables for each of the subgroups. As stated in the introduction to this research question, a positive correlation is expected, where deeper graves have larger amount of grave goods, which should be comparable between subadult and adult burials. The subadult samples of infant, child, and adolescent burials are also examined to assess trends in the relationship of these two variables among the three subadult age groups.

For the Early period sample (Figure 8.1), there is a strong positive correlation between grave depth and total number of grave goods for subadult burials, however there is an indeterminate correlation for adult burials. For the Early period sample of infant, child, and adolescent burials (Figure 8.3), all three age groups share a strong positive correlation between the two variables, with child burials having the strongest positive correlation of the three age groups. For the Middle period (Figure 8.2), both subadult and adult burials exhibit very similar trends, however, adult burials have the slightest positive correlation (likely due to the outliers with very large total grave good counts), while subadults have an indeterminate correlation. Considering the sample of Middle period subadults (Figure 8.4), child burials have a slight positive correlation, adolescents a slight negative correlation, and infants have an indeterminate correlation. Between time periods, clear differences are evident between subadults and adults in the Early period, while all three subadult age groups appear to have trends very similar to one another. For the Middle period, subadults and adults have trends very similar to one another, while the three subadult age groups all exhibit different trends from one another.

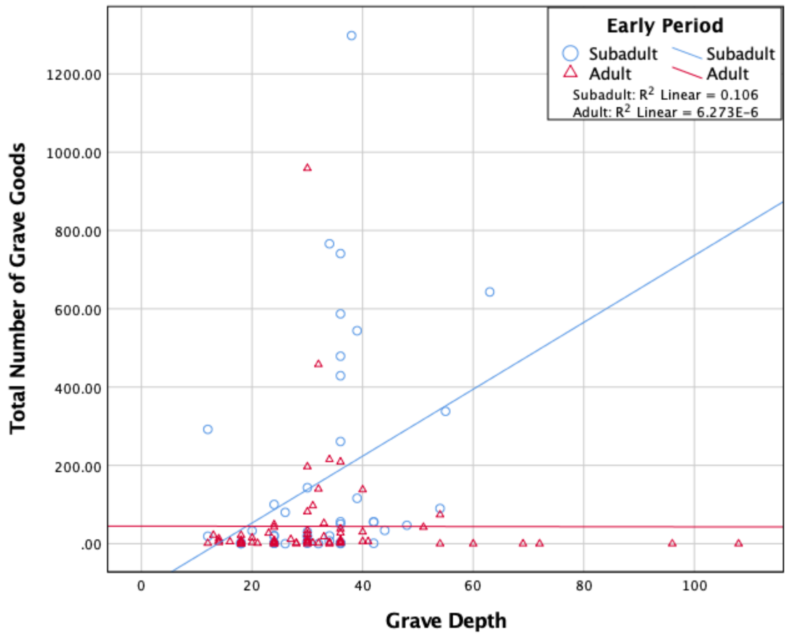

Figure 8.1. Scatterplot of grave depth and total number of grave goods for the Early period sample separated by subadult and adult burials.

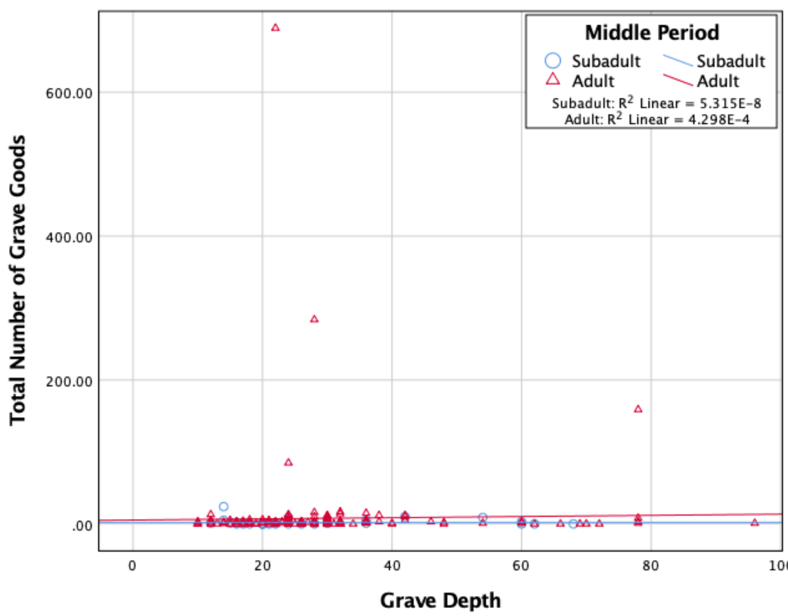

Figure 8.2. Scatterplot of grave depth and total number of grave goods for the Middle period sample separated by subadult and adult burials.

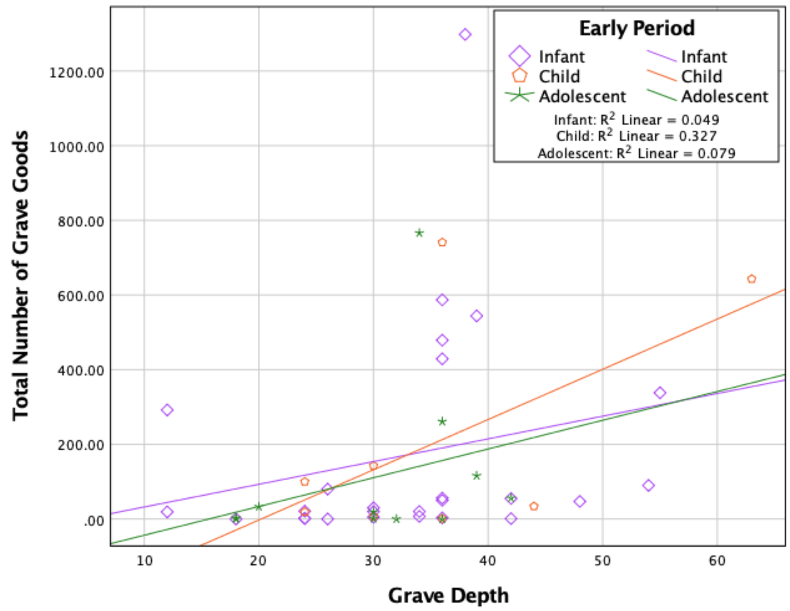

Figure 8.3. Scatterplot of grave depth and total number of grave goods for the Early period subadult sample separated by infant, child, and adolescent burials.

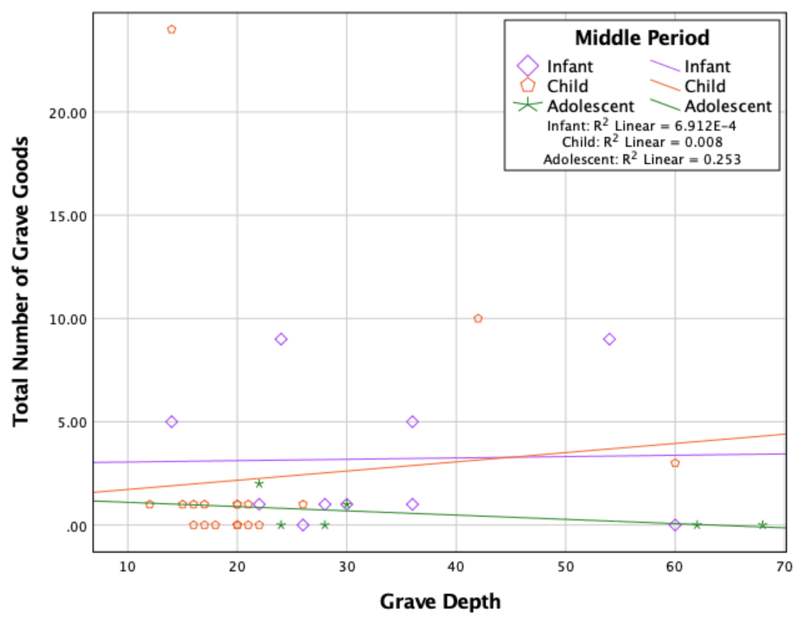

Figure 8.4. Scatterplot of grave depth and total number of grave goods for the Middle period subadult sample separated by infant, child, and adolescent burials.

For the island contexts sample (Figure 8.5), subadult burials exhibit a moderate positive correlation between grave depth and total number of grave goods, while adults have a slight negative correlation. Examining the three subadult age groups (Figure 8.7), infant and child burials both share moderate positive correlations, while adolescent burials exhibit a slight negative correlation, the latter of which is more similar to the trends seen in the adult sample than in the other subadult age groups. In the mainland contexts sample (Figure 8.6), both subadult and adult burials are extremely similar in overall patterning, however, there is the most miniscule negative correlation evident for adults, and an indeterminate correlation for subadults. When the three subadult age groups are examined more closely (Figure 8.8), child burials showcase a moderate positive correlation, while infant and adolescent burials exhibit a moderate negative correlation, which most closely matches the adult sample. The two geographic contexts showcase different trends for grave depth and total number of grave goods between the different age groups. In island contexts burials, infant and child burials have a strong positive correlation between the two variables, while adolescents most closely match the sample of adults with a negative correlation. In mainland contexts burials, little difference is evident between the subadult and adult age groups, however, when subadults are examined in more detail, child burials have a positive correlation for grave depth and total number of grave goods, while infants and adolescents have a negative correlation, more closely matching that in the adult sample.

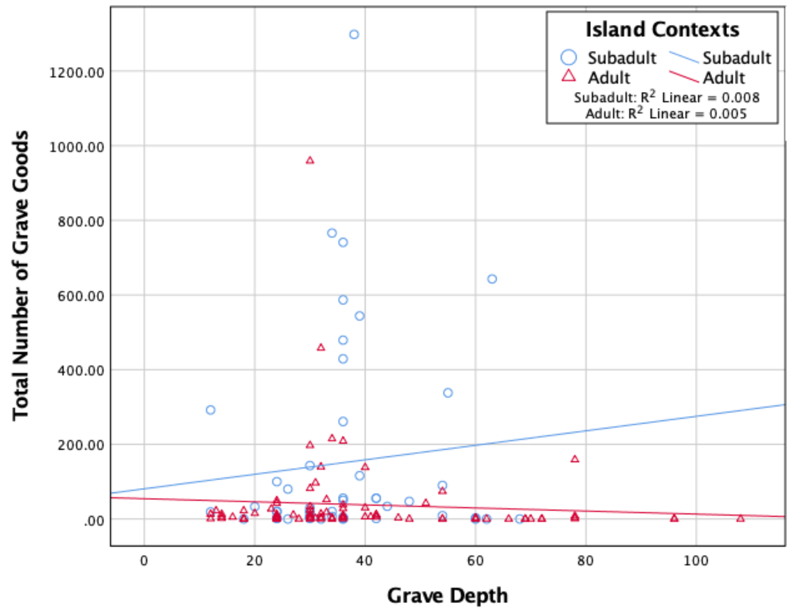

Figure 8.5. Scatterplot of grave depth and total number of grave goods for the island contexts sample separated by subadult and adult burials.

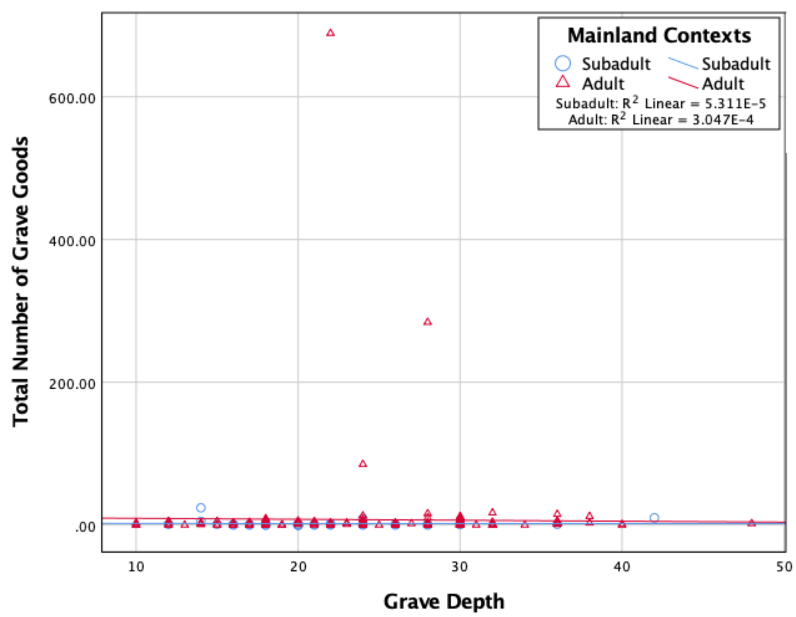

Figure 8.6. Scatterplot of grave depth and total number of grave goods for the mainland contexts sample separated by subadult and adult burials.

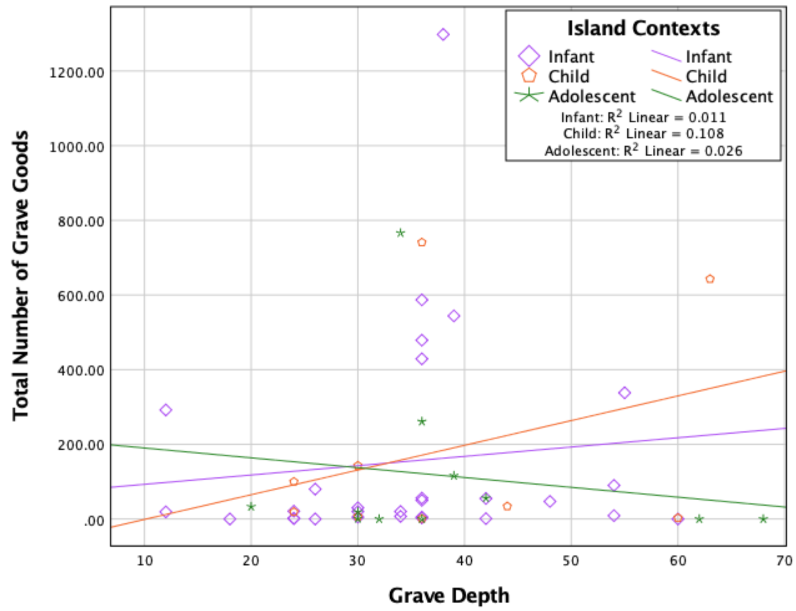

Figure 8.7. Scatterplot of grave depth and total number of grave goods for the island contexts subadult sample separated by infant, child, and adolescent burials.

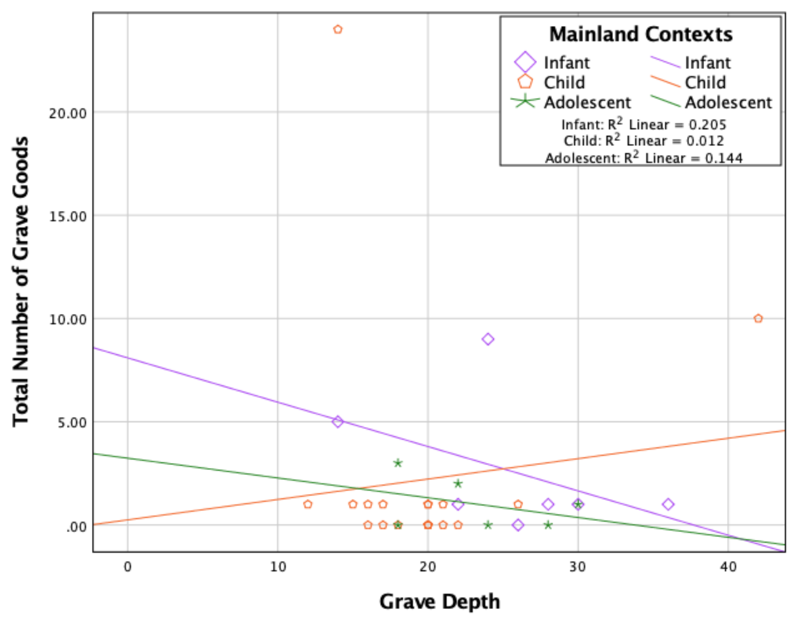

Figure 8.8. Scatterplot of grave depth and total number of grave goods for the mainland contexts subadult sample separated by infant, child, and adolescent burials.

Returning to the tenets of the research question, subadult and adult burials are expected to have positive correlations between grave depth and total number of grave goods, however, in reality, the data do not neatly conform to this supposition. None of the adult burial samples displayed a positive correlation, while a positive correlation was most strongly upheld in the infant, child, and adolescent burials from both Early period and island contexts, as well as child burials from both Middle period and mainland contexts. For time period, the most clearly evident differences are between Early period subadult and adult burials, while very little difference is evident between Middle period subadult and adult burials. The three subadult age groups are most similar in the Early period, while in the Middle period, no discernable pattern is evident. Considering the samples from each context, the sample of island subadult and adult burials differ the most dramatically from one another, while the mainland sample shows very little difference between subadult and adult burials. For the three subadult age groups, island contexts infant and child burials express a strong positive correlation, while adolescent burials more closely match adults with a negative correlation. Mainland child burials are the only group from this sample with a strong positive correlation, while infant and adolescent burials both match adults with a negative correlation.

When patterns of grave depth and total number of grave goods are examined in the scatterplot analyses, a pattern emerges—contrary to the supposition in the research question—where the burials with the largest numbers of grave goods tend to cluster between grave depths of ~25–40 inches. In the Early period, it is mainly subadults who have high numbers of grave goods, however, there are more adults with deeper graves, and in the Middle period, high numbers of grave goods are far more rare, with the deepest graves and largest numbers of grave goods belonging primarily to adult burials. Investigating these patterns within the subadult samples, Early period infants make up the majority of subadult burials with large numbers of grave goods, while it is also infants who tend to have the deepest graves, albeit with comparatively moderate numbers of grave goods. This contrasts strongly with the Middle period subadult sample, where numbers of grave goods are fairly low across all three age groups, and relatively deep graves (few that there are), generally belong to infant and adolescent burials. Island and mainland context samples of subadult and adult burials, map on fairly neatly to the patterns described for Early and Middle period samples, respectively, however, differences are noted within the subadult samples. For island subadults, the same pattern is seen where primarily infants have high numbers of grave goods, while deep graves are pretty well distributed among the three age groups, and in the mainland subadult sample, there are no subadults with relatively high numbers of grave goods or comparatively deep burials.

The results obtained here do not support the idea that the deepest graves are the ones that have the most grave goods, in fact, the majority of analyses seem to indicate that graves with the most grave goods are found at moderate depths (~25–40 inches below surface), and the deepest graves generally have very few grave goods. One potential reason for the observation of this pattern could be in the historic Chumash tradition of having *'aqi* (third-gender undertakers) dig the graves, proportional to the amount which they were compensated for the task (Hollimon 1990, 1996, 1997, 2000). Ethnographic accounts support that the *'aqi* received the most compensation for digging the deepest graves (L. King 1969:47), so it is possible that large quantities of wealth were expended on *either* a deep grave with few grave goods *or* a grave of moderate depth with great quantities of grave goods. While *'aqi* are attested in historic Chumash contexts, there is no substantial evidence to support (or alternately, refute) their existence in the pre-contact time periods covered in this study.

Another possible explanation for the deepest graves having few grave goods, could be justified by the destruction of the deceased's personal property in a regularly occurring mourning ceremony, which is attested historically (Hardy 2000; Hollimon 2001; Hull 2012; Hull et al. 2013). L. King (1982:92), in her investigation of the Late period cemetery at Medea Creek, identified similar patterns to those seen in this study, where adults rarely had the quantities of grave goods observed in many subadult burials, which led her to believe that the social status of adult burials was expressed in another form, such as a mourning ceremony of this type. Coupled with data on grave depth, L. King's research suggested that subadult burials exhibited greater degrees of variation for grave depth than adult burials, which fit with her previous assumption that subadult social status would be more fully expressed in burial contexts than adult social status.

Overall, L. King's (1982:96) findings at the Late period Medea Creek cemetery suggest that the correlations between grave depth and grave goods was more evident among subadult burials than adult burials. This study's analysis of Early period subadult and adult burials for grave depth and number of grave goods (Figure 8.1) support this observation, however, the analysis of the Middle period sample (Figure 8.2) shows a negligible difference between subadult and adult burials. In the Early period, subadult burials appear to have comparable treatment among the three age groups, which vastly exceeds the grave depths and numbers of grave goods seen in Early period adult burials. This patterning would seem to indicate that, even at this early phase of Chumash history, infant, child, and adolescent burials received special burial treatment that set them apart from their adult contemporaries. Not only were subadults included in the full repertoire of burial practices as adults, but the fact that so many subadults were interred with very large numbers of grave goods indicates that they were not only important members of the social community at large, but also that they seem to have received a type of status not afforded to the majority of the adult community. The fact that the patterns seen in the Early period do not continue into the Middle period may be afforded to incipient changes in sociopolitical organization (Erlandson and Rick 2002; C. King 1990; Lambert and Walker 1991). Given that subadult and adult treatment in the Middle period is nearly indistinguishable from one another, this patterning seems to indicate that subadults were treated similarly to adults in the community and were afforded the same rights and community inclusion.

Problems Inherent in the Data for Question 2

The analyses in this section cover both grave depth and total number of grave goods, and each variable category had its own respective issues with regard to information collected and tabulated by original recorders. While grave depth was regularly recorded by excavators for sites in the study sample, there was one site (SLO-406) that had no grave depths recorded for any of its burials, and three sites (SRI-3, SRI-5, and VEN-61) had only ~1–13 % of burials with grave depth recorded. All other sites in the study had grave depth recorded to differing degrees, with the majority of sites having depth recorded for a significant portion of the burial sample. For the remainder of the sample, three sites (SCRI-257, SBA-43, and SBA-81) had between ~64–86 % of burials with grave depth recorded, and three additional sites (VEN-150, SBA-72, and SCRI-333) had between ~91–99 % of burials with grave depth recorded. The remaining five sites (SCRI-159, SCRI-162, SBA-53, SBA-71, and SBA-73) had grave depth recorded for 100 % of excavated burials. In an ideal world, excavators would have recorded grave depth for all individuals encountered in their excavations, however, the information that remains to us from these previous excavations still retains valuable details about burial treatment.

The second variable in this section covers the total number of grave goods for burials. In certain instances, excavators did not fully tabulate the amounts of grave goods and/or collections records could not verify exact counts for burial lots no longer under their curatorship. This was not an issue for the majority of sites in this study, however, three mainland, Middle period sites (SBA-72, SBA-81, and VEN-61) had higher proportions of burials lacking exact counts for total number of grave goods. Dating to phase M2 of the Middle period, SBA-81 had 22.8 % of burials where total number of grave goods could not be assessed, while VEN-61 had 28.6 % of burials lacking total number of grave goods. SBA-72, dating to phase M3, had fewer burials lacking total number of grave goods (17.0 %) than either SBA-81 or VEN-61. Although these three sites have the greatest proportions for burials lacking total numbers of grave goods in the study sample, it is important to note that total grave good counts are available for approximately three-quarters of the burials for these three sites. Even so, the burials lacking counts for total numbers of grave goods from sites SBA-81, SBA-72, and VEN-61 affect the central portion of the Middle period sample most strongly.

One other issue worthy of consideration is in the inclusion of ecofacts and organic materials into the total counts of grave goods. These items may have not been considered “artifacts” in the strictest sense by many early excavators. Due to the highly friable nature of lumps of pigment, charcoal, and asphaltum, these substances were not recorded numerically in the counts of grave goods, which could affect the total counts to a small degree, however, these substances were infrequently encountered in burials. Regarding other ecofacts, isolated elements of unworked faunal bone and stone items especially, these were included in counts of grave goods only when excavation notes, photographs, and other records suggested their intentional placement in direct association with the deceased and their apparent discontinuity with midden and/or stratigraphic components.

Question 3: Do subadults consistently receive grave goods at higher proportions than adults and have larger proportions for beads being present than do adults?

The supposition for Question 3 is based upon the collective work of a number of Chumash researchers (Corbett 2007; Gamble 2017; Gamble et al. 2001; Green 1999; L. King 1969, 1982; Martz 1984) who have identified various trends in the type and quantity of grave goods interred with subadults. Essentially, these more complex arguments reduce down to the idea that subadults had grave goods (of any type) present in their burial contexts more often than adults (generally in larger quantities), and that subadults more often have beads, a subset of the ornamentation category, included in their burial assemblages than adults. To provide affirmation for Question 3, subadult data are expected to have consistently have higher proportions for both presence of grave goods and presence of beads when compared to adults.

<u>Presence/Absence of Grave Goods: Data Patterns for Time Periods and Geographic Contexts</u>

The analysis for presence/absence of grave goods (Variable 9) was designed to assess a general baseline for the frequency of grave goods—at least one object intentionally deposited with the deceased—included in Chumash burials. The majority of the analyses between subadult and adult burials did not result in statistically significant differences (Table 8.8), and no significant differences were revealed between Early and Middle period or island and mainland context samples. These results indicate that the proportions of individuals receiving grave goods remained fairly stable between all age groups, time periods, and geographic contexts.

Table 8.8. Pearson Chi-Square and Fischer's Exact Results for Presence/Absence of Grave Goods Indicating *P*-Value and Level of Statistical Significance Reached for All Analyses Conducted

Presence/Absence of Grave Goods	***P*-Value**	**Level of Statistical Significance**
All Burials by Period	0.702	Not Significant
All Burials by Subadult and Adult	0.216	Not Significant
Early Period Burials by Subadult and Adult	0.066	Approaching Significance
Middle Period Burials by Subadult and Adult	0.771	Not Significant
All Burials by Context	0.449	Not Significant
Island Contexts Burials by Subadult and Adult	0.038	Significant
Mainland Contexts Burials by Subadult and Adult	0.632	Not Significant
All Subadult Burials by Infant, Child, and Adolescent	0.370	Not Significant
Early Period Burials by Infant, Child, and Adolescent	0.795	Not Significant
Middle Period Burials by Infant, Child, and Adolescent	0.237	Not Significant
Island Contexts Burials by Infant, Child, and Adolescent	0.549	Not Significant
Mainland Contexts Burials by Infant, Child, and Adolescent	0.794	Not Significant

Between the Early and Middle period samples, there does not appear to be a significant difference in the proportions for presence/absence of grave goods. In the Early period sample of subadult and adult burials, a *p*-value approaching significance was noted ($p = 0.066$) and the majority of both age groups had grave goods present, however, the proportion of subadults with grave goods present was higher than that for adults. No significant difference ($p = 0.795$) was present between Early period infant, child, and adolescent burials; the majority of all three subadult age groups had grave goods present, however, proportions for infants with grave goods present was slightly higher than that for child and adolescent burials, which were nearly equal to one another. In the Middle period sample of subadult and adult burials, the majority of both age groups had grave goods present at nearly equal proportions, which was not statistically significant ($p = 0.771$). A greater, yet still not statistically significant ($p = 0.237$), difference was evident among the Middle period subadult sample, where the majority of infant and child burials had nearly equal proportions to one another for presence of grave goods, while adolescent burials had a nearly equal split between presence/absence of grave goods, however, the latter patterning may be an effect of sample size.

No significant difference was apparent between island and mainland geographic contexts. For the island sample of subadult and adult burials, a significant difference was present between the two age groups ($p = 0.038$). The majority of both subadult and adult burials have grave goods present, however, the rates for presence of grave goods in subadult burials are higher than that for adults. For the subadult sample from island contexts, there was no significant difference ($p = 0.549$) present between the three age groups. All three subadult age groups had grave goods present for the majority of burials, however, infant and child burials had slightly higher rates for presence of grave goods than adolescent burials. No statistically significant difference was present between mainland subadult and adult burials ($p = 0.632$), as both age groups had nearly identical rates for presence of grave goods. No significant difference ($p = 0.794$) was present in the three subadult age groups, however, infant and child burials had slightly higher rates for presence of grave goods than adolescent burials, which had a nearly equal split between presence and absence of grave goods.

Presence/Absence of Beads: Data Patterns for Time Periods and Geographic Contexts

Data recording the presence/absence of beads (Variable 15) as grave goods was documented as an additional measure to assess the frequency of this important aspect of Chumash material culture in burials through time and between geographic contexts. Differences in the inclusion of beads in burials is more pronounced in comparisons between subadult and adult age groups, than it is within the three subadult age groups. In the Early period, subadult burials have a higher proportion of burials with beads than adults, while by the Middle period, proportional values for inclusion of beads become very similar between subadult and adult burials. Considering the burial sample from the point of geographic context, island contexts subadult burials have a larger proportion of burials with beads than adults, whereas inclusion of beads appears to become more restrictive in mainland contexts, with the majority of burials lacking beads, at rates similar between subadult and adult burials. The levels of statistical significance achieved in the analyses for presence/absence of beads are represented in table form (Table 8.9), and the most salient results are discussed in narrative form below.

Table 8.9. Pearson Chi-Square and Fischer's Exact Results for Presence/Absence of Beads Indicating *P*-Value and Level of Statistical Significance Reached for All Analyses Conducted

Presence/Absence of Beads	***P*-Value**	**Level of Statistical Significance**
All Burials by Period	< 0.001	Highly Significant
All Burials by Subadult and Adult	< 0.001	Highly Significant
Early Period Burials by Subadult and Adult	0.002	Highly Significant
Middle Period Burials by Subadult and Adult	1.000	Not Significant
All Burials by Context	< 0.001	Highly Significant
Island Contexts Burials by Subadult and Adult	0.001	Highly Significant
Mainland Contexts Burials by Subadult and Adult	0.609	Not Significant
All Subadult Burials by Infant, Child, and Adolescent	0.640	Not Significant
Early Period Burials by Infant, Child, and Adolescent	1.000	Not Significant
Middle Period Burials by Infant, Child, and Adolescent	0.475	Not Significant
Island Contexts Burials by Infant, Child, and Adolescent	0.855	Not Significant
Mainland Contexts Burials by Infant, Child, and Adolescent	0.728	Not Significant

Between the Early and Middle periods, there was a highly significant difference in the frequencies for presence/absence of beads included in burial contexts. For the Early period sample of subadult and adult burials, a highly significant difference was present ($p = 0.002$), where subadults had significantly higher frequencies of beads than adults, however, the majority of burials from both age groups had beads present more often than they were absent. No significant difference ($p = 1.000$) was present among the three Early period subadult age groups, and the majority of burials from all three age groups had beads present at nearly equal proportions. No significant difference was present in the Middle period sample, either between subadult and adult burials ($p = 1.000$) or at between infant, child, and adolescent burials ($p = 0.475$). For the sample of subadult and adult burials, both age groups have the majority of burials lacking beads at nearly equal proportions. For the subadult sample, the majority of all burials from the three subadult age groups lack beads, however, children have a slightly higher proportion of burials with beads present than either infant or adolescent burials, which are nearly equal to one another.

A highly significant difference was also apparent between the two geographic contexts for inclusion of beads in burial contexts. In the sample of island subadult and adult burials, a highly significant difference ($p = 0.001$) was present, where the majority of subadults had beads, while adults had a nearly equal split between presence and absence of beads. No significant difference ($p = 0.855$) was present for the three subadult age groups, as beads were present in the majority of all burials, however, child burials had slightly higher proportions for inclusion of beads than infant or child burials, which were relatively equal to one another. For mainland subadult and adult burials, no significant difference ($p = 0.609$) was present for inclusion of beads. Both age groups had the majority of burials lacking beads, however, adult burials had a slightly higher rate for presence of beads than for subadult burials. In the mainland subadult sample, no significant difference was present ($p = 0.728$) between the three age groups. All three age groups lack beads in the majority of burials, however, child burials have slightly higher rates for presence of beads than either infant or adolescent burials.

Question 3: Discussion and Interpretation

To further examine the relationship between the presence of beads as grave goods and age of the deceased, data for both variables are examined for time period and geographic context (Table 8.10). For the Early period sample, there were 309 burials that had data for both presence/absence of grave goods and presence/absence of beads, which reduces further into 68 subadults (68.0 %, $n = 100$) and 102 adults (48.8 %, $n = 209$). For the subadult sample, 40 infant burials (67.8 %, $n = 59$), 14 child burials (70.0 %, $n = 20$), and 14 adolescent burials (70.0 %, $n = 20$) had both presence of grave goods and beads. For the Middle period sample, there were 431 burials that had data for both presence/absence of grave goods and presence/absence of beads. There were 17 subadults (26.6 %, $n = 64$) and 96 adults (26.2 %, $n = 367$) that had beads included as part of their grave good assemblage. Examining the subadult sample in more depth, there were 4 infant burials (20.0 %, $n = 20$), 11 child burials (33.3 %, $n = 33$), and 2 adolescent burials (18.2 %, n = 11) that had beads included in their burial assemblages. For the Early period, all three subadult age groups have very similar rates for the presence of grave goods and beads, however, in the Middle period, there is a more pronounced difference among the three subadult age groups, where child burials have the highest rates for beads being present in their burial assemblages. Comparing subadult and adult burials between the two time periods, Early period subadults more frequently have beads as part of their burial assemblages than their adult counterparts, however rates between Middle period subadult and adult burials are nearly equal.

Table 8.10. Cross-Tabulation of Presence/Absence of Grave Goods and Presence/Absence of Beads for Time Period and Geographic Context

	Time Period				**Geographic Context**			
	Early Period n **= 309**		**Middle Period** n **= 431**		**Island Contexts** n **= 361**		**Mainland Contexts** n **= 379**	
	Grave Goods Present	**Grave Goods Absent**	**Grave Goods Present**	**Grave Goods Absent**	**Grave Goods Present**	**Grave Goods Absent**	**Grave Goods Present**	**Grave Goods Absent**
Beads Present	170	0	113	0	193	0	90	0
Beads Absent	59	80	187	131	67	101	179	110

In the sample of burials from island contexts, there were 361 individuals who had data recording both presence/absence of grave goods and presence/absence of beads. Of the 361 individuals, there were 74 subadult burials (66.7 %, n = 111) and 119 adult burials (47.6 %, n = 250) that had beads present among their burial goods. Considering the three island contexts subadult age groups in more depth, there were 41 infant burials (65.1 %, n = 63), 18 child burials (72.0 %, n = 25), and 15 adolescent burials (65.2 %, n = 23) that had beads present within their burial assemblages. In the mainland sample of burials, there were 379 individuals who had data for both presence/absence of grave goods and presence/absence of beads. There were 11 subadult burials (20.8 %, n = 53) and 79 adult burials (24.2 %, n = 326) that had beads included in their burial contexts. Taking a more in-depth look at the mainland contexts subadult sample, there were 3 infant burials (18.8 %, n = 16), 7 child burials (25.0 %, n = 28), and 1 adolescent burial (12.5 %, n = 8) that had beads as part of their grave goods. Adult burials from mainland contexts more frequently had beads included in their grave goods, however, for island contexts, subadults were far more frequent recipients of beads than adults. For both contexts, child burials have the highest rates for inclusion of beads in burial assemblages when compared to the rates present for infant and child burials.

The results for presence of beads as grave goods (Table 8.9) are likely more significant for time period than for geographic context, given that proportional values for island and mainland contexts data map neatly onto Early and Middle period data, respectively. Consequently, only time period data will be discussed further here. Three patterns are immediately evident when comparing Early and Middle period data for presence of beads as grave goods: 1) Early period burials have approximately twice the proportion (55.02 %, n = 170) of burials with beads as grave goods than Middle period burials (26.22 %, n = 113); 2) Middle period burials have approximately twice the proportion (43.39 %, n = 187) of burials with grave goods, but lacking beads, than the Early period sample (19.09 %, n = 59); and 3) both Early (25.89 %, n = 80) and Middle (30.39 %, n = 131) periods have similar proportions for burials that do not have grave goods at all. The conjunction of these three patterns indicate that, over time, the proportion of burials with no grave goods remained relatively stable, and that the proportion of burials receiving grave goods (both with and without beads) also remained fairly stable. The primary difference here is that burials with beads among their grave goods were twice as common in the Early period than in the Middle period, indicating that the inclusion of beads became much more restricted over time.

When these same three patterns are examined between subadult and adult burials, there is a remarkable consistency between Middle period burials, but differential treatment is evident between Early period age groups. In the Early period, there is a larger proportion of subadult burials (68.0 %, *n* = 68) than adult burials (48.8 %, *n* = 102) that receive beads among their grave goods, while in the Middle period, proportions between subadult (26.6 %, *n* = 17) and adult (26.2 %, *n* = 96) burials are nearly equal. For burials that receive grave goods without beads, proportions again are very similar between Middle period subadult (40.6 %, *n* = 26) and adult (43.9 %, *n* = 161) burials, whereas in the Early period sample, adults (23.0 %, *n* = 48) have twice the proportion of burials lacking beads among their grave goods than subadult burials (11.0 %, *n* = 11). For the burials that lack grave goods entirely, proportions of Early period adult burials (28.2 %, *n* = 59) are slightly larger than subadult burials (21.0 %, *n* = 21), however, the difference between Middle period subadult (32.8 %, *n* = 21) and adult (30.0 %, *n* = 110) burials is less pronounced. In the Early period sample, subadult burials receive beads among their grave goods at higher proportions than adults, while adult burials receiving grave goods without beads and those receiving no grave goods at all occur at higher proportions than in subadult burials. In the Middle period sample, there is very little proportional difference between subadult and adult burials, which indicates very similar burial treatment for these age groups. Based on these patterns, there appears to be preferential treatment of subadults in the Early period receiving beads as part of their grave goods at a rate that exceeds adult burials, while in the Middle period, subadults appear to be treated on relatively even footing as adults. All-in-all, the treatment of subadult burials across time indicates their inclusion in the overall burial rites shared by the greater community.

As discussed by Gamble and colleagues (2001), social status must be taken into consideration when interpreting aspects of burial practice. Ethnohistoric accounts maintain that individuals of high status had the most elaborate burial practices, and that the time-intensive process of producing shell beads (especially in large quantities) made them objects of considerable value even in pre-contact times (Gamble et al. 2001:192). Although this analysis was not designed to comparatively test grave good volume (this is addressed in Question 4 below), it rather provides a baseline for larger trends in grave goods, especially regarding the inclusion of beads. The results discussed above provide evidence that in the Early period, those responsible for burying subadults more frequently included beads among their burial goods than for adult burials. This would indicate at some level—given the nearly 70 % of Early period subadults with at least one bead—that the inclusion of beads cross-cuts social status. While it is very logical that burials of both subadult and adult individuals with large numbers of beads were likely members of a higher social class than burials with low or nonexistent numbers of beads (Gamble 2017:439; Gamble et al. 2001:197), the fact that a markedly larger proportion of subadult burials receive beads compared to adults indicates an additional social mechanism at work (Green 1999:125). In this regard, those of low socioeconomic status would have been unlikely to provide large numbers of grave goods (beads or otherwise), especially to subadults, who would have been unlikely to have obtained these objects on their own accord.

While depth of grief cannot be equated to numbers or types of grave goods, especially given limitations of socioeconomic status, overall community bereavement and subsequent involvement in burials rites cannot be overlooked. Patterns in the data indicated that not all burials that received beads did so in large numbers. Cases where subadults received comparably small amounts of beads could indicate greater community involvement in subadult burial ritual, where the community at large may have collaborated to amass even a small handful of beads as a token grave good. Alternatively, a person in a position of political/religious leadership could possibly bestow beads upon subadult burials in situations where their families/caretakers could not provide any of their own accord. In such a situation, the leader's actions may be fulfilling cultural standards for burial practices at one level, but it could also have served as a method by which favor and support may have been engendered through reciprocity. Additionally, since the proportions for burials lacking grave goods altogether are comparable between subadults and adults, this may indicate patterning more indicative of heterarchical organization, where particular social groupings (e.g., lineages, moieties) may have maintained burial customs that differed from the majority of the burial population.

Problems Inherent in the Data for Question 3

Regarding research question 3, the categories for presence of grave goods and presence of beads were designed to assess frequency of beads included as grave goods, especially for burials in which the exact amounts of beads could not be verified (refer to previous discussion of "Problems Inherent in the Data for Question 2"). Given the nature of presence/absence data, these two categories could be ascertained with a high degree of certainty for almost all burials in the data set. Although these categories do not comprise detailed counts of grave goods (these counts are analyzed and discussed in research question 2 and research question 4), they allow for more general trends to be assessed among burials in the dataset. The burials in which presence of grave goods and/or beads could not be accurately determined were almost all in the case of non-single interments, where excavators could not accurately parse out which grave goods belonged to each of the burials in dual and multiple interments. Consequently, data from these types of interments for presence of grave goods and presence of beads is not available, since it could not be accurately assessed.

Question 4: Do subadult burials more frequently have larger amounts of ornaments as grave goods than adult burials, while amounts of non-ornament grave goods remain comparable between subadult and adult burials?

Green (1999:117–120), among other Chumash scholars (e.g., L. King 1982; Martz 1984), identified a pattern where subadult burials from the Late period cemetery at Medea Creek were generally interred with larger numbers of ornaments[8] than adults (approximately 2–3 times as many), however, the two age groups were not able to be clearly discerned from one another based on the number of non-ornament grave goods. The trend of subadult burials having more ornament grave goods than adult burials is most consistently demonstrated among infant and child burials, which generally have the highest number of ornament grave goods (Gamble 2017:439; Gamble et al. 2001:201; L. King 1969:92). Given the pattern described by Green and others, if the data are to provide affirmation for Question 4, there should be two fairly distinct groupings, one with adults having relatively low numbers of ornament grave goods and one with subadults having comparatively high numbers of ornament grave goods. In both of the aforementioned groupings, the numbers of non-ornament grave goods are expected to be comparable between the two age groups. In the examination of the three subadult age groups, infant and child burials are expected to have larger amounts of ornament grave goods than adolescent burials.

Number of Ornament Grave Goods: Data Patterns for Time Periods and Geographic Contexts

Number of ornament grave goods (Variable 11) comprises objects such as beads, pendants, rings, and other ornament types (Appendix A:Table A.1), which were calculated based

[8] Ornaments are defined as objects that were used to decorate/adorn the body (Gamble et al. 2001:192), and which subsequently conveyed culturally-specific information to others in society (Hudson and Blackburn 1985:19), although the latter cannot be assumed to be a primary or sole function (See Appendix A for artifact list and definitions).

on the MNI and recorded in whole integers. The analyses for this variable (Table 8.11) revealed generally that Early period burials were interred with more ornaments than Middle period burials, and furthermore that subadult burials received more ornaments than adults in the Early period. Between contexts, island burials had more ornaments included in burial contexts than those from mainland contexts, and subadult burials from island contexts had greater numbers of ornaments at higher rates when compared to their adult counterparts. These patterns indicate that subadult burials received more ornaments than adults, especially in Early period and island contexts, while Middle period and mainland context burials had fewer differences between the two age groups, suggesting more equal age-based treatment.

Table 8.11. Mann Whitney *U* and Kruskal-Wallis Results for Number of Ornament Grave Goods Indicating *P*-Value and Level of Statistical Significance Reached for All Analyses Conducted

Number of Ornament Grave Goods	***P*-Value**	**Level of Statistical Significance**
All Burials by Period	< 0.001	Highly Significant
All Burials by Subadult and Adult	< 0.001	Highly Significant
Early Period Burials by Subadult and Adult	< 0.001	Highly Significant
Middle Period Burials by Subadult and Adult	0.268	Not Significant
All Burials by Context	< 0.001	Highly Significant
Island Contexts Burials by Subadult and Adult	< 0.001	Highly Significant
Mainland Contexts Burials by Subadult and Adult	0.537	Not Significant
All Subadult Burials by Infant, Child, and Adolescent	0.133	Not Significant
Early Period Burials by Infant, Child, and Adolescent	0.794	Not Significant
Middle Period Burials by Infant, Child, and Adolescent	0.402	Not Significant
Island Contexts Burials by Infant, Child, and Adolescent	0.791	Not Significant
Mainland Contexts Burials by Infant, Child, and Adolescent	0.612	Not Significant

A highly significant difference was present between Early period and Middle period burials for the number of ornament grave goods, which revealed age-based differences only in the Early period subadult/adult sample. For the sample of subadult and adult burials from the Early period, a highly significant difference ($p < 0.001$) was present for number of ornament grave goods. The majority (> 50 %) of Early period subadult burials had 32 or more grave goods, while the majority of adults had none. Additionally, the level of variability for number of ornament grave goods was higher in the sample of subadults. For the three Early period subadult age groups, no significant difference ($p = 0.794$) was present for number of ornament grave goods. Infant burials had the highest number of ornaments (39.00), with child and adolescent burials only having slightly fewer (32.00 each), and levels of variability were slightly higher in infant and child burials than in adolescent burials. For the Middle period sample of subadult and adult burials, there was no significant difference ($p = 0.268$) between the two age groups for number of ornament grave goods, as the majority of both groups received no ornaments and had comparable levels of variability. For the Middle period sample of subadults, there was no significant difference ($p = 0.402$) between infant, child, and adolescent burials for number of ornament grave goods. The majority of all three age groups had no ornaments, and infant and child burials had slightly higher levels of variability than adolescent burials.

Between the two geographic contexts, there is a highly significant difference for number of ornament grave goods, however, the only age-based difference is evident in the island context sample of subadult and adult burials. For island contexts a highly significant difference ($p < 0.001$) is present, where the majority of subadult burials have at least 25 ornaments and adults have none, and subadults also have a markedly higher level of variation. Although no significant difference ($p = 0.791$) was present for the island subadult sample, there was more variation evident in number of ornaments for the three age groups. Adolescents had the highest number of ornaments (27.50) and the lowest level of variability, followed by infants (22.50) and children (18.50), which both had higher levels of variability than adolescent burials at similar rates to one another. No significant difference ($p = 0.537$) was present between mainland subadult and adult burials, as the majority of both age groups had no ornaments, however, they did have comparable levels of variability to one another. The sample of subadults from mainland contexts did not exhibit a significant difference ($p = 0.612$) for number of ornament grave goods, as the majority of all three age groups had no ornaments. Levels of variability were similar among the three age groups, however, infant and child burials had higher levels of variability than adolescent burials, at very similar rates to one another.

<u>Number of Non-Ornament Grave Goods: Data Patterns for Time Periods and Geographic Contexts</u>

The counts for number of non-ornament grave goods (Variable 10) were recorded in whole integers and comprise all grave goods that were not classified as ornaments (see Appendix A:Table A.2). The results for the analyses performed for number of non-ornament grave goods are tabulated (Table 8.12) as well as briefly summarized in the discussion below. The most striking difference was in the number of non-ornament grave goods between contexts. Mainland contexts burials were more likely than island contexts burials to have at least one non-ornament grave good, and differences for numbers of non-ornament grave goods indicated that Middle period burials were more likely than Early period burials to have at least one non-ornament grave good. Overall, the data indicate that Middle period and mainland contexts burials had larger proportions of burials with non-ornament grave goods than Early period or island contexts burials, respectively, however, the difference between time periods is less pronounced than that for geographic context.

Table 8.12. Mann Whitney *U* and Kruskal-Wallis Results for Number of Non-Ornament Grave Goods Indicating *P*-Value and Level of Statistical Significance Reached for All Analyses Conducted

Number of Non-Ornament Grave Goods	***P*-Value**	**Level of Statistical Significance**
All Burials by Period	0.069	Approaching Significance
All Burials by Subadult and Adult	0.453	Not Significant
Early Period Burials by Subadult and Adult	0.872	Not Significant
Middle Period Burials by Subadult and Adult	0.505	Not Significant
All Burials by Context	0.003	Highly Significant
Island Contexts Burials by Subadult and Adult	0.703	Not Significant
Mainland Contexts Burials by Subadult and Adult	0.431	Not Significant
All Subadult Burials by Infant, Child, and Adolescent	0.718	Not Significant
Early Period Burials by Infant, Child, and Adolescent	0.971	Not Significant
Middle Period Burials by Infant, Child, and Adolescent	0.521	Not Significant
Island Contexts Burials by Infant, Child, and Adolescent	0.648	Not Significant
Mainland Contexts Burials by Infant, Child, and Adolescent	0.998	Not Significant

A nearly significant difference for the number of non-ornament grave goods existed between Early and Middle period samples. For the sample of Early period subadult and adult burials, no significant difference was present ($p = 0.872$). Both age groups had nearly equal levels of variability in number of non-ornament grave goods, however, the majority of subadults had at least one non-ornament grave good, while adults had zero. Considering the Early period sample of subadults, no significant difference ($p = 0.971$) was present between the three age groups. All three age groups had nearly identical levels of variability, however, the majority of infant and adolescent burials had one non-ornament grave good, while child burials had less than one. For the Middle period sample, no significant difference ($p = 0.505$) was observed between subadult and adult burials. The majority of both age groups had at least one non-ornament grave good with very comparable levels of variability. No significant difference ($p = 0.521$) was present in the Middle period subadult sample for number of non-ornament grave goods. Infant burials had the highest level of variability and adolescents the least, however, the majority of infant and child burials had at least one non-ornament grave good, while the majority of adolescent burials had no non-ornament grave goods.

Although there was a highly significant difference for number of non-ornament grave goods between geographic contexts, there was little in the way of any age-based differences present at the subadult/adult and infant/child/adolescent levels. Island contexts subadult and adult burials had nearly equal levels of variability for number of non-ornament grave goods, however, the majority of subadult burials had one non-ornament grave good, while the majority of adults had zero, and the difference between the two groups is not considered to be significant (p = 0.703). There was also no significant difference (p = 0.648) was present between the three island contexts subadult age groups for number of non-ornament grave goods. The majority of both infant and child burials had one non-ornament grave good, with nearly equal levels of variability, while the majority of adolescent burials had zero non-ornament grave goods, and a slightly lower level of variability than the other two age groups. For mainland contexts subadult and adult burials, there was no significant difference (p = 0.431) between the two age groups, as the majority of both groups had one non-ornament grave good as well as comparable levels of variability. No significant difference (p = 0.998) was present among mainland contexts infant, child, and adolescent burials, as the majority of all three age groups had one non-ornament grave good on average and nearly identical levels of variability.

Question 4: Discussion and Interpretation

To assess patterns in the numbers of ornament and non-ornament grave goods in Chumash burials, scatterplots were generated to aid in the comparisons of subadult and adult burials from the Early and Middle periods (Figures 8.9 and 8.10) and island and mainland contexts (Figures 8.13 and 8.14), as well as for infant, child, and adolescent burials from Early and Middle periods (Figures 8.11 and 8.12) and island and mainland contexts (Figures 8.15 and 8.16). Only burials that had data in variable categories for *both* the number of ornament grave goods *and* the number of non-ornament grave goods were assessed in these scatterplots. Based upon the results of previous studies, two fairly distinct groupings are expected to be present in each of the analyses, one with adults having relatively low numbers of ornament grave goods and one with subadults having comparatively high numbers of ornament grave goods. It is also expected that for both of these groupings, the numbers of non-ornament grave goods should be comparable between the two age groups. When the subadult sample is broken down into the three requisite age groups, infant and child burials are expected to have larger amounts of ornament grave goods than adolescent burials.

For the Early period sample of subadult and adult burials (Figure 8.9), the data largely affirm the research question, as more subadult burials have larger numbers of ornament grave goods than adult burials, with both groups having relatively comparable numbers of non-ornament grave goods. The most interesting deviation from this pattern is in the extreme outlier present for each variable, as they differ inversely from the expected patterning. The largest number of ornaments is seen in an adult burial that has relatively low numbers of non-ornament grave goods, while the largest number of non-ornament grave goods is seen in a subadult burial, which has relatively low numbers of ornaments. Considering the Early period subadult sample in more depth (Figure 8.11), the data also affirm the second part of the research question, which posits that infant and child burials have larger numbers of ornaments than adolescent burials. Infant and child burials make up the majority of subadult burials that exceed 200 ornaments, and the largest number of ornaments in the subadult sample is found in an infant burial with approximately 1,300 ornaments. Another pattern to note for the Early period subadult sample is that adolescent burials rarely exceed 300 ornaments, while no child or adolescent burial in this sample exceeds 800 ornaments.

For the Middle period sample of subadult and adult burials (Figure 8.10), the data do not entirely conform to the expected pattern. There are more adult burials with 100 or more ornaments than there are subadult burials, however, the majority of burials for both age groups have few to no ornaments, but have up to 20 non-ornament grave goods. For the Middle period sample, the extreme outliers take the converse pattern of what was seen in the Early period, with the largest number of ornaments in a subadult burial and the largest number of non-ornament grave goods in an adult burial. The Middle period subadult sample (Figure 8.12) also does not wholly conform to the pattern expected either, as child burials have the largest amounts of ornaments, while infant and adolescent burials are more comparable to one another. There is one extreme outlier, a child burial, that has both the largest number of ornament and non-ornament grave goods. One pattern to note for the Middle period subadult sample is in the number of non-ornament grave goods, which indicates that infant and child burials have greater numbers of non-ornament grave goods than adolescent burials. This may represent a significant change over time in the treatment of different subadult age groups.

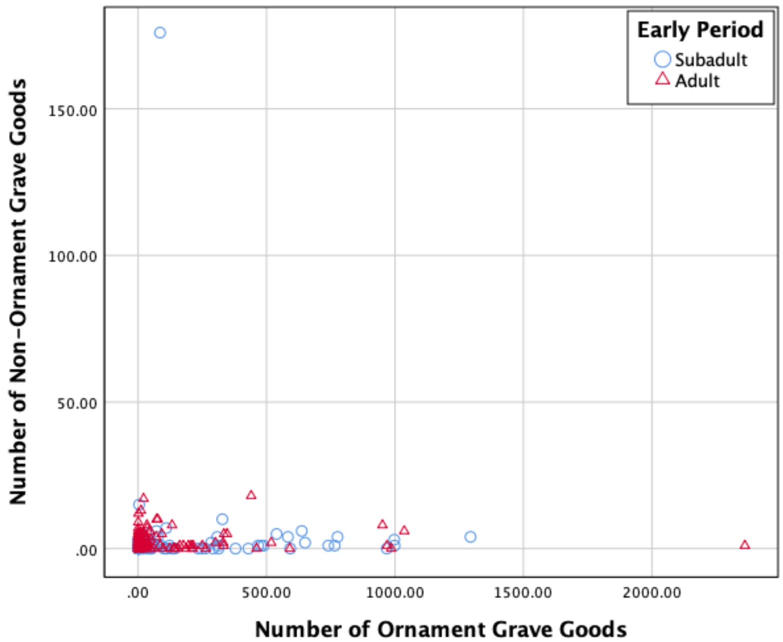

Figure 8.9. Scatterplot of number of non-ornament grave goods and number of ornament grave goods for the Early period sample separated by subadult and adult burials.

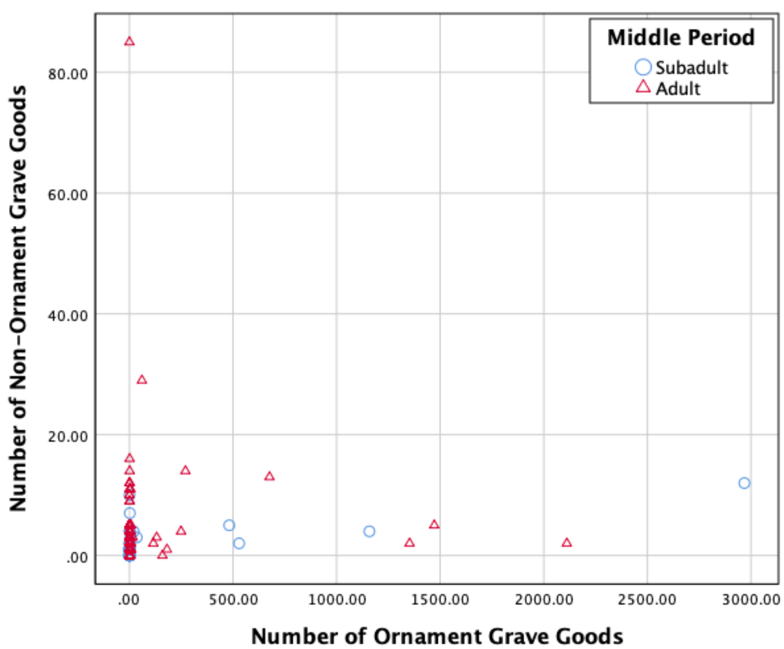

Figure 8.10. Scatterplot of number of non-ornament grave goods and number of ornament grave goods for the Middle period sample separated by subadult and adult burials.

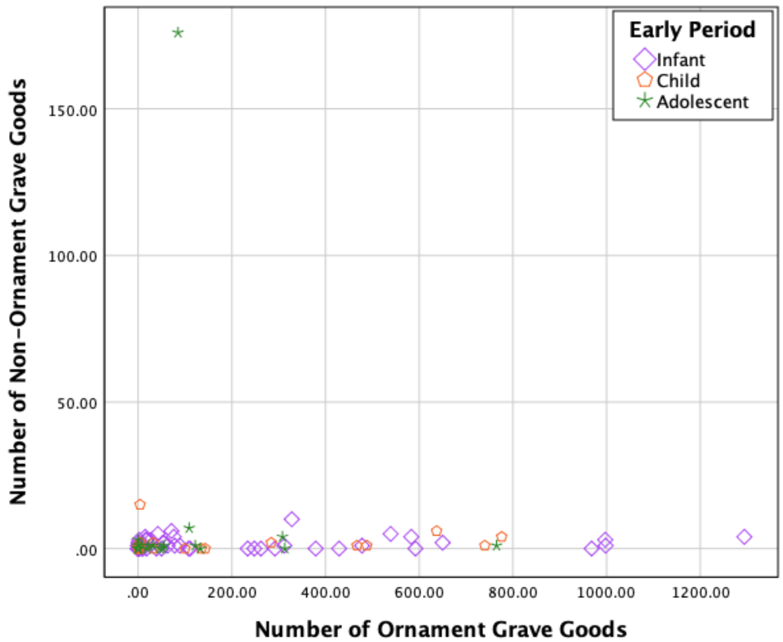

Figure 8.11. Scatterplot of number of non-ornament grave goods and number of ornament grave goods for the Early period subadult sample separated by infant, child, and adolescent burials.

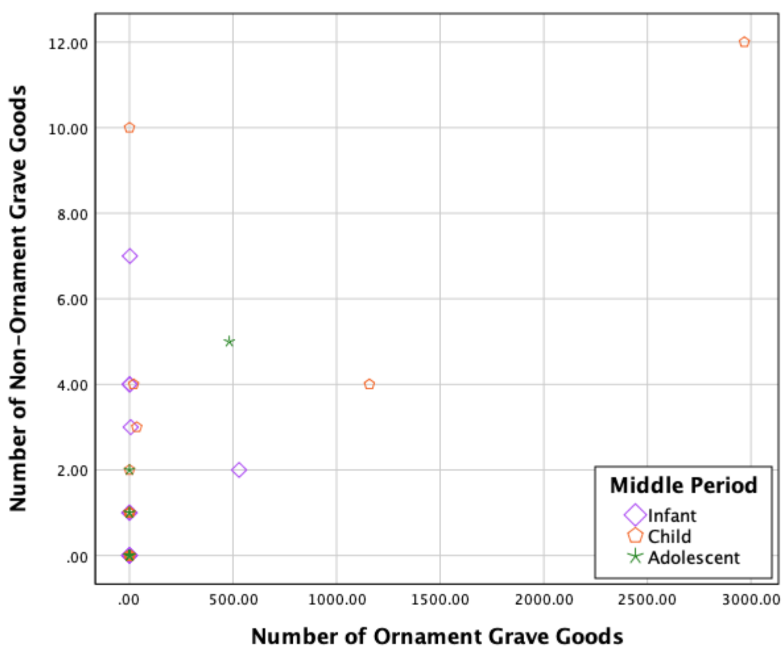

Figure 8.12. Scatterplot of number of non-ornament grave goods and number of ornament grave goods for the Middle period subadult sample separated by infant, child, and adolescent burials.

Similar patterns are seen in the island contexts sample of subadult and adult burials (Figure 8.13) as was seen in the Early period sample, which again provides support for the suppositions present in the research question. More subadult burials exhibit larger numbers of ornaments than adult burials, while both age groups have a similar range for the numbers of non-ornament grave goods. The same extreme outliers are present as in the Early period sample, with an adult burial having the largest number of ornaments and a subadult burial having the largest number of non-ornament grave goods. As with the Early period sample, in the island sample of subadult burials (Figure 8.15), infant and child burials consistently have larger numbers of ornaments than adolescents, with infant burials being the only age group with 1,000 or more ornaments. Mainland subadult and adult burials (Figure 8.14) share similar patterns with the Middle period sample, where the majority of burials have more non-ornament grave goods than ornaments, and there are more adults than subadults with over 100 ornaments. In the sample of subadults from mainland contexts (Figure 8.16), child burials have the largest numbers of ornaments, with infant and adolescent burials having fewer ornaments in similar amounts. As with the Middle period sample, infant and child burials generally have more non-ornament grave goods than adolescent burials, while large numbers of ornaments are quite rare overall. Given that patterns for island and mainland contexts are so similar to those Early and Middle periods, respectively, it appears that the site and burial distribution is more representative of time period than context in these analyses.

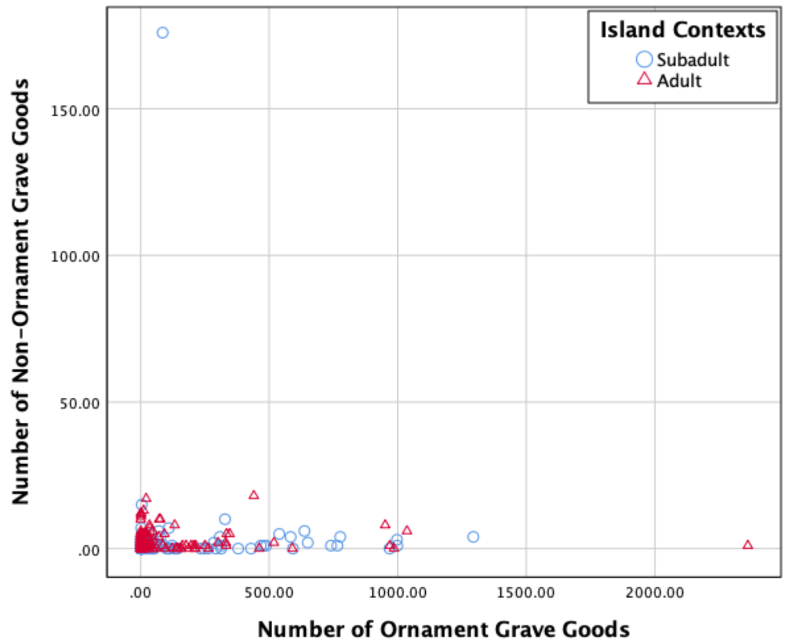

Figure 8.13. Scatterplot of number of non-ornament grave goods and number of ornament grave goods for the island contexts sample separated by subadult and adult burials.

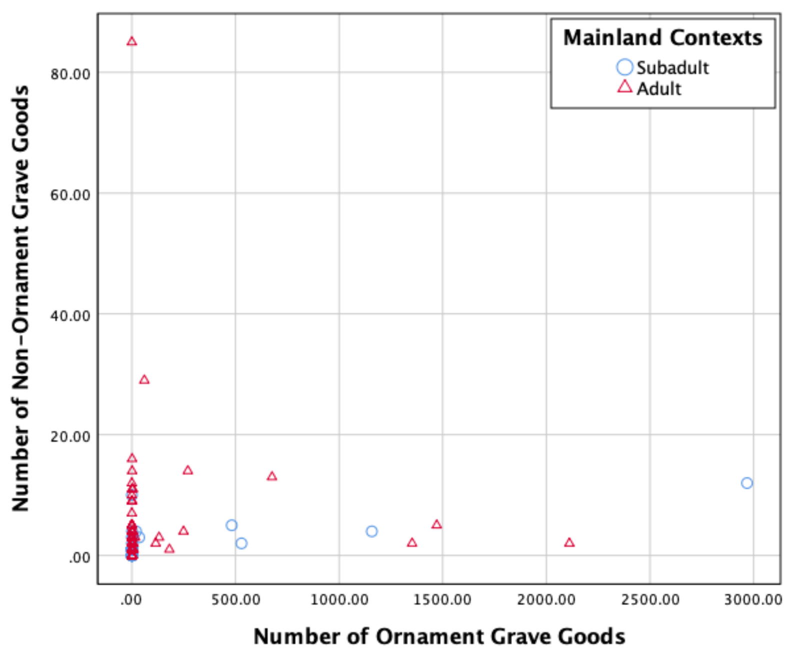

Figure 8.14. Scatterplot of number of non-ornament grave goods and number of ornament grave goods for the mainland contexts sample separated by subadult and adult burials.

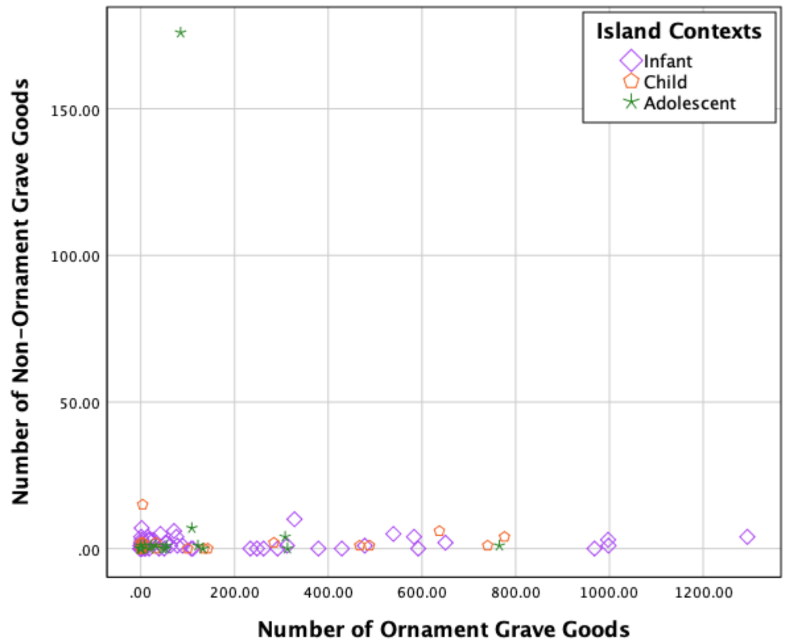

Figure 8.15. Scatterplot of number of non-ornament grave goods and number of ornament grave goods for the island contexts subadult sample separated by infant, child, and adolescent burials.

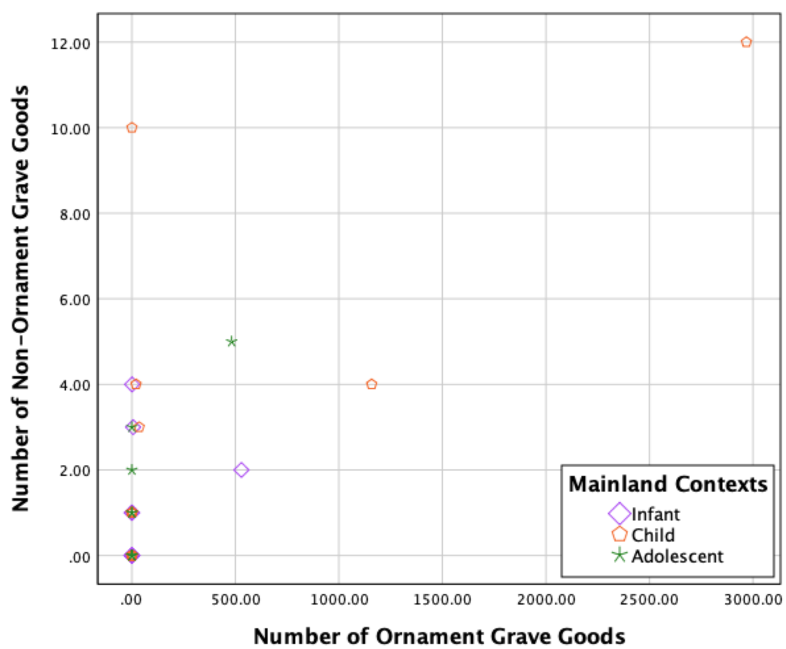

Figure 8.16. Scatterplot of number of non-ornament grave goods and number of ornament grave goods for the mainland contexts subadult sample separated by infant, child, and adolescent burials.

The fact that consistently larger numbers of ornaments are included in subadult burials rather than in adult burials contradicts the conjecture presented by Binford (1971) and has led Chumash researchers to not only suggest that adult status was represented in another form (e.g., mourning ceremony; L. King 1982:102), but to also maintain that a system of ascribed social status was in place (L. King 1982:109; Martz 1984:490). While the results discussed previously cannot speak to supporting or refuting either of those hypotheses, there is the potential for another social mechanism to be acting (potentially concurrently) with the suppositions discussed by other researchers. The aforementioned analyses appear to have the most notable differences between Early and Middle periods, indicating that objects of ornamentation operate more so as age-based signifiers in burial contexts than grave goods that are not ornaments. This is not to say that subadults had exclusive privileges over these types of artifacts, however, burial trends indicate there was a predisposition for subadult burials to receive larger quantities of these goods more often than adult burials, at least in the Early period. Closer examination of Early period subadult burials reveals that adolescent burials express patterns more similar to adults (i.e., fewer ornament grave goods) than to infant or child burials, while in the Middle period subadult sample child burials are set apart from infant or adolescent burials, the latter of which are more similar to adult burial trends. The conjunction of these two patterns, even though they are different from one another, could potentially indicate social norms dictating not only treatment of subadults in mortuary contexts, but potentially rites of passage/inclusion in the community (Ekengren 2013; Hardy 2000).

<u>Problems Inherent in the Data for Question 4</u>

The two variables addressed in research question 4, ornament and non-ornament grave goods, are analyzed to provide finer granulation of the category "total number of grave goods," which was addressed in research question 2. Given that research question 2 is the sum of the numbers of ornament and non-ornament grave goods, the same issues relevant to total numbers of grave goods are applicable here. For some burials, excavators did not record exact counts of artifacts, which in certain cases could also not be determined from inventory collections records. While this was not a prevailing issue for the majority of the dataset, three Middle period, mainland sites (SBA-72, SBA-81, and VEN-61) had higher proportions of burials lacking counts for either ornament or non-ornament grave goods than the remaining sites in the study sample. For these three sites, 22.8 % of burials from SBA-81 (sub-phase M2), 28.6 % of burials from VEN-61 (sub-phase M2), and 17.0 % of burials from SBA-72 (sub-phase M3) lacked accurate counts for either the number of ornament or non-ornament grave goods. While these three sites have the highest proportions of burials lacking exact counts in one of the two artifact count categories (ornament and non-ornament), the majority of burials from all three sites have counts in these two categories. Nevertheless, given the geographic location and time periods of these sites, the mainland sample and the central portion of the Middle period sample are likely to be most affected.

Another potential issue to note is in the presence of ecofacts and organic materials in the counts of non-ornament grave goods. Although infrequently encountered, lumps of pigment, charcoal, and asphaltum were not included in grave good counts due to their highly friable nature, which might affect grave good counts to a very small degree. In cases of ecofacts, such as isolated elements of unworked faunal bone and stone, these items were included in non-ornament grave good counts only when legacy excavation documentation (e.g., excavation notes, drawings, burial cards, photographs, published materials) remarked upon their intentional placement with the deceased, which was determined as being in direct association with the body of the deceased, as well as their evident discontinuity with the constituents of the surrounding stratum/strata.

Question 5: Do subadults receive a wider diversity of grave good material types in their burial contexts than adults?

The premise of this research question is inspired by the research of L. King (1982:89), who identified patterns in her analysis of the Late period cemetery at Medea Creek where subadult burials generally had a greater range of grave good types than adults. The previous analyses of grave good counts addressed herein (research questions 2 and 4) were able to quantify the overall volume of grave goods interred with the deceased, while the aim of this question is to assess the relative diversity present in these burial assemblages by examining number of material types. It is expected that subadult burials will have greater numbers of material types, when compared to adult burials. Additionally, if differences are evident between infant, child, and adolescent burials, it is expected that infant and child burials will have more material types than adolescent burials, the latter of which are expected to more closely mirror patterns present in the adult sample.

<u>Number of Material Types: Data Patterns for Time Periods and Geographic Contexts</u>

There were five possible material types (Variable 13)—stone, shell, bone (faunal), organic, and composite[9]—that were assigned to a given grave good. For each burial, the number of unique material types was tabulated based upon each of the artifacts within the burial context, resulting in the number of material types analyzed herein. The results of the statistical analyses

[9] Artifacts falling under the "composite" category were made up of two or more material types (stone, shell, bone [faunal], and organic). See Chapter 5 for additional discussion.

presented for this variable in Chapter 7 are summarized below both in table (Table 8.13) and narrative form. The majority of both Early period subadult and adult burials have at least one material type, which is also true for the Middle period sample, however, Early period subadults have greater variation in number of material types than adults. The majority of both island and mainland contexts burials share this pattern with one material type present, however, an age-based difference is evident in island contexts burials where the majority of subadults have two material types, while adults only have one type present. No age-based difference in number of material types is apparent between mainland contexts subadult and adult burials.

Table 8.13. Mann Whitney *U* and Kruskal-Wallis Results for Number of Material Types Indicating *P*-Value and Level of Statistical Significance Reached for All Analyses Conducted

Number of Material Types	***P*-Value**	**Level of Statistical Significance**
All Burials by Period	0.125	Not Significant
All Burials by Subadult and Adult	0.021	Significant
Early Period Burials by Subadult and Adult	0.012	Highly Significant
Middle Period Burials by Subadult and Adult	0.987	Not Significant
All Burials by Context	0.036	Significant
Island Contexts Burials by Subadult and Adult	0.005	Highly Significant
Mainland Contexts Burials by Subadult and Adult	0.374	Not Significant
All Subadult Burials by Infant, Child, and Adolescent	0.341	Not Significant
Early Period Burials by Infant, Child, and Adolescent	0.771	Not Significant
Middle Period Burials by Infant, Child, and Adolescent	0.276	Not Significant
Island Contexts Burials by Infant, Child, and Adolescent	0.619	Not Significant
Mainland Contexts Burials by Infant, Child, and Adolescent	0.586	Not Significant

The number of material types included in burial contexts does not significantly differ for burials between the Early and Middle periods. There is a highly significant difference ($p = 0.012$) between Early period subadult and adult burials for number of material types, where the majority of both age groups have at least one material type present, however, subadult burials display a greater degree of variation than adult burials. No significant difference ($p = 0.771$) was identified between Early period subadults. The majority of infant burials have two material types, while child and adolescent burials have only one, and infant burials have slightly more variability in the number of material types compared to child or adolescent burials. For the Middle period sample, no significant difference (p = 0.987) is evident between subadult and adult burials, as the majority of both age groups have one material type present and nearly equivalent levels of variability. For the Middle period subadult sample, no significant difference (p = 0.276) was present between the three age groups, however, infant and child burials appear to be more similar to one another (one material type and similar levels of variability), than to adolescent burials (zero material types and lower level of variability).

Between burials from island and mainland contexts, a significant difference was present for the number of material types included in burial contexts. A highly significant difference (p = 0.005) was present between island subadult and adult burials, where the majority of subadult burials had two or more material types and adults only one, and a greater degree of variability was present in subadult burials. For subadult burials from island contexts, no significant difference (p = 0.619) was present between the three age groups. The majority of infant burials have more material types than child or adolescent burials (two vs. one, respectively), however, levels of variability between infant and child burials were more similar to one another and higher than adolescent burials. For the sample of subadult and adult burials from mainland contexts, no significant difference (p = 0.374) was observed, as the majority of both age groups had at least one material type and similar levels of variability. For the three mainland subadult age groups, no significant difference (p = 0.586) was present. The majority of all three age groups had at least one material type, however, infant and child burials had larger levels of variability, very similar to one another, than that present for adolescents.

Question 5: Discussion and Interpretation

When the data for subadult and adult burials are compared between Early and Middle periods, there are clearer differences evident between Early period subadults and adults, but no discernable age-based difference among Middle period burials. The majority of Early period subadults have comparatively low numbers of material types, however, there are a few cases of burials with exceptionally high numbers of material types. Given the rare occurrence of Early period subadults with high numbers of material types, it seems that this patterning is more indicative of a social grouping, such as social class or status, than it is a difference primarily based in age. When infant, child, and adolescent burials are compared between Early and Middle periods, the Middle period subadult sample affirms the second part of the research question, as infant and child burials both have higher numbers of material types than adolescent burials, while in the Early period sample, only infant burials have higher numbers of material types than child and adolescent burials. It is important to note that the differences in median values between these groups are small, only one additional material type greater, so these differences are interpreted with a degree of caution.

For the island sample, subadult burials have a larger median value than adult burials, by one additional material type, and the distribution of number of material types is skewed toward subadults having greater numbers of material types more frequently than adults. For the mainland sample, subadult and adult burials share a median value for number of material types, however, their overall patterning in distribution differs slightly from that observed in the island sample, with a smaller number of subadults interred with exceptionally high numbers of material types. Between the two contexts, there appears to be a moderate age-based difference in island subadults for number of material types, while in the mainland subadult sample, no age-based difference appears to exist. In the case of mainland subadults, the low frequency of burials with exceptionally large numbers of material types may again indicate that an aspect of social grouping (e.g., social class or status) is influencing these patterns, rather than age alone. Considering patterns in infant, child, and adolescent burials from island and mainland contexts, neither sample of subadults fully affirms the second premise of the research question. The island sample of subadults indicates that infant burials had larger numbers of material types than child or adolescent burials, albeit by only one material type, and in the mainland subadult sample, all three age groups shared a median value. When the data for diversity in material types are examined at the subadult level regarding geographic context, there appears to be a pattern in which island infant burials exhibit more material type diversity than child or adolescent burials, while no such difference is evident among the mainland subadult sample.

Using diversity as an analytical measure allows for a way in which distribution of types for a given dataset can be established and then deviations from the expected norm can be assessed (Kintigh 1984). At a base level, the underlying premise for investigating diversity of material types goes hand in hand with the grave goods interred with the deceased. In this case, individuals with small numbers of grave goods (a pattern evident throughout the majority of the study sample) are less likely to have high diversity in material type because there is a higher probability for greater diversity in material type as number of grave goods increases. The assumption here is that if age-based differentiation is present among the study sample, evidence of this differentiation should be accessible through number of material types. The simplicity of this analysis is intentional, which was designed to assess whether or not subadult burials deviated from the established baselines for time period and geographic contexts. Considering the analyses for number of material types altogether, there is no definitive evidence that age-based differentiation was present in the study sample. Unlike the analyses conducted by L. King (1982) for the Late period cemetery at Medea Creek, the analyses for material type conducted herein do not support the notion that age played a definitive role in the deceased receiving a larger number of material types in their grave good assemblages. Overall, it appears that subadult and adult burials from both time periods and geographic contexts were privy to receiving comparable numbers of material types among their grave goods.

Problems Inherent in the Data for Question 5

Research question 5 covers the number of material types present within a given burial's grave goods to assess a comparative level of diversity separate from overall grave good counts. Excavators and those responsible for recording information on grave good material type did so with a high degree of regularity for the majority of the sites in the dataset. There were three sites (SBA-43, SCRI-257, and SBA-73), however, that had notably higher frequency of burials for which number of material types could not be determined due to insufficient information from legacy records and complementary forms of collections documentation. The site with the highest proportion of burials lacking number of material types is SBA-43 at 47.8 %, while the other two sites, SCRI-257 and SBA-73, have 23.2 % and 25 % of burials lacking this value, respectively. All three sites date to the Middle period; SBA-43 and SCRI-257 date to sub-phase M1, while SBA-73 dates to sub-phase M4. Any potential issues would be most pronounced for the mainland sample, in the first part of the Middle period, however, less extreme issues may also be present for Middle period and island contexts analyses, due to SCRI-257 coming from an island context.

Question 6: Do infant and child burials have lower frequencies of ceremonial paraphernalia being present among their grave goods than adolescent and adult burials?

A number of Chumash scholars (e.g., Gamble et al. 2001:202; Martz 1984:169) have identified a pattern in which subadult burials (infants and children in particular) receive few to no objects of ceremonial paraphernalia, in comparison to their adult counterparts. This trend, however, is argued to become less extreme in the Middle period than in the Early period (where more subadults with ceremonial paraphernalia are expected), as sociopolitical complexity increased, these objects became proxies indicating inherited status and a system that was largely based in centralized political power (Kennett et al. 2009; C. King 1990; Gamble et al. 2002; Martz 1992). To affirm this research question, the data would need to indicate subadult burials having lower proportions of ceremonial paraphernalia than adults. In addition, at the subadult level, infant and child burials are expected to have lower frequencies of ceremonial paraphernalia than adolescent burials, which are anticipated to be closer in proportion to adult burials. Given the apparent rise in sociopolitical complexity between the Early and Middle periods, frequencies of subadults with ceremonial paraphernalia is expected to increase over time.

Presence/Absence of Ceremonial Paraphernalia: Data Patterns for Time Periods and Geographic Contexts

The presence of ceremonial paraphernalia (Variable 15) was determined by the inclusion of at least one object related to ceremonial/non-secular purposes (according to Hudson and Blackburn 1986), and included artifacts such as charmstones, crystals, effigies, whistles, and rattles. A brief summary of the statistical results is presented below, conveying the data in tabled form (Table 8.14) as well as in narrative summary. For both Early period and island subadult burials, ceremonial paraphernalia was present nearly twice as frequently as in adult burials. Whereas in Middle period and mainland context burials, proportions for presence of ceremonial paraphernalia is much closer between subadult and adult burials, with adult burials having slightly higher proportions. Although not statistically significant, one pattern evident throughout subadult analysis in both contexts and time periods was that the presence of ceremonial paraphernalia increased incrementally as age increased.

Table 8.14. Pearson Chi-Square and Fischer's Exact Results for Presence/Absence of Ceremonial Paraphernalia Indicating *P*-Value and Level of Statistical Significance Reached for All Analyses Conducted

Presence/Absence of Ceremonial Paraphernalia	*P*-Value	Level of Statistical Significance
All Burials by Period	0.007	Highly Significant
All Burials by Subadult and Adult	0.888	Not Significant
Early Period Burials by Subadult and Adult	0.072	Approaching Significance
Middle Period Burials by Subadult and Adult	0.550	Not Significant
All Burials by Context	0.004	Highly Significant
Island Contexts Burials by Subadult and Adult	0.054	Approaching Significance
Mainland Contexts Burials by Subadult and Adult	0.524	Not Significant
All Subadult Burials by Infant, Child, and Adolescent	0.124	Not Significant
Early Period Burials by Infant, Child, and Adolescent	0.438	Not Significant
Middle Period Burials by Infant, Child, and Adolescent	0.233	Not Significant
Island Contexts Burials by Infant, Child, and Adolescent	0.191	Not Significant
Mainland Contexts Burials by Infant, Child, and Adolescent	0.701	Not Significant

A highly significant difference is present for the inclusion of ceremonial paraphernalia between the Early and Middle periods, where ceremonial paraphernalia increases nearly twofold in burials over time. For the Early period sample, the difference between subadult and adult burials is approaching significance (p = 0.072), as subadult burials have ceremonial paraphernalia approximately twice as often as adult burials. Despite there being no statistically significant (p = 0.438) difference between subadult age groups, there is a clear pattern in the frequency with which ceremonial paraphernalia are included, which appears to increase in age. Among the three subadult age groups, infant burials have rates most closely matching adult burials. No significant difference (p = 0.550) was present in the Middle period sample of subadult and adult burials; adult burials have slightly higher rates for presence of ceremonial paraphernalia, however, the difference is slight and the proportions are largely comparable. As with the Early period sample of subadults, the Middle period sample showcases a similar pattern where ceremonial paraphernalia increases as age increases. In this case, infants have lower proportions of ceremonial paraphernalia than the other subadult and adult age groups, however, the difference between the three subadult age groups is not significant (p = 0.233).

A highly significant difference is present between the two geographic contexts, where mainland contexts have nearly twice the frequency of ceremonial paraphernalia in burials than in island contexts. For the sample of island contexts burials, the difference between subadult and adult burials is approaching significance (p = 0.054), as subadult burials have ceremonial paraphernalia twice as often as their adult counterparts. The difference between infant, child, and adolescent burials from island contexts is not statistically significant (p = 0.191). Similar to patterns observed in the Early and Middle period samples, ceremonial paraphernalia becomes more common in subadult burials as age increases, however, in this case adolescent burials have over twice the proportion of ceremonial paraphernalia than either infant or child burials. For the mainland contexts sample, no significant difference (p = 0.524) was present between subadult and adult burials. Both age groups had similar proportions for presence of ceremonial paraphernalia, however, adults had a slightly higher proportion than subadults. No significant difference (p = 0.701) was identified for inclusion of ceremonial paraphernalia between mainland contexts subadult burials either. Infant burials had the lowest proportion for ceremonial paraphernalia, while child and adolescent burials had equal proportions, which were approximately twice the proportion of the infant age group.

Question 6: Discussion and Interpretation

While Early period subadult burials have nearly twice the rates for presence of ceremonial paraphernalia as adults, this difference becomes more equivalent between the two Middle period age groups, in which adult burials have just slightly higher rates than subadults for ceremonial paraphernalia. Adolescent burials for both Early and Middle periods have the highest proportions for all subadult age groups for presence of ceremonial paraphernalia. Between time periods, the differences in proportions of ceremonial paraphernalia is more extreme among the three age groups. The inclusion of ceremonial paraphernalia over time decreases most drastically in infant burials (and to a lesser extent in child burials), and rises most drastically in adolescent burials, which suggests a larger change in overall societal structuring regarding who could receive objects of ceremonial paraphernalia. These patterns suggest more restrictions in place in the Middle period than in the Early period. Overall, patterns between island and mainland contexts align with Early and Middle period patterns, respectively, which indicates that differences in time period are more representative than context for this variable.

In the longer span of Chumash history, C. King (1990:93–101) identified trends in burial lots where ceremonial objects are more common in Early and Middle period burials than in Late period burials, which he concludes is most likely due to religious systems being institutionalized by the end of the Middle period. In his analysis of the artifact distribution at the Middle period mainland site of SBA-81, he identified two groups present, one for political and economic subsystems and the other corresponding to ritual (ceremonial) subsystems, which could potentially indicate the existence of a moiety system in operation (C. King 1990:99). Additionally, Gamble and colleagues (2001), as well as Martz (1984), also noted patterns akin to those observed by C. King, where infant and child burials rarely were the recipients of ceremonial objects, yet adolescent burials received them more frequently than other subadult age groups. Although the time periods covered in Martz's and Gamble and colleagues' respective studies include sites dating to the Historic and Late periods, along with Middle period sites, there are some interesting parallels for subadult trends also observed in this study, specifically in the treatment of adolescent burials. Perhaps, given the institution of religion by the end of the Middle period, members of a powerful ceremonial class (like the *'antap*) may have co-opted these objects for their own purposes, making them more difficult or impossible to access by individuals outside of this social group. Based on knowledge of the historic Chumash, members of the *'antap* were initiated into the group as children through a lofty "payment" of wealth in the form of shell beads provided by their parents. Children of high status were brought up in this social group, which included members of the chief's family and other high-status society members, where they learned specialized religious knowledge, as well as performed dances and rituals at public gatherings (Blackburn 1976:236–238). If *'antap* members were not initiated until they reached childhood, it seems unsurprising that there were larger proportions of adolescents with ceremonial objects, who would have certainly reached the age of initiation, but relatively low proportions of infants and children (ages as defined within this study) with ceremonial objects. While this is a useful comparison, the existence of the *'antap* is not confirmed until the late Middle period (Corbett 1999, 2004), however, for the Early period and the early Middle periods, the presence of an incipient version of this group, or a similar powerful social class with a ceremonial component can neither be confirmed nor denied.

<u>Problems Inherent in the Data for Question 6</u>

Given that research question 6 covers the presence of ceremonial paraphernalia in burial assemblages, similar issues inherent to those using legacy records for archaeological analyses also apply here. Across the study sample, excavators recorded information on grave goods, objects of ceremonial paraphernalia especially, with a high degree of regularity and detail. Among the dataset, three sites (SBA-43, SCRI-257, and SBA-73) stood out, as they had markedly higher proportions of burials for which information on grave goods could not be accurately assessed. Regarding presence of ceremonial paraphernalia in burials, SBA-43 had the highest proportion of burials lacking information on ceremonial paraphernalia at 41.3 %, while SCRI-257 and SBA-

73 had 23.2 % and 25.0 % of burials lacking this information, respectively. While all three sites date to the Middle period, only SCRI-257 comes from an island context, with the other two sites located on the mainland. As such, any potential issues are expected to be most pronounced in mainland contexts, and less so for island contexts, while also being more pronounced in the first part of the Middle period (SBA-43 and SCRI-257 date to sub-phase M1), with SBA-73 potentially having an effect on the later part of the Middle period (sub-phase M4).

Question 7: Do adolescent and adult burials receive a higher degree of energy expenditure (grave features and burial pigmentation) than infant and child burials?

In their respective analyses of Chumash mortuary contexts, L. King (1969:55) recognized generally that subadult burials received more in the way of energy (labor) expenditure than adult burials, and Martz (1984:212, 451) argued that extra energy expenditure could be observed in the form of additional grave features and burial pigmentation. Building off of Whittlesey's (1978:229) assumption that variability in burial treatment is greatest with subadults, but becomes more homogeneous with adult status, as well as the assertion by Martz (1984:99) that children and infants were not fully fledged members of society, it is expected that adolescent and adult burials would exhibit higher rates for presence of grave features and burial pigmentation than infant and child burials.

Presence/Absence of Grave Features: Data Patterns for Time Periods and Geographic Contexts

For the purposes of this study, grave features (Variable 7) were defined as objects used to mark locations of particular graves, as included stone slabs, cairns, and large whale bone elements. Based on ethnographic accounts, organic markers (e.g., wooden posts) were probably also used, however, no direct or indirect evidence of these were encountered due to issues in preservation of organic materials. Basic patterns for time period and geographic context are introduced here, and are also displayed in table form (Table 8.15) and discussed in more detail below. Overall trends in grave features indicate that they were more prevalent in Middle period and mainland contexts than in Early period or island contexts burials. There were no cases of subadults having grave features in the Early period or island contexts samples, and in the Middle period and mainland contexts samples, adult graves were more frequently associated with grave features than subadult burials.

Table 8.15. Pearson Chi-Square and Fischer's Exact Results for Presence/Absence of Grave Features Indicating *P*-Value and Level of Statistical Significance Reached for All Analyses Conducted

Presence/Absence of Grave Features	***P*-Value**	**Level of Statistical Significance**
All Burials by Period	< 0.001	Highly Significant
All Burials by Subadult and Adult	< 0.001	Highly Significant
Early Period Burials by Subadult and Adult	0.590	Not Significant
Middle Period Burials by Subadult and Adult	< 0.001	Highly Significant
All Burials by Context	< 0.001	Highly Significant
Island Contexts Burials by Subadult and Adult	1.000	Not Significant
Mainland Contexts Burials by Subadult and Adult	< 0.001	Highly Significant
All Subadult Burials by Infant, Child, and Adolescent	0.312	Not Significant
Early Period Burials by Infant, Child, and Adolescent	[1.00]	[Constant]
Middle Period Burials by Infant, Child, and Adolescent	0.388	Not Significant
Island Contexts Burials by Infant, Child, and Adolescent	[1.00]	[Constant]
Mainland Contexts Burials by Infant, Child, and Adolescent	0.282	Not Significant

A highly significant difference exists between time periods for grave features, where they are much rarer in the Early period (7.0 % of burials), but become more common in the Middle period (37.4 % of burials). Between subadult and adult burials from the Early period, there was no significant difference ($p = 0.590$) for presence of grave features. No subadult burials were recorded as having any grave features present, while only a small proportion of adults had grave features. There was a highly significant difference ($p < 0.001$) between Middle period subadult and adult burials, where nearly half of adult burials had grave features in some capacity, compared to only a small proportion of subadults with grave features. For the three subadult age groups in the Middle period sample, no significant difference ($p = 0.388$) was present. There appears to be a clear pattern, opposite to what was expected, where infants have the highest proportions of grave features out of all subadult age groups, while children have fewer grave features than infants, and there were no grave features present for adolescents.

Between island and mainland burials there was a highly significant difference, where grave features are far more common in mainland burials than in island burials. No significant difference ($p = 1.000$) was present between island contexts subadult and adult burials, and grave features were only present in a very small proportion of adult burials. For the mainland contexts sample, a highly significant difference ($p < 0.001$) was present between adult burials, of which nearly half have grave features, and subadult burials, of which only a very small proportion have grave features. For the mainland contexts subadult sample, no significant difference ($p = 0.282$) was present between the three age groups for grave features. Infant burials have the highest proportions of grave features, child burials have them far less frequently, and no adolescent burials had grave features.

<u>Presence/Absence of Burial Pigmentation: Data Patterns for Time Periods and Geographic Contexts</u>

Burial pigmentation (Variable 8) generally took the form of intentional decoration of specific portions or in some cases the majority of the deceased's body with pigment. The most common iterations were red pigment (ochre) on the head of the deceased and black pigment on the abdomen, however, other colors and locations were less commonly observed. Burial pigmentation was a more common practice in the Early period and also in island contexts. While proportions of Early period pigmented burials are nearly equal between subadult and adults, there was a greater proportion of Middle period subadults than adults with pigmentation. Island subadult and adult burials had fairly comparable proportions of burial pigmentation, while mainland subadult burials had nearly twice the proportion of pigmentation compared to adults. Additional details regarding the statistical results (Table 8.16) for burial pigmentation are tabulated and further discussed below.

Table 8.16. Pearson Chi-Square and Fischer's Exact Results for Presence/Absence of Burial Pigmentation Indicating *P*-Value and Level of Statistical Significance Reached for All Analyses Conducted

Presence/Absence of Burial Pigmentation	***P*-Value**	**Level of Statistical Significance**
All Burials by Period	< 0.001	Highly Significant
All Burials by Subadult and Adult	< 0.001	Highly Significant
Early Period Burials by Subadult and Adult	0.400	Not Significant
Middle Period Burials by Subadult and Adult	0.004	Highly Significant
All Burials by Context	< 0.001	Highly Significant
Island Contexts Burials by Subadult and Adult	0.085	Not Significant
Mainland Contexts Burials by Subadult and Adult	0.255	Not Significant
All Subadult Burials by Infant, Child, and Adolescent	0.006	Highly Significant
Early Period Burials by Infant, Child, and Adolescent	0.003	Highly Significant
Middle Period Burials by Infant, Child, and Adolescent	0.626	Not Significant
Island Contexts Burials by Infant, Child, and Adolescent	0.005	Highly Significant
Mainland Contexts Burials by Infant, Child, and Adolescent	0.807	Not Significant

Between the two time periods, pigmented burials were significantly more common in the Early period than in the Middle period. No significant difference ($p = 0.400$) was present between subadult and adult burials from the Early period, as the majority of both age groups had some form of burial pigmentation present. A highly significant ($p = 0.003$) difference was present between infant, child, and adolescent burials, where the majority of both infant and child burials had pigmentation present at similar rates to one another, however, the majority of adolescent burials lacked pigmentation. For the Middle period sample, there was a highly significant ($p = 0.004$) difference between subadult and adult burials. Although the majority of both age groups lacked pigmentation, subadults had frequencies of pigmentation nearly three times greater than adults. For infant, child, and adolescent burials from the Middle period, there was no significant ($p = 0.626$) difference between the three age groups. In this sample, child burials had the highest proportions for pigmented burials, followed by adolescent burials, and then by infant burials, with the majority of all three age groups lacking burial pigmentation.

Considering the differences in geographic-based proportions of burials pigmentation, a highly significant difference is present where island burials had pigmentation approximately five times as often as mainland contexts burials. No significant difference ($p = 0.085$) was present between island contexts subadult and adult burials, as both age groups had similar rates for presence of burial pigmentation, however, the rate for subadults is slightly higher than that for adults. A highly significant ($p = 0.005$) difference was present between island contexts subadult age groups, where infant and child burials had very similar proportions for presence of pigmentation at approximately twice the frequency of adolescent burials, where the majority lacked pigmentation. Although the difference between mainland subadult and adult burials was not significant ($p = 0.255$), subadult burials had pigmentation nearly twice as frequently as adults, and the majority of burials from both age groups lacked pigmentation. No significant difference ($p = 0.807$) was present between the three mainland contexts subadult age groups, as the majority of all subadult burials lacked burial pigmentation. Nevertheless, a pattern emerged where child burials had the highest proportion for presence of pigmentation, and infant and adolescent burials had pigmentation approximately half as frequently as child burials.

Question 7: Discussion and Interpretation

In order to further examine the relationship between the presence of grave features and burial pigmentation, which is used here to determine degree of energy expenditure in burials, data for both variables are examined for each time period and geographic context (Table 8.17). For the Early period sample, there were 77 burials that had data for both grave features and burial pigmentation. No subadults (0.0 %, $n = 8$) had both grave features and burial pigmentation present, however, half of all Early period subadults (50.0 %, *n* = 4) had pigmented burials. In comparison, there were three Early period adult burials (4.35 %, *n* = 69) that had both presence of grave features and burial pigmentation and 40 adult burials (58.0 %, *n* = 69) only had pigmented burials. In the Early period subadult sample, burial pigmentation was present in two infant burials (100.0 %, *n* = 2), one child burial (50.0 %, *n* = 2), and one adolescent burial (25.0 %, *n* = 4). In the analysis of the Middle period sample, there were 251 burials that had data for both grave features and burial pigmentation. There were no subadults (0.0 %, *n* = 24) that had both grave features and burial pigmentation, and only 4 subadults (16.7 %, *n* = 24) that had grave features. In contrast, only 2 adult burials (0.9 %, *n* = 227) had both grave features and burial pigmentation present, while there were 122 adult burials (53.7 %, *n* = 227) with only grave features present. Examining the Middle period subadult sample in more depth, there were three infant burials (30.0 %, *n* = 10) and one child burial (12.5 %, *n* = 8) with grave features, and one adolescent burial (16.7 %, *n* = 6) with burial pigmentation.

Table 8.17. Cross-Tabulation of Presence/Absence of Grave Features and Presence/Absence of Burial Pigmentation for Time Period and Geographic Context

	Time Period				**Geographic Context**			
	Early Period *n* = 77		**Middle Period *n* = 251**		**Island Contexts *n* = 69**		**Mainland Contexts *n* = 259**	
	Grave Features Present	**Grave Features Absent**	**Grave Features Present**	**Grave Features Absent**	**Grave Features Present**	**Grave Features Absent**	**Grave Features Present**	**Grave Features Absent**
Burial Pigmentation Present	3	44	2	126	3	44	2	9
Burial Pigmentation Absent	3	27	9	114	0	22	129	119

Some notable differences are present between the burial samples from each time period. Considering differences between subadult and adult burials, Early period adults have a higher likelihood of both grave features and burial pigmentation being present than subadults, while pigmentation is altogether more common for Early period adults than are grave features. Middle period adults have almost a direct reversal of this trend, where grave features are far more commonly observed than instances of burial pigmentation, however, the presence of both variables is very rare in adult burials and non-existent for subadults. In the Early period subadult sample, infant and child burials are more likely to have burial pigmentation than adolescent burials, whereas in the Middle period, grave features are more common in infant and child burials than in adolescent burials, where pigmented burials are more common.

In the sample of burials from island contexts, there were 69 individuals who had data recording both burial pigmentation and grave features. No subadults (0.0 %, n = 6) had both grave features and burial pigmentation, however, there were four subadults (66.7 %, n = 6) that did have pigmented burials. In comparison, only three adult burials (4.8 %, n = 63) had both grave features and burial pigmentation and 40 adult burials (63.5 %, n = 63) with only pigmentation present. Comparing the three island subadult age groups, burial pigmentation was present in two infant burials (100.0 %, n = 2), one child burial (50.0 %, n = 2), and one adolescent burial (50.0 %, n = 2). In the mainland sample, there were 259 individuals who had data for both grave features and burial pigmentation. For subadult burials, there were no cases (0.0 %, n = 26) of both grave features and burial pigmentation being present, and four cases (15.4 %, n = 26) of only grave features being present. Comparatively, only two adult burials (0.9 %, n = 233) had both grave features and burial pigmentation present and 125 burials (53.6 %, n = 233) with only grave features present. For the mainland contexts sample of subadults, grave features were present in three infant burials (30.0 %, n = 10) and one child burial (12.5 %, n = 8), while burial pigmentation was present in one adolescent burial (12.5 %, n = 8).

When the age-divided samples from each geographic context are analyzed and compared some interesting patterns emerge. In the island sample, the majority of subadults receive pigmented burials but not grave features, which is also true for the majority of adult burials; only a very select few adults receive both grave features and burial pigmentation. For the mainland sample, age-based differences are apparent as the majority of subadults receive burial pigmentation, but not grave features, while the majority of adults receive grave features, but not burial pigmentation. When the three subadult age groups are compared between contexts, burial pigmentation is a resoundingly common trait. In the island subadult sample, the majority of burials for all three age groups are pigmented, however, infants have comparatively higher proportions for pigmentation than either child or adolescent burials. For the mainland subadult sample, the majority of all burials lack both grave features and burial pigmentation, however, infant burials have cases of receiving grave features without pigmentation, while for child and adolescent burials, presence of burial pigmentation and lack of grave features is a more common pattern.

Returning to the premise of the research question, adult burials are expected to have more evidence for extra energy expenditure (grave features and burial pigmentation) than subadult burials, and in the more refined analysis of subadult age groups, adolescent burials would be expected to surpass infant and child burials for evidence of extra energy expenditure. The data affirm the overall research question in that there are no cases for subadult burials from either context or time period that had both grave features and burial pigmentation, however, contrary to the expected pattern, adolescent burials do not appear to have greater evidence of energy expenditure than infant or child burials. Adult burials in all time periods and contexts had less than five percent of burials with both pigmentation and grave features, which seems to indicate that the conjunction of these two burial treatments was reserved for a highly selective portion of the population, most likely individuals of high social status. The presence of both grave features and burial pigmentation could potentially indicate aspects of the burial program that were "achieved" by the deceased, since there are no cases of subadults in this dataset with both grave features and burial pigmentation, but this patterning is present in adult burials.

Pigmented burials were more common in Early period and island contexts than grave features, where only one type of extra energy expenditure was present. Subadult burials in Early period and island contexts have slightly higher rates for burial pigmentation than adults, however, this difference is very slight and subadult pigmentation appears to decrease with age. For burials lacking both pigmentation and features, rates between subadult and adult burials are most similar in island contexts, while Early period subadult burials have one-and-one-half times more burials lacking pigmentation or features than adults. A relative reversal of trends is evident in Middle period and mainland contexts burials where grave features are more common than pigmented burials. Adults have over three times the number of burials with grave features than subadult burials, whereas subadult burials have nearly three times the number of pigmented burials as adults, for both Middle period and mainland contexts samples. The patterns for these subadult samples indicate that presence of grave features tends to decrease with age, while burial pigmentation increases with age. For the burials lacking both features and pigmentation, subadult rates are nearly twice the rates seen in adult burials, which indicates that a greater proportion of adult burials received some form of extra energy expenditure than subadult burials.

While Martz's (1984:377) research indicated that the Late period cemetery at Medea Creek showed a strong association between subadult age and extra energy expenditure in burial, this does not appear to be the case in a larger regional analysis, as the data discussed here suggest. Perhaps the most compelling suggestion for the patterns of extra energy expenditure in the forms of both grave features and body pigmentation lies in level of community participation in the funeral rites. As posited by Martz (1984:451, 498) the presence of special grave features and/or body treatment (pigmentation) is likely to be indicative of a wider community participation in such burials, given that these special treatments are designed to be seen/observed by a wide audience as they are visible even at a distance. Additionally, the fact that no subadult burials in this study received both burial pigmentation and grave features suggests a higher likelihood that the conjunction of these two variables was reserved for individuals of high social status that had also reached an age of initiation into these special social groups, which subadults largely do not appear to have been (Martz 1984:220).

Problems Inherent in the Data for Question 7

While the majority of excavators dutifully noted the presence of both grave features and burial pigmentation, there were a few sites for each respective category in which legacy collections did not explicitly state whether or not the respective category was present. Given that sufficient information was lacking in these cases, these burials were coded as "unknown" so as to not misattribute patterns to uncertain data. Regarding grave features, there were four sites in the study sample for which no information on presence of grave features could be ascertained" SRI-41, SCRI-257. SCRI-159, and SCRI-162. The lack of information on grave features from these four sites most notably affects data patterns for the island sample, since all four sites come from island contexts. It also could affect time period patterning to an extent, as SRI-41 and SCRI-162 are Early period sites (sub-phase Eyb), while SCRI-257 and SCRI-159 are Middle period sites (sub-phase M1 and M2, respectively). When the primary archaeologists responsible for site excavations are examined, SCRI-257, SCRI-159, and SCRI-162 were excavated by Olson, while SRI-41 was excavated by Orr. It is unfortunate that explicit information was not collected by the original excavators regarding grave features, which seemed to be a trend in the island context excavations of Olson especially. Nevertheless, the data analyzed herein represent the burials for which presence of grave features could be assessed with a high degree of confidence.

Regarding the presence of burial pigmentation, there were four sites for which excavation records did not explicitly record pigmentation in burials: SCRI-162, SBA-53, SBA-72, and SBA-73. Again, due to the ambiguity of whether or not burial pigmentation was present yet went unremarked upon by excavators, these burials were marked as "unknown" and not included in the subsequent analyses. Three of these sites are from mainland contexts, SBA-53, SBA-72, and SBA-73, while only SCRI-162 is from an island context. Therefore, any potential issues in patterning for the data are expected to be more significant for the mainland sample than the island sample. In terms of time period, SCRI-162 and SBA-53 both date to the Early period (sub-phase Eyb), while SBA-72 and SBA-73 date to the Middle period (sub phases M3 and M4, respectively). Regarding trends in principal investigators who excavated these sites, three out of the four sites (SBA-53, SBA-72, and SBA-73) were excavated by D. B. Rogers, while Olson was responsible for excavations taking place at SCRI-162. Consequently, any potential issues in patterning are expected to be most significant for sub-phase Eyb of the Early period, and for the latter part of the Middle period. Altogether, the data presented represents the remaining burials for which burial pigmentation could be assessed with a high degree of confidence.

Question 8: Are subadults (infants, particularly) more commonly part of dual or multiple interment types than adult burials?

Among the many mortuary observations made by Martz (1984), perhaps the least addressed directly by other researchers is the relationship between burial proximity and age of the interred. In her analysis of the Late period cemetery at Medea Creek, Martz (1984:354) recognized that that the majority of infant burials were interred with adults, however, dual burials with infants and adults were rare in the overall sample. This question was designed to test whether or not subadults, infant burials in particular, are more commonly part of contemporaneous non-single (dual or multiple) interments than adult burials. To affirm this research question, infant burials (and subadult burials, generally) should have higher proportions for dual and multiple interment types, and the adult-subadult age grouping should be the most common type (over adult-adult and subadult-subadult types) for dual and multiple interments.

Interment Type: Data Patterns for Time Periods and Geographic Contexts

Interment type (Variable 4) was defined was the number of contemporaneous individuals interred in a given grave, which are in direct association with one another. If an individual had no contemporaneous individuals with direct association, it was coded as single, if one other contemporaneous individual was present in direct association, it was coded as dual, and if two or more individuals were in direct association and contemporaneous, it was coded as multiple. For all analyses, single interments were the most common type of burial, followed at much smaller proportions by dual interments and finally, the least common type, multiple interments. Higher rates for dual and multiple interments are present in Early period and island contexts than in Middle period or mainland contexts. For the Early period and island contexts samples, subadult burials are more frequently a part of dual interments than adults, while both age groups have similar rates for multiple burial types. In Middle period and mainland burials, subadults have higher rates for both dual and multiple interment types than adults. The results from the analyses for interment type are summarized briefly below in both tabular (Table 8.18) and narrative form.

Table 8.18. Pearson Chi-Square and Fischer's Exact Results for Interment Type Indicating *P*-Value and Level of Statistical Significance Reached for All Analyses Conducted

Interment Type	***P*-Value**	**Level of Statistical Significance**
All Burials by Period	< 0.001	Highly Significant
All Burials by Subadult and Adult	0.002	Highly Significant
Early Period Burials by Subadult and Adult	0.107	Not Significant
Middle Period Burials by Subadult and Adult	0.019	Significant
All Burials by Context	< 0.001	Highly Significant
Island Contexts Burials by Subadult and Adult	0.047	Significant
Mainland Contexts Burials by Subadult and Adult	0.175	Not Significant
All Subadult Burials by Infant, Child, and Adolescent	0.214	Not Significant
Early Period Burials by Infant, Child, and Adolescent	0.640	Not Significant
Middle Period Burials by Infant, Child, and Adolescent	0.004	Highly Significant
Island Contexts Burials by Infant, Child, and Adolescent	0.792	Not Significant
Mainland Contexts Burials by Infant, Child, and Adolescent	0.010	Significant

Between the Early and Middle periods, a highly significant difference existed for interment type, where single interments made up the majority for both periods, however, dual and multiple types were more prevalent in the Early period than in the Middle period. No significant difference ($p = 0.107$) was present between Early period subadult and adult burials, as both age groups have the majority of burials interred as single inhumations, however, subadult and adult burials had similar proportions for multiple burials, but subadult burials had approximately twice the proportion of dual burials. For infant, child, and adolescent burials from the Early period, no significant difference ($p = 0.640$) was present between the three age groups, however, there appears to be an age-based difference in patterning for interment type. All three age groups had nearly equal proportions for single interment types, however, child and adolescent burials were more similar (no cases of multiple interment types), whereas infant burials exhibited more variation, with both dual and multiple interments. Between Middle period subadult and adult burials, a significant difference ($p = 0.019$) was present for interment type. While the majority of both age groups had single interments as the most common type, subadult burials had proportions of dual and multiple burials approximately three times larger than adult burials. A highly significant difference ($p = 0.004$) was present between the three Middle period subadult age groups, where child and adolescent burials appear more similar to one another than either group does to infant burials, which exhibit a greater degree of variation. The majority of burials in all three age groups were single interments, however, infant burials had examples of all three interment types, child burials have examples of single and multiple interments but not dual interments, and all adolescent burials are single interments.

The difference in interment type between island and mainland contexts burials was also highly significant, where single interments were the most common type in both contexts, however, island burials had nearly three times the rates for dual and multiple interments as mainland contexts burials. In island contexts, a significant difference ($p = 0.047$) was present between subadult and adult burials for interment type. Both age groups have single interments as the most common type and have similar proportions for multiple interments, however, subadult burials had dual interments nearly twice as frequently as adult burials. For island contexts subadults, the majority of all burials were single interments present at relatively equivalent proportions, and there were only small differences in the proportions of dual and multiple interments, which were not statistically significant ($p = 0.792$). Both infant and child burials had all three interment types present, however, infant burials had higher proportions for multiple interment types than child burials, and adolescent burials had no cases for multiple interments. No statistically significant difference ($p = 0.175$) was identified between mainland contexts subadult and adult burials for interment type, but the patterning present may have real world consequences. The majority of burials from both age groups had single interments as the most common type, however, subadult burials had nearly three times the rate of dual interments and nearly twice the rate of multiple interments as adults. Within the mainland contexts sample of subadults, a significant difference ($p = 0.010$) was present for interment type, and not one of the three age groups had examples for all three interment types. Infant burials had no cases of multiple interments, child burials had no cases of dual interments, and adolescent burials had no cases of dual or multiple interments.

Interment Type Age Association: Data Patterns for Time Periods and Geographic Contexts

Age associations for interment type (Variable 5) provides further detail on the age relationships present in non-single (dual and multiple) interments. For each dual and multiple interment, the relative ages of the associated individuals were classified into one of three categories, all adults, all subadults, and adult and subadult. As with the general category of interment type (Variable 4), all efforts were made by the author to include only contemporaneous inhumations, where individuals appear to have been interred together during the same burial event. For analyses conducted for both time period and geographic contexts (Table 8.19), very similar patterns appear regarding interment type age association. When subadult and adult age groups are compared, subadult burials have a consistently higher rate for burial with an adult than with another subadult, while adult burials have a much more even split between burial with a subadult or burial with another adult. One interesting pattern that emerged was that all analyses also have non-single infant interments occurring only with an adult (no cases of all subadults type interments for infant burials), whereas child and adolescent burials occur with both other subadults and adult burials.

Table 8.19. Pearson Chi-Square and Fischer's Exact Results for Interment Type Age Association Indicating *P*-Value and Level of Statistical Significance Reached for All Analyses Conducted

Interment Type Age Association	*P*-Value	Level of Statistical Significance
All Burials by Period	0.450	Not Significant
All Burials by Subadult and Adult	–	–
Early Period Burials by Subadult and Adult	–	–
Middle Period Burials by Subadult and Adult	–	–
All Burials by Context	0.283	Not Significant
Island Contexts Burials by Subadult and Adult	–	–
Mainland Contexts Burials by Subadult and Adult	–	–
All Subadult Burials by Infant, Child, and Adolescent	0.016	Significant
Early Period Burials by Infant, Child, and Adolescent	0.015	Significant
Middle Period Burials by Infant, Child, and Adolescent	–	–
Island Contexts Burials by Infant, Child, and Adolescent	0.012	Significant
Mainland Contexts Burials by Infant, Child, and Adolescent	–	–

Although there was no statistically significant difference present between Early and Middle period burials for interment type age association, the most notable difference present between the two periods was that the Early period had cases of all subadult interments, but the Middle period had none. In the Early period sample, non-single subadult interments most commonly occurred in adult and subadult types at higher proportions than in non-single adult burials, where there was a much more even split between all adult and adult and subadult types. A significant difference ($p = 0.015$) was observed among Early period infant, child, and adolescent burials. All non-single infant interments took place with an adult, while the majority of non-single child interments occur with another subadult, and non-single adolescent interments were split equally into all subadults and adult and subadult type interments. For the Middle period sample of subadult and adult burials, all non-single subadult interments took the form of adult and subadult type age associations, while an even split between all adult and adult and subadult was observed for non-single adult interments. For Middle period subadults, there were no cases of adolescent burials in dual or multiple type age associations, and the variable was constant for both infant and child non-single interments, as all cases for both age groups occurred in adult and subadult type age associations.

Statistical testing did not identify significant differences for interment type age association between island and mainland contexts; the majority of non-single interments from both contexts occurred as adult and subadult types, however, there were no cases for all subadults type interments in the mainland sample. In island contexts, the majority of non-single interments in both age groups took the adult and subadult type, however, subadults had a higher proportion for this type than adults. A significant difference ($p = 0.012$) was identified between the three island subadult age groups, where all non-single infant interments occurred in the form of the adult and subadult type, while for non-single child and adolescent burials, both age groups had an even split between all subadults and adult and subadult type interments. In the mainland sample, all non-single subadult interments occurred as the adult and subadult type, while the all adults type was slightly more common for adult burials. In the subadult sample of non-single interments from mainland contexts, there were no cases of non-single adolescent interments, and all non-single infant and child interments were of the adult and subadult type.

<u>Question 8: Discussion and Interpretation</u>

To further examine the relationship between non-single interment types and contemporaneous age associations, data for both variables are examined for each time period and geographic context (Table 8.20). There were data from 34 Early period burials and 17 Middle period burials that recorded both interment type and age association. The most common configuration for Early period subadults (55.6 %, $n = 18$) and adults (62.5 %, $n = 16$) was in the form of dual burials comprised of subadult and adult interments, with 10 cases each. Multiple burials comprised the second most common type for both age groups, with four cases (22.2 %, $n = 18$) for subadult burials and six cases (37.5 %, $n = 16$) for adult burials. There were no cases of all adult dual or multiple burials, and only four cases (22.2 %, $n = 18$) for all subadult dual interments. In the Early period sample of subadults, the majority type for each age group differed somewhat, with infant burials being the most different from child and adolescent burials. Ten infant interments (63.6 %, n = 10) were dual in nature and took the form of the adult and subadult type, while two child burials (66.7 %, n = 4) and two adolescent burials (50.0 %, n = 4) occurred in dual form with another subadult. All age associations in the Middle period sample were of the adult and subadult type, and the most common interment type was dual, which broke down into five cases (62.5 %, n = 8) of adult and five cases (55.6 %, n = 9) of subadult burials. Multiple interments between subadult and adults were slightly less common, with four subadult cases (44.4 %, n = 9) and three adult cases (37.5 %, n = 8). In the Middle period subadult sample, there were no cases of adolescent burials being a part of non-single interments, and infant and child burials were only a part of interments with adults. There were five cases (83.3 %, n = 5) of infant dual burials with an adult, and three cases (100.0 %, n = 3) of child burials being a part of multiple interments with at least one other adult and subadult.

Table 8.20. Cross-Tabulation of Interment Type and Interment Type Age Association for Time Period and Geographic Context

	Time Period				**Geographic Context**			
	Early Period n = 34		**Middle Period n = 17**		**Island Contexts n = 39**		**Mainland Contexts n = 12**	
	Interment Type		**Interment Type**		**Interment Type**		**Interment Type**	
	Dual	**Multiple**	**Dual**	**Multiple**	**Dual**	**Multiple**	**Dual**	**Multiple**
All Subadults Type	4	0	0	0	4	0	0	0
Adult and Subadult Type	20	10	10	7	22	13	8	4

General trends regarding interment type and age association in the Early period indicate that adult and subadult dual interments are the most common pairing, and the subadult age group most frequently included in this pairing is the infant age group, which affirms the tenets set out in this research question. Additionally, Early period subadult and adult burials are both part of multiple interments, which more frequently include child and adolescent burials. Although child and adolescent burials are included in multiple interments, dual interments with another subadult are more common for those age groups (albeit adolescent burials are equally split between dual interments with one other subadult or one adult). For the Middle period sample, burial trends indicate that subadult and adult type dual interments were the most common non-single interment type, occurring most frequently with infant burials, also affirming the research question for the Middle period sample. No adolescent burials received non-single interments, and multiple interments of the adult and subadult type were the sole type for child burials, and present at a lesser extent for infant burials. Altogether, there was a strong diachronic trend that dual interments between infants and adults remained the most common type of non-single interment.

For burials with data recording non-single interment type and age association, 39 cases were available from island contexts and 12 cases from mainland contexts. In the island contexts sample, the adult and subadult age association was dominant for both subadult and adult interments, as there were 11 subadult dual interments (52.4 %, n = 21) with adults and 11 adult dual interments (61.1 %, n = 18) with subadults. Multiple burials of the subadult and adult type were the second most common variety, with six subadult cases (28.6 %, n = 21) and seven adult cases (38.9 %, n = 18), while there were no cases for the all adults type burial and only four cases (19.0 %, n = 21) of all subadult dual burials. For the island contexts subadult sample, eight infant interments (61.5 %, n = 13) were dual burials with an adult, while two child interments (50.0 %, n = 4) and two adolescent interments (50.0 %, n = 4) were also dual interments, but with another subadult. Both child and infant burials had cases for multiple interments with other subadults, however, there were no cases for adolescent burials being a part of multiple interments. In the mainland contexts sample, four subadult interments (66.7 %, $n = 6$) and four adult interments (66.7 %, $n = 6$) comprised the most common interment type, dual burials between an adult and a subadult. There were no cases for either all adult or all subadult type interments, however, there were two subadult cases (33.3 %, $n = 6$) and two adult cases (33.3 %, $n = 6$) for multiple burials between subadults and adults. In the sample of mainland subadults, four infant burials (100.0 %, $n = 4$) were part of dual interments with an adult, and two child burials (100.0 %, $n = 2$) were part of a multiple interment with at least one other adult and subadult; there were no cases for non-single adolescent burials in the mainland contexts sample.

In the island sample of burials, the research question is again affirmed, as the most common pairing for non-single interments is the dual type, between adult and infant burials. Child burials are most frequently a part of dual burials with another subadult, while adolescent burials have equal proportions of dual burials with an adult, as well as with another subadult. Additionally, both infant and child burials (but not adolescent burials) are occasionally included in multiple interments, however, for both groups at least one adult is present within the multiple interment. Analysis of the mainland contexts sample of burials also affirms the tenets set out in the research question, as dual interments are the most common type between infants and adults. No adolescent burials received non-single interments, and multiple interments of the subadult and adult type were the most common interment type for child burials.

Given that subadult mortality rates are significantly higher than those of adults, especially among prehistoric populations (Angel 1969), one might expect higher rates of non-single interments to occur between only subadults, however, the results presented here affirm that adult and subadult interments are the most common type of non-single contemporary interment, through time and between contexts. Although the exact circumstances that led to these non-single, contemporary interments will never be known, the patterns observed here provide some degree of knowledge regarding subadult inclusion within these types of interments. From the general analysis of interment type, it is clear that—among Chumash burials—single type interments are by far the most prevalent type, with dual and multiple interments far more rare. The comparative rarity of dual and multiple interments provides some indication that these types of interments are reserved for special burial circumstances. The dual and multiple interments that were a part of this study were almost all careful and intentional interments, rather than "mass grave" situations, however, large-scale accidents and/or illness cannot be discounted as possible events that could have resulted in multiple deaths within a short period of time.

Since infant burials were the most common subadult age group to be interred with adult burials, it provides some evidence for a special status, or at least special treatment, afforded to infant burials that was much more rarely extended to child burials (and almost never to adolescent burials). Perhaps infants were among those that had not yet received initiation into the wider social community and were seen as being in need of special protection by adults who had certainly been fully initiated. Ethnographic accounts (e.g., Harrington 1929:172) also suggest that Chumash cemeteries were organized by family group, which could explain the relationships between individuals buried together in non-single interments. There is a possibility that subadults included in these non-single interments were related to the individuals with which they were interred, but there is an equal probability that these non-single interments were arranged out of necessity with an individual of another familial or lineage group based on the timing of their respective deaths. Unfortunately, the osteological and DNA analyses that could support such a claim are outside the scope of this study.

Problems Inherent in the Data for Question 8

Interment type was one category in which legacy collections had to be very carefully analyzed in order to determine which interment sub-type (single, dual, or multiple) a given burial belonged. Excavation notes and available records (including burial cards, photographs, drawings, and published documentation) had to clearly distinguish that burials were contemporaneous in order to be categorized as dual or multiple. If a burial could not be clearly established as either single, dual, or multiple, it was coded as "unknown" so as to not misattribute patterns to data where excavation records were unclear. Burials that were indicated to have been disturbed by intrusive burials and/or reburials were not considered dual or multiple types either. Dual and multiple interment types were much more rarely encountered in the dataset than single interments, however, there is a chance due to excavator bias that a small number of burials marked as "unknown" in this study could have been part of either dual or multiple interments. Best efforts were undertaken by the author to ensure that burials attributed to dual and multiple interment types accurate reflected the descriptions provided by excavators in the legacy collections.

Regarding age associations (all subadults, all adults, and subadult and adult types) for dual and multiple interments, there were a small number of cases in which the relative age (subadult or adult) of at least one individual in a dual or multiple interment could not be ascertained. In these cases, the interment type age association was coded as "unknown" since it could not be determined with a high degree of certainty from existing excavation documentation or collections records. While it is unfortunate that information for the limited number of burials in which this phenomenon occurred cannot be utilized in this study to further understand patterning in non-single interments, there is still value in being able to ascertain the number of burials that were included in dual and multiple interments.

Situating Prehistoric Chumash Subadults Within Their Greater Social Matrix

The eight research questions presented in this chapter have provided measurable comparisons regarding aspects of prehistoric Chumash burial customs evident between subadult and adult burials, as well as within the sample of subadults for infant, child, and adolescent burials. These research questions operate under the general premise that the degree to which subadults share in aspects of adult mortuary ritual corresponds to their overall incorporation into their respective communities (see Cerezo-Román 2013, 2015; Fowler 2004; Gillespie 2001). In situations where subadults are found to have largely similar mortuary treatment to adults, the most likely explanation is that, at a broad social level, subadults and adults were subject to very similar sets of cultural practices. The results of this study overwhelmingly demonstrate the personhood of prehistoric Chumash subadults, as even the youngest infants received careful burials along the lines of expected cultural norms for both time periods examined. The mortuary data examined in this study *do not* support the idea that prehistoric Chumash subadults were subject to exposure or infanticide practices, or even lack of burial rites altogether, as is sometimes observed cross-culturally in archaeological and ethnographic cases (see Goodale 1971; Gowland and Chamberlain 2002; Hart and Pilling 1960; Lee 1994; Mays 1993; Schwartz et al. 2012; Sillar 1994; Smith and Kahlia 1992; Wedgwood 1927). Similarities and differences in mortuary treatment observed in this study between subadults and adults provide a useful point of comparison, revealing important aspects of cultural norms surrounding burial, and in certain situations, relative subadult age groups were also subject to differential treatment within this larger age group.

In separating the subadult sample into infant (< 3 years old), child (3–9.9 years old), and adolescent (10–17.9 years old) age categories, it has been possible to identify differences in treatment between age groups for different aspects of mortuary ritual. Such an analytical division allows for further comparisons of each age group with trends observed for adults, thus providing an avenue to contextualize the treatment of different subadult age groups within the matrix of social norms operating for adults. Given the lack of written records, accounts, or depictions of daily prehistoric life available, the mortuary record provides the most substantial material evidence for the treatment of subadults in any context. Ethnographic and ethnohistoric sources documenting later Chumash groups are useful as regionally-specific examples for comparison, but these observations cannot be projected directly onto the past (Arnold 1992). By being able to assess more nuanced differences in burial treatment for subadult age groups, it is more likely that culturally-specific stages in childhood can be indirectly identified through the material remains. Although the exact cultural circumstances surrounding burial rites will never be known, the resulting mortuary record provides tangible evidence with which to better understand past behaviors not only at the burial site, but also in how the interred were treated socially. The following section considers the eight research questions presented previously in light of the level of incorporation subadults had into society, their overall integration within hierarchical and heterarchical structures, as well as aspects of religious organization. Each sub-section presents the significance of trends observed in the study's analysis, first generally, and then diachronically, to further contextualize the patterns observed.

Level of Subadult Incorporation into Society

To consider the overall level of subadult incorporation into society, the results from the questions that examined non-single interment patterns (Question 8), the presence of beads as grave goods (Question 3), and number of material types (Question 5) are evaluated in light of this study's theoretical framework. If subadults in prehistoric Chumash society were considered to be intrinsically different from adults (e.g., not attributed personhood), then it would be expected that they would be subject to burial standards that are observably different (in the physical and/or material aspects of the burial context) than those of adults (individuals attributed full personhood). On the other hand, if subadults are considered to exist in the same social realm as adults (e.g., attributed personhood), there should be observable aspects of the burial contexts that share similarities between them. The results presented for questions 3, 5, and 8 support the supposition that subadults of all ages were attributed personhood, given the many shared aspects and overall similarities of burial ritual.

When considering interment type and the relative ages of individuals in non-single interments, if subadults were not attributed personhood, then it would be expected that they would exhibit patterns that would indicate a clear distinction between subadult and adult age groups, such as there being no cases for subadults buried with adults (i.e., subadults only being buried with other subadults). Overall patterns observed for this dataset indicate that, while single interments were dominant, both subadults and adults were subject to dual and multiple interment types. Moreover, there are cases observed within the study sample for subadults and adults interred with each other (in the form of dual and multiple types). Given that non-single interment types are more rarely occurring than single types, it appears that individuals who were part of dual and multiple types were subject to a special set of burial circumstances that resulted in treatment differing from the majority of the burial population. These non-single interments would have likely required additional planning to orchestrate, and overall indicate an even higher degree of care surrounding these burials, thus further confirming aspects of personhood for all interred. Additional examination of the subadult sample indicates that infant burials had the most variation of the three subadult age groups, and that they were more commonly interred with an adult than they were with another subadult. The fact that the youngest subadult age group is documented being buried not only with other subadult burials, but also with adult burials is compelling evidence to affirm personhood for Chumash subadults.

As introduced above, additional evidence for subadults being incorporated into society can be observed in subadults receiving grave goods, which are a fairly standard aspect of mortuary ritual for the majority of the burial population in this study. These results indicated that, not only did subadults receive grave goods as part of their respective mortuary rituals, they often did so at comparable or even greater rates than adults. The active choices made by the individuals responsible for burying the deceased to include grave goods provides an indication of overall additional energy expenditure, especially when compared to burials without any grave good accompaniments. This idea is strengthened further when the presence of grave goods is narrowed down to focus on beads, which were artifacts that took considerable time and energy to produce (Gamble et al. 2001). As with overall trends for grave goods, subadults frequently received beads at comparable or even greater rates than did adults, and infant, child, and adolescent burials had similar rates for beads among the subadult sample. Given that subadults received beads, a specialized class of grave good, at similar or even greater rates than adults, indicates that these two age groups were subject to similar rules for burial regarding individuals that could receive such objects. This patterning is similar to patterns observed for rates of grave goods more generally, which also supports the idea of both age groups sharing in similar sets of social rules for acceptable burial behavior, and additionally, supports the idea of subadults having full personhood.

Another way to assess the degree of societal incorporation is by comparing a proxy measure of grave good diversity, which was examined in this study through the of number of material types present in grave good assemblages. If subadults were not attributed personhood, they would be expected to receive fewer material types than adults, however, the results of the analyses revealed that there was very little difference in number of material types between subadult and adult burials. This again is indicative that, at least in regard to relative artifact diversity, subadult and adult burials were subject to similar rules governing culturally appropriate burial behavior, and since subadults generally mirror the patterns seen in adults, they too were considered to have full personhood. While there were small numbers of individuals in both age groups that had large numbers of material types present in their grave good assemblages, the majority of the population had very few types present. The comparatively small number of individuals with more artifact diversity may be linked to other social grouping factors, like class or status.

In terms of overall diachronic patterning for both non-single interments and presence of grave goods and beads, there appears to be more variation present in the Early period sample for subadult burials than is observed in the Middle period sample of subadults, whereas the number of material types present in burial assemblages remains largely stable over time for subadults and adults. Regarding non-single interments, Early period dual and multiple interments consisting of all subadults are more commonly observed than in the Middle period sample, where all subadult non-single interments take place with at least one adult. This patterning seems to indicate that prescribed burial treatment for subadults is more restrictive by the Middle period, as more variation for subadult burials is evident in the Early period (e.g., presence of all subadults type non-single interments) than in the Middle period. The results for grave good and bead inclusion also support the idea that prescribed burial treatment becomes more restricted by the Middle period, as subadults in the Early period have higher rates for frequency of grave goods and beads than adults, whereas in the Middle period, rates between subadults and adults are much more equal. The decrease in subadult variation that is evident in the Middle period sample can most likely be attributed to the emergence of differential political and religious leadership that developed around this time (C. King 1990), which appears to structure aspects of burial treatment differently than in the Early period. The lack of change over time for the number of material types included in burial assemblages seems to reflect shared cultural norms for appropriate items included in the burial context, which does not appear to have been influenced by this increased social complexity. The results discussed here support the idea that prehistoric Chumash subadults of all ages were attributed personhood, as they received similar numbers of material types as adults, and shared similar aspects of burial treatment as adults in their communities. This is further supported by the lack of evidence to suggest exposure or infanticide practices among the Chumash, as well as no indication that subadults of any age were not afforded socially appropriate burial rites.

Sociopolitical Incorporation of Subadults

The following section aims to discern ways in which subadults may have been incorporated into the greater sociopolitical organization of society, examining patterns that appear to indicate hierarchical and heterarchical aspects.[10] As posited by Carole Crumley (2005:40), it is important to take aspects of both hierarchy and heterarchy into account, as they form a dialectical relationship with one another. Moreover, she argues that hierarchy is a subset of heterarchy (Crumley 1987), the latter of which, for the purposes of this study, may be evident more strongly in the Early period sample due to the temporality of emerging Chumash sociopolitical organization in the Middle period. Although the historical record indicates that by

[10] For the purposes of this study, hierarchy is defined as an organizational structure (often conceived spatially as being vertically oriented) where some aspects of the organizational structure are subordinate to others, and which can often be ranked (Crumley 1987:144, 1995). Whereas heterarchy is defined as an organizational structure (often conceived to have a lateral or horizontal orientation) where the constituent elements are "either unranked relative to other elements or possess the *potential* for being ranked in a number of different ways" (Crumley 1987:158; emphasis in original).

the time of European contact, Chumash society was operating within a hierarchically organized system of leadership (Arnold 1992; Erlandson 1997; Gamble 2008; Lambert and Walker 1991; Sassaman 2004), archaeological markers for centralized political and religious leadership are not identified prior the early Middle period (C. King 1990). Aspects of centralized and political leadership are expected to result in less observed variability (e.g., more homogeneity) in the Middle period mortuary record for this study, whereas greater variability (e.g., more heterogeneity) is expected to be observed in the Early period sample. The following section's discussion considers mortuary patterning that has the potential to reveal additional factors regarding the treatment of prehistoric Chumash subadults in terms of both hierarchical and heterarchical aspects of sociopolitical organization.

Considering Aspects of Hierarchical Organization

The examination of patterns in the distribution of grave goods provides a way in which to perceive a more complex picture of possible links between social status and aspects of material culture in mortuary contexts. While the presence of specific types of grave goods, or grave goods generally, cannot be used as a one-to-one correlation of sociopolitical status, nor can the base supposition that the presence of grave goods in subadult burials necessitates ascribed status (see Cannon 1989), patterns observed in burials can provide further contextualization for aspects of sociopolitical organization over time. In terms of the analyses conducted in this study for grave depth and total number of grave goods (Question 2) and the numbers of ornament and non-ornament grave goods (Question 4), the treatment of subadult and adult burials respective to one another have the potential to reveal additional patterns relating to prehistoric sociopolitical organization.

The patterns for grave depth and total number of grave goods generally revealed that burials with the largest amounts of grave goods were found at moderate depths (~25–40 inches below surface), and that the deepest graves very often had few grave goods. It is possible that while the deepest graves may have belonged to individuals with wealth and status (in line with accounts for historic period undertaker [*'aqi*] practices; see L. King 1969:47), that quantities of material wealth were expended on *either* a large number of grave goods *or* a grave that was dug significantly deeper than the majority of the population. The deepest graves, even without large numbers of grave goods, still indicate a significantly greater amount of energy expended to dig a grave that was deeper than the majority of burials in the sample. Age-based differences were most strongly observed between time periods, where subadult burials more consistently received much larger amounts of grave goods than adults in the Early period, while in the Middle period the difference between the two age groups was much less pronounced. This patterning is likely linked to the increased centralization of political and religious organization evident in the early Middle period (C. King 1990). However, when grave depth is considered on its own, subadults very rarely were interred as deeply as the deepest adult graves, which may indicate an achieved aspect to graves of significant depth.

Patterns observed in the amounts of ornament and non-ornament grave goods manifest differently in subadult and adult burials and are most pronounced in the number of ornament grave goods when observed diachronically. For the most part, subadult and adult burials received comparable amounts of non-ornament grave goods, which remained fairly consistent over time. The amount of ornament grave goods on the other hand differed drastically between Early period subadult and adult burials. The consistency evident in the number of non-ornament grave goods over time makes these objects unlikely candidates (at this broad categorical level) to indicate aspects of sociopolitical status. Rather, future analyses of grave good categories within this more general classification of non-ornament objects may indicate more minute patterns, which could potentially reveal aspects of heterarchical organization. Since the age-based patterns observed for numbers of ornaments appear to be more contingent upon the time period in which they occurred, this most likely reflecting material correlates for the increase in centralized sociopolitical organization believed to occur in the early part of the Middle period. The differences observed in the numbers of ornaments between Early period subadults and adults may be reflective of subadults receiving special treatment in the form of these grave goods, but also could be indicating that there was less in the way of centrally-organized control over aspects of burial treatment.

Considering the resulting patterns in grave goods (ornament and non-ornament) and grave depth diachronically, ornament grave goods and grave depth appear to have the strongest potential to indicate aspects of hierarchical social organization that can be identified in the mortuary record. Although the analyses for non-ornament grave goods were not indicative of being able to readily identify aspects of hierarchical organization, it is possible that future analyses could consider the interplay of the different artifact types within this over-arching category to assess whether or not they may speak to patterns regarding sociopolitical organization that are not apparent at this level of analysis. Finally, the analysis of grave depth is one of the few variables examined in which subadult burials did not nearly match or exceed the depths seen for adults. While additional factors of the mortuary context need to be considered in conjunction with grave depth to further assess its potential link to status, it seems likely that graves of extreme depth could be indicative of achieved aspects of sociopolitical organization as evident within a hierarchically organized society.

Considering Aspects of Heterarchical Organization

While considering questions of hierarchy is useful, especially for the Middle period sample employed in this study, it is also crucial to consider the role that heterarchical organizing factors may have played in society, and furthermore the degree to which subadults were incorporated into this type of social organization. The recognition of lateral differentiation in the heterarchical organization of society can be particularly useful in identifying patterns in age, status, and even gender (Levy 2007:193), and has the potential to reveal additional organizing principles over time. The results of the variables analyzed in this study that examine the body's overall disposition (Question 1), as well as the interplay of grave features and burial pigmentation (Question 7) are considered in this section in regard to their potential to reveal aspects of heterarchical organization. By considering the data in this way, the degree to which subadults may have been incorporated into heterarchical groups, like lineage groups and moieties, can be further examined.

When considering patterns that may be indicative of heterarchical organizing principles, it is expected that greater evidence of overall variation (e.g., more heterogeneity) in aspects of the burial program will be evident, however, these patterns may or may not have an age-based component. The results of the first research question revealed that burial position was the strongest candidate for an aspect of the body's disposition that operates on an age-based component, while age-based patterning was not observed for body side or burial direction. Regarding burial position, infant burials displayed the highest degree of differentiation compared to the other two subadult age groups, as well as a higher degree of differentiation than that of adult burials. This patterning could indicate the relative age at which subadults were formally initiated into their family, lineage, and/or moiety groups (see Martz 1984:99). Although the research presented here has supported the notion that all Chumash subadults were attributed personhood, specific aspects of burial mode, such as position, may have operated based on heterarchical lines, which may also explain the wide range of variability in burial position in the burial sample overall. The wide degree of variation evident for burial side and orientation, although they do not exhibit evidence for differentiation that is based in age, could also be expressing factors that are based in heterarchical organization.

In considering the results for the conjunction of both grave features and burial pigmentation, it is apparent that these two burial aspects very rarely concur, and when they do, it is only in the burials of adults. While it is certainly possible that the coexistence of these two aspects of burial treatment were reserved for a very small segment of socially and/or religiously important individuals within society, it is also conceivable that each of these variables are respectively linked to aspects of burial programs that operate independently from one another, such burial practices that are linked to particular heterarchically organized group (e.g., lineages or moieties). If these variables are considered individually for subadults, it was much more common for subadults to have pigmented burials and fairly rare for subadults to have grave features. This may indicate social aspects of appropriate burial norms, where grave features were largely reserved for adult burials, whereas the norms surrounding which individuals could receive burial pigmentation were less restricted, as subadults received this type of treatment at similar or even greater rates than adults. Given the patterning for grave features being most commonly observed in adult burials, it appears there may have been an achieved component to its association with a given grave, whereas, for burial pigmentation this does not appear to operate on the same lines, due to the patterning of subadults exhibiting this burial treatment at similar or even greater rates than seen in adults. Generally, the patterning evident in subadult and adult burials for presence of grave features has a greater likelihood of indicating aspects of potentially achieved status, while patterns in burial pigmentation do not appear to have an achieved aspect.

When patterning for the body's overall disposition in the grave, as well as the conjunction of grave features and burial pigmentation are examined diachronically, there is a high degree of variability present within these aspects of burial treatment, especially for the Early period sample. This more noticeable variation in the Early period may indicate that heterarchical organization was more pervasive as an organizing factor during this time period than later in time. When these patterns are contrasted with those observed in the Middle period sample, for the most part, subadult patterns mirror those seen in the adult sample more closely than in the Early period. This patterning may indicate that aspects of hierarchical organization were more dominant organizing sociopolitical factors during the Middle period than in the Early period. While the diachronic contrast of these aspects of the Chumash burial program are useful points of comparison, the variation present in these aspects of the burial program suggest that aspects of heterarchical organization were in operation throughout the Early and Middle periods.

Religious Incorporation of Subadults

The results for presence of ceremonial paraphernalia, addressed in research question 6, provide a way in which to examine the prevalence of these objects across the different subadult age groups, as well as to identify how subadults compared with adults in the burial population. Objects of ceremonial paraphernalia (see Appendix A:Table A.2) are those that ethnographic and ethnohistoric sources indicate their primary use was restricted to ceremonial (religious) and not secular uses (Gamble et al. 2001:192). While these ethnographic and ethnohistoric observations cannot be applied directly onto the prehistoric past, their presence in burials consistently through prehistoric and historic periods of Chumash history suggest their overall cultural importance, and the relatively small proportion of the population that received them as grave goods also provides evidence that they were fairly restricted in their distribution (compared to other grave goods, such as beads, discussed above). By considering the distribution of these objects across the burial sample, the results help to place subadults within the overall religious/ceremonial matrix of their greater communities.

If subadults were not incorporated at some level into their society's religious/ceremonial practices, it would be expected that very few, if any, subadults would receive such objects among their grave good assemblages. This study's results indicate that subadult burials generally had similar, or even greater, proportions of ceremonial paraphernalia than their adult counterparts, which provides support for the assertion that subadults were incorporated into religious/ceremonial practices. Moreover, presence of ceremonial paraphernalia among subadults appears to increase with age, as adolescents consistently receive ceremonial paraphernalia at higher rates than children, who receive these objects at higher rates than infants. At the most basic level, these results indicate that cultural practices allowed for subadults of all ages to receive these objects, however, the presence of these objects was confined to a portion of the burial population (for both subadults and adults), which indicates that other factors such as social class/status or group membership may have been operating as well.

When the results are considered diachronically, there is observably more variation evident in the Early period sample than in the Middle period. In the Early period sample, subadults received ceremonial paraphernalia nearly twice as frequently as adults, whereas in the Middle period, the rates for presence of these objects are much more equal between the two age groups. The general patterning present between subadults and adults likely indicates that in the Early period the cultural rules prescribing who could receive these objects were more relaxed for subadults than adults, however, by the Middle period the cultural rules appear to be operating on a basis that appears to be more hierarchical in nature. Based on the distribution of ceremonial paraphernalia among the three subadult age groups, it appears that for both time periods the largest proportion of subadults who received these objects were in the adolescent age group (e.g., between the ages of 10 and 17.9 years old). Given that there are cases for both infant and child burials receiving ceremonial paraphernalia in both time periods, there were clearly special circumstances in which subadults under the age of 10 received these objects, but for the most part, these objects appear to be most commonly observed in burials of subadults aged ten and older. This could potentially indicate the relative timing at which religious initiations or rites of passage may have been undertaken in society. It is possible that these initiations may have been linked to the onset of puberty, which is a trend observed cross-culturally for certain rites of passage (see Markstrom and Iborra 2003; Norbeck et al. 1962). While the presence of a formal religious group (like the *'antap*; see Corbett 1999, 2004) is not confirmed until the late Middle period, these results may indicate the presence of an incipient version of such a group, which may have followed similar patterns in terms of age of initiates (see Blackburn 1976:236–238).

Concluding Thoughts

Based on the different material and non-material aspects of prehistoric burial practices analyzed in this study, it is evident that the Chumash had a high value of human life and also very likely a complex conception of the afterlife. In many of the analyses presented, subadult burials often revealed similar patterns to adults or even had treatment exceeding that which was commonly seen in adult burials. While there were many temporally specific patterns observed between subadult and adult burials for aspects of prehistoric Chumash burial treatment, the increased homogeneity in many aspects of burial practice evident in the Middle period sample is likely significant at the wider, regional level revealing patterns in shared cultural practices. The patterns observed diachronically for the treatment of subadult and adult burials support the idea that a fairly complex sociopolitical organization with a degree of centralization was present at least by the Middle period, that aspects of heterarchical organization likely were concurring throughout the Early and Middle periods, and that through all periods of Chumash history subadults were attributed personhood.

Considerations for the Study Sample Demography

The following discussion first introduces archaeological demography at a base theoretical level, focusing primarily on studies that have applied its examination to past hunter-gatherer groups. The most salient explanations for high subadult morbidity and mortality rates, along with the respective timing of these events are briefly discussed, which is followed by a concise discussion for ways in which studies initially focused on subadults could apply to the larger population. Lastly, the population profiles for the sites included in this study are discussed in context, with specific reference to the available proportion of subadult burials respective to time period and context.

Demographic Studies and Hunter-Gatherer Populations

Demographic studies in the field of archaeology aim to compile evidence from all possible past human activities and the corresponding material culture to assess how past populations functioned and were structured. The realm of death and burial is a particularly essential aspect to demographic studies in further estimating overall population size and structure, distribution and movement of the population across the landscape, as well as the rates at which individuals procreated and died (Chamberlain 2009:275–276). In studies of hunter-gatherer population demography, the studies of subadult morbidity and mortality rates have been found to be particularly telling of larger cultural, economic, and environmental factors (see Walker and Thornton 2002). At a base level, studies of morbidity assess physiological stressors that lead to illness and are highly affected by the type and quantity of pathogens present in the individual, how resistant that individual is to disease, and the larger environmental setting in which resources are available (Lallo and Rose 1979:323). Morbidity very often results in mortality (death) for subadults (Table 8.21), given the under-developed immune systems present in their developing bodies.

Table 8.21. Age Patterns in Subadult Mortality and Common Causes

Phases of Subadult Mortality	Subadult Age	Common Causes of Mortality
Phase I	Birth to one month	Asphyxia; atelectasis; congenital anomalies; infections acquired at/immediately after birth injuries sustained during birth
Phase II	One month to one year	Bronchitis; gastroenteritis; otitis media; pneumonia
Phase III	One year to Four years	Conjunction of higher degree of malnutrition and frequency of infectious disease

Source: Lallo and Rose 1979:325 and Gordon et al. 1967

In order to grow and develop, subadults require sufficient nutrition to meets their body's physiological needs, however, malnutrition is a very common occurrence in subadults due to a number of interworking internal and external factors (Beaumont et al. 2015). Heavy energy demands during these first few years of growth are greatly impacted by malnutrition, especially for subadults ages 1–3 years (the age range defined for infants in this study), which results in substantial levels of physiological stress. These high levels of physiological stress tend to occur during a specific cross-cultural life stage when the weaning process begins, and when these factors are combined with opportunities for infectious disease to enter the body through new sources of food and drink, observed mortality rates are often much higher for this age group than others in the population (Lallo and Rose 1979:324–325).

Subadult Morbidity, Mortality, and the Greater Population

As introduced above, the process of weaning subadults off of a diet solely consisting of breast milk tends to coincide with high mortality rates in subadult populations cross-culturally, in both ancient and modern contexts. Katzenberg and colleagues (1996:179) suggest a range of four-and-one-half years (between 2.5 and 7 years of age) to encompass the possible variation expected in prehistoric populations for the period of time in which mothers begin the process of introducing external sources of food and drink, either gradually with reduction of breast milk, or more suddenly with complete cessation of breast milk. The manner in which these events occur varies widely across ancient and modern populations, and is highly influenced by cultural norms, economic factors, and resource availability (Beaumont et al. 2015:6). Breast milk is widely recognized to supply a wide range of immunity-boosting factors from mother to infant, which enables the immune system of the infant to mature at a faster rate than it would otherwise (Beaumont et al. 2015; Katzenberg et al. 1996). However, once contaminated food and drink are introduced into the subadult system during the weaning process, rates for malnutrition increase due to the strain of the system combating the introduced pathogens while attempting to concurrently grow and develop and normal rates (Beaumont et al. 2015). Although weaning is focused upon heavily here and in much of the corresponding literature, it is important to note that it is not the sole cause or only factor involved in high morbidity and mortality rates for young subadults, as other environmental, cultural, epidemiological, and pathological factors certainly played a substantial role.

Paleodemographic studies that focus upon subadults are also able to provide a wealth of information on mothers in these populations (Angel 1969; Beaumont et al. 2015; Katzenberg et al. 1996). Previous studies have considered the interplay of socioeconomic class and environment, daily tasks of women, structure of households, unequal distribution of resources, among many other foci. The importance of understanding the minutiae surrounding subadult macro- and micro-environment cannot be overstated, and corresponds directly with the mothers (Katzenberg et al. 1996:179–180). Beaumont and colleagues (2015:4) stress the importance of studying the health of the mothers, considering especially levels of health during pregnancy, breast feeding, and weaning phases, which are all directly related to overall subadult morbidity and mortality rates. While the archaeological study of demography is a useful tool in understanding many aspects of past populations, any interpretations based upon these data must be made with extreme caution, as to not over- or mis-interpret the skeletal collections off which such data are based (Katzenberg et al. 1996).

Study Site Population Profiles and Discussion

To further consider the demographic spreads from the different sites included in this study, population profiles are presented for each site, separated into Early (Table 8.22) and Middle periods (Table 8.23), and are further organized by time period sub-phase. These distributions are based on the associated skeletal record and are designed to compare mortality distributions across prehistoric samples and populations (Chamberlain 2009:280). In human populations, general patterns in mortality rates reveal a sharp drop soon after birth, with rates remaining low until approximately the age of ten, at which the rate at which individuals die gradually rises, but never again reaches the rate seen during an infant's first year (L. King 1969:34). Sites with multiple time-period components are separated out accordingly to further assess age distributions across the sample. Although burials of "unknown" age are included within these population profiles, the reader should recall that these total burial counts do not include "reburials." In an ideal situation, all burials would have adequate age estimations, which would provide the most accurate age distribution for the cemetery, however, not every cemetery within this study has such data available.

Data from eight cemeteries are available for the Early period sample (Table 8.22), with SCRI-333 being the only multi-component cemetery (sub-phases Eya and Ez) dating to this period.[11] There are three sites for which there are no burials of unknown age, SCRI-333a, SCRI-162, and SCRI-333z, while two of the remaining sites, SRI-41 and SRI-5 have the lowest rates for unknown burials in the Early period, and SRI-3, SBA-53, and VEN-150, comparatively, have the highest rates for number of unknown burials. Adult burial rates are fairly comparable among the Early period sample, with all but one site (SCRI-162) falling within a range of 53–62 %. Four of the Early period sites (SCRI-333a, SRI-41, SRI-5, and SCRI-333z) have all three subadult age groups present and the only site lacking subadult burials entirely is SBA-53. Two sites (SRI-3 and SCRI-162) lack any adolescent burials, while only VEN-150 has cases for infant and child burials, but no adolescent burials. The proportions of the three subadult age groups for these Early period sites range approximately from 0–23 % for infant burials (SCRI-333a is an outlier far exceeding this value), and 0–11 % for child burials, and 0–17 % for adolescent burials.

[11] The two cemeteries present at SCRI-333 were clearly demarcated, so that burials from the earlier (Eya phase) cemetery could be distinguished from burials in the later (Ez phase) cemetery.

Table 8.22. Summary Table for Early Period Burial Populations Separated by Age

Early Period: Site Designation	Sub-Phase	Infants		Children		Adolescents		Adults		Unknown		Total	
		n	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%
SRI-3	Ex	1	1.4	1	1.4	0	0.0	44	62.0	25	35.2	71	100
SCRI-333a	Eya	23	41.1	2	3.6	1	1.8	30	53.6	0	0.0	56	100
SRI-41	Eyb	33	22.8	12	8.3	10	6.9	86	59.3	4	2.8	145	100
SCRI-162	Eyb	2	7.1	3	10.7	0	0.0	23	82.1	0	0.0	28	100
SBA-53	Eyb	0	0.0	0	0.0	0	0.0	7	58.3	5	41.7	12	100
SRI-5	Ez	2	18.2	1	9.1	1	9.1	6	54.5	1	9.1	11	100
SCRI-333z	Ez	7	14.0	4	8.0	8	16.0	31	62.0	0	0.0	50	100
VEN-150	Late Early	0	0.0	0	0.0	2	16.7	7	58.3	3	25.0	12	100

For the Middle period sample (Table 8.23), there are ten cemeteries for which population profiles have been generated; VEN-61 is the only multi-component cemetery in this sample, with cemeteries dating to sub-phases M2a and M2b. Five sites from the Middle period have no burials of unknown age, SBA-43, SCRI-159, SBA-72, SLO-406, and SBA-73. For the cemeteries with burials of unknown age, three sites (SCRI-257, SBA-81, and SBA-71) have the lowest rates, compared to the two phases of VEN-61 (Sub-phases M2a and M2b) with the highest rates. The ranges for rates of adult burials among the Middle period sample exceeds that of the Early period sample, with an approximate range of 46–91 %. Five of the Middle period sites (SCRI-257, SBA-42, SBA-81, SBA-71, and SLO-406) have cases for each of the three subadult age groups, while VEN-61a, VEN-61b, and SBA-73 lack infant burials, SCRI-159 lacks child burials, and VEN-61b, SBA-72, and SBA-73 lack adolescent burials. Ranges for Middle period infant burials extend approximately from 0–13 %, for child burials between 0–22 % (SBA-73 is an outlier exceeding this range), and for adolescent burials between 0–13 %. When subadult age groups from each time period are compared, infant mortality rates appear to be higher across the

Early period sample, while child mortality rates were higher in the Middle period, and mortality rates for adolescent burials are fairly comparable between the two time periods.

Table 8.23. Summary Table for Middle Period Burial Populations Separated by Age

Middle Period: Site Designation	Sub-Phase	Infants		Children		Adolescents		Adults		Unknown		Total	
		n	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%
SCRI-257	M1	3	4.3	6	8.7	5	7.2	52	75.4	3	4.3	69	100
SBA-43	M1	1	2.2	2	4.3	1	2.2	42	91.3	0	0.0	46	100
SCRI-159	M2a	2	10.5	0	0.0	1	5.3	16	84.2	0	0.0	19	100
SBA-81	M2a	7	3.0	3	1.3	2	0.8	212	89.5	13	5.5	237	100
VEN-61a	M2a	0	0.0	1	4.3	1	4.3	11	47.8	10	43.5	23	100
SBA-71	M2b	3	5.3	9	15.8	1	1.8	42	73.7	2	3.5	57	100
VEN-61b	M2b	0	0.0	1	3.8	0	0.0	12	46.2	13	50.0	26	100
SBA-72	M3	4	8.5	10	21.3	0	0.0	33	70.2	0	0.0	47	100
SLO-406	M3	3	12.5	4	16.7	3	12.5	14	58.3	0	0.0	24	100
SBA-73	M4	0	0.0	3	37.5	0	0.0	5	62.5	0	0.0	8	100

Oft-cited by Chumash mortuary scholars, J. Angel's (1969) article on paleodemography estimated ratios for infant to adult death ratios between 5 : 10 and 8 : 10, and for child burials between 3 : 10 and 5 : 10. While these values for infant and child to adult death ratios may be useful in studies comparing sites across different cultures, death ratios calculated by L. King (1969) and Martz (1984) for the Southern Chumash region are generally lower than expected based on Angel's estimations, and overall more useful for comparisons to this study's data. Martz's more comprehensive study, examining both prehistoric and historic cemetery data, has a range of 2.5–6.3 subadult deaths to every ten subadult deaths, with an average for her study at 3.8. The subadult to adult death ratios computed by Martz (1984) do not include adolescents in the burial population, so the ratios computed for the sites within this study (Table 8.24) follow suit for ease of comparison.

Table 8.24. Infant, Child, and Combined Subadult Death Ratios as Related to Adult Deaths for Study Sample

Time Period	Site Designation	Infant : Adult	Child : Adult	Subadult : Adult
Early Period	SRI-3	0.2 : 10	0.2 : 10	0.5 : 10
	SCRI-333a	7.6 : 10	0.6 : 10	8.3 : 10
	SRI-41	3.8 : 10	1.4 : 10	5.2 : 10
	SCRI-162	0.9 : 10	1.3 : 10	2.2 : 10
	SBA-53	0.0 : 10	0.0 : 10	0.0 : 10
	SRI-5	3.3 : 10	1.7 : 10	5.0 : 10
	SCRI-333z	2.3 : 10	1.7 : 10	3.5 : 10
	VEN-150	0.0 : 10	0.0 : 10	0.0 : 10
Middle Period	SCRI-257	0.6 : 10	1.2 : 10	1.7 : 10
	SBA-43	0.2 : 10	0.5 : 10	0.7 : 10
	SCRI-159	1.3 : 10	0.0 : 10	1.3 : 10
	SBA-81	0.3 : 10	0.1 : 10	0.5 : 10
	VEN-61a	0.0 : 10	0.9 : 10	0.9 : 10
	SBA-71	0.7 : 10	2.1 : 10	2.9 : 10
	VEN-61b	0.0 : 10	0.8 : 10	0.8 : 10
	SBA-72	1.2 : 10	3.0 : 10	4.2 : 10
	SLO-406	2.1 : 10	2.9 : 10	5.0 : 10
	SBA-73	0.0 : 10	6.0 : 10	6.0 : 10

The following discussion examines the combined subadult to adult death ratios (Table 8.24) for the cemeteries included in this study, comparing the Early and Middle period samples against the baseline range established by Martz (1984). It is expected that each of the cemeteries falling into the "normal" range are the most representative and should have cases for infant and child burials, while also having minimal, if any, burials of unknown age. In the Early period sample, there were four cemeteries,[12] SRI-41, SCRI-162, SRI-5, SCRI-333z, that fell within the expected range of 2.5–6.3 subadult deaths to every ten adult deaths. For the Middle period sample, there were also four cemeteries that fell within the expected range, SBA-71, SBA-72, SLO-406, and SBA-73. The majority of both samples had no cases for burials of unknown age with cases representing both infant and child burials, with only SBA-73 having no burials of unknown and also lacking infant burials. There were three sites (SRI-41, SRI-5, and SBA-71)

[12] SCRI-162 is included within this category due to its combined subadult value (Table 8.24) being so close to the low end of the values established by Martz (1984).

that had relatively low proportions (all were < 10.0 %, and two were < 4.0 %) for burials of unknown age, however, these sites also had cases representing infant and child burials, suggesting that the representativeness of the sample is not compromised by the number of unknown burials. Additionally, there was one Early period cemetery, SCRI-333a, which exceeded the high end of the respective ranges established by both Martz (1984) and Angel (1969; see Gamble 2017:Table 4). SCRI-333a had no burials of unknown age, and both infant and child burials represented, however, rates for infant mortality were very high, approaching rates seen in adult burials. This patterning is non-normative, especially when the entire study sample is taken into account, and is also suggestive of some level of special treatment or unusual event/circumstances resulting in the ratios evident at SCRI-333a.

It is expected that the cemeteries falling below the low-end of the expected range (< 2.4 combined subadult ratio) are less representative than the cemeteries falling within the expected range, and are expected to more frequently lack infant and/or child burials completely, as well as have higher proportions for burials of unknown age. There were three Early period sites, SRI-3, SBA-53, and VEN-150, and six Middle period cemeteries, SCRI-257, SBA-43, SCRI-159, SBA-81, VEN-61a, and VEN-61b, that fell below the expected range. Only two sites, SBA-43 and SCRI-159, had no cases for burials of unknown age and, of these, only SBA-43 had both infant and child burials represented, setting it apart somewhat from the other sites. The majority of the remaining sites had fairly high proportions (~ 25.0–50.0 %) for burials of unknown age, however, SCRI-257 and SBA-81 stand out as having relatively low proportions (~ 4.0–5.5 %) for burials of unknown age, with both infant and child age groups represented. Only two burials from the Early period (SBA-53 and VEN-150) lacked infant and child burials entirely, however, Middle period sites VEN-61a and VEN-61b both lacked infant burials, while SCRI-159 lacked child burials. Overall, there appears to be a larger phenomenon, which is more prominent in, but not exclusive to, the Middle period, affecting the rates for subadult burials included in the cemeteries.

Evidence for Chumash cemeteries in all time periods, including those not covered in this study, suggests that they followed a fairly consistent burial practice over time with use of formal cemeteries that usually included all age groups. In a general sense, these types of burial practices occurring within formalized cemeteries are expected to represent levels of attritional mortality, where the youngest and oldest individuals are expected to have the highest mortality rates and thus be more frequently represented in these cemetery contexts (Chamberlain 2009:281). Be that as it may, deviations from this general expected pattern are perhaps more telling about larger societal treatment and incorporation of subadults within the community. The following discussion covers four potential reasons why the ratio for subadult burials fell below the expected range, as well as discussing potential reasons why subadult burials at SCRI-333a exceeded the expected range.

The first potential reason for lower than expected subadult ratios within excavated burial populations lies in the archaeological record itself, particularly in differential taphonomic preservation and/or insufficient excavator techniques in the recovery of subadult remains. Although many mortuary and bioarchaeological studies commonly reference differential taphonomic preservation to be the cause of lower than expected rates for subadult recovery (Flensborg et al. 2015; Gordon and Buikstra 1981; Lewis 2007; Walker et al. 1988), the population profiles and subadult death ratios (Tables 8.23 and 8.24) indicate that these taphonomic issues may be site-dependent, as neither geographic context nor time period appear to have strong patterns for differential preservation. There is also no evidence suggesting that insufficient excavator techniques were the primary cause for lower than expected subadult burial rates. One of the reasons sites were selected and included in this study was due to the confidence of the original excavators that they were able to document the entire cemetery. Additionally, the techniques employed by excavators were comparable across the different sites, resulting in subadult burials recovered from all but two sites in the entire study, which are among the sites with the lowest number of burials. For these reasons, differential taphonomic preservation and insufficient excavator techniques are not further entertained as potential reasons for lower than expected subadult burial ratios.

The second possibility for lower than expected subadult burial ratios could potentially lie in the overall health of the population, resulting in fewer premature deaths in the case of subadults. As discussed previously, high subadult mortality rates are often directly linked to periods of systemic biological stress, which are often compounded by diarrheal illness and resulting malnutrition. Martz (1984:126) suggests that the samples used to generate subadult to adult mortality ratios in Angel's (1969) study may be representative of populations that were under greater degrees of nutritional stress than the Chumash cases in her analysis, which would also hold true for the populations in this analysis. One way to test this, would be to evaluate the osteological health of the study sample, specifically in regard to skeletal indicators of growth disruption, such as linear enamel hypoplasia, among other indices (Gamble et al. 2001:205). Examinations of the relationship between periods of subadult stress and social status have led to meaningful results in prehistoric populations (Gamble et al. 2001; Wilkinson and Norelli 1981). Gamble and colleagues were able to make a connection in the Middle period cemetery at Malibu between health and social status, whereby individuals lacking grave goods (especially those signifying wealth) had higher rates for periods of systemic stress during childhood than did individuals with wealth-associated grave goods. Unfortunately, the research presented in this dissertation was not designed to examine osteological indicators of health for the study population, so this possibility cannot be confirmed or refuted, however, it could function as a much-needed avenue of further study.

The third possibility for subadult mortality rates falling below the expected range could be based in cultural practices, which would have been responsible for dictating the appropriate manner and location of burials for community members and non-members. The supposition here, following Martz (1984:468, 491–492), is that the under-representation of infant and child burials suggests a pattern in mortuary treatment where initiated adults had specific sanctions relating to the manner in which they were interred, which was not established for uninitiated infants and children. While this study has repeatedly demonstrated that personhood was allocated to even the youngest of infants in Early and Middle period Chumash contexts, it seems likely that cultural ascription of personhood and social and/or religious initiation into the greater community were two separate cultural phenomena. Cross-culturally, it was very common for burials of infants and children to take place within household contexts (Binford 1971; Carr 1995; Garroway 2012; Parker Pearson 2000; Wedgwood 1927). Depending on the cultural norms within a given society, infant and child burials might lack any evidence of formal disposal, or more commonly they were interred in non-cemetery contexts, such as within the household or in/around the domestic settlement. Although infrequently encountered, Van Valkenburgh reported the burial of two subadults (both believed to be children) under a house floor at the site of Muwu in a Historic period context (as cited in Martz 1984:493), however, only one subadult (an infant) can be confirmed (Gamble 1991:102, 2008:106). The infant burial was interred within the confines of a pit, adjacent to two centrally-located hearths within the house, and was associated with a number of different kinds of grave goods. The careful and thorough excavations in the Historic period Muwu settlement, including the complete excavation of the house containing the infant burial (as well as two other houses; Gamble 2008:131), may account for the recovery of this subadult burial; however, this lone subadult case of a subadult household burial cannot be used to substantiate whether or not this was a practice only occurring in the Historic period, or if it potentially was occurring in other time periods as well. Additionally, adult burials have been atypically encountered outside of cemetery contexts. For example, adult burials were found associated with a sweat lodge at Morro Bay in a Middle period context (Clemmer 1962; see Gamble 1991:86–88, 1995:65, 89) and also at the Middle/Late period site Pitas Point (Gamble 1983:121). Van Valkenburgh's finding lends support to the possibility that infant household burials could have been a rare, albeit still occurring practice among the Chumash. Additional analyses of household contexts for subadult and adult remains would provide another direction of future study to further assess this possibility.

The fourth possibility for lower than expected subadult mortality rates could lie in methods of corpse disposal that were not the subject of statistical analysis in this study, namely reburials. Reburials were primarily excluded from this study to facilitate the assessment of widespread patterns between subadult and adult burials within respective study populations, but also, to a lesser extent, because reburials often occurred as an "incidental necessity" to inter additional individuals within the already compacted nature of many Chumash cemeteries. Although a regional analysis is critical to further assess the rate to which subadult burials are subject to reburial practices, L. King's (1982:96) analysis of Medea Creek, provides some level of confirmation that a higher proportion of reburials belonged to subadults than adults. Another trend remarked upon by both L. King (1969, 1982) and Martz (1984) was that infant burials were frequently interred in the confines of containers, such as stone vessels, mortars, and baskets, within the cemetery. Given the general cross-cultural propensity for burials of infants to take place within household (as opposed to cemetery) contexts, there is a possibility that infant container burials could represent secondary burial practices, however, there is not enough evidence to make any definitive statements for this practice in Chumash contexts. At a practical level, such burials would functionally provide a container in which to inter the infant for the period in which it would remain in the household context, with minimal to no disruption of the body's articulation, and further facilitate its transfer and eventual reburial within the greater cemetery context. Even though specific cultural reasons for such a practice may never be known, the lower than expected infant mortality ratios may represent infants that were not socially privy to a container burial and thus remained permanently interred within household contexts. Again, this hypothesis is untested and, at this juncture, there is little evidence to support it. Container burials were encountered with some frequency in this dataset, however, their statistical analysis was not within the overall aim of this study, but definitely provides another line of future research.

While lower than expected infant and child mortality rates were more common among the majority of study cemeteries, the Early period cemetery SCRI-333a stands out among the rest due to its far higher than expected rates for infant mortality. Even when compared to the slightly later cemetery in use at the same site (SCRI-333z, sub-phase Ez), these rates are still comparatively staggering (see Gamble 2017:439–440). In Martz's (1984:494) mortuary analysis, the Middle period cemetery at Malibu had a similar pattern with rates for infant and child burials far exceeding those seen in her other study sites, which she attributed to fewer sanctions surrounding the burial of these age groups. While this is certainly one potential reason for the observed pattern at SCRI-333a, the rates for infant burials nearly reach that for all adult burials, which seems to indicate an unusually large number of infants as part of the overall population. It seems unlikely that such a population distribution was a regular occurrence, but perhaps this particular site served as a place of regular pilgrimage or gathering. Gamble's (2017) research has validated the importance of this massive mound site on the west end of Santa Cruz island, establishing it as a site of long-lasting cultural importance in the Early period, and even encountering evidence that could suggest feasting events, further supporting the notion that the site served as a place of community pilgrimage and/or gathering. The high rates for subadult mortality at the site could represent burials of both resident and visiting, non-resident Chumash infants, who perhaps died while their parents were visiting at the site, or given their small size, recently deceased infants could have been transported from other areas on the island for burial at this special location. In order to test this possibility, osteological and ideally genetic testing would be performed to assess the degree of relatedness between infants and the adults buried in this cemetery.

Potential Biases in Study Dataset

One potential bias affecting the dataset is the distribution of the Middle period sample. The majority of burials for the Middle period sample are skewed towards the first half of the Middle period, especially since SBA-81 (dating to sub-phase M2a) has nearly 237 burials on its own accord. Additionally, there are no sites in this study that date to phase M5 of the Middle period, which was unfortunately due to records of insufficient quality for sites dating to that sub-phase within the defined study area. While the results presented here still have value in aiding our collective understanding of burial practices in both the Early and Middle periods, it is important to note that these results are more telling of trends in the first half of the Middle period.

Another potential bias lies in the excavation and recording of the sites themselves. While all efforts were made to preference cemeteries for inclusion in the study that, by all accounts, were fully excavated, there were unavoidable instances in which legacy records were missing information on certain burials, or little to no useful information was available from "excavations" conducted prior to modern scientific archaeological investigations. For instance, evidence of looting and pot-hunting activity conducted prior to scientific excavations was observed at SRI-41, SBA-72, SBA-73, and VEN-61 (see Chapter 4 for additional discussion). In the case of excavations at SBA-72, D. B. Rogers did not excavate the cemetery fully due to the evidence of previous looting activities (C. King 1980:46). Additionally, post-depositional processes such as erosion likely affected some sites, such as SRI-3, resulting in the inability to record burial information on partially or fully eroded burials. While information lost through the natural processes of time or human error can never be recovered, efforts were undertaken for this study to provide the most accurate data with the available legacy records.

Chumash Conceptions of Children and Childhood: A Perspective of Life and Death

The results discussed previously in this chapter highlight the integration of Early and Middle period subadults into their wider societies, whereby they were largely treated on very similar footing as adults, if not subject to receiving special treatment far beyond that seen in adult burials in the form of their respective burials and the associated grave goods. On the whole, these results have reaffirmed the attribution of personhood to even the youngest infants, however, personhood cannot be directly equated to inclusion at the social and/or religious levels. Some of the patterns observed may very well be representing different life stages or rites of passage that are unable to be ascertained via the prehistoric archaeological record. The following discussion considers ethnohistoric Chumash accounts of subadults in both life and death. Although these accounts cannot be applied directly to the past, especially the distant past, they still provide a useful point of comparison in which to consider the archaeological results of this study.

Children in Life

While much of what we know of historic Chumash children comes from tales and myths from Fernando Librado and other consultants to Harrington, these accounts are particularly useful in assessing some of the wider community relationships taking place, especially between subadults and members of their immediate and extended families. These accounts affirm that the historic (and very likely ancient) Chumash treasured their children, seemingly placing their well-being above that of adults, even those most closely related to them. This intense care and special treatment was even extended to infants not yet born, affirming again their personhood: "The Indians said that a child in its mother's womb was independent—a free-willed person" (Hudson et al. 1981:19). In our modern society, care of children most often falls upon the parents, however, in Chumash culture, strong relationships also existed with grandparents, aunts and uncles, and siblings as well, each playing a role in the upbringing of the child.

Analyzing the many accounts of Harrington's consultants, Blackburn commented on observed patterns in how relationships between children and their parents were represented:

> One of the more surprising aspects of the depiction of interpersonal relationships in the narratives is the lack of attention paid to the relationship between parents and children. The fact that this relationship does not figure at all prominently in the stories seems all the more surprising in view of ethnohistoric statements to the fact that Chumash are exceptionally fond of children and allow them considerable latitude in behavior [Blackburn 1975:58].

Blackburn posited that while the emotional relationship between parents and children may be significant to both parties, it may have not been relevant to the overall societal structure, and thus left out of the majority of these tales. Alternatively, he suggested that parents may have been responsible for bearing the burden of subsistence and other daily activities, a situation in which activities of child rearing and supervision, enculturation, and discipline fell upon older siblings, aunts, uncles, and especially grandparents (Blackburn 1975:58–59). Between children and grandparents (and aunts and uncles, as well) there appears to have been a very close and warm relationship, that lacked the formality and emotional distance observed between Chumash parents and children, where grandparents often served the roles more traditionally associated with parents in modern society (Blackburn 1975:62).

Harrington's consultants shared many accounts and mythological tales that are rife with negative social sanctions against adults who harm or endanger the lives of children. For example, in the story of Vicenta's sons, Vicenta, the mother of two young boys, leaves them alone to gather water, even though they insist on joining her. She returns from her excursion to find them gone; her husband joins in her frantic search for them, however, they locate both boys already dead. In her grief, she insists that she be returned to her relatives for punishment, saying "It doesn't matter what becomes of me. I don't care if they kill me" (Blackburn 1975:285). In the story of Anucwa, overcome with emotion at the indolent behavior of her young daughter, the mother kills her daughter, but suffers such distress that she herself becomes an animal (Blackburn 1975:234–236). In another tale, a "half-wit" named Siqneqs was instructed by his parents to take care of his infant brother in their absence, nevertheless, during the brief period of his caretaking, Siqneqs accidentally kills the infant, but does not realize this until his parents return. In the aftermath, Siqneqs is punished by being whipped (Blackburn 1975:242–243). While in the story of Anucwa, the young girl is magically regenerated, however, the children in the tales of Vicenta and Siqneqs are not so fortunate. Even with the tragic endings of these two tales, the story-tellers include latent information about burial practices, in that both stories include specific language affirming the burial of both infants and children. Although the transition from life to death is not readily attained through the archaeological record, these mythological tales and accounts provide further details on the afterlife for infants and children.

Children in the Afterlife

While only conjectures can be made regarding the prehistoric Chumash conception of death and the afterlife, ethnohistoric accounts provide some details about historic Chumash ideas regarding communication with the souls of the deceased, the path traveled by the deceased to reach the afterlife, and the supernatural life-cycle. The Chumash envisioned the land of the dead to be a place called *Šimilaqša*, which lay westward, past Point Conception, across the sea. J. P. Harrington's primary consultant, Fernando Librado, recalled much information regarding the journey and lifecycle of the souls of children: "Once the soul has crossed the bridge it is safe in *Šimilaqša*. … When children die they take the same route as adults. The *qaq* [raven] peck out their eyes, but they have no other troubles on the journey. They pass the bridge easily, for the monsters that try to frighten other souls do not appear" (Blackburn 1975:100). Based on Librado's account, it seems that both subadult and adult souls traverse the same journey to the land of the dead, however, subadult souls suffer less in the way of supernatural "harassment" on their way to *Šimilaqša* than their adult counterparts.

Librado goes on to further clarify circumstances of the death and the age of deceased subadults and their journey to the afterlife, specifically regarding infants:

> The soul of a baby that died before or after birth went west also, but it never reached the place that souls of adults did. They explained that the small surf fish never reached the place that the deep-water fish did. Fernando was told that the soul is eternal. The soul went to the west and at the end of twelve years it would return and live here reincarnated, born again. When Fernando was a boy and went out hunting the Indians used to tell him to be careful about shooting because the time was going to come—to be careful because there would be many young children. Those were pure spirits. They never slept. They were constantly on guard, watching and waiting for the spirits that were coming [Blackburn 1975:97].

Librado's account here provides a veritable wealth of information both about infants having a special place in the land of the dead, and also generally regarding the souls of subadults. While this account confirms the personhood of infants in later Chumash society, suggesting that although they follow the same westward path towards *Šimilaqša* as did adults and older subadults, the souls of infants went to a special location reserved only for other infants. The metaphor used to describe the difference between infant and adult afterlife destinations seems to indicate that infants ended up in almost a protected nursery-like place, compared to older individuals, who would have had to contend with increased dangers in the deep waters.

The account of Librado referenced above also divulges the notion that the Chumash believed in the idea of reincarnation at 12-year intervals following the death of the human body. While this is a profound belief on its own, when tied to the Chumash notion of souls, especially those of children, the level of interaction and respectful reverence due to these souls on a daily basis becomes more clear. His retelling characterizes the heightened supernatural powers of the souls of children, as cautioned to him by elders in his community, which must have been especially harrowing to hear as a youth himself. Furthermore, regarding the interaction and communication with souls of the deceased, Richard Applegate (1975) highlights the importance of *Datura meteloides,* also known as Jimsonweed or *toloache*, which was a powerful hallucinogenic plant used widely in North and South America, with known use among the Chumash: "A person might take *Datura* to communicate with the spirits of the dead; those who still missed some loved one, particularly a dead child, sometimes took *Datura* for this reason" (Applegate 1975:8). Altogether, these accounts further support the notion that at least the historic Chumash attributed full personhood to the youngest of infants, believed the souls of subadults traveled westward as did adults to the land of the dead, and that the living could communicate with the deceased by means of powerful plant medicine.

Further Research

The established aims of this study were achieved through diachronic and multi-context analyses of subadult and adult burials for the Santa Barbara Channel Region. While the examination of subadult burials has certainly featured in a number of previous regional studies, their analysis tends to be centered within the confines of a specific site, time period, or small geographic sub-region. This study's analysis of Early and Middle period mortuary contexts, extending over San Luis Obispo, Santa Barbara, and Ventura counties, as well as Santa Cruz and Santa Rosa island, has considered the interplay of 16 different variables comparing subadult and adult burials, even analyzing subadult burials at the level of infant, child, and adolescent age groups. While much headway has been made to understand the treatment of subadults in Chumash burial contexts, additional research avenues would further enhance our understanding of this less frequently addressed age group.

Multivariate Analyses of Grave Goods

Given that one of this study's goals was to establish broad baselines for subadult and adult burials, the next step would be to assess further details of burial trends through multivariate analyses with additional grave good data, including artifact type and location relative to the body. Analyses of this type would enable additional patterns in the data to be ascertained, potentially aiding in the identification of sub-groups within the burial population that could be compared at inter- and intra-site levels. The interworking of these many variables could potentially yield more information regarding potential class and status affiliations through more complex statistical analyses of grave goods. Additionally, further analyses of grave good location, relative to the body of the deceased, may be able to aid in understanding more about the order in which grave-site ritual practices may have taken place, including events occurring preinterment, during the preparation of the body, and during/after burial rites (Bornemann and Gamble 2018).

Osteological and Chemical Analyses of Systemic Stress

Osteological examinations and chemical analyses, in the form of different isotope ratios, can provide other venues in which to assess certain aspects of individual health via systemic stress, both of subadults who died prematurely, as well as individuals who survived to adulthood, but exhibit long-lasting skeletal evidence of physiological stress experienced during infancy and childhood. Given that the process of weaning is such a precarious one for subadults, chemical analyses of stable isotope ratios can provide details about this process that are impossible to glean from other aspects of the archaeological record. The trace element ratios of strontium to calcium (Sr/Ca) and stable nitrogen isotope ($\delta^{15}N$[3]) analyses provide two opposing, yet complementary approaches to study weaning. Sr/Ca ratios are very low in bone mineral content for newborn and nursing infants/children given their reliance on mother's milk, but increase as solid foods are incorporated into the diet during the weaning process. Coming from the opposing direction, $\delta^{15}N$[3] values begin to change when breast milk is reduced or removed entirely. Since Nitrogen stable isotopes reflect general trophic levels, subadults consuming breast milk as part of their regular diet are expected to have larger $\delta^{15}N$ levels than adults in the population (Katzenberg et al. 1996:187–188). The conjunction of these two chemical analyses could provide a wealth of information about a practice of which little is known in Chumash prehistory.

Additionally, wider-scale analyses following after the osteological studies performed by Gamble and colleagues (2001), among others (e.g., Ambrose et al. 2003; Cook 1981; Lambert 1993; Lambert and Walker 1991; Robb et al. 2001; Walker 1986; Walker and Erlandson 1986;

Walker et al. 2005), would be of great benefit to understanding periods of systemic stress on the body during childhood and social status through the proxy of associated grave goods. While some skeletal indicators of systemic physiological stress are evident in deceased subadults, including a comprehensive study of skeletal indicators also on adults would be beneficial in assessing the overall health of the population and can also provide a venue for examining the relationship between systemic stress and social status (Gamble et al. 2001; Wilkinson and Norelli 1981). Evidence of Harris lines, linear enamel hypoplasia, dental hypocalcification, and hypoplasia-related caries on the deciduous teeth of infants and children would provide a number of approaches with which to further consider this topic (Goodman and Armelagos 1989; Katzenberg et al. 1996).

Osteological and Genetic Testing for Relatedness

For the cemetery at SCRI-333a in particular, osteological analyses assessing degree of genetic relatedness, as well as genetic DNA testing for familial relationships, would aid in determining the degree to which related individuals were interred in cemeteries and the degree to which individuals with no clear genetic ties are included. Such an analysis would be useful not only to further understand the cemetery data at SCRI-333a, but likely at many other sites in the region as well. Sites that have subadult mortality ratios either higher or lower than the established regional range would be ideal candidates for such analyses. In situations such as these, assessing degrees of relatedness between individuals would be one venue to support or refute the idea that subadults (unrelated to individuals within the cemetery) were being brought from outside areas for burial at a particularly important site, as well as to ascertain if certain time periods or sub-regions had fewer sanctions regulating burial of uninitiated community members.

Reburials and Infant Container Burials

Although not a subject of this study's analysis, the examination of reburials in Chumash cemeteries has been shown to include a greater number of subadults than adults, at least at the site of Medea Creek (L. King 1982). Considering this phenomenon at a broader level for both time period and geographic region would help ascertain whether or not the trends observed at the Late period cemetery at Medea Creek were also regularly practiced at other sites within the Chumash region, especially during pre-contact time periods. Burials of infants within containers were observed at a number of sites within this study, as well as at others within the Chumash region (e.g., L. King 1969, 1982; Martz 1984), however, it seems that container preference differed somewhat diachronically. Assessing the degree to which infant container burials were practiced in the Chumash region would provide a much-needed baseline, and additionally, it may also provide support for or against this practice as evidence for secondary burial custom. Considering reburial practice and infant container burial practices in conjunction with one another segues neatly into the study of burials in settlement contexts as well, given that subadult burials can occur in settlement contexts, which is widely documented cross-culturally, but is also attested within Chumash sites as well.

Settlement Context Burial Assessment

Although infrequently encountered, Van Valkenburgh's discovery of at least one subadult buried in household contexts at Muwu lends some credence to the possibility that this burial custom could have been practiced at other sites in the Chumash region. A complementary study, building upon the previous research conducted by Gamble (1991, 1995), that focuses on the corresponding settlement excavation data from the sites in this study would prove useful in assessing how widespread such burial customs were. Such a study would also need to investigate whether or not there is evidence for adults interred in household contexts or nearby, as well. Sites with particularly low subadult mortality ratios would be ideal candidates for such analysis, given that the likelihood for the low subadult ratios is explained by their burial elsewhere, which is a common practice observed cross-culturally.

Conclusions

While modern conceptions of children and childhood cannot be applied onto the examination of the past directly, the analyses performed in this study have rigorously investigated aspects of Chumash subadult mortuary practice in the Early and Middle periods, comparing them to an adult baseline from their respective populations. Through the application of childhood theory, using frameworks of personhood and practice, many gaps in knowledge and previous assumptions regarding subadult burial treatment have been further clarified, enhancing our knowledge to date of this less well-known portion of the population.

In many respects subadults received similar treatment to adults, however, some key differences were evident between the two age groups, as well as between infant, child, and adolescent burials. Analyses conducted for most of the Early period sample revealed a greater degree of differentiation present between the age groups. For example, Early period subadults exhibited the most differentiation in burial position types compared to adults. Even though flexed burials were the dominant position in both age groups, subadults had a greater diversity of burial types, with the second most common position being extended types (the least common for adults). Middle period subadult burials still exhibited greater degrees of differentiation compared to adults, however, between the three subadult age groups, the overall patterning of burial positions are fairly comparable. Similarly, greater differences are seen among Early period subadults for ceremonial paraphernalia, where subadults have higher proportions of ceremonial objects than adults, while in the Middle period proportions between the two age groups are more similar. These patterns seem to indicate a greater restriction of these objects by the advent of the Middle period, while burial positioning also seems to become more regulated in the Middle period as well.

Analyses of grave good associations confirmed that in most cases subadults received beads at higher frequencies, as well as greater amounts of ornaments than adults. Across the board, beads were more frequent inclusions in subadult burials than adult burials, the frequency of which appears to cross-cut social status and is potentially indicative of community participation in funeral events. Early period subadults consistently had larger numbers of ornaments and relatively equivalent numbers of non-ornaments as adults, which was more true for infant and child burials than for adolescents. A change is evident for these variables in the Middle period sample, where more adults have burials with large numbers of ornaments, however, both age groups have comparable numbers of non-ornament grave goods. Additional changes are evident in the subadult group, where in the Middle period child burials have the greatest numbers of ornaments out of the three subadult age groups, while infant and child burials are more comparable to one another. For both Early and Middle period samples, subadults received similar numbers of material types as adults, respective to time period. This patterning indicates that the majority of subadult and adult burials were subject to similar rules governing culturally appropriate burial behavior, further providing evidence for subadults having full personhood.

Certain aspects of mortuary ritual were revealed where subadult burials were not awarded the same treatment as adults. For example, in the examination of grave depth, both Early and Middle period adults consistently had deeper graves than subadults, which may indicate this variable as an aspect of achieved status, especially to the degree it coincided with total number of grave goods. Similarly, adults appear to receive extra energy expenditure (burial pigmentation and grave features) more frequently and to greater degrees than subadults in both time periods. Contrary to expectations, non-single interments (dual and multiple burials) most frequently occurred between adult and subadult pairings, with adult and infant pairings being the most common type. This patterning appears to signify infants having special treatment in this regard, potentially signifying the need for these very young, and likely uninitiated community members, additional supernatural protection in the afterlife from adults in the community, who may or may not have been directly related to them.

The final repose of death is one that is carefully constructed by those burying the body, and as such, conveys much information about the relationship of that individual to the wider community. Mortuary treatment of subadults is likely more telling of their relationship to those responsible for preparation and burial rites, which conceivably fell to members of their immediate and extended families, and likely to portions of the greater community as well. This is not to say that adults necessarily had control over their burial contexts either, but in the case of adult burials, there were more social roles able to be achieved in life, aspects of which were likely represented in the mortuary context. Previous mortuary studies in the Chumash region have gone through great lengths to expand our knowledge of the past and establish some widely-held patterns at a regional level. The patterns and interpretations achieved through this study contribute complementary knowledge to this wider body of literature, furthering the overall understanding of the past. The implementation of childhood theory in this study has enabled a novel theoretical venue for the region, which has provided a greater understanding of the burial programs of Early and Middle period Chumash infant, child, and adolescent burials.

The eight research questions addressed in this chapter have also provided a way in which to assess the mortuary treatment of subadults and to contextualize this treatment within their respective social matrix. By investigating the results of these questions in light of larger anthropological topics such as personhood, sociopolitical organization (hierarchical and heterarchical), and religious organization (rites of passage), the social integration of prehistoric Chumash subadults, as well as the relative ages at which certain aspects of burial treatment appear to correspond, may be useful to studies of subadults and childhood beyond the Santa Barbara Channel region. The following chapter (Chapter 9) provides a summary of the overall research presented within this study, including the goals and significance of the research conducted, the most salient analytical results, as well as future avenues of study that would provide an even more nuanced perspective of the treatment and social incorporation of prehistoric Chumash subadults.

CHAPTER 9
Conclusions

Goals of Research

The primary aim of this research project was to provide a baseline of subadult treatment in Early and Middle period Chumash mortuary contexts in order to bring some much-needed analytical light to a group that has been largely under-studied, especially at the broad, regional level. Building upon the work of previous scholars, and also identifying gaps in their research, eight research questions were developed to quantify the differences between subadult and adult burial programs, as well as to provide further refinement in the analysis of subadult burials by comparing infant, child, and adolescent age groups. Many meaningful interpretations of how subadult burial treatment was enacted and how it changed over time were assessed through detailed analysis of these questions (Chapter 8), which relied on a framework of childhood theory, informed by aspects of personhood and practice theories (Chapter 2). These questions considered aspects of both the overall treatment of the body as it was displayed at the time of interment, as well as the relationship of these variables to the number, type, and quantities of grave goods that were found associated with the body.

The interplay of these two sets of variables allowed for a rich interpretation of burial practices, suggesting the ascription of personhood to even the youngest subadults in Chumash society through time, a high likelihood of community involvement in the burial rites of these young individuals, and differentiation in age for certain aspects of burial rites, the latter of which likely is connected to a formal ritual initiation into the community. Previous mortuary studies in the Chumash region, which included subadults within their respective analyses, have presented data supporting the notion that subadult burials often exhibited greater variation (e.g., unequal treatment) when compared to adult burials (see Gamble et al. 2001; Green 1999; L. King 1969, 1982; Martz 1984). The results of this study provide a more nuanced view into the mortuary treatment of subadults in Early and Middle period contexts, revealing that certain aspects of the burial program for subadults operated on distinctions that were based on age, while others appear to have implications for cultural aspects not necessarily determined by age of the deceased. So many factors—only some of which provide archaeologically accessible information—were a part of the decisions surrounding the burial treatment of subadults that one overarching conclusion regarding treatment does not encompass the wide range of factors that resulted in the patterns observed archaeologically. The most salient results of this study, summarized below, provide much needed depth and nuance to the observed patterns and similarities and differences observed between the age groups in this study.

Primary Conclusions

The following section is organized by the eight research questions presented in Chapter 8 and provides summaries of the most salient results for the 15 analytical variables presented in Chapters 6 and 7, as well as summaries of the contextualized discussions and interpretations also presented in Chapter 8. Each research question is reviewed and includes brief discussions for the variables that appear to have differentiation based on age, as well as those that do not appear to have age-based differentiation. Additionally, the primary differences between subadult and adult age groups, as well as differences evident between infant, child, and adolescent burials, are also discussed, along with any significant changes evident between time periods and any noteworthy patterns that emerged as part of additional analyses. Finally, each section concludes with a brief recapitulation of the overall interpretations for the given question.

Summary of Question 1 Results

Question 1 inquires whether or not subadults have more variability in burial position, body side, and burial direction, when compared to adults. The results of the analyses of body position (Variable 1), body side (Variable 2), and burial direction (Variable 3) indicated that only burial position appears to have an age-based distinction reflected in position of the body at interment. Differentiation of burial position was most extreme in the burials of infants, a factor that could be due to their small size, but subadult burials overall exhibited greater variation and different trends than adults, which was more extreme in the Early period. Neither body side nor burial direction exhibited patterns that would suggest their implementation had a strong basis in age. For both variables, changes observed were most extreme between the two time periods, where subadult patterns largely mimicked patterns seen in adult burials. Variation in subadult burial position could possibly be indicative of lineage affiliation or other types of social groupings that may be relevant to individuals not fully initiated into the community, while patterns in body side could potentially indicate the sex of an individual, or it may have broader implications for geographic sub-region, neither of which were able to be ascertained in the aims of this study. Lastly, primary burial orientations can be linked to the Chumash land of the dead, located in the west according to historic accounts (Blackburn 1975), while east-oriented burials have cross-cultural implications for rebirth in the direction of the rising sun (Parker Pearson 2000:54). Another possibility, observed cross-culturally, is that burial direction could be linked to seasonality, where burials could have been oriented toward the position of a sun during a given season (Cross 1989; Petersen 2013; Rahtz 1978; Schulz 1970, 1981).

Summary of Question 2 Results

The second research question is aimed at assessing whether or not a positive correlation exists between grave depth and total number of grave goods. Considering grave depth (Variable 6) and total number of grave goods (Variable 12) individually, no significant difference for grave depth was apparent between subadult and adult burials in the Early period, however, in the Middle period, adult burials had significantly deeper burials than subadults, and adolescent burials had the deepest burials of the three Middle period subadult age groups. Whereas for total number of grave goods, Early period subadult burials had significantly more grave goods than adults, however, the three subadult age groups did not differ significantly from one another. For the Middle period sample, all subadult age groups and adult burials were similar to one another, and did not have a significant difference.

Visual examinations of the data revealed that bi-modal distributions divided the sample data into grave depths of less than or greater than 50 inches in depth, as well as total numbers of grave goods either greater than or less than 750 in amount (Appendix A:Tables A.1–A.2). When analyzed in the form of contingency tables, it became apparent that no burials (for either time period or geographic context) had any cases for burials with both 750 or more grave goods *and* grave depths of 50 or more inches. In fact, it was more common in almost all cases for there to be more burials with depths of greater than 50 inches and fewer than 750 grave goods, but far less common for there to be cases of burials with more than 750 grave goods and grave depths of less than 50 inches.

When data for grave depth and total number of grave goods were presented in the form of scatterplots, it became clear in almost all cases that burials that the largest numbers of grave goods tended to cluster at depths ranging from 25–40 inches. For Early period burials, subadults more often had higher amounts of grave goods than adults, but adults more often had deeper graves than subadults, while in the Middle period, cases for burials with large numbers of grave goods were very rare, and it was mainly adult burials who had the deepest graves and largest numbers of grave goods. Overall, the burials with the deepest graves very often had few to no grave goods, which provided evidence against the premise of the original research question. It is important to note, however, that post-depositional processes may also have affected depths of graves to a degree, which could include deposits (e.g., colluvial and alluvial) resulting in accretion, as well as natural processes resulting in erosion (Brown 2009; Glassow et al. 2009; Schumann and Pigati 2019; Schumann et al. 2014). These results could potentially point to the deepest graves having the least amount of grave goods due to the destruction of the deceased's property in an annual mourning ceremony (attested historically; see Hardy 2000; Hollimon 2001; Hull 2012; Hull et al. 2013), or potentially a conservation of wealth used to pay undertakers (also attested historically) in graves of moderate depth with large numbers of grave goods (see Hollimon 1990, 1996, 1997, 2000).

Summary of Question 3 Results

Question 3 is aimed at exploring the rates at which subadult and adult burials received grave goods, and more specifically, the rate at which beads were included in burials, which was believed to be more extreme in subadult burials than adult burials. The results indicated that for both Early and Middle periods there was very little difference in the proportions of subadult and adult burials receiving grave goods, however, for inclusion of beads as grave goods, Early period subadult burials received beads more often than adults, whereas in the Middle period there was no marked difference between the two age groups receiving beads as grave goods.

When the data for presence of grave goods (Variable 9) and presence of beads (Variable 15) were analyzed via contingency tables, the patterns for overall proportions of burials with grave goods (with and without beads) remained fairly stable between the Early and Middle periods, as did the proportions of burials that did not receive any grave goods. The primary difference between the two time periods was that in the Early period, there were nearly twice the proportion of burials receiving beads as grave goods than in the Middle period sample. This patterning indicates that the inclusion of beads as grave goods became more restricted over time, likely as a result of increased sociopolitical organization. When these data are considered in light of age of the interred, Early period subadults received beads at higher proportions than adults, whereas in the Middle period, very little difference was evident between subadult and adult burials. Additionally, Early period adults had higher proportions of burials receiving non-bead grave goods, as well as those lacking grave goods completely.

These results indicate that age-based preferential treatment seems to be occurring in the Early period, with subadult burials receiving beads more frequently than adult burials. This patterning does not continue in the Middle period, where subadult and adult burials cannot be differentiated based upon frequency of beads included as grave goods. One potential reason for the difference in frequency of bead inclusion between subadult and adult burials could be in greater community involvement in subadult burial ritual, where community members may have worked together to amass a small amount of beads in a way that cross-cut social boundaries. Additionally, an individual in a place of political/religious leadership could also have been responsible for providing beads in the graves of subadults, which may have fulfilled culturally dictated burial norms, while also engendering a reciprocal relationship between the family of the deceased and the political/religious leader. Additionally, since the proportions for burials lacking grave goods altogether are comparable between subadults and adults, this may indicate patterning more indicative of heterarchical organization, where particular social groupings (e.g., lineages, moieties) may have maintained burial customs that differed from the majority of Chumash society.

Summary of Question 4 Results

The premise of question 4 is concerned with comparing the amounts of ornament (Variable 11) and non-ornament grave goods (Variable 10) in subadult and adult burials, where subadults are expected to have greater amounts of ornament grave goods than adults, but relatively equal numbers of non-ornament grave goods as adults. Considering these variables individually, in the Early period, subadults received significantly more ornaments than adults, while in the Middle period there were no discernable differences between subadult and adult burials. For non-ornament grave goods, both Early and Middle period samples had no significant differences present between subadult and adult burials.

To further assess patterns between variables 10 and 11, scatterplots were generated to visually assess differences between the distribution of these variables by age group. The data indicate that subadult burials, primarily in the Early period sample, had a predisposition for receiving larger quantities of ornaments than adults, while both age groups had comparable numbers of non-ornament grave goods. Within the respective subadult age groups, Early period adolescent burials and Middle period child burials had fewer ornament grave goods than the other two subadult age groups, respectively, which makes their patterning closer to that seen in adults than to the other subadult groups. Given that these subadult age groups more closely match patterns seen in adult burials than those in other subadult burials, this patterning could potentially be indicative of particular social norms and/or rituals that dictate treatment of subadults in mortuary contexts, perhaps even being linked to rites of passage and ritual inclusion in the greater community.

Summary of Question 5 Results

Question 5 is focused on assessing a degree of diversity, in the number of material types (Variable 13), which can be compared between all study age groups for both time periods and geographic contexts. Subadults are expected to have greater diversity in material type than adults, and adolescent burials are expected to have greater diversity in material type than infant or child burials. The subsequent analyses revealed that Early period subadults have significantly more material types than adults, while in the Middle period, there is no significant difference present in number of material types between subadult and adult burials. When infant, child, and adolescent burials are compared between Early and Middle periods, the Middle period subadult sample affirms the second part of the research question, as infant and child burials both have higher numbers of material types than adolescent burials, while in the Early period sample, only infant burials have higher numbers of material types than child and adolescent burials. Even though levels of statistical significance were reached for some of these analyses (Table 8.12), the difference between the samples does not appear to be one with real-world significance. Based on these results, it does not appear that age-based differentiation is indicated in the analyses for number of material types, as comparable numbers of material types were observed among grave goods for subadult and adult burials for both time periods and geographic contexts.

Summary of Question 6 Results

The sixth question aims to assess whether or not infant and child burials have lower frequencies of ceremonial paraphernalia than adolescent and adult burials, the difference between which is expected to be especially distinct in the Middle period sample. In examining the rates for ceremonial paraphernalia, Early period subadults have objects of ceremonial paraphernalia nearly twice as frequently as adults, while in the Middle period sample there is no distinguishable difference between rates for subadult and adult burials. Within each of the subadult samples, there is a consistent trend in both time periods where the frequency with which ceremonial paraphernalia are included increases with relative subadult age. The results for presence of ceremonial paraphernalia (Variable 14) indicate a clear reduction in the rates for inclusion of ceremonial paraphernalia for subadult burials between the Early and Middle periods, which is most likely linked to the institutionalization of religion in the Middle period. Additionally, the patterning where rates of ceremonial paraphernalia incrementally increase with subadult age could potentially be signifying particular cultural stages in which subadults are ritually brought into social groups, such as the *'antap*, who were responsible for ceremonial performances and ritual knowledge. While the existence of the *'antap* is not confirmed until the late Middle period (Corbett 1999, 2004), it is still possible an incipient version of this religious and social group may have existed, which may explain the consistency in rates for ceremonial paraphernalia in the Middle period sample.

Summary of Question 7 Results

Question 7 was designed to investigate the premise of whether adolescent and adult burials received more energy expenditure in their burial programs than infant and child burials, which was measured through the presence of grave features and burial pigmentation. For both presence of grave features (Variable 7) and presence of burial pigmentation (Variable 8), there were significant differences between the two time periods, where grave features were more common in the Middle period, but burial pigmentation was a more commonly occurring practice in the Early period. There was no significant difference in the presence of grave features between subadult and adult burials in the Early period, however, there was a significant difference between the age groups for the Middle period, where nearly half of adult burials had grave features, and only a small proportion of subadults had grave features. Among the subadult age groups, no Early period subadults had any grave features recorded, and there was no significant difference present between the Middle period subadult age groups. A similar pattern was in effect for burial pigmentation, where no significant difference was present between Early period subadult and adult burials, however, a significant difference did exist between Middle period subadult and adult burials, with subadults having pigmented burials far more frequently than adults. Regarding the three subadult age groups, Early period infant and child burials had higher rates of burial pigmentation than adolescent burials, while in the Middle period, there was no discernable difference between the three age groups.

In order to consider the relationship between presence of burial pigmentation and grave features, the data were analyzed in the form of contingency tables. For both time periods and geographic contexts, only adult burials had cases for having *both* pigmented burials and grave features. Since less than five percent of adult burials had both variables present for both time periods and contexts, this patterning likely indicates that the presence of both burial pigmentation and grave features in a given adult burial was reserved for a highly selective segment of the population, potentially achieved by individuals of high social status. Additionally, the data generally affirm the premise of the research question, as no subadult burials from either time period or context had both variables present, but contrary to the expected patterning, there is no evidence to suggest that adolescent burials had a greater level of energy expenditure than infant or child burials. It is possible that the conjunction of both grave features and burial pigmentation could indicate a material proxy for social "achievement" by the deceased, given that there were no cases for subadult burials with both pigmentation and grave features, however, these are both present in burials of adults.

Summary of Question 8 Results

The eighth and final research question considers the patterning present in non-single (i.e., dual and multiple) interments, specifically inquiring if infants are more commonly included in non-single interments than other age groups. Considering interment type and age association patterns broadly, non-single interments are more common in the Early period than in the Middle period, while for age associations, all three interment age associations (all adults, all subadults, and adult and subadult) occurred in the Early period, however, in the Middle period there were no cases for the all subadults interment type. No significant difference existed between Early period subadult and adult burials for interment type, however, for the Middle period sample, a significant difference did exist, where subadult burials had rates of dual and multiple interments that were three times the rate of adult burials. Considering the subadult groups in more depth, no significant difference was present between Early period infant, child, and adolescent burials, whereas in the Middle period subadult sample, a highly significant difference existed, where infant burials had cases for all three types, child burials had no cases for dual interments, and adolescent burials had no cases for non-single interments. Regarding age association in non-single interments, Early period subadults more frequently were buried with an adult, and in the Middle period, all subadult non-single interments were of the adult and subadult type. For the subadult samples divided by age, all Early period infant burials took place with an adult, while child burials most commonly occurred with another subadult, and adolescent burials were split between burials with an adult or another subadult. For the Middle period subadult sample, infant and child burials were only a part of adult and subadult type non-single interments, while for adolescent burials there were no cases for non-single interments.

In order to further assess patterning between interment type (Variable 4) and interment type age association (Variable 5), contingency tables were utilized to compare results from the different age groups. Results for both time periods and geographic contexts affirm the premise of the research question that infant burials are most commonly included in non-single interments with an adult. Given that infants were the subadult age group most frequently included in non-single interments with adults, it further suggests that this particular age group had a special status or at least received special treatment that was not as frequently extended to child burials and almost never extended to adolescent burials. These results present a scenario in which infant burials may have not yet received ritual initiation into the wider community, and may have needed extra, supernatural protection through interment with an adult. Additionally, Chumash ethnographic accounts (see Harrington 1929:172) suggest that cemeteries were organized by family group, so there is a possibility that subadults were directly related to the individuals with which they were interred, but it is also just as likely that non-single interments were made out of necessity with an individual or individuals from another family or lineage group based on the timing of the deaths of those individuals.

Correlations Between Mortuary Behavior and Anthropological Concepts

The results of the eight research questions summarized above have investigated the interplay of 15 mortuary variables to reveal aspects of Chumash mortuary behavior specifically focused on the treatment of subadults. These questions are based on the premise that the degree to which subadults share in aspects of burial treatment can reveal additional structuring principles in society, such as the degree to which subadults were included into their respective communities (see Cerezo-Román 2013, 2015; Fowler 2004; Gillespie 2001). Overall, the results of this study have indicated that prehistoric Chumash subadults of all ages (infants to adolescents) were attributed personhood, which is evident in the overall similarities of burial treatment between subadult and adult burials, respective to time period. Additionally, there is no evidence to suggest that the Chumash engaged in exposure or infanticide practices, or even lack of burial rites altogether, which are documented cross-culturally in both archaeological and ethnographic situations (see Goodale 1971; Gowland and Chamberlain 2002; Hart and Pilling 1960; Lee 1994; Mays 1993; Schwartz et al. 2012; Sillar 1994; Smith and Kahlia 1992; Wedgwood 1927). The analyses of the three subadult age categories (infant, child, and adolescent) have also made it possible to ascertain differences in mortuary treatment within the sample of subadults. By analyzing aspects of mortuary ritual as they pertain to the different subadult age groups, it allows for the recognition of more nuanced differences in the treatment of subadults, making it more likely that culturally-specific stages in childhood can be recognized indirectly through the remaining mortuary record.

The results of the analyses performed for non-single interment patterns (Question 8), the presence of beads as grave goods (Question 3), and number of material types (Question 5) support the idea that prehistoric Chumash subadults were attributed full personhood in society, which is evident in both the Early and Middle periods. Patterning for non-single interments and grave goods (including beads) revealed a greater degree of variation in subadult burials for the Early period sample, whereas in the Middle period sample, patterning for subadult burials was much more similar to trends seen in adults. The apparent decrease in variation observed diachronically in subadult burials between the Early and Middle periods can most likely be attributed to the emergence of fairly centralized political and religious leadership that developed around the beginning of the Middle period (C. King 1990). While the patterns for number of material types are observed to be very similar between subadult and adult burials, respective to time period, the lack of distinguishable change appears to be reflective of shared cultural norms that dictated items that were appropriate to include in the burial context, which does not appear to be influenced by the increase in social complexity.

The examination of patterns in the distribution of grave goods between subadult and adult burials (Questions 2 and 4), especially over time, allows for a way in which to assess possible connections between developing sociopolitical complexity and aspects of material culture in mortuary settings. The results for patterns in ornament grave goods, as well as grave depth, are the most likely candidates to reveal potential correlates of hierarchical organization in the mortuary record. While the deepest graves may have belonged to individuals with wealth and status (in line with historic accounts of burial practices; see L. King 1969:47), the data appear to indicate that material wealth was expended *either* on the inclusion of large numbers of grave goods, *or* on a grave significantly deeper than the majority of the burial population. Age-based differences in burial practice were most notably observed between time periods, where Early period subadults received larger numbers of ornaments (and amounts of grave goods overall) than adults, whereas in the Middle period differences between the two age groups were much less pronounced. The patterning observed for these variables again likely stems from the increasingly centralized nature of political and religious (hierarchical) organization identified to occur at the beginning of the Middle period (C. King 1990).

It is also likely that mortuary patterning in the body's overall disposition in the grave (Question 1) and the presence of grave features and burial pigmentation (Question 7) may have the potential to reveal ways in which subadults may have been incorporated into heterarchical groups, like lineages and moieties. Diachronic patterning revealed that the body's disposition, as well as the presence of grave features and burial pigmentation, were more variable during the Early period than in the Middle period. The larger degree of variation evident in the Early period sample, especially for subadult burials, may provide evidence that heterarchical organization was more ubiquitous as an organizing factor in the Early period than later in time. In contrast, subadults appear to have comparably less variability in the Middle period, where these aspects of mortuary ritual align more closely between subadult and adult burials. Patterns evident in the Middle period sample may indicate that hierarchical organizing factors were more pervasive in structuring Chumash society during the Middle period. The results discussed here further imply that aspects of heterarchical organization were likely operating throughout the Early and Middle periods.

The results for presence of ceremonial paraphernalia (Question 6) provide an avenue to assess the degree of religious incorporation that subadults had in society, as well as relative ages at which these objects became more widespread in the subadult age group. Subadults in the Early period received ceremonial paraphernalia nearly twice as frequently as adults, while in the Middle period sample, the rates between subadults and adults were much more similar between the two age groups. On a broad level, these patterns may indicate that in the Early period cultural rules prescribing who could receive such objects were more relaxed for subadults than adults, whereas in the Middle period, this patterning became more restricted for subadults. The overall change observed for the presence of these objects in subadult burials over time may be linked to the distribution of these objects being controlled by a centrally organized group, which appears to be operating in the Middle period. Additionally, the patterns within the subadult age group indicate that for both time periods the adolescent age group received these objects at consistently higher rates than either infant or child burials. While it is clear that there were special circumstances in which individuals under the age of 10 years (infants and children) received these objects, ceremonial paraphernalia are most commonly observed in burials of subadults between the ages of 10 and 17.9 years old (adolescents). This patterning could potentially indicate the relative timing in which religious initiations or rites of passage may have been undertaken in society, similar to that of *'antap* initiations that are documented in the historic period, and recognized archaeologically at least by the late Middle period (see Blackburn 1976; Corbett 1999, 2004).

Limitations of Research

As with any research endeavor, this study was subject to certain limitations of research, which were primarily related to the nature of using published and unpublished documentation pertaining to previously excavated mortuary contexts. Data collected from these sources (e.g., Olson 1927–1928, 1930; Orr 1942, 1949a, 1949b, 1951a, 1951b; Rogers 1925, 1926a, 1926b, 1926c, 1926d, 1929a, 1929b, 1944; SBMNH ca. 1960s; Van Valkenburgh 1933) were produced by scholars operating within the archaeological standards of their respective time (late 19th and early to mid-20th century), both methodologically and theoretically. To mitigate the differences in variables collected by these previous research endeavors, which were respectively tailored to the methods and goals of each respective project, best efforts were undertaken to construct a set of variables that would represent a wide range of categories and could be ascertained from the sources of previously collected data. Additionally, inconsistency in excavation methods were another limitation, as early excavations used screens with inappropriate mesh size for recovery of very small artifacts like beads, or records did not clearly indicate their use. It is likely that, due to human error, a small amount of beads were not recovered by original excavators due to poor or nonexistent screening methods, however, this study mitigated this issue by including a presence/absence category for beads along with analyses of numerical counts of grave goods.

Another limitation was that the author did not perform analyses of human remains or burial goods, which was largely due to the fragmented and uneven nature of the remaining legacy collections. Many of the mortuary excavations that occurred in the late 19th and early 20th century were primarily focused on collecting crania for study and subsequently disposed of or never collect the remaining infracranial material (Walker 2000:11). Additionally, the poor *in situ* preservation of human remains in certain cemetery contexts resulted in the excavators not collecting, either in full or in part, the remains of those poorly preserved individuals (Orr 1949a; SBMNH 2006b). The data used in this study were based upon the original documentation and analysis of the artifacts and osteological remains, which was mitigated by cross-checking these data with subsequent published and unpublished artifact and osteological analyses of burials included within the study sample, where available (see Notes for Tables C.1 and C.2 in Appendix C).

Lastly, two research biases have the potential to affect the sample data. The first bias is that the Middle period sample is primarily skewed toward the first half of the Middle period, and there are no sites dating to M5 of the Middle period, due to records of insufficient quality for sites dating to the sub-phase within the defined study area. Consequently, the results presented herein for the Middle period are more telling of trends taking place in the first half of the Middle period. The second bias is focused on the original excavation and recording of the sites. While best efforts were undertaken to preference sites that were considered to be excavated in their entirety, in certain instances excavation records were missing information on a small number of burials within a cemetery, or little-to-no useful information was available from "excavations" that occurred prior to more modern scientific excavations. For example, evidence of looting and pot-hunting was observed and recorded for certain sites within the study (SRI-41, SBA-72, SBA-73, and VEN-61; see Chapter 4 for additional discussion) and in the case of SBA-72, D. B. Rogers elected to not fully excavate the cemetery due to evidence of previous looting (C. King 1980:46). Effects of post-depositional processes, like erosion activity observed at SRI-3, may have also affected sites to an unknown degree, resulting in the inability to record burial information on partially or fully eroded burials. It is unfortunate that some archaeological information was lost due to naturally occurring post-depositional processes, as well as human error, however, best efforts were undertaken by the author to amass the most accurate data possible from the available legacy records.

Future Avenues of Study

The results of this study have provided a much-needed baseline for the treatment of subadults in Early and Middle period Chumash mortuary contexts, however, there are additional areas in which subsequent research could provide further nuanced understanding of Chumash subadults. The first recommended avenue for research is in multivariate analyses of grave goods, which would ideally assess artifact type and location relative to the body. This type of analysis would ideally result in patterns with which sub-groups could be compared at inter- and intra-site levels, and could potentially yield further information regarding class and status affiliations. The analysis of grave goods and their location relative to the body may also aid in assessing the order in which grave-site ritual practices may have occurred (e.g., while preparing the body for burial, during/after burial rites), specifically in the placement of grave goods with the deceased and in the grave context (Bornemann and Gamble 2018).

Two additional avenues for future research are based in osteological and chemical analyses to identify patterns in systemic stress, as well as the relatedness of individuals. Regarding the study of systemic stress, osteological and chemical analyses can provide data relevant to the health of the overall population, documenting not only subadults who died prematurely, but also those who survived to adulthood and retained osteological markers for periods of stress incurred during infancy and childhood. The chemical analysis of strontium to calcium (Sr/Ca) and stable nitrogen isotope ($\delta^{15}N^{3}$) analyses provide complementary approaches to the study of weaning

(Katzenberg et al. 1996:187–188). Osteological analyses of health and systemic stress, such as that undertaken for the Middle and Historic period cemeteries at Malibu by Gamble and colleagues (2001) and others (e.g., Ambrose et al. 2003; Cook 1981; Lambert 1993; Lambert and Walker 1991; Robb et al. 2001; Walker 1986; Walker and Erlandson 1986; Walker et al. 2005) would provide additional understanding for periods of systemic stress experienced in childhood and the likely social implications revealed through associated grave goods. Additionally, osteological and genetic testing for relatedness of interred individuals across a broad area of Chumash territory would aid in determining the degree to which individuals within a given cemetery were related.

The final two recommended venues of future study include a focused analysis of subadult reburials and infant container burials, as well as an assessment of settlement and non-mortuary context burials for sites in the region. Although reburials were not included in this study's dataset, L. King's (1982) research at the Late period Medea Creek cemetery indicated subadults were interred as reburials more frequently than adults. Analyses of data from the Early and Middle periods for subadult reburials would help ascertain whether the patterns observed at Medea Creek were a solely Late period phenomenon, or if these trends hold true for pre-contact periods as well. The practice of infant burials within containers was observed in sites analyzed for this study, as well as others within the Chumash region (e.g., L. King 1969, 1982; Martz 1984), however, it appears that container preference for interment differed diachronically, with Early period infant container burials usually occurring in asphalted baskets, while Middle period infant container burials were documented in stone mortars. Additional study of container burials for infants is needed to assess the degree to which the practice occurred and how widespread in time and space it was. Lastly, a complementary study to the previous settlement research conducted by Gamble (1991, 1995) is needed to assess the degree to which subadult and adult burials were interred in non-mortuary contexts (e.g., in houses). While the evidence for such practices are limited (see Clemmer 1962; Gamble 1983, 1991, 1995), further study is needed, especially at sites that have low subadult mortality ratios, to ascertain whether or not this practice was practiced more widely among the Chumash.

Significance of Research

The results and interpretations from the analyses conducted within this study provide a strong baseline for subadult burial practices in the Early and Middle periods, where personhood appears to have been ascribed to even the youngest subadults, and many of the analyses further suggest the possibility of community involvement in the burial rites for subadults, as well as age-based differentiation of certain burial practices that may be indicative of timing for formal ritual initiation into the community. The results of previous mortuary analyses provide additional support for the results presented herein, as they have also established differentiation in burial practices that appear to be based on age (see Gamble et al. 2001; Green 1999; L. King 1969, 1982; Martz 1984), as well as the ascription of personhood to infants (Bornemann and Gamble 2018; Gamble 2017). The results presented within this study provide much-needed quantitative data to affirm and refute assumptions, as well as gaps in research, from previous Chumash mortuary studies that were more limited in time period, and/or geographic scope. Moreover, the implementation of childhood theory in this study has provided a novel analytical perspective for interpreting Early and Middle period Chumash mortuary data, which has aided in further understanding mortuary behavior surrounding Early and Middle period infant, child, and adolescent burials, thus providing a richer understanding of the prehistoric past.

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APPENDIX A
Grave Good Classification and Artifact Types

Preface

Appendix A consists of grave good data separated into the two analytical categories established in this study: ornament (Table A.1) and non-ornament (Table A.2) grave goods. Preceding each respective table is a discussion that defines the artifact types listed in each category and sub-category (where applicable). The categories listed here are based upon the classification system developed by Travis Hudson and Thomas C. Blackburn (1982, 1983, 1985, 1986, 1987) and recorded in their five-volume set categorizing objects that were a part of Chumash material culture. An additional sub-category qualifier, "unspecified use," was added by the author to include objects that could fall into more than one potential sub-category, based upon the classification system presented here. It is important to note that the categories and sub-categories discussed here are defined and organized from an etic perspective and the author does not assume that the Chumash would have identified these artifacts in the same manner. Additionally, even objects with ethnographically and ethnohistorically known uses (e.g., mano and metate for processing food) may have had vastly different cultural meanings in a mortuary setting, which, unfortunately, cannot be assessed from the archaeological record.

Grave Goods Present in Study Sample Separated by Category

The following discussion presents the artifact types that occurred within the dataset, separated into the two analytical categories defined by the study: ornament and non-ornament grave goods.

Ornament Grave Goods

The ornament category (Table A.1) includes artifacts that were used to decorate the body (Gamble et al. 2001:192), and which subsequently conveyed culturally-specific information to others in society (Gibson 1992:1; Hudson and Blackburn 1985:19), although the latter cannot be assumed to be a primary or sole function. Beads are small objects of ornamentation of differing material types (shell, bone, and stone examples) that have a small central perforation (less than half the overall bead diameter; Gibson 1992:12), which are commonly suspended via cordage strung through the central hole (Hudson and Blackburn 1985:283–289). Within the dataset, the most commonly observed bead types included rectangular *Olivella biplicata* and abalone beads, *Olivella* shell beads with spire and/or base removed, clam disc beads, and *Olivella* barrel beads (see C. King 1990:Figure 6).The artifact type of "ornament" comprises all other forms that are not classified as beads, pendants, or shell bead inlay. Ornaments could be attached for wear in a number of ways, with some ornaments having central perforations, perforations at one or both ends, single or multiple perforations, among other potential configurations. Ornament types include ear tubes/rods, rings, and pendants. Ear tubes/rods were designed to be worn through a perforation in the ear (Hudson and Blackburn 1985:225–227). The term ring, as an ornament sub-type, refers to the shape of the ornament and does not imply a modern, western implication of a "finger ring." Ornament rings are differentiated from beads in that the "hole diameter is greater than half of the overall bead diameter. Thus, with this shape there is really more hole than wall" (Gibson 1992:12). Additionally, pendants are another type of ornament, which are perforated at one end with the intention of being suspended via cordage. The final artifact type for the ornament category is shell bead inlay, which takes the form of a segment of asphaltum adhesive into which shell beads had been impressed to create additional designs.

Table A.1. Ornament Grave Goods

Category	Artifact Types		
Ornaments	Bead	Ornament	Shell bead inlay

Non-Ornament Grave Goods

The non-ornament category (Table A.2) comprises all other artifact types that are not considered to fall within the ornamentation category. The non-ornament artifacts are separated into 13 sub-categories based on associated function from ethnographic and ethnohistoric accounts, and each artifact within a respective sub-category is defined below.

Adhesives and Paints

This sub-category comprises asphaltum impressions, pigment mortars, and tarring pebbles. An asphaltum impression is defined as a fragment of processed asphaltum, functioning as an adhesive to secure two objects together, however, one or both objects failed to preserve (this artifact category is distinct from asphaltum basketry impressions and shell bead inlay). A pigment mortar is defined as a small stone receptacle into which pigments would have been placed and subsequently pulverized for processing and eventual use (Hudson and Blackburn 1987:197). A tarring pebble is defined as a small, generally rounded, unmodified stone, which is heated and used for the purposes of applying a layer of asphaltum to the inside of certain types of basketry for waterproofing purposes (Hudson and Blackburn 1987:174).

Ceremonial Paraphernalia

Artifacts within the ceremonial paraphernalia sub-category are those in which ethnographic and ethnohistoric sources indicate their primary use was restricted to ceremonial (religious) and not secular uses (Gamble et al. 2001:192). Artifacts defined as animal components were a special type of talisman which included at least one animal element (e.g., claw, talon, tooth, etc.) and was often worn suspended around the neck (Hudson and Blackburn 1986:142). Charmstones were another type of talisman, which most often consisted of a naturally occurring object and was believed to confer supernatural power to the wearer (Hudson and Blackburn 1986:139). Crystals, usually of quartz, were another type of talisman believed to bestow power upon their owner (Hudson and Blackburn 1986:154–156). Effigies were yet another type of talisman, often being formed from stone or bone, which generally took the shape of a zoomorphic or anthropomorphic representation (Hudson and Blackburn 1986:171–219). Pipes, usually made from stone, consisted of a fairly short, tube with a mouthpiece at one end and bowl-like chamber at the other that was designed to hold organic materials for ingestion of smoke via incineration (Hudson and Blackburn 1986:118). Rattles, in the form of turtle shell rattles and deer hoof rattles, were percussive devices that produced noise when shaken (Hudson and Blackburn 1986:329–332, 339–340). Strigils are usually made from bone (often an animal rib), which is flat and slightly curved, which is used primarily to remove moisture from skin (Hudson and Blackburn 1986:107). Examples of wands generally consist of a short, flat staff made of bone, often tapering from a wider distal end to a narrow pointed proximal end, and were often decorated or inlaid with shell and other materials (Hudson and Blackburn 1986:254–264). Whistles are another type of musical instrument encountered, these were most often made from a short bone tube, which had a transverse slit into which air was expelled through, producing a shrill musical note (Hudson and Blackburn 1986:349–353).

Clothing

The clothing sub-category consists of hairpins and skirt weights. Unfortunately, the organic materials with which other objects of Chumash clothing would have been made, did not survive in the archaeological record. Hairpins, usually made from bone, take a spatulate shape and were used to keep the hair in place; the visible end (when worn) was often decorated (Hudson and Blackburn 1985:76). Skirt weights consisted of small, teardrop-shaped pieces of asphaltum, which would have been attached to the end of a skirt strand to weigh it down (Hudson and Blackburn 1985:31).

Containers (Unspecified Use)

Containers in the form of asphaltum basketry impressions and shell dishes were fairly commonly observed in the dataset. Asphaltum basketry impressions consisted of pieces of asphaltum from the inside of a "water-proofed" basket, in which the organic basket material did not survive in the archaeological record, however, the "imprint" in the asphaltum from the basketry clearly remains. Shell dishes were also used as containers, usually in the form of unmodified, or minimally modified whole shells or valves of bivalves. Additionally, shell dishes were observed with more specialized functions, either with pigment or asphaltum remaining in the shell. In some cases the siphon holes of abalone shell dishes were plugged with asphaltum (Gifford 1947:7; Hudson and Blackburn 1983:278–279).

Ecofacts

The ecofact sub-category includes naturally occurring objects that do not display any clear modification, but appear to have been placed intentionally in the grave with the deceased. This sub-category includes small, regularly shaped rocks (also pebbles) and elements of shell (e.g., snail) that appear to be intentional grave goods and not elements occurring naturally in the surrounding soil.

Faunal Bone (Unspecified Use)

Elements of faunal bone included in this category were clearly associated with the body of the deceased, however, their position and lack of clear modification could not justify their inclusion as an artifact in another sub-category (such as an "animal component" or rattle). Isolated animal elements took the form of avian (e.g., bird wing bones), mammal (e.g., deer and whale bone), and reptile (e.g., turtle shell) examples. Additionally, coral, a type of marine invertebrate, elements were also found within the associated burial context of certain individuals. Lastly, mammal burials also occurred, albeit rarely, and in these cases the mammal (usually a fox or dog) was interred in direct association with the deceased, sometimes in a "bundle."

Food Preparation

Objects associated with the preparation and serving of food were included in grave good assemblages, such as manos and metates, mortars and pestles, shell "spoons," and cooking/ serving vessels. A mano is a relatively small-sized stone with one or more ground surfaces that is designed to be held in the hand and used in conjunction with a metate, to grind and/or pulverize plant materials (Hudson and Blackburn 1983:98). The counterpart to the mano is the metate, which is a stone slab that has a shallow depression on one surface, which is used to grind and/or pulverize plant materials against (Hudson and Blackburn 1983:94). Mortars served a similar function as a metate, albeit taking a different shape. Mortars were generally made of stone, and had a receptacle that consisted of a deep, circular depression where food substances (and other materials) could be placed for subsequent pulverization with a pestle (Hudson and Blackburn

1983:103). The counterpart to the mortar is the pestle, which was a hand-held implement (usually stone) with an ellipsoid shape and working surface at one end, which was used to grind and/or pulverize materials in a mortar (Hudson and Blackburn 1983:120). Shell "spoons" were used as eating utensils, consisting of a mollusk shell, usually mussel, but there were also examples of abalone and stone ones as well (Hudson and Blackburn 1983:317). Lastly, stone vessels were also included among grave goods, which included examples of stone pots and bowls, for cooking and serving purposes (Hudson and Blackburn 1983:201, 250).

Food Procurement

The food procurement sub-category includes artifacts associated with hunting, fishing, and gathering activities. Projectile points were sharp, pointed pieces of stone of varying sizes, which would been hafted onto a wooden shaft or spear, depending on their intended purpose. Smaller projectile points were often arrow-points, while examples of larger projectile points, like spearpoints, are also known (Hudson and Blackburn 1982:103, 195). Spear-throwers (also referred to as atlatls) consisted of a short rod of bone with a smaller, projecting spur at the distal end, used to increase the distance with which a spear could be thrown by hand (Hudson and Blackburn 1982:143). Fishhooks were also fairly common in mortuary contexts, occurring in a few different forms. The simplest fishhooks included barbs and gorges, usually made from bone, followed by circular hooks manufactured from a single piece of shell or bone. Examples of composite hooks were also encountered, which were made by joining two pointed pieces of shell or bone at one end, to form an acute, V-shaped, angle (Hudson and Blackburn 1982:172–181). Sinkers, small stone weights with a groove or notch, were used in fishing endeavors and were attached to a net or line to make it sink (Hudson and Blackburn 1982:159). Pry bars were short implements, usually made from bone, with a beveled end, which were used primarily to remove shellfish from rocky environments (Hudson and Blackburn 1982:253). Digging stones (also referred to commonly as "donut" stones) generally took the form of a stone ring with a central perforation (to sit atop a digging stick) and would have been used in conjunction with a digging stick to unearth plant materials (Hudson and Blackburn 1982:247).

Games and Amusements

The only artifact in the dataset belonging to the games and amusements sub-category is a ball. Ethnographically, examples of spherical objects like the one encountered in this study were used for recreational purposes (Hudson and Blackburn 1986:393–396).

Organic

In certain burial contexts, small amounts of organic material, in the form of wood and burned clay, appear to have been intentionally interred with the deceased. Unfortunately, due to poor preservation of organic material, in contexts where small amounts of wood preserved, the pieces were not large enough to determine their most likely original form.

Shell Processing

Tools for working shell and shell artifacts in production ("blanks") comprise the shell processing sub-category. Abraiding slabs for shell processing typically take the form of a flat slab of stone on which beads are worked on the abrasive, upper surface (Hudson and Blackburn 1987:132). Shell bead blanks, shell fishhook blanks, shell ornament blanks, and shell pendant blanks all follow their respective definitions as above, however, given that they are "blanks," they are unfinished versions of their respective artifact type and would not be able to fulfill their intended function in their current state of manufacture.

Stone Processing

Within the stone processing sub-category are stone blanks for beads and digging stones, as well as tools and materials commonly employed in the processing of stone artifacts. Stone bead blanks are classified under this category due to being "unfinished" beads, which would not yet have been able to function as a "stand-alone" ornament. Digging (donut) stone blanks were also encountered, which are unfinished digging stones (see definition under "Food Procurement" sub-category). Percussion-flaking tool (e.g., hammerstone) were stone implements, generally spherical in shape, which were used to remove "flakes" from lithic cores by percussive force (Hudson and Blackburn 1985:40). Pressure-flaking tools generally took the form of a short, straight piece of bone, blunted at one end, and used to remove secondary flakes from lithic materials using pressure rather than percussive force (Hudson and Blackburn 1987:42). Reamers were stone implements used to enlarge or alter a drilled hole through rotary abrasion (Hudson and Blackburn 1987:50). Source material consisted of a node of mineral or mineral aggregate (e.g., chert), which was the primary element required for a processing/fabrication technique (Hudson and Blackburn 1987:27).

Textiles

While complete textiles rarely survive in the archaeological record, tools used in the manufacturing of textiles, like awls, often survive, and in certain cases small fragments of basketry also preserve. An awl is a small tool, often made from bone, with a sharp point on one end, which is used to separate elements in basket-making (Hudson and Blackburn 1987:244–247). Fragments of basketry are what remains from a receptacle constructed out of finely interwoven vegetable fibers, which were joined together (twined or sewn) in coiled, concentric rings (Hudson and Blackburn 1987:212–240).

Tools (Unspecified Use)

This sub-category was designed to encompass a range of tools, the respective functions of which could apply to more than one potential sub-category. Drills are implements used for boring purposes, mainly to make holes via rotary abrasion in shell, bone, or stone materials (Hudson and Blackburn 1987:48, 94). General tools refers to a group of artifacts with which specific function could not be ascertained, either due to fragmentary nature of the artifact, or due to the artifact having a myriad of potential uses (e.g., graver, chopper, flake). Artifacts in the shape of hooks were also encountered, and it is important to not that these artifacts are *not* fishhooks, but are hook-shaped tools used for other purposes. Knives are defined as tools used for cutting organic material and usually take the form of a bifacially-worked stone, which could be hafted into a wooden handle (Hudson and Blackburn 1987:75). Slabs were pieces of relatively flat stone, most likely used for abraiding purposes, however, the exact use could not be determined due to lack of distinct wear present on the working surface of the artifact.

Wood and Bone Processing

Tools associated with the processing of wood and bone were also encountered in mortuary contexts. Scraper tools were made from stone, generally in a planoconvex form, with a beveled and steeply angled edge, which would have been used to remove small quantities of the material being processed (Hudson and Blackburn 1987:66). Shaft straighteners were used to straighten a curved wooden shaft, and usually took the form of a piece of stone that had a flat base and one or more groove on the top surface (Hudson and Blackburn 1987:105–111). Lastly, wedges were encountered as well, which most often consisted of a piece of bone or shell with a thin, beveled edge used to split wood (Hudson and Blackburn 1987:57–69).

Table A.2. Non-Ornament Grave Goods

Category	Sub-Category	Artifact Types		
Non-Ornaments	Adhesives and Paints	Asphaltum impression	Pigment mortar	Tarring pebble
	Ceremonial Paraphernalia	Animal component	Charmstone	Crystal
		Effigy	Pipe	Rattle
		Strigil	Wand	Whistle
	Clothing	Hairpin	Skirt Weight	–
	Containers (Unspecified Use)	Asphaltum basketry impression	Shell dish	Shell dish with asphaltum and/or pigment
	Ecofacts	Rock	Shell	–
	Faunal Bone (Unspecified Use)	Avian element	Coral	Mammal burial
		Mammal element	Reptile element	–
	Food Preparation	Mano	Metate	Mortar
		Pestle	Shell "spoon"	Vessel
	Food Procurement	Digging (donut) stone	Fishhook	Pry bar
		Sinker	Spear-thrower	–
	Games and Amusements	Ball	–	–
	Organic	Burned clay	Wood	–
	Shell Processing	Abraiding slab	Bead Blank	Fishhook blank
		Ornament Blank	Pendant Blank	–
	Stone Processing	Bead Blank	Digging (donut) stone blank	Percussion-flaking tool
		Pressure-flaking tool	Reamer	Source material
	Textiles	Awl	Basketry	–
	Tools (Unspecified Use)	Drill	General tool	Hook
		Knife	Slab	–
	Wood and Bone Processing	Scraper	Shaft straightener	Wedge

APPENDIX B
Codebook Values for Study Data

Site Identification
<u>Column Heading: Site Des</u>

1 = SRI-3	2 = SRI-5	3 = SRI-41	4 = SCRI-333	5 = SCRI-257
6 = SCRI-159	7 = SCRI-162	8 = SBA-43	9 = SBA-53	10 = SBA-71
11 = SBA-72	12 = SBA-73	13 = SBA-81	14 = VEN-61	15 = VEN-150
16 = SLO-406				

Independent Variable: Geographic Location
<u>Column Heading: Context</u>

1 = Island   2 = Mainland

Independent Variable: Time Period Phase
<u>Column Heading: Time Pd</u>

1 = Early   2 = Middle

Independent Variable: Biological Age (Subadult/Adult)
<u>Column Heading: Age Simp</u>

0 = Unknown   1 = Subadult   2 = Adult   3 = No data

Independent Variable: Biological Age (Infant/Child/Adolescent)
<u>Column Heading: Age Comp</u>

0 = Unknown   1 = Infant   2 = Child   3 = Adolescent   4 = No data

Variable 1: Burial Position
<u>Column Heading: Burial Pos</u>

0 = Unknown	1 = Flexed	2 = Extended	3 = Semi-flexed	4 = Seated
5 = No data				

Variable 2: Body Side
<u>Column Heading: Body Side</u>

0 = Unknown	1 = Right	2 = Left	3 = Supine	4 = Prone
5 = Seated	6 = No data			

Variable 3: Burial Direction (Compass Cardinal)
<u>Column Heading: Bur Dir</u>

0 = Unknown	1 = North	2 = Northeast	3 = East	4 = Southeast
5 = South	6 = Southwest	7 = West	8 = Northwest	9 = No data

Variable 4: Interment Type
<u>Column Heading: Int Typ</u>

0 = Unknown   1 = Single   2 = Dual   3 = Multiple   4 = No data

Variable 5: Interment Type Age Association
<u>Column Heading: Int AA</u>

0 = Unknown	1 = All adults	2 = All subadults	3 = Adult and subadult	4 = No data

Variable 6: Grave Depth
<u>Column Heading: Gr Dep</u>
Burial depth recorded in inches.

Variable 7: Presence/Absence of Grave Features
<u>Column Heading: Grv Feat</u>
0 = Unknown   1 = Present   2 = Absent   3 = No data

Variable 8: Presence/Absence of Burial Pigmentation
<u>Column Heading: Pig Bur</u>
0 = Unknown   1 = Present   2 = Absent   3 = No data

Variable 9: Presence/Absence of Grave Goods
<u>Column Heading: Grv Gds</u>
0 = Unknown   1 = Present   2 = Absent   3 = No data

Variable 10: Number of Non-Ornament Grave Goods
<u>Column Heading: GG NO</u>
Count of non-ornament grave goods.

Variable 11: Number of Ornament Grave Goods
<u>Column Heading: GG O</u>
Count of ornament grave goods.

Variable 12: Total Number of Grave Goods
<u>Column Heading: Tot GG</u>
Count of total number of grave goods.

Variable 13: Number of Material Types
<u>Column Heading: Mat Typ</u>
Number of material types.

Variable 14: Presence/Absence of Ceremonial Paraphernalia
<u>Column Heading: Cer Para</u>
0 = Unknown   1 = Present   2 = Absent   3 = No data

Variable 15: Presence/Absence of Beads
<u>Column Heading: Beads</u>
0 = Unknown   1 = Present   2 = Absent   3 = No data

APPENDIX C
Study Dataset

Preface

The following two tables (Table C.1 and C.2) present the coded data used in the study's statistical analyses. The numeric codes in the table below correspond to the codebook values listed in Appendix B.

Table C.1. Independent Variables and Dependent Variables 1–8

Case #	Site Des	Con-text	Time Pd	Age Simp	Age Comp	Burial Pos	Body Side	Bur Dir	Int Type	Int AA	Gr Dep
1	1	1	1	0	0	1	3	5	1	4	
2 [b]	1	1	1	2	4	1	3	5	1	4	
3 [b]	1	1	1	2	4	1	3	5	1	4	
4 [b]	1	1	1	2	4	1	3	5	1	4	
5 [b]	1	1	1	2	4	4	5	1	1	4	
6	1	1	1	0	0	4	5	7	1	4	
7 [b]	1	1	1	2	4	1	5	5	1	4	
8 [b]	1	1	1	2	4	1	3	7	1	4	
9 [b]	1	1	1	2	4	4	5	6	1	4	
10	1	1	1	2	4	4	5	1	1	4	
11	1	1	1	2	4	1	3	7	0	0	
12 [b]	1	1	1	2	4	1	1	5	1	4	
13	1	1	1	2	4	1	3	6	1	4	
14	1	1	1	2	4	1	3	6	1	4	
15 [b]	1	1	1	0	0	4	5	1	1	4	
16	1	1	1	2	4	0	0	5	1	4	
17 [b]	1	1	1	2	4	1	5	5	0	0	
18	1	1	1	1	2	1	3	5	0	0	
19	1	1	1	2	4	1	3	6	0	0	
20	1	1	1	2	4	4	5	6	1	4	
21 [b]	1	1	1	2	4	1	3	7	1	4	
22 [b]	1	1	1	2	4	1	2	0	1	4	
23	1	1	1	2	4	1	5	0	1	4	
24 [b]	1	1	1	2	4	3	3	5	1	4	108
25	1	1	1	2	4	1	2	5	1	4	
26	1	1	1	2	4	1	3	7	1	4	
27 [b]	1	1	1	2	4	4	5	5	1	4	
28 [b]	1	1	1	2	0	1	3	5	1	4	
29	1	1	1	2	4	4	5	0	1	4	
30	1	1	1	0	0	4	5	0	1	4	
31 [b]	1	1	1	2	4	4	5	5	1	4	
32	1	1	1	2	4	4	5	6	1	4	
33	1	1	1	2	4	4	5	1	1	4	
34	1	1	1	2	4	4	5	5	1	4	
35	1	1	1	2	4	1	3	6	0	0	
36 [b]	1	1	1	2	0	0	3	1	1	4	
37 [b]	1	1	1	2	4	4	5	0	0	0	108
38 [b]	1	1	1	2	0	4	5	7	1	4	72

Case #	Site Des	Con-text	Time Pd	Age Simp	Age Comp	Burial Pos	Body Side	Bur Dir	Int Type	Int AA	Gr Dep
39 [b]	1	1	1	2	0	1	3	5	1	4	
40 [b]	1	1	1	2	0	1	3	2	0	0	
41	1	1	1	2	0	3	3	6	0	0	
42	1	1	1	0	0	1	3	6	1	4	
43 [b]	1	1	1	2	4	0	0	8	1	4	
44	1	1	1	2	4	1	3	6	0	0	96
45 [b]	1	1	1	2	4	4	5	6	1	4	
46	1	1	1	2	0	4	5	8	1	4	
47	1	1	1	2	0	4	5	0	1	4	
48 [b]	1	1	1	2	4	4	5	6	1	4	
49	1	1	1	0	0	1	3	3	1	4	
50 [b]	1	1	1	2	4	3	4	5	3	1	
51 [b]	1	1	1	2	0	1	3	5	3	1	
52 [b]	1	1	1	2	0	1	3	5	3	1	
53	1	1	1	1	1	0	0	0	0	0	
54 [b]	1	1	1	2	4	1	2	5	0	0	
55 [b]	1	1	1	2	0	0	0	5	1	4	
56 [b]	1	1	1	2	4	1	2	7	1	4	
57	1	1	1	0	0	1	3	1	2	0	
58	1	1	1	2	4	1	3	1	2	0	
59 [b]	1	1	1	2	4	0	0	0	1	4	
60 [b]	1	1	1	2	4	0	0	1	1	4	
61	1	1	1	2	0	4	5	1	1	4	
62	1	1	1	2	4	4	5	3	1	4	
63	1	1	1	2	4	4	5	4	0	0	
64 [b]	1	1	1	2	0	1	3	3	0	0	
65 [b]	1	1	1	2	4	1	3	1	1	4	
66	1	1	1	0	0	1	4	7	1	4	
67	1	1	1	0	0	1	3	1	1	4	
68 [b]	1	1	1	2	4	4	5	3	1	4	
69 [b]	1	1	1	2	0	1	3	1	1	4	
70	1	1	1	0	0	1	3	5	1	4	
71	1	1	1	0	0	4	5	5	1	4	
72	2	1	1	1	1	0	0	0	2	3	
73	2	1	1	2	4	1	3	1	2	3	
74	2	1	1	1	2	1	3	8	2	2	
75	2	1	1	1	3	1	3	3	2	2	
76	2	1	1	2	4	1	3	1	1	4	
77	2	1	1	0	0	1	3	8	1	4	
78	2	1	1	2	4	1	1	1	1	4	
79	2	1	1	1	1	1	3	1	1	4	12
80	2	1	1	2	4	1	2	3	2	1	
81	2	1	1	2	4	1	2	3	2	1	
82	2	1	1	2	4	1	3	8	1	4	
83 [b]	3	1	1	2	4	1	0	8	0	0	
84	3	1	1	0	0	1	0	5	1	4	
85 [b]	3	1	1	2	4	1	0	5	1	4	
86	3	1	1	2	4	1	4	4	1	4	
87 [b]	3	1	1	2	4	1	4	6	1	4	

Case #	Site Des	Con-text	Time Pd	Age Simp	Age Comp	Burial Pos	Body Side	Bur Dir	Int Type	Int AA	Gr Dep
88 [b]	3	1	1	2	4	1	0	1	1	4	
89 [b]	3	1	1	2	4	1	1	5	1	4	
90 [b]	3	1	1	2	4	1	1	5	1	4	
91	3	1	1	1	1	1	3	7	0	0	
92	3	1	1	2	4	1	3	5	1	4	
93	3	1	1	2	4	1	0	0	1	4	
94	3	1	1	2	4	1	1	1	0	0	
95	3	1	1	0	0	0	0	0	2	0	
96	3	1	1	0	0	0	0	0	2	0	
97	3	1	1	1	1	1	3	7	1	4	
98	3	1	1	2	4	1	1	8	1	4	
99 [b]	3	1	1	2	4	1	3	7	1	4	
100	3	1	1	1	1	1	3	7	2	3	
101	3	1	1	2	4	1	3	7	2	3	
102	3	1	1	1	2	1	0	0	0	0	24
103	3	1	1	1	1	1	3	5	0	0	
104	3	1	1	2	4	1	3	5	0	0	
105	3	1	1	1	1	1	3	3	0	0	
106	3	1	1	1	1	1	2	0	0	0	
107 [b]	3	1	1	2	4	1	3	5	0	0	
108	3	1	1	2	4	1	3	5	2	3	
109 [b]	3	1	1	1	3	4	5	6	2	3	
110 [b]	3	1	1	2	4	1	3	6	0	0	
111	3	1	1	2	4	1	3	7	1	4	
112	3	1	1	1	3	4	5	7	1	4	
113 [b]	3	1	1	2	4	1	0	7	1	4	
114	3	1	1	1	1	1	3	7	1	4	
115 [b]	3	1	1	1	3	4	5	2	1	4	
116	3	1	1	2	4	0	0	0	2	3	
117	3	1	1	1	1	1	0	0	2	3	
118	3	1	1	1	1	1	3	3	1	4	
119	3	1	1	2	4	1	3	5	1	4	
120 [b]	3	1	1	2	4	1	3	6	1	4	
121	3	1	1	1	1	1	1	3	1	4	
122	3	1	1	2	4	1	3	7	0	0	
123	3	1	1	1	2	1	3	1	0	0	
124 [b]	3	1	1	2	4	1	3	7	0	0	
125	3	1	1	2	4	1	1	7	0	0	
126	3	1	1	1	1	0	0	0	0	0	
127	3	1	1	2	4	1	3	6	0	0	
128	3	1	1	1	1	1	3	7	1	4	
129 [b]	3	1	1	2	4	1	3	7	1	4	
130	3	1	1	1	2	1	3	8	1	4	
131	3	1	1	1	1	1	3	7	0	0	
132 [b]	3	1	1	2	4	1	3	7	0	0	
133	3	1	1	2	4	1	3	7	1	4	
134 [b]	3	1	1	2	4	1	3	7	1	4	
135 [b]	3	1	1	2	4	1	1	7	1	4	
136	3	1	1	1	1	0	0	0	0	0	
137	3	1	1	1	2	4	5	7	1	4	

Case #	Site Des	Con-text	Time Pd	Age Simp	Age Comp	Burial Pos	Body Side	Bur Dir	Int Type	Int AA	Gr Dep
138 [b]	3	1	1	2	4	1	3	7	1	4	
139 [b]	3	1	1	2	4	1	3	8	1	4	
140 [b]	3	1	1	1	3	1	3	7	1	4	
141 [b]	3	1	1	2	4	1	3	6	1	4	
142 [b]	3	1	1	2	4	1	3	7	3	1	
143 [b]	3	1	1	2	4	2	3	1	3	1	
144	3	1	1	1	1	0	0	0	0	0	
145	3	1	1	1	1	1	3	3	0	0	
146 [b]	3	1	1	2	4	3	3	1	3	1	
147	3	1	1	2	4	3	3	1	3	1	
148 [b]	3	1	1	2	4	1	3	7	1	4	
149 [b]	3	1	1	1	3	1	2	3	0	0	
150 [b]	3	1	1	2	4	1	3	2	1	4	
151 [b]	3	1	1	2	4	1	3	5	1	4	
152	3	1	1	2	4	1	3	7	1	4	
153	3	1	1	1	1	0	0	0	1	4	
154 [b]	3	1	1	2	4	1	3	1	1	4	
155 [b]	3	1	1	2	4	1	3	1	0	0	
156	3	1	1	1	1	1	1	0	0	0	
157	3	1	1	1	1	1	5	7	1	4	
158 [b]	3	1	1	2	4	1	3	7	0	0	
159	3	1	1	1	1	0	0	0	0	0	
160	3	1	1	1	2	1	3	7	0	0	
161 [b]	3	1	1	2	4	1	2	8	0	0	
162	3	1	1	1	1	1	3	7	0	0	
163 [b]	3	1	1	1	3	0	3	6	0	0	
164 [b]	3	1	1	1	2	0	0	7	0	0	
165	3	1	1	1	3	0	0	0	0	0	
166	3	1	1	1	1	0	0	0	0	0	
167	3	1	1	1	1	0	0	0	0	0	
168 [b]	3	1	1	2	4	1	5	7	1	4	
169 [b]	3	1	1	2	4	1	5	8	0	0	
170 [b]	3	1	1	2	4	1	2	6	2	3	
171	3	1	1	1	3	1	1	6	2	3	
172	3	1	1	2	4	1	3	8	2	1	
173	3	1	1	2	4	2	4	8	2	1	
174	3	1	1	1	2	4	5	6	0	0	
175	3	1	1	1	1	1	3	2	0	0	
176	3	1	1	2	4	1	3	8	1	4	
177 [b]	3	1	1	2	4	1	3	8	1	4	
178	3	1	1	1	1	1	4	0	0	0	
179	3	1	1	2	4	1	3	0	0	0	
180	3	1	1	1	2	0	3	7	0	0	
181 [b]	3	1	1	2	4	0	0	0	0	0	
182 [b]	3	1	1	2	4	4	5	0	1	4	
183	3	1	1	2	4	0	3	7	1	4	
184 [b]	3	1	1	2	4	1	5	3	0	0	
185 [b]	3	1	1	2	4	1	3	3	0	0	

Case #	Site Des	Con-text	Time Pd	Age Simp	Age Comp	Burial Pos	Body Side	Bur Dir	Int Type	Int AA	Gr Dep
186	3	1	1	1	1	1	3	3	1	4	
187 [b]	3	1	1	2	4	1	1	1	1	4	
188	3	1	1	1	1	1	4	8	1	4	
189 [b]	3	1	1	1	2	4	5	7	1	4	
190 [b]	3	1	1	2	4	1	3	5	1	4	
191 [b]	3	1	1	2	4	1	3	6	0	0	
192	3	1	1	1	3	1	0	8	0	0	
193 [b]	3	1	1	2	4	1	3	6	1	4	
194	3	1	1	2	4	1	3	1	0	0	
195	3	1	1	1	3	1	5	2	0	0	
196	3	1	1	1	2	1	5	2	0	0	
197 [b]	3	1	1	2	4	1	5	7	0	0	
198 [b]	3	1	1	2	4	1	1	6	1	4	
199	3	1	1	1	1	1	5	2	0	0	
200	3	1	1	2	4	1	3	8	0	0	
201	3	1	1	2	4	1	2	7	1	4	
202	3	1	1	2	4	1	5	8	0	0	
203	3	1	1	1	1	0	0	0	1	4	
204 [b]	3	1	1	2	4	1	3	7	0	0	
205 [b]	3	1	1	2	4	1	3	8	0	0	
206	3	1	1	2	4	1	3	7	0	0	
207 [b]	3	1	1	2	4	1	3	6	1	4	
208 [b]	3	1	1	2	4	1	1	5	1	4	
209 [b]	3	1	1	2	4	1	1	1	1	4	
210 [b]	3	1	1	2	4	1	3	7	0	0	
211	3	1	1	2	4	1	3	8	0	0	
212	3	1	1	2	4	1	1	5	1	4	
213	3	1	1	1	2	1	5	6	1	4	
214	3	1	1	0	0	1	2	8	1	4	
215	3	1	1	2	4	1	2	8	0	0	
216	3	1	1	1	2	1	2	8	0	0	
217	3	1	1	1	1	0	0	1	0	0	
218	3	1	1	2	4	1	2	7	1	4	
219	3	1	1	1	1	1	2	3	1	4	
220 [b]	3	1	1	2	4	1	0	6	1	4	
221 [b]	3	1	1	2	4	1	4	6	1	4	
222	3	1	1	2	4	1	3	6	1	4	
223	3	1	1	2	4	4	5	8	0	0	
224	3	1	1	2	4	1	0	7	0	0	
225	3	1	1	1	1	0	5	0	0	0	
226	3	1	1	1	1	0	5	8	1	4	
227	3	1	1	2	4	1	1	2	0	0	
228	4	1	1	2	4	3	3	4	1	4	23
229 [b]	4	1	1	2	4	3	3	3	1	4	24
230 [b]	4	1	1	1	3	1	3	3	0	0	30
231	4	1	1	2	4	3	3	3	0	0	31
232	4	1	1	2	4	2	3	3	3	3	34
233 [b]	4	1	1	2	4	2	3	3	3	3	34
234	4	1	1	2	4	2	3	3	3	3	34

Case #	Site Des	Con-text	Time Pd	Age Simp	Age Comp	Burial Pos	Body Side	Bur Dir	Int Type	Int AA	Gr Dep
235	4	1	1	1	1	0	5	0	3	3	34
236[b]	4	1	1	2	4	2	3	3	2	3	34
237	4	1	1	1	1	0	5	0	2	3	34
238[b]	4	1	1	1	3	2	3	3	0	0	36
239	4	1	1	1	1	2	3	5	1	4	36
240[b]	4	1	1	2	4	2	3	2	1	4	36
241[b]	4	1	1	2	4	3	3	4	1	4	54
242	4	1	1	1	2	1	2	4	2	2	36
243	4	1	1	1	3	1	2	4	2	2	36
244	4	1	1	1	1	1	3	0	0	0	36
245	4	1	1	1	3	3	2	3	1	4	42
246[b]	4	1	1	2	4	2	3	4	0	0	33
247	4	1	1	1	2	2	3	3	1	4	63
248[b]	4	1	1	2	4	3	3	3	1	4	32
249	4	1	1	1	3	1	2	3	1	4	32
250[b]	4	1	1	2	4	3	3	3	2	3	18
251	4	1	1	1	2	0	5	0	2	3	18
252[b]	4	1	1	1	3	1	1	1	1	4	34
253[b]	4	1	1	2	4	1	1	3	3	3	33
254[b]	4	1	1	2	4	1	3	3	3	3	30
255	4	1	1	1	1	0	5	0	3	3	30
256[b]	4	1	1	2	4	1	2	5	1	4	30
257[b]	4	1	1	1	3	3	1	5	1	4	20
258[b]	4	1	1	2	4	3	3	3	1	4	24
259[b]	4	1	1	2	4	3	2	3	1	4	13
260[b]	4	1	1	2	4	1	1	7	1	4	36
261	4	1	1	2	4	3	3	3	1	4	28
262[b]	4	1	1	2	4	3	3	3	1	4	24
263[b]	4	1	1	2	4	1	1	7	1	4	40
264[b]	4	1	1	2	4	1	4	7	1	4	34
265[b]	4	1	1	2	4	3	3	3	1	4	24
266	4	1	1	1	1	1	5	0	1	4	38
267	4	1	1	1	2	1	2	3	1	4	36
268[b]	4	1	1	2	4	3	3	5	1	4	30
269[b]	4	1	1	2	4	3	1	3	1	4	36
270	4	1	1	1	1	3	3	7	1	4	30
271[b]	4	1	1	2	4	3	3	3	1	4	54
272[b]	4	1	1	2	4	3	3	7	1	4	54
273	4	1	1	2	4	3	3	2	1	4	60
274	4	1	1	2	4	3	2	3	1	4	30
275[b]	4	1	1	2	4	3	3	5	1	4	24
276[b]	4	1	1	1	3	1	1	0	1	4	39
277[b]	4	1	1	2	4	3	3	3	1	4	40
278	4	1	1	2	4	1	2	7	1	4	18
279	4	1	1	2	4	4	5	0	1	4	18
280	4	1	1	1	1	3	3	3	1	4	18
281	4	1	1	2	4	1	2	3	1	4	30
282	4	1	1	2	4	0	3	3	1	4	27

Case #	Site Des	Con-text	Time Pd	Age Simp	Age Comp	Burial Pos	Body Side	Bur Dir	Int Type	Int AA	Gr Dep
283	4	1	1	1	1	0	5	0	1	4	32
284	4	1	1	1	1	1	4	7	1	4	26
285	4	1	1	1	1	0	5	0	1	4	26
286 [b]	4	1	1	2	4	4	5	7	1	4	34
287	4	1	1	2	4	4	5	5	1	4	36
288 [b]	4	1	1	2	4	4	5	1	1	4	36
289	4	1	1	2	4	1	2	7	1	4	32
290	4	1	1	1	1	0	5	0	1	4	36
291 [b]	4	1	1	2	4	1	2	7	2	3	40
292	4	1	1	1	1	0	5	0	2	3	42
293 [b]	4	1	1	2	4	4	5	7	1	4	41
294	4	1	1	2	4	1	3	3	2	3	24
295	4	1	1	1	1	0	0	0	2	3	24
296	4	1	1	1	1	1	4	5	1	4	34
297	4	1	1	2	4	1	1	3	1	4	30
298 [b]	4	1	1	2	4	1	2	3	1	4	32
299	4	1	1	2	4	1	1	3	1	4	24
300	4	1	1	2	4	1	1	3	1	4	30
301	4	1	1	2	4	1	1	7	1	4	24
302	4	1	1	1	1	1	1	7	0	0	24
303	4	1	1	1	1	1	4	3	1	4	24
304	4	1	1	2	4	0	5	0	0	0	24
305	4	1	1	2	4	0	5	0	0	0	24
306	4	1	1	1	1	0	3	5	1	4	36
307	4	1	1	1	3	0	3	3	1	4	30
308	4	1	1	1	1	1	1	5	1	4	36
309	4	1	1	1	1	0	5	0	0	0	36
310	4	1	1	1	1	0	5	0	0	0	36
311	4	1	1	2	4	1	1	2	1	4	40
312	4	1	1	1	2	2	3	4	1	4	30
313	4	1	1	2	4	1	3	1	1	4	36
314 [b]	4	1	1	2	4	1	3	7	1	4	32
315 [b]	4	1	1	2	4	0	3	1	1	4	30
316	4	1	1	2	4	0	5	0	1	4	
317	4	1	1	1	1	0	5	3	1	4	42
318 [b]	4	1	1	2	4	4	5	4	1	4	36
319 [b]	4	1	1	2	4	1	2	7	1	4	30
320	4	1	1	1	1	0	3	1	1	4	30
321	4	1	1	1	1	2	3	3	1	4	39
322	4	1	1	1	1	2	3	5	1	4	54
323	4	1	1	1	1	2	4	7	1	4	34
324	4	1	1	1	2	1	4	5	1	4	44
325 [b]	4	1	1	2	4	3	3	3	2	1	48
326 [b]	4	1	1	2	4	3	3	7	2	1	48
327	4	1	1	1	1	1	4	3	1	4	48
328 [b]	4	1	1	2	4	1	4	7	3	3	40
329	4	1	1	1	1	1	2	3	3	3	40
330	4	1	1	1	1	1	5	0	3	3	40
331	4	1	1	2	4	1	2	1	1	4	51
332 [a]	4	1	1	2	4	1	4	7	1	4	54

Case #	Site Des	Con-text	Time Pd	Age Simp	Age Comp	Burial Pos	Body Side	Bur Dir	Int Type	Int AA	Gr Dep
333	4	1	1	1	1	1	4	1	1	4	55
334 [b]	5	1	2	2	4	1	3	3	1	4	60
335 [b]	5	1	2	1	3	1	2	2	0	0	62
336	5	1	2	2	4	2	3	7	3	3	62
337	5	1	2	1	1	0	0	0	3	3	60
338	5	1	2	1	2	0	0	0	3	3	60
339	5	1	2	2	4	1	3	6	1	4	96
340 [b]	5	1	2	1	3	1	3	3	1	4	68
341 [b]	5	1	2	2	4	1	1	3	2	3	60
342	5	1	2	1	1	1	1	0	2	3	60
343 [b]	5	1	2	2	4	0	0	0	1	4	66
344	5	1	2	2	4	1	3	3	1	4	72
345 [b]	5	1	2	2	4	0	0	0	1	4	72
346	5	1	2	2	4	0	3	3	1	4	
347	5	1	2	2	4	0	0	0	0	0	
348	5	1	2	1	2	1	2	2	1	4	72
349	5	1	2	2	4	0	0	0	0	0	60
350	5	1	2	2	4	0	0	0	1	4	69
351	5	1	2	1	2	1	2	1	1	4	72
352 [b]	5	1	2	2	4	1	3	5	1	4	88
353 [b]	5	1	2	1	3	1	3	8	1	4	82
354 [b]	5	1	2	2	4	1	3	6	1	4	78
355	5	1	2	1	3	0	3	3	0	0	75
356 [b]	5	1	2	2	4	1	1	1	1	4	60
357	5	1	2	2	4	1	2	2	1	4	63
358	5	1	2	1	2	2	3	4	1	4	68
359 [b]	5	1	2	2	4	0	5	0	1	4	
360 [b]	5	1	2	2	4	0	5	0	1	4	
361 [b]	5	1	2	2	4	0	5	0	1	4	
362	5	1	2	2	4	1	3	3	0	0	68
363	5	1	2	2	4	0	5	0	1	4	
364 [b]	5	1	2	2	4	1	3	8	1	4	72
365 [b]	5	1	2	2	4	0	5	0	0	0	78
366	5	1	2	2	4	0	5	0	1	4	75
367	5	1	2	2	4	0	5	0	1	4	
368	5	1	2	2	4	1	3	6	0	0	78
369	5	1	2	2	4	1	1	8	0	0	78
370 [b]	5	1	2	2	4	1	3	7	1	4	78
371	5	1	2	2	4	0	5	0	1	4	
372	5	1	2	2	4	1	3	3	1	4	72
373	5	1	2	2	4	1	3	4	1	4	78
374	5	1	2	2	4	0	5	0	1	4	
375	5	1	2	2	4	0	5	0	0	0	68
376	5	1	2	2	4	0	5	0	0	0	68
377	5	1	2	2	4	0	5	0	0	0	68
378	5	1	2	2	4	0	5	0	0	0	68
379	5	1	2	1	2	1	2	8	1	4	18
380	5	1	2	0	0	1	3	3	1	4	54
381	5	1	2	0	0	2	3	1	1	4	57
382	5	1	2	2	4	1	3	3	1	4	56

Case #	Site Des	Con-text	Time Pd	Age Simp	Age Comp	Burial Pos	Body Side	Bur Dir	Int Type	Int AA	Gr Dep
383	5	1	2	0	0	1	2	5	1	4	66
384	5	1	2	2	4	1	3	4	1	4	82
385	5	1	2	2	4	2	0	2	1	4	76
386	5	1	2	2	4	1	3	2	1	4	78
387 [b]	5	1	2	2	4	0	2	2	1	4	72
388 [b]	5	1	2	2	4	0	3	0	0	0	70
389 [b]	5	1	2	2	4	2	3	3	1	4	78
390	5	1	2	1	1	2	3	3	1	4	78
391	5	1	2	2	4	2	3	3	1	4	80
392	5	1	2	2	4	0	5	0	1	4	
393	5	1	2	2	4	0	5	0	1	4	
394	5	1	2	2	4	0	5	0	1	4	
395	5	1	2	2	4	0	5	0	1	4	
396	5	1	2	2	4	0	5	0	1	4	
397	5	1	2	2	4	0	5	0	1	4	
398	5	1	2	1	3	0	5	0	1	4	
399	5	1	2	2	4	0	5	0	1	4	
400	5	1	2	2	4	1	3	4	1	4	74
401	5	1	2	2	4	1	3	8	1	4	79
402	5	1	2	1	2	0	5	0	1	4	
403	6	1	2	2	4	0	0	0	0	0	12
404	6	1	2	2	4	0	0	0	0	0	14
405	6	1	2	2	4	0	0	0	0	0	24
406	6	1	2	2	4	1	3	1	0	0	42
407	6	1	2	2	4	1	2	6	0	0	18
408	6	1	2	2	4	2	3	1	0	0	42
409	6	1	2	1	1	2	3	2	0	0	36
410	6	1	2	2	4	1	3	5	0	0	42
411	6	1	2	2	4	1	3	3	0	0	54
412	6	1	2	1	1	1	0	1	0	0	54
413	6	1	2	2	4	1	2	5	0	0	32
414	6	1	2	2	4	1	1	1	0	0	32
415	6	1	2	2	4	1	2	8	0	0	32
416	6	1	2	2	4	1	1	1	0	0	46
417	6	1	2	2	4	1	2	5	0	0	36
418	6	1	2	1	3	1	3	5	0	0	36
419	6	1	2	2	4	4	5	6	0	0	54
420	6	1	2	2	4	1	2	8	0	0	48
421	6	1	2	2	4	0	0	0	0	0	24
422	7	1	1	2	4	1	1	3	0	0	24
423	7	1	1	1	1	0	0	7	0	0	12
424	7	1	1	2	4	0	0	2	0	0	9
425	7	1	1	2	4	1	2	6	0	0	24
426	7	1	1	2	4	1	2	1	0	0	16
427	7	1	1	2	4	1	3	3	0	0	30
428	7	1	1	2	4	2	3	8	0	0	20
429	7	1	1	1	2	2	3	7	0	0	30
430	7	1	1	1	2	2	3	1	0	0	24
431	7	1	1	2	4	1	3	6	0	0	18
432	7	1	1	2	4	1	4	7	0	0	14
433	7	1	1	1	2	0	0	0	0	0	24
434	7	1	1	2	4	1	3	3	2	3	20

Case #	Site Des	Con-text	Time Pd	Age Simp	Age Comp	Burial Pos	Body Side	Bur Dir	Int Type	Int AA	Gr Dep
435	7	1	1	1	1	0	0	0	2	3	20
436	7	1	1	2	4	1	2	6	0	0	24
437	7	1	1	2	4	1	4	7	0	0	30
438	7	1	1	2	4	0	3	1	0	0	30
439	7	1	1	2	4	1	2	1	0	0	34
440	7	1	1	2	4	1	2	1	0	0	14
441	7	1	1	2	4	0	0	0	0	0	31
442	7	1	1	2	4	1	1	8	0	0	34
443	7	1	1	2	4	1	4	5	0	0	34
444	7	1	1	2	4	1	2	1	0	0	34
445	7	1	1	2	4	1	2	2	0	0	36
446	7	1	1	2	4	0	2	6	0	0	36
447	7	1	1	2	4	0	0	0	0	0	12
448	7	1	1	2	4	0	0	0	0	0	54
449	7	1	1	2	4	0	0	0	0	0	69
450	8	2	2	2	4	0	0	0	0	0	
451	8	2	2	2	4	0	0	0	0	0	
452	8	2	2	2	4	1	0	1	1	4	18
453	8	2	2	2	4	1	0	6	1	4	18
454	8	2	2	2	4	0	0	0	1	4	
455	8	2	2	2	4	0	0	0	0	0	30
456	8	2	2	2	4	0	0	0	0	0	34
457	8	2	2	2	4	1	0	0	0	0	32
458	8	2	2	2	4	0	0	0	1	4	
459	8	2	2	2	4	0	0	0	1	4	36
460	8	2	2	1	2	0	0	0	1	4	42
461	8	2	2	2	4	0	0	0	0	0	10
462	8	2	2	2	4	1	3	7	0	0	12
463	8	2	2	2	4	0	3	1	0	0	22
464	8	2	2	2	4	1	3	2	1	4	12
465	8	2	2	2	4	0	3	4	0	0	22
466	8	2	2	2	4	0	0	4	0	0	24
467	8	2	2	2	4	0	0	0	0	0	21
468	8	2	2	2	4	1	1	3	2	3	38
469	8	2	2	1	1	0	0	0	2	3	38
470	8	2	2	2	4	0	0	0	0	0	48
471	8	2	2	2	4	0	0	0	0	0	26
472	8	2	2	2	4	0	0	0	0	0	26
473	8	2	2	2	4	0	0	0	0	0	40
474	8	2	2	2	4	0	0	0	0	0	38
475	8	2	2	1	2	0	0	0	0	0	42
476	8	2	2	2	4	0	0	0	0	0	36
477	8	2	2	1	3	0	0	0	1	4	30
478	8	2	2	2	4	0	0	0	1	4	28
479	8	2	2	2	4	0	0	0	1	4	20
480	8	2	2	2	4	0	0	0	0	0	
481	8	2	2	2	4	0	0	0	1	4	
482	8	2	2	2	4	0	0	0	1	4	
483	8	2	2	2	4	0	0	0	0	0	
484	8	2	2	2	4	1	2	3	1	4	36
485	8	2	2	2	4	0	0	0	1	4	
486	8	2	2	2	4	0	0	0	1	4	
487	8	2	2	2	4	0	0	0	1	4	

Case #	Site Des	Con-text	Time Pd	Age Simp	Age Comp	Burial Pos	Body Side	Bur Dir	Int Type	Int AA	Gr Dep
488	8	2	2	2	4	0	0	0	0	0	
489	8	2	2	2	4	0	0	0	1	4	
490	8	2	2	2	4	0	0	0	1	4	
491	8	2	2	2	4	0	0	0	1	4	
492	8	2	2	2	4	1	2	7	1	4	15
493	8	2	2	2	4	0	0	0	1	4	6
494	8	2	2	2	4	0	0	0	0	0	24
495	8	2	2	2	4	0	0	8	1	4	
496	9	2	1	2	4	1	0	2	0	0	14
497	9	2	1	2	4	0	3	6	0	0	21
498	9	2	1	2	4	0	0	1	0	0	20
499	9	2	1	0	0	1	3	1	0	0	30
500	9	2	1	0	0	0	0	0	0	0	30
501	9	2	1	2	4	1	3	1	0	0	28
502	9	2	1	2	4	1	3	1	0	0	28
503	9	2	1	1	0	0	0	1	0	0	24
504	9	2	1	2	4	1	1	7	0	0	45
505	9	2	1	0	0	0	0	1	0	0	10
506	9	2	1	2	4	1	1	3	0	0	45
507	9	2	1	0	0	0	0	0	0	0	24
508	10	2	2	2	4	1	4	6	0	0	32
509	10	2	2	2	4	0	4	4	0	0	26
510	10	2	2	2	4	1	4	2	0	0	16
511	10	2	2	2	4	1	1	7	0	0	20
512	10	2	2	1	2	0	5	0	0	0	10
513	10	2	2	2	4	1	1	7	0	0	21
514	10	2	2	2	4	1	4	1	0	0	18
515	10	2	2	2	4	1	4	6	0	0	6
516	10	2	2	2	4	1	4	6	0	0	6
517	10	2	2	2	4	1	4	6	0	0	16
518	10	2	2	2	4	0	4	6	0	0	16
519	10	2	2	2	4	1	4	6	0	0	16
520	10	2	2	2	4	1	4	6	0	0	16
521	10	2	2	2	4	0	4	5	0	0	26
522	10	2	2	2	4	1	1	6	0	0	24
523	10	2	2	2	4	1	4	6	0	0	17
524	10	2	2	2	4	1	4	6	0	0	20
525	10	2	2	0	0	0	5	0	0	0	16
526	10	2	2	2	4	0	5	0	0	0	22
527	10	2	2	1	1	0	4	4	0	0	18
528	10	2	2	2	4	1	1	8	0	0	20
529	10	2	2	2	4	1	1	7	0	0	22
530	10	2	2	1	1	0	0	6	0	0	22
531	10	2	2	1	3	1	1	6	1	4	22
532	10	2	2	2	4	1	2	6	0	0	18
533	10	2	2	1	2	1	2	6	0	0	20
534	10	2	2	2	4	1	1	8	1	4	23
535	10	2	2	2	4	1	1	6	0	0	20
536	10	2	2	2	4	1	1	6	0	0	22
537	10	2	2	2	4	1	1	7	0	0	15
538	10	2	2	2	4	1	4	1	1	4	17
539	10	2	2	1	1	0	0	0	1	4	30
540	10	2	2	1	2	1	4	5	1	4	20

Case #	Site Des	Con-text	Time Pd	Age Simp	Age Comp	Burial Pos	Body Side	Bur Dir	Int Type	Int AA	Gr Dep
541	10	2	2	2	4	0	0	0	0	0	27
542	10	2	2	1	2	1	1	7	0	0	17
543	10	2	2	2	4	1	2	8	1	4	25
544	10	2	2	2	4	1	4	5	1	4	25
545	10	2	2	2	4	1	1	7	1	4	17
546	10	2	2	1	2	1	4	1	1	4	20
547	10	2	2	2	4	1	1	7	1	4	22
548	10	2	2	1	2	1	4	5	1	4	17
549	10	2	2	2	4	1	1	7	1	4	16
550	10	2	2	2	4	1	1	7	1	4	24
551	10	2	2	2	4	1	1	6	1	4	15
552	10	2	2	1	2	0	0	0	1	4	20
553	10	2	2	2	4	0	0	0	1	4	22
554	10	2	2	2	4	0	0	0	1	4	17
555	10	2	2	2	4	1	1	6	0	0	17
556	10	2	2	2	4	1	1	6	0	0	17
557	10	2	2	1	2	0	0	6	1	4	22
558	10	2	2	2	4	1	1	8	1	4	19
559	10	2	2	0	0	0	0	0	1	4	25
560	10	2	2	1	2	0	0	0	1	4	20
561	10	2	2	2	4	1	1	6	1	4	19
562	10	2	2	2	4	1	1	8	1	4	17
563	10	2	2	2	4	1	1	2	1	4	15
564	10	2	2	2	4	0	0	0	1	4	15
565	11	2	2	2	4	1	1	2	0	0	24
566	11	2	2	2	4	1	4	3	0	0	24
567	11	2	2	2	4	1	4	3	0	0	30
568	11	2	2	2	4	1	4	7	1	4	24
569 [a]	11	2	2	2	4	1	1	5	0	0	28
570	11	2	2	2	4	1	2	7	0	0	28
571	11	2	2	2	4	1	4	8	0	0	18
572	11	2	2	2	4	1	4	7	1	4	24
573 [a]	11	2	2	2	4	1	4	7	1	4	22
574	11	2	2	2	4	0	0	2	1	4	30
575	11	2	2	1	2	1	1	6	1	4	12
576	11	2	2	2	4	1	4	6	0	0	12
577	11	2	2	2	4	1	4	6	0	0	13
578	11	2	2	2	4	0	0	0	1	4	18
579 [a]	11	2	2	2	4	1	2	7	1	4	24
580	11	2	2	1	1	0	0	6	1	4	24
581	11	2	2	2	4	1	4	7	1	4	28
582	11	2	2	1	2	0	0	0	0	0	16
583	11	2	2	1	2	0	0	0	0	0	16
584	11	2	2	1	2	0	0	0	1	4	21
585	11	2	2	2	4	0	0	0	1	4	20
586	11	2	2	2	4	0	0	1	1	4	34
587	11	2	2	2	4	0	0	0	1	4	26
588	11	2	2	2	4	0	0	0	1	4	28
589	11	2	2	2	4	1	4	8	3	3	19
590	11	2	2	2	4	1	4	8	3	3	20
591	11	2	2	1	2	1	4	8	3	3	21
592	11	2	2	1	2	1	4	8	3	3	22

Case #	Site Des	Con-text	Time Pd	Age Simp	Age Comp	Burial Pos	Body Side	Bur Dir	Int Type	Int AA	Gr Dep
593	11	2	2	1	2	0	0	0	1	4	15
594	11	2	2	1	1	0	0	0	2	3	26
595	11	2	2	2	4	0	0	0	2	3	26
596	11	2	2	2	4	0	0	0	1	4	32
597	11	2	2	2	4	1	4	6	1	4	
598	11	2	2	1	1	0	0	0	0	0	17
599	11	2	2	1	2	0	0	0	0	0	18
600	11	2	2	2	4	0	0	0	1	4	26
601	11	2	2	2	4	0	0	0	1	4	26
602	11	2	2	1	2	0	0	0	1	4	20
603	11	2	2	1	2	1	4	7	1	4	14
604	11	2	2	1	1	1	4	7	0	0	26
605	11	2	2	2	4	1	4	3	0	0	26
606	11	2	2	2	4	1	1	1	0	0	27
607	11	2	2	2	4	1	1	7	0	0	27
608	11	2	2	2	4	1	4	7	3	1	20
609	11	2	2	2	4	1	0	7	3	1	20
610	11	2	2	2	4	1	1	7	3	1	20
611	11	2	2	2	4	1	0	2	3	1	20
612	12	2	2	2	4	1	2	8	1	4	24
613	12	2	2	2	4	1	1	6	1	4	16
614	12	2	2	2	4	1	1	7	1	4	21
615	12	2	2	2	4	1	1	6	1	4	26
616	12	2	2	1	2	1	0	6	1	4	26
617	12	2	2	1	2	1	2	6	1	4	19
618	12	2	2	1	2	0	0	0	1	4	16
619	12	2	2	2	4	1	4	6	1	4	15
620	13	2	2	2	4	1	4	3	1	4	14
621	13	2	2	2	4	0	1	3	1	4	30
622	13	2	2	2	4	1	1	3	1	4	12
623	13	2	2	2	4	1	4	7	1	4	18
624	13	2	2	2	4	0	0	3	1	4	36
625	13	2	2	2	4	0	0	3	1	4	30
626	13	2	2	2	4	0	0	0	0	0	36
627	13	2	2	2	4	0	0	0	0	0	40
628	13	2	2	2	4	0	0	0	0	0	27
629	13	2	2	2	4	0	0	8	0	0	29
630	13	2	2	2	4	0	0	0	0	0	34
631	13	2	2	2	4	0	0	0	0	0	30
632	13	2	2	2	4	2	4	7	1	4	18
633	13	2	2	1	1	0	0	0	0	0	
634	13	2	2	1	1	0	0	0	0	0	
635	13	2	2	2	4	0	0	0	0	0	30
636	13	2	2	2	4	1	0	3	0	0	24
637	13	2	2	2	4	1	0	3	0	0	
638	13	2	2	2	4	1	0	3	0	0	
639	13	2	2	2	4	0	0	0	0	0	30
640	13	2	2	2	4	0	0	0	0	0	
641	13	2	2	2	4	1	2	7	1	4	10
642	13	2	2	1	1	1	1	7	1	4	14
643	13	2	2	2	4	1	4	3	1	4	36
644	13	2	2	2	4	1	4	3	1	4	30
645	13	2	2	2	4	1	4	3	1	4	26

Case #	Site Des	Con-text	Time Pd	Age Simp	Age Comp	Burial Pos	Body Side	Bur Dir	Int Type	Int AA	Gr Dep
646	13	2	2	2	4	1	3	8	1	4	14
647	13	2	2	2	4	0	0	7	0	0	34
648	13	2	2	2	4	0	0	0	1	4	36
649	13	2	2	2	4	1	4	1	1	4	10
650	13	2	2	2	4	1	4	7	1	4	14
651	13	2	2	2	4	1	4	7	1	4	14
652	13	2	2	2	4	1	0	6	1	4	30
653	13	2	2	1	1	0	0	5	1	4	26
654	13	2	2	2	4	0	0	7	1	4	32
655	13	2	2	2	4	1	3	7	1	4	14
656	13	2	2	2	4	1	1	8	1	4	10
657	13	2	2	2	4	1	1	1	1	4	10
658	13	2	2	2	4	0	0	3	1	4	30
659	13	2	2	1	2	0	4	3	1	4	18
660	13	2	2	0	0	0	0	3	0	0	28
661	13	2	2	0	0	0	0	0	0	0	24
662	13	2	2	2	4	1	1	3	0	0	26
663	13	2	2	2	4	1	1	3	0	0	26
664	13	2	2	2	4	0	0	0	0	0	30
665	13	2	2	2	4	0	0	0	0	0	31
666	13	2	2	2	4	0	0	0	0	0	32
667	13	2	2	2	4	1	0	3	1	4	
668	13	2	2	2	4	1	0	3	0	0	30
669	13	2	2	2	4	1	0	3	0	0	30
670	13	2	2	2	4	1	0	3	0	0	30
671	13	2	2	2	4	1	0	3	0	0	30
672	13	2	2	2	4	0	0	3	0	0	30
673	13	2	2	2	4	0	0	3	0	0	30
674	13	2	2	2	4	0	0	3	0	0	30
675	13	2	2	2	4	0	0	3	0	0	30
676	13	2	2	2	4	0	0	3	0	0	30
677	13	2	2	2	4	1	0	0	1	4	24
678	13	2	2	2	4	1	0	0	1	4	
679	13	2	2	2	4	1	0	0	1	4	30
680	13	2	2	2	4	1	0	0	1	4	
681	13	2	2	2	4	1	0	0	1	4	
682	13	2	2	2	4	1	0	0	1	4	40
683	13	2	2	2	4	0	0	0	1	4	40
684	13	2	2	2	4	0	0	0	2	3	36
685	13	2	2	1	1	0	0	0	2	3	36
686	13	2	2	2	4	0	0	0	1	4	
687	13	2	2	2	4	0	0	0	1	4	
688	13	2	2	2	4	0	0	0	1	4	
689	13	2	2	0	0	0	0	0	1	4	20
690	13	2	2	0	0	0	0	0	1	4	20
691	13	2	2	0	0	0	0	0	1	4	20
692	13	2	2	0	0	0	0	0	1	4	20
693	13	2	2	0	0	0	0	0	1	4	20
694	13	2	2	0	0	0	0	0	1	4	20
695	13	2	2	0	0	0	0	0	1	4	30
696	13	2	2	0	0	0	0	0	1	4	36
697	13	2	2	0	0	0	0	0	1	4	30
698	13	2	2	2	4	1	2	1	1	4	12

Case #	Site Des	Con-text	Time Pd	Age Simp	Age Comp	Burial Pos	Body Side	Bur Dir	Int Type	Int AA	Gr Dep
699	13	2	2	2	4	0	0	0	1	4	36
700	13	2	2	2	4	0	0	0	1	4	30
701	13	2	2	2	4	1	2	2	1	4	30
702	13	2	2	2	4	0	0	0	1	4	
703	13	2	2	2	4	0	0	3	0	0	30
704	13	2	2	2	4	0	0	0	0	0	30
705	13	2	2	2	4	0	0	0	0	0	30
706	13	2	2	2	4	1	0	3	1	4	28
707	13	2	2	2	4	0	2	2	1	4	32
708	13	2	2	2	4	0	0	0	1	4	30
709	13	2	2	2	4	1	1	2	1	4	18
710	13	2	2	2	4	0	0	0	1	4	
711	13	2	2	2	4	0	0	0	1	4	
712	13	2	2	2	4	0	0	0	1	4	
713	13	2	2	2	4	0	0	0	0	0	30
714	13	2	2	2	4	0	4	5	1	4	24
715	13	2	2	2	4	0	0	3	0	0	30
716	13	2	2	2	4	0	0	3	0	0	30
717	13	2	2	2	4	1	1	4	1	4	28
718	13	2	2	2	4	1	4	6	1	4	24
719	13	2	2	1	2	0	0	0	1	4	40
720	13	2	2	2	4	1	3	6	1	4	33
721	13	2	2	2	4	1	4	3	1	4	28
722	13	2	2	2	4	0	0	3	0	0	30
723	13	2	2	2	4	0	0	3	0	0	30
724	13	2	2	2	4	0	0	0	1	4	30
725	13	2	2	2	4	0	0	5	1	4	26
726	13	2	2	2	4	0	0	0	1	4	30
727	13	2	2	2	4	0	0	1	1	4	24
728	13	2	2	2	4	0	0	0	1	4	28
729	13	2	2	2	4	0	0	0	1	4	26
730	13	2	2	2	4	0	0	0	1	4	
731	13	2	2	2	4	0	0	0	1	4	30
732	13	2	2	2	4	0	1	1	1	4	36
733	13	2	2	2	4	1	1	8	1	4	24
734	13	2	2	2	4	1	4	7	1	4	32
735	13	2	2	2	4	1	4	7	1	4	30
736	13	2	2	2	4	0	0	0	0	0	30
737	13	2	2	2	4	1	4	2	1	4	30
738	13	2	2	2	4	1	1	1	1	4	24
739	13	2	2	2	4	0	0	0	0	0	30
740	13	2	2	2	4	0	0	0	0	0	30
741	13	2	2	1	1	0	0	0	1	4	28
742	13	2	2	2	4	0	0	3	0	0	30
743	13	2	2	2	4	0	0	3	0	0	30
744	13	2	2	2	4	0	0	3	1	4	28
745	13	2	2	2	4	0	0	3	1	4	24
746	13	2	2	2	4	0	0	0	0	0	26
747	13	2	2	2	4	0	0	0	0	0	26
748	13	2	2	2	4	0	0	8	1	4	28
749	13	2	2	2	4	0	0	0	0	0	30
750	13	2	2	2	4	0	0	0	0	0	30
751	13	2	2	2	4	0	0	0	0	0	30

Case #	Site Des	Con- text	Time Pd	Age Simp	Age Comp	Burial Pos	Body Side	Bur Dir	Int Type	Int AA	Gr Dep
752	13	2	2	2	4	0	0	0	0	0	30
753	13	2	2	2	4	0	0	0	0	0	30
754	13	2	2	2	4	0	0	0	1	4	24
755	13	2	2	2	4	0	0	0	1	4	30
756	13	2	2	2	4	0	0	0	0	0	28
757	13	2	2	2	4	0	0	0	0	0	28
758	13	2	2	2	4	0	0	0	1	4	26
759	13	2	2	2	4	0	0	0	1	4	38
760	13	2	2	2	4	0	0	0	1	4	36
761	13	2	2	2	4	0	0	0	1	4	
762	13	2	2	2	4	0	0	0	1	4	30
763	13	2	2	2	4	0	0	0	1	4	
764	13	2	2	2	4	1	2	7	1	4	26
765	13	2	2	2	4	0	0	0	1	4	30
766	13	2	2	1	2	2	0	3	1	4	26
767	13	2	2	2	4	0	0	0	1	4	30
768	13	2	2	2	4	0	0	3	1	4	24
769	13	2	2	2	4	0	0	0	1	4	
770	13	2	2	2	4	0	0	0	1	4	30
771	13	2	2	2	4	0	0	0	1	4	30
772	13	2	2	2	4	0	0	0	1	4	26
773	13	2	2	2	4	0	0	0	1	4	36
774	13	2	2	2	4	0	0	0	1	4	
775	13	2	2	2	4	0	0	3	0	0	34
776	13	2	2	2	4	0	0	3	0	0	34
777	13	2	2	2	4	0	0	3	1	4	28
778	13	2	2	0	0	0	0	0	1	4	24
779	13	2	2	2	4	0	0	0	1	4	30
780	13	2	2	2	4	0	0	0	1	4	28
781	13	2	2	2	4	0	0	0	1	4	
782	13	2	2	2	4	0	0	0	1	4	
783	13	2	2	2	4	0	0	0	1	4	
784	13	2	2	2	4	0	0	0	1	4	
785	13	2	2	2	4	0	0	0	1	4	
786	13	2	2	2	4	0	0	0	1	4	
787	13	2	2	2	4	0	0	0	1	4	
788	13	2	2	2	4	0	0	0	1	4	
789	13	2	2	2	4	0	0	0	1	4	28
790	13	2	2	2	4	0	0	0	1	4	26
791	13	2	2	2	4	0	0	0	1	4	
792	13	2	2	2	4	0	0	0	1	4	36
793	13	2	2	2	4	0	0	0	1	4	28
794	13	2	2	2	4	0	0	0	1	4	32
795	13	2	2	2	4	0	0	4	1	4	30
796	13	2	2	2	4	0	0	0	1	4	24
797	13	2	2	2	4	0	0	0	0	0	30
798	13	2	2	2	4	0	0	0	0	0	30
799	13	2	2	2	4	0	0	0	0	0	30
800	13	2	2	2	4	0	0	3	1	4	24
801	13	2	2	2	4	0	0	0	1	4	30
802	13	2	2	2	4	0	0	0	1	4	22
803	13	2	2	2	4	0	0	0	1	4	
804	13	2	2	2	4	0	0	0	1	4	36

Case #	Site Des	Con-text	Time Pd	Age Simp	Age Comp	Burial Pos	Body Side	Bur Dir	Int Type	Int AA	Gr Dep
805	13	2	2	2	4	0	0	0	1	4	30
806	13	2	2	2	4	0	0	0	1	4	30
807	13	2	2	2	4	0	0	0	1	4	30
808	13	2	2	2	4	0	0	0	0	0	30
809	13	2	2	2	4	0	0	0	0	0	30
810	13	2	2	2	4	0	0	0	0	0	30
811	13	2	2	2	4	0	0	1	0	0	30
812	13	2	2	2	4	0	0	1	0	0	30
813	13	2	2	2	4	0	0	3	0	0	30
814	13	2	2	2	4	0	0	6	0	0	20
815	13	2	2	2	4	0	0	0	0	0	36
816	13	2	2	2	4	0	0	0	0	0	30
817	13	2	2	2	4	0	0	0	0	0	30
818	13	2	2	1	1	0	0	0	0	0	30
819	13	2	2	2	4	0	0	0	0	0	30
820	13	2	2	2	4	0	0	1	1	4	28
821	13	2	2	2	4	0	0	0	2	1	32
822	13	2	2	2	4	0	0	7	2	1	32
823	13	2	2	2	4	0	0	3	1	4	24
824	13	2	2	2	4	0	0	2	0	0	30
825	13	2	2	2	4	0	0	2	0	0	30
826	13	2	2	2	4	1	2	1	0	0	24
827	13	2	2	0	0	0	0	3	0	0	30
828	13	2	2	2	4	0	0	0	0	0	
829	13	2	2	2	4	0	0	0	0	0	
830	13	2	2	2	4	1	2	7	1	4	12
831	13	2	2	2	4	1	2	7	1	4	29
832	13	2	2	2	4	1	2	6	1	4	24
833	13	2	2	2	4	1	4	7	1	4	26
834	13	2	2	2	4	1	0	7	1	4	52
835	13	2	2	2	4	1	4	8	1	4	24
836	13	2	2	2	4	1	4	6	1	4	26
837	13	2	2	2	4	1	1	8	1	4	18
838	13	2	2	2	4	1	4	7	1	4	28
839	13	2	2	1	3	1	4	3	1	4	28
840	13	2	2	2	4	0	0	0	2	1	30
841	13	2	2	2	4	0	0	0	2	1	31
842	13	2	2	2	4	1	4	8	1	4	24
843	13	2	2	2	4	1	4	8	1	4	30
844	13	2	2	2	4	1	4	1	0	0	19
845	13	2	2	1	3	1	4	6	0	0	24
846	13	2	2	2	4	1	4	8	0	0	24
847	13	2	2	2	4	1	4	3	1	4	26
848	13	2	2	2	4	1	4	8	1	4	21
849	13	2	2	2	4	1	4	8	1	4	18
850	13	2	2	2	4	1	4	3	1	4	23
851	13	2	2	2	4	1	4	1	1	4	27
852	13	2	2	2	4	1	2	8	0	0	30
853	13	2	2	2	4	1	4	7	0	0	30
854	13	2	2	2	4	0	0	0	0	0	20
855	13	2	2	2	4	0	0	0	0	0	20
856	13	2	2	2	4	1	4	5	1	4	30
857	14	2	2	0	0	1	0	0	1	4	

Case #	Site Des	Con-text	Time Pd	Age Simp	Age Comp	Burial Pos	Body Side	Bur Dir	Int Type	Int AA	Gr Dep
858	14	2	2	2	4	1	4	0	0	0	
859	14	2	2	1	2	0	0	0	0	0	
860	14	2	2	2	4	3	1	7	1	4	36
861	14	2	2	2	4	1	4	7	0	0	48
862	14	2	2	2	4	1	3	0	0	0	
863	14	2	2	2	4	1	4	0	0	0	
864	14	2	2	2	4	2	4	0	0	0	
865	14	2	2	2	4	2	4	0	0	0	24
866	14	2	2	2	4	1	4	0	0	0	
867	14	2	2	2	4	1	4	0	1	4	
868	14	2	2	0	0	1	4	0	1	4	24
869	14	2	2	2	4	1	4	0	1	4	
870	14	2	2	2	4	1	4	0	1	4	
871	14	2	2	2	4	2	4	0	0	0	
872	14	2	2	0	0	1	4	0	1	4	
873	14	2	2	0	0	2	4	0	0	0	
874	14	2	2	0	0	2	4	0	0	0	
875	14	2	2	0	0	2	4	0	1	4	
876	14	2	2	2	4	2	4	0	1	4	
877	14	2	2	2	4	1	4	0	0	0	
878	14	2	2	2	4	2	4	0	1	4	
879	14	2	2	2	4	2	4	0	1	4	
880	14	2	2	0	0	1	4	0	1	4	
881	14	2	2	0	0	1	4	0	1	4	
882	14	2	2	0	0	1	4	0	1	4	
883	14	2	2	0	0	2	4	0	1	4	
884	14	2	2	2	4	1	4	0	1	4	
885	14	2	2	0	0	2	4	0	1	4	
886	14	2	2	2	4	3	4	0	1	4	
887	14	2	2	2	4	2	0	0	1	4	
888	14	2	2	2	4	2	4	0	1	4	
889	14	2	2	2	4	2	4	0	1	4	
890	14	2	2	0	0	1	4	0	0	0	
891	14	2	2	2	4	1	0	0	1	4	
892	14	2	2	0	0	2	4	0	1	4	36
893	14	2	2	0	0	2	4	0	1	4	
894	14	2	2	0	0	2	4	0	1	4	
895	14	2	2	0	0	2	4	0	1	4	
896	14	2	2	1	3	2	4	0	1	4	
897	14	2	2	0	0	2	4	0	1	4	
898	14	2	2	2	4	2	4	0	1	4	60
899	14	2	2	0	0	1	0	0	1	4	
900	14	2	2	1	2	2	4	0	1	4	
901	14	2	2	0	0	1	0	0	1	4	
902	14	2	2	0	0	1	0	0	1	4	
903	14	2	2	0	0	1	0	0	1	4	
904	14	2	2	0	0	1	4	0	1	4	
905	14	2	2	0	0	1	4	0	1	4	
906	15	2	1	2	4	1	4	3	1	4	18
907	15	2	1	1	3	1	2	5	1	4	18
908	15	2	1	2	4	1	1	2	0	0	18
909	15	2	1	2	4	2	4	7	1	4	18
910	15	2	1	0	0	0	0	0	0	0	18

Case #	Site Des	Con-text	Time Pd	Age Simp	Age Comp	Burial Pos	Body Side	Bur Dir	Int Type	Int AA	Gr Dep
911	15	2	1	2	4	0	0	3	0	0	18
912	15	2	1	2	4	0	0	3	0	0	
913	15	2	1	2	4	1	0	7	0	0	18
914	15	2	1	0	0	0	0	0	1	4	18
915	15	2	1	0	0	1	0	0	1	4	18
916	15	2	1	2	4	1	0	3	0	0	18
917	15	2	1	1	3	0	0	0	1	4	18
918	16	2	2	2	4	4	5	1	1	4	
919	16	2	2	2	4	4	5	5	2	3	
920	16	2	2	1	1	0	0	0	2	3	
921	16	2	2	2	4	4	5	7	1	4	
922[a]	16	2	2	2	4	4	5	2	1	4	
923	16	2	2	1	1	2	1	3	1	4	
924	16	2	2	1	2	4	5	1	1	4	
925	16	2	2	1	2	4	5	1	1	4	
926	16	2	2	1	3	4	5	5	1	4	
927	16	2	2	2	4	4	5	4	1	4	
928	16	2	2	2	4	4	5	7	1	4	
929	16	2	2	1	2	4	5	4	1	4	
930	16	2	2	2	4	4	5	8	1	4	
931	16	2	2	1	1	4	5	7	1	4	
932	16	2	2	1	3	4	5	5	1	4	
933[a]	16	2	2	2	4	4	5	7	1	4	
934	16	2	2	2	4	4	5	7	1	4	
935	16	2	2	1	2	0	0	0	0	0	
936	16	2	2	2	4	4	5	7	1	4	
937[a]	16	2	2	2	4	4	5	7	1	4	
938	16	2	2	2	4	0	0	0	0	0	
939	16	2	2	2	4	0	0	0	0	0	
940	16	2	2	1	3	0	0	0	0	0	
941	16	2	2	2	4	0	0	0	1	4	

Note: Biological age estimations are those assessed by the original excavators, unless demarcated otherwise ([a] = Lambert 1994; [b]= Sholts 2010).

Table C.2. Dependent Variables 9–15

Case #	Grv Feat	Pig Bur	Grv Gds	GG NO	GG O	Tot GG	Mat Typ	Cer Para	Beads
1	2	1	0					0	0
2	2	1	2				0	0	0
3	2	1	1	2	0	2	1	2	2
4	2	1	1	1	0	1	1	2	2
5	2	1	2	0	0	0	0	0	2
6	2	0	2	0	0	0	0	0	2
7	2	1	2	0	0	0	0	0	2
8	2	2	0					0	0
9	2	2	1	0	0	0	1	2	2
10	2	1	2	0	0	0	0	0	2
11	2	1	2	0	0	0	0	0	2
12	2	2	2	0	0	0	0	0	2
13	2	2	2	0	0	0	0	0	2
14	2	0	1	0	4	4	1	2	1
15	2	2	2	0	0	0	0	0	2
16	2	1	0					0	0
17	2	1	2	0	0	0	0	0	2
18	2	1	2	0	0	0	0	0	2
19	2	1	2	0	0	0	0	0	2
20	2	1	2	0	0	0	0	0	2
21	2	1	1	0	141	141	1	2	1
22	2	2	2	0	0	0	0	0	2
23	2	2	1	1	0	1	1	2	2
24	2	1	2	0	0	0	0	0	2
25	2	2	1	1	0	1	1	2	2
26	2	2	2	0	0	0	0	0	2
27	2	2	2	0	0		0	0	2
28	2	2	2	0	0	0	0	0	2
29	2	1	1				2	2	2
30	2	1	1	1	0	1	1	2	2
31	2	1	1	2	8	10	3	2	1
32	2	2	2	0	0	0	0	0	2
33	2	1	2	0	0	0	0	0	2
34	2	1	2	0	0	0	0	0	2
35	2	1	1	1	0	1	1	2	2
36	2	2	2	0	0	0	0	0	2
37	2	1	1				1	2	1
38	2	1	2	0	0	0	0	0	2
39	2	1	1	4	0	4	2	2	2
40	2	2	2	0	0	0	0	0	2
41	2	1	1	1	0	1	1	2	2
42	2	2	1	1	0	1	1	1	2
43	2	1	2	0	0	0	0	0	2
44	2	2	2	0	0	0	0	0	2
45	2	1	2	0	0	0	0	0	2
46	2	1	2	0	0	0	0	0	2
47	2	1	1	2	2	4	2	2	1
48	2	1	2	0	0	0	0	0	2
49	2	2	2	0	0	0	0	0	2
50	2	1	0					0	0
51	2	1	0					0	0

Case #	Grv Feat	Pig Bur	Grv Gds	GG NO	GG O	Tot GG	Mat Typ	Cer Para	Beads
52	2	2	2	0	0	0	0	0	2
53	2	1	1					0	0
54	2	2	2	0	0	0	0	0	0
55	2	1	1				2	2	2
56	2	1	1	1	0	1	1	2	2
57	2	1	2	0	0	0	0	0	0
58	2	1	2	0	0	0	0	0	0
59	1	1	2	0	0	0	0	0	0
60	2	0	2	0	0	0	0	0	0
61	2	1	2	0	0	0	0	0	0
62	2	1	2	0	0	0	0	0	0
63	2	1	2	0	0	0	0	0	0
64	2	1	2	0	0	0	0	0	0
65	2	1	2	0	0	0	0	0	0
66	2	2	2	0	0	0	0	0	0
67	2	1	2	0	0	0	0	0	0
68	2	1	2	0	0	0	0	0	0
69	2	1	2	0	0	0	0	0	0
70	2	1	2	0	0	0	0	0	0
71	2	1	2	0	0	0	0	0	0
72	2	1	1	3	997	1000	1	1	1
73	2	1	1	0	61	61	1	2	1
74	2	3	1	4	776	780	2	1	1
75	2	3	1	4	308	312	2	1	1
76	2	3	1	1	0	1	1	2	2
77	2	3	2	0	0	0	1	2	2
78	2	3	1	1	969	970	2	2	1
79	2	3	1	0	292	292	2	2	1
80	2	3	1	2	331	333	3	1	1
81	2	3	1	10	76	86	2	2	1
82	2	3	1	1	0	1	1	2	2
83	0	0	2	0	0	0	0	0	2
84	0	0	1	0	126	126	3	2	1
85	0	0	1				1	2	1
86	0	0	1	0	5	5	2	2	1
87	0	0	1	0	11	11	2	2	1
88	0	1	1	0	33	33	1	2	1
89	0	0	1	0	1	1	1	2	1
90	0	0	1				1	2	1
91	0	1	1	1	3	4	1	2	1
92	0	0	1	0	98	98	2	2	1
93	0	0	1	0	48	48	2	2	1
94	0	0	1	1	0	1	1	2	2
95	0	0	0					0	0
96	0	0	0					0	0
97	0	1	1	0	234	234	2	2	1
98	0	1	1	0	144	144	2	2	1
99	0	1	1	2	518	520	2	2	1
100	0	1	1	0	248	248	1	2	1
101	0	1	1				1	2	0
102	0	1	1	0	100	100	1	2	1
103	0	2	2	0	0	0	0	0	2
104	0	0	2	0	0	0	0	0	2

Case #	Grv Feat	Pig Bur	Grv Gds	GG NO	GG O	Tot GG	Mat Typ	Cer Para	Beads
105	0	1	1	1	998	999	3	1	1
106	0	1	1	1	312	313	2	2	1
107	0	0	1	2	0	2	1	1	2
108	0	0	2	0	0	0	0	0	2
109	0	2	2	0	0	0	0	0	2
110	0	1	1	0	7	7	2	2	2
111	0	1	1	1	39	40	2	1	0
112	0	1	1	0	47	47	1	2	1
113	0	2	2	0	0	0	0	0	2
114	0	1	2	0	0	0	0	0	2
115	0	1	1	0	313	313	1	2	1
116	0	0	1	0	187	187	1	2	1
117	0	0	2	0	0	0	0	0	2
118	0	1	2	0	0	0	0	0	2
119	0	1	1	1	32	33	2	2	2
120	0	0	1	1	162	163	1	2	1
121	0	1	1	0	1	1	1	2	2
122	0	1	2	0	0	0	0	0	2
123	0	0	2	0	0	0	0	0	2
124	0	0	2	0	0	0	0	0	2
125	0	1	2	0	0	0	0	0	2
126	0	1	1	0	111	111	2	2	2
127	0	1	2	0	0	0	0	0	2
128	0	1	1	0	262	262	1	2	2
129	0	1	2	0	0	0	0	0	2
130	0	1	2	0	0	0	0	0	2
131	0	1	1	0	968	968	3	2	1
132	0	1	1	1	1	2	1	2	1
133	0	2	2	0	0	0	0	0	2
134	0	1	1	0	985	985	2	2	1
135	0	2	2	0	0	0	0	0	2
136	0	1	1	0	39	39	1	2	1
137	0	1	1	2	284	286	3	1	1
138	0	1	1	0	0	0	0	2	2
139	0	1	1	1	0	1	1	2	2
140	0	1	1	0	133	133	1	2	1
141	0	1	1	0	461	461	1	2	1
142	0	1	0					0	0
143	0	2	0					0	0
144	0	1	1	0	18	18	1	2	1
145	0	1	1	0			1	2	1
146	0	1	1	1	176	177	3	2	1
147	0	1	1				1	2	1
148	0	1	1				1	1	2
149	0	2	2	0	0	0	0	0	2
150	0	1	2	0	0	0	0	0	2
151	0	1	1	0	1	1	1	2	2
152	0	1	1	0	122	122	1	2	2
153	0	1	2	0	0	0	0	0	2
154	0	1	2	0	0	0	0	0	2
155	0	2	1	0	1	1	1	2	1
156	0	1	2	0	0	0	0	0	2
157	0	1	2	0	0	0	0	0	2

Case #	Grv Feat	Pig Bur	Grv Gds	GG NO	GG O	Tot GG	Mat Typ	Cer Para	Beads
158	0	1	1	2	1		2	2	1
159	0	1	2	0	0	0	0	0	2
160	0	1	2	0	0	0	0	0	2
161	0	1	1	0	2	2	1	2	2
162	0	1	2	0	0	0	0	0	2
163	0	0	1	1	23	24	2	1	1
164	0	2	1	1	467	468	3	2	1
165	0	1	1	1	8	9	2	1	1
166	0	1	0					0	0
167	0	1	0					0	0
168	0	1	1	0	211	211	1	2	1
169	0	1	1	6	46	52	4	1	1
170	0	2	1	1	333	334	2	2	1
171	0	2	1	1	122	123	2	2	1
172	0	1	1	0	590	590	1	2	1
173	0	1	1	0	155	155	2	2	1
174	0	1	1	1	488	489	2	2	1
175	0	1	1	1	78	79	2	2	1
176	0	0	1	0	4	4	1	2	2
177	0	1	1	1	2362	2363	3	2	1
178	0	1	1	0	592	592	3	2	1
179	0	2	1	0	26	26	1	2	1
180	0	2	2	0	0	0	1	0	2
181	0	1	0				1	0	0
182	0	1	1	6	1036	1041	4	2	1
183	0	0	1	0	33	33	1	2	1
184	0	0	1	0	16	16	1	2	1
185	0	0	2	0	0	0	0	0	2
186	0	1	1	0	10	10	1	2	1
187	0	1	1	0	4	4	1	2	1
188	0	1	1	0	108	108	2	2	1
189	0	1	1	0	135	135	1	2	1
190	0	1	1	0	11	11	3	2	1
191	0	1	1	1	85	86	2	2	1
192	0	2	0					0	0
193	0	2	1	0	46	46	2	2	1
194	0	1	0	0	0	0	0	0	2
195	0	1	1	0	52	52	1	2	1
196	0	1	1	0	4	4	1	2	1
197	0	1	1					2	1
198	0	1	1	5	334	339	3	2	1
199	0	1	1	0	379	379	1	2	1
200	0	1	1	5	346	351	3	2	1
201	0	1	1	2	301	303	2	2	1
202	0	1	1	0	263	263	2	2	1
203	0	1	1	2	650	652	3	1	1
204	0	1	1	4	10	14	2	2	1
205	0	2	1	1	207	208	2	1	1
206	0	1	1	1	250	251	2	2	1
207	0	0	0					0	0
208	0	1	1	17	21	38	3	1	1
209	0	1	1	2	38	40	2	2	1
210	0	0	1	0	7	7	1	2	1

Case #	Grv Feat	Pig Bur	Grv Gds	GG NO	GG O	Tot GG	Mat Typ	Cer Para	Beads
211	0	0	0					0	0
212	0	0	1	2	17	19	3	2	1
213	0	0	1	0	32	32	1	2	1
214	0	1	1	1	0	0	1	2	2
215	0	0	2	0	0	0	0	0	2
216	0	0	0					0	0
217	0	0	1	0	7	7	2	2	1
218	0	1	2	0	0	0	0	0	2
219	0	1	1	1	63	64	2	2	1
220	0	0	2	0	0	0	0	0	2
221	0	0	1	0	20	20	1	2	1
222	0	0	2	0	0	0	0	0	2
223	0	0	2	0	0	0	0	0	2
224	0	0	1	0	2	2	1	2	1
225	0	0	1	6	71	77	2	2	1
226	0	0	2	0	0	0	0	0	2
227	0	1	2	0	0	0	0	0	2
228 [c]	2	2	1	5	22	27	3	2	1
229 [c]	2	2	1		2215		4	2	1
230 [c]	0	2	1	0	19	19	2	2	1
231 [c]	0	2	1	5	92	97	3	2	1
232 [c]	0	2	1					2	0
233 [c]	0	2	1					2	0
234 [c]	0	1	1					2	0
235	0	1	1					2	0
236 [c]	0	2	1					2	0
237	0	2	1					2	0
238 [c]	2	1	1	176	85	261	4	1	1
239 [c]	0	2	1	0	50	50	1	2	1
240 [c]	0	2	1	0	209	209	1	2	1
241 [c]	0	2	1	15			4	2	1
242	2	2	1	1	0	1	1	2	1
243	2	2	2	0	0	0	0	0	2
244 [c]	0	2	1	2	1	3	2	2	2
245 [c]	0	2	1	1	55	56	2	2	1
246 [c]	0	1	1	5	13	18		2	1
247 [c]	0	1	1	6	637	643	4	1	1
248	0	2	1	7			4	1	1
249	0	2	2	0	0	0	0	0	2
250	0	2	0					0	0
251	0	2	0					0	0
252 [c]	0	2	1	1	765	766	3	2	1
253 [c]	0	1	1	3	49	52	3	2	1
254 [c]	0	2	1	0	8	8	1	2	1
255	0	1	1	3	17	20	4	2	1
256 [c]	0	2	1	1	196	197	2	2	1
257 [c]	0	2	1	1	32	33	2	2	1
258 [c]	0	1	1	7	35	42	3	2	1

Case #	Grv Feat	Pig Bur	Grv Gds	GG NO	GG O	Tot GG	Mat Typ	Cer Para	Beads
259[c]	0	2	1	5	17	22	4	2	1
260[c]	2	2	1	6	0	6	3	2	2
261	2	2	2	0	0	0	0	0	2
262	0	2	2	0	0	0	0	0	2
263[c]	0	2	1	1	29	30	2	2	1
264	0	1	1	1	0	1	1	2	2
265[c]	0	2	1	5	0	5	2	2	2
266[c]	0	2	1	4	1294	1298	4	1	1
267[c]	0	1	1	1	740	741	3	2	1
268	0	2	1				1	2	1
269[c]	0	1	1		495		3	2	1
270[c]	0	1	1	3	27	30	3	2	1
271[c]	1	1	1				1	2	0
272	0	2	1				1	2	1
273	0	1	2	0	0	0	0	0	0
274[c]	0	2	1	8	951	959	3	1	1
275[c]	0	2	1				2	2	2
276[c]	0	2	1	7	109	116	3	2	1
277	0	1	1	4			3	2	1
278	0	2	2	0	0	0	0	0	2
279	0	2	2	0	0	0	0	0	2
280	0	2	2	0	0	0	0	0	2
281	0	2	0					0	0
282[c]	0	2	1	5	6	11	3	2	1
283[c]	0	1	1	11			4	2	1
284	0	1	1	4	76	80	4	2	1
285	0	2	2	0	0	0	0	0	2
286[c]	0	2	0					0	0
287	0	1	1	2	0	2	1	2	2
288[c]	0	2	1	5	23	28	4	2	1
289[c]	0	2	1	1	0	1	1	2	2
290[c]	0	1	1	1	478	479	1	2	1
291[c]	0	2	1	2	4	6	2	2	1
292	0	1	1	1	0	1	1	2	2
293[c]	0	2	1	5	1	6	3	2	1
294	0	2	2	0	0	0	0	0	2
295	0	2	1	1	0	1	1	2	2
296[c]	0	1	1	1	6	7	2	2	1
297[c]	0	2	1	10	72	82	3	1	1
298[c]	0	1	1	18	440	458	3	2	1
299	0	2	0					0	0
300	0	2	2	0	0	0	0	0	2
301[c]	0	1	1	0	49	49	2	2	1
302[c]	0	2	1	3	18	21	2	2	1
303[c]	0	1	1	1	1	2	2	2	2
304[c]	0	1	1	1	8	9	2	2	1
305	0	2	1	4	0	4	2	2	2

Case #	Grv Feat	Pig Bur	Grv Gds	GG NO	GG O	Tot GG	Mat Typ	Cer Para	Beads
306 [c]	0	2	1	2	54	56	2	2	1
307	0	2	1	1	0	1	1	2	2
308 [c]	0	1	1	4	583	587	3	2	1
309	0	2	0					0	0
310 [c]	0	2	1	0	429	429	1	2	1
311 [c]	0	2	1	0	138	138	1	2	1
312 [c]	0	2	1	2	5	7	2	2	2
313 [c]	0	2	1	3	2	5	3	2	1
314 [c]	1	1	1	8	132	140	3	2	1
315 [c]	0	2	1	13	11	24	4	2	1
316 [c]	0	2	1	1	5	6	2	2	1
317 [c]	0	2	1	2	53	55	3	2	1
318 [c]	0	2	1	4	34	38	3	2	1
319 [c]	0	2	1	1	3	4	2	2	1
320 [c]	0	2	1	3	2	5	2	1	1
321 [c]	0	1	1	5	539	544	3	2	1
322 [c]	0	2	1	1	89	90	2	2	1
323 [c]	0	2	1	3	17	20	2	1	1
324 [c]	0	1	1	2	32	34	2	2	1
325 [c]	0	2	0					0	0
326 [c]	0	1	0					0	0
327 [c]	0	2	1	5	42	47	3	2	1
328 [c]	0	2	0					0	0
329	0	1	0					0	0
330	0	1	0					0	0
331 [c]	0	2	1	8	34	42	2	2	1
332 [c]	0	1	1	4	70	74	3	2	1
333 [c]	0	1	1	10	328	338	4	2	1
334	0	2	1				1	2	1
335	0	2	2	0	0	0	0	0	2
336	0	2	2	0	0	0	0	0	2
337	0	2	2	0	0	0	0	0	2
338	0	2	1	0	3	3	1	2	1
339	0	2	1	1	0	1	1	2	2
340	0	1	2	0	0	0	0	0	2
341	0	1	0					0	0
342	0	1	1	1			3	2	1
343	0	2	2	0	0	0	0	0	2
344	0	1	1				1	2	1
345	0	2	2	0	0	0	0	0	2
346	0	2	0					0	0
347	0	2	1	0	3	3	2	2	2
348	0	1	1	1			3	2	1
349	0	1	1	3	0	3	1	2	2
350	0	2	2	0	0	0	0	0	2
351	0	2	0					0	0
352	0	2	1				1	2	1
353	0	2	0					0	0

Case #	Grv Feat	Pig Bur	Grv Gds	GG NO	GG O	Tot GG	Mat Typ	Cer Para	Beads
354	0	2	0					0	0
355	0	1	1				3	1	1
356	0	1	1	0	1	1	1	2	2
357	0	2	1				3	2	1
358	0	1	1				3	2	1
359	0	2	2	0	0	0	0	0	2
360	0	2	2	0	0	0	0	0	2
361	0	2	2	0	0	0	0	0	2
362	0	2	0					0	0
363	0	2	2	0	0	0	0	0	2
364	0	1	1				2	2	1
365	0	1	1				3	2	1
366	0	1	0					0	0
367	0	2	2	0	0	0	0	0	2
368	0	1	0					0	0
369	0	1	1	3	0	3	1	2	2
370	0	2	1				3	2	1
371	0	2	2	0	0	0	0	0	2
372	0	2	1	5			2	2	1
373	0	2	1	2	6	8	2	2	1
374	0	2	0					0	0
375	0	2	0					0	0
376	0	2	0					0	0
377	0	2	0					0	0
378	0	2	0					0	0
379	0	1	1				3	2	1
380	0	2	2	0	0	0	0	0	2
381	0	1	2	0	0	0	0	0	2
382	0	1	0					0	0
383	0	1	1	4	0	4	2	2	2
384	0	1	1	0			1	2	1
385	0	2	0					0	0
386	0	1	1	1	0	1	1	2	2
387	0	1	1	4			2	2	1
388	0	2	2	0	0	0	0	0	2
389	0	1	1	0	159	159	1	2	1
390	0	1	0					0	0
391	0	1	1	2			2	2	1
392	0	2	2	0	0	0	0	0	2
393	0	2	2	0	0	0	0	0	2
394	0	2	2	0	0	0	0	0	2
395	0	2	2	0	0	0	0	0	2
396	0	2	2	0	0	0	0	0	2
397	0	2	2	0	0	0	0	0	2
398	0	2	2	0	0	0	0	0	2
399	0	0	2	0	0	0	0	0	2
400	0	2	1	0			2	2	1
401	0	0	1	1			2	1	1
402	0	1	1	2	0	2	1	2	2
403	0	0	1	5	8	13	2	2	1
404	0	0	1	2	0	2	1	2	2
405	0	0	1	12	0	12	2	2	2
406	0	0	1	10	0	10	2	1	2

Case #	Grv Feat	Pig Bur	Grv Gds	GG NO	GG O	Tot GG	Mat Typ	Cer Para	Beads
407	0	0	2	0	0	0	0	0	2
408	0	0	1	11	1	12	3	1	2
409	0	0	1	4	1	5	3	2	2
410	0	0	1	5	0	5	2	2	2
411	0	0	1	5			3	2	1
412	0	0	1	7	2	9	3	2	2
413	0	0	1	4	0	4	2	2	2
414	0	0	1	2	0	2	1	2	2
415	0	0	1	12	2	14	2	2	2
416	0	0	1	2	1	3	2	2	1
417	0	0	1				4	2	2
418	0	0	0					0	0
419	0	0	1	1	0	1	1	2	2
420	0	0	2	0	0	0	0	0	2
421	0	0	1	3	0	3	2	2	2
422	0	0	1	2	0	2	1	2	2
423	0	0	1	4	15	19	1	2	1
424	0	0	0					0	0
425	0	0	1	4	0	4	1	2	2
426	0	0	1	5	0	5	1	2	2
427	0	0	1	3	30	33	3	1	1
428	0	0	1	2	13	15	3	2	1
429	0	0	1	0	143	143	1	2	1
430	0	0	1	15	4	19	2	2	1
431	0	0	1	3	19	22	3	2	1
432	0	0	1	0	7	7	1	2	1
433	0	0	0					0	0
434	0	0	1					2	0
435	0	0	1					2	0
436	0	0	1	1	4	5	2	2	1
437	0	0	1	2	2	4	2	2	1
438	0	0	1	5	9	14	2	2	1
439	0	0	1					2	0
440	0	0	1	12	1	13	2	2	1
441	0	0	1	2	0	2	1	2	2
442	0	0	1	3	0	3	1	2	2
443	0	0	2	0	0	0	0	0	2
444	0	0	1	1	214	215	2	2	1
445	0	0	1	1	0	1	1	2	2
446	0	0	1	5	5	10	2	2	1
447	0	0	1	1	0	1	1	2	2
448	0	0	2	0	0	0	0	0	2
449	0	0	2	0	0	0	0	0	2
450	0	0	0					0	0
451	0	0	0					0	0
452	0	1	1	2	0	2	1	2	2
453	0	0	1	2	0	2	1	2	2
454	0	1	1	1	0	1	1	2	2
455	0	1	1				2	2	2
456	0	0	0					0	0
457	0	0	1	4	0	4	3	2	2
458	0	1	1	1	0	1	1	2	2
459	0	0	1	5	0	5	1	1	2

Case #	Grv Feat	Pig Bur	Grv Gds	GG NO	GG O	Tot GG	Mat Typ	Cer Para	Beads
460	0	1	1	10	0	10	1	2	2
461	0	1	1	2	0	2	1	2	2
462	0	0	1	5	0	5	1	2	2
463	0	0	1	2	0	2	1	1	2
464	0	0	1	1	0	1	1	1	2
465	0	0	1	1	0	1	1	2	2
466	0	0	0					0	0
467	0	0	1	5	0	5	1	2	2
468	0	1	1					2	0
469	0	1	1					2	0
470	0	1	1	1	1	2	2	2	2
471	0	0	2	0	0	0	0	0	2
472	0	0	1	1			2	1	1
473	0	1	2	0	0	0	0	0	2
474	0	0	1	3	0	3	2	1	2
475	0	0	1					2	0
476	0	1	1	3	0	3	1	1	2
477	0	0	1	1	0	1	1	2	2
478	0	0	0					0	0
479	0	0	0					0	0
480	0	0	0					0	0
481	0	0	0					0	0
482	0	0	0					0	0
483	0	0	0					0	0
484	0	0	0					0	0
485	0	0	0					0	0
486	0	0	0					0	0
487	0	0	0					0	0
488	0	0	0					0	0
489	0	0	0					0	0
490	0	0	0					0	0
491	0	0	0					0	0
492	0	1	0					0	0
493	0	1	1		0		3	2	2
494	1	0	1	1	0	1	1	2	2
495	0	0	1	2	0	2	1	2	2
496	2	0	1	3	0	3	1	2	2
497	2	0	1	1	0	1	1	2	2
498	2	0	1	3	0	3	1	2	2
499	2	0	1	1	0	1	1	2	2
500	2	0	1	4	0	4	1	2	2
501	2	0	2				0	0	2
502	1	0	1	2	0	2	1	2	2
503	2	0	1	1	0	1	1	2	2
504	2	0	2				0	0	2
505	2	0	1					2	0
506	2	0	2				0	0	2
507	2	0	1	3	0	3	1	2	2
508[d]	2	0	2	0	0	0	0	0	2
509[d]	2	0	2	0	0	0	0	0	2
510[d]	2	0	1	3	0	3	1	2	2
511[d]	2	0	0					0	0
512[d]	2	0	0					0	0

Case #	Grv Feat	Pig Bur	Grv Gds	GG NO	GG O	Tot GG	Mat Typ	Cer Para	Beads
513 [d]	2	0	1	1	1	2	2	2	2
514 [d]	2	0	1	1	0	1	1	2	2
515 [d]	2	0	0					0	0
516 [d]	2	0	0					0	0
517 [d]	2	0	1				1	2	1
518 [d]	2	0	2	0	0	0	0	0	2
519 [d]	2	0	2	0	0	0	0	0	2
520 [d]	2	0	2	0	0	0	0	0	2
521 [d]	2	0	1	3	0	3	2	2	2
522 [d]	2	0	1	85	0	85	2	1	2
523 [d]	2	0	1					2	0
524 [d]	2	0	1				1	2	1
525 [d]	2	0	1	1			2	2	2
526 [d]	2	0	2	0	0	0	0	0	2
527 [d]	2	0	1	6			1	2	2
528 [d]	2	1	1				2	2	1
529 [d]	1	1	1	13	676	689	3	1	1
530 [d]	2	0	1	1	0	1	1	2	2
531 [d]	2	0	1	2	0	2	1	2	2
532 [d]	1	2	1				1	2	1
533 [d]	2	1	1	1	0	1	1	2	2
534 [d]	2	2	1	1	2	3	1	2	2
535 [d]	1	0	1	1	0	1	1	2	2
536 [d]	2	0	2	0	0	0	0	0	2
537 [d]	1	0	2	0	0	0	0	0	2
538 [d]	1	0	1	4	0	4	2	2	2
539 [d]	0	0	1	1			1	2	1
540 [d]	2	0	2	0	0	0	0	0	2
541 [d]	2	0	1	3			2	2	2
542 [d]	1	0	1	1	0	1	1	2	2
543 [d]	0	0	2	0	0	0	0	0	2
544 [d]	0	0	0					0	0
545 [d]	2	0	2	0	0	0	0	0	2
546 [d]	2	0	2	0	0	0	0	0	2
547 [d]	1	0	1				2	2	1
548 [d]	2	0	2	0	0	0	0	0	2
549 [d]	1	0	2	0	0	0	0	0	2
550 [d]	2	0	1	2	0	2	1	2	2
551 [d]	0	0	1				2	2	1
552 [d]	2	0	2	0	0	0	0	0	2
553 [d]	2	0	1	2	1	3	2	1	2
554 [d]	2	0	1	1	0	1	1	2	2
555 [d]	2	0	2	0	0	0	0	0	2
556 [d]	2	0	2	0	0	0	0	0	2
557 [d]	2	0	1				2	2	1
558 [d]	2	0	1				1	2	1
559 [d]	2	1	1				1	2	1
560 [d]	2	0	1	1	0	1	1	2	2
561 [d]	1	0	2	0	0	0	0	0	2
562 [d]	2	0	1	1			1	2	2
563 [d]	2	0	2	0	0	0	0	0	2
564 [d]	2	0	1	5	0	5	2	2	2
565 [e]	2	0	1	3	5	8	3	2	1

Case #	Grv Feat	Pig Bur	Grv Gds	GG NO	GG O	Tot GG	Mat Typ	Cer Para	Beads
566 [e]	2	0	1	5	0	5	2	2	2
567 [e]	2	0	1	5	0	5	1	2	2
568 [e]	2	0	2	0	0	0	0	0	2
569 [e]	2	0	1	15			2	1	1
570 [e]	2	0	1	11	5	16	3	2	2
571 [e]	2	0	1	5	1	6	2	2	2
572 [e]	2	0	1	11	2	13	2	1	2
573 [e]	2	0	1	2			1	2	1
574 [e]	2	0	1	4	0	4	1	2	2
575 [e]	2	0	1	1	0	1	1	2	2
576 [e]	2	0	2	0	0	0	0	0	2
577 [e]	2	0	2	0	0	0	0	0	2
578 [e]	2	0	2	0	0	0	0	0	2
579 [e]	2	0	1	2			2	2	1
580 [e]	2	0	1	3	6	9	2	1	1
581 [e]	2	0	1	0	1	1	1	2	2
582 [e]	2	0	1	1	0	1	1	2	2
583 [e]	2	0	2	0	0	0	0	0	2
584 [e]	2	0	1	1	0	1	1	2	2
585 [e]	2	0	1	2	0	2	2	2	2
586 [e]	2	0	1	0			1	2	1
587 [e]	2	0	2	0	0	0	0	0	2
588 [e]	2	0	1	2			3	2	1
589 [e]	2	0	2	0	0	0	0	0	2
590 [e]	2	0	1	1	1	2	2	2	2
591 [e]	2	0	2	0	0	0	0	0	2
592 [e]	2	0	2	0	0	0	0	0	2
593 [e]	2	0	1	0	1	1	1	2	1
594 [e]	2	0	2	0	0	0	0	0	2
595 [e]	2	0	1	1	0	1	1	2	2
596 [e]	2	0	1	0	1	1	1	2	1
597 [e]	2	0	1	1	0	1	1	2	2
598 [e]	2	0	0					0	0
599 [e]	2	0	2	0	0	0	0	0	2
600 [e]	2	0	1	0			2	2	1
601 [e]	2	0	2	0	0	0	0	0	2
602 [e]	2	0	2	0	0	0	0	0	2
603 [e]	2	0	1	4	20	24	3	1	1
604 [e]	2	0	1	5			2	2	2
605 [e]	2	0	1	0	2	2	1	2	2
606 [e]	2	0	1	0			1	2	2
607 [e]	2	0	1	0	2	2	1	2	2
608 [e]	1	0	0					0	0
609 [e]	1	0	0					0	0
610 [e]	1	0	0					0	0
611 [e]	1	0	0					0	0
612 [f]	2	0	2	0	0	0	0	0	2
613 [f]	2	0	1	3	0	3	2	2	2
614 [f]	2	0	1	3	0	3	1	2	2
615 [f]	2	0	2	0	0	0	0	0	2
616 [f]	2	0	1	1	0	1	1	1	2
617 [f]	2	0	0					0	0
618 [f]	2	0	0					0	0

Case #	Grv Feat	Pig Bur	Grv Gds	GG NO	GG O	Tot GG	Mat Typ	Cer Para	Beads
619†	2	0	1				1	2	0
620	2	2	1	1	0	1	1	2	2
621	2	2	2	0	0	0	0	0	2
622	2	2	1	4	0	4	1	2	2
623	2	2	1	3			3	1	1
624	2	2	1	4	0	4	1	2	2
625	2	2	1	0				2	1
626	2	2	1	1			2	2	1
627	2	2	1	1	0	1	1	2	2
628	1	2	0					0	0
629	1	2	0					0	0
630	1	2	0					0	0
631	1	2	1	1	0	1	1	1	2
632	2	2	1	14			3	2	1
633	2	2	2	0	0	0	0	0	2
634	2	2	2	0	0	0	0	0	2
635	2	2	1	0				2	1
636	2	2	1	0			1	2	1
637	2	2	1	2	8	10	2	2	2
638	2	2	1	1	0	1	1	2	2
639	1	2	1	3			2	2	1
640	1	2	1	2	115	117	2	1	1
641	1	2	1	3	0	3	1	2	2
642	1	2	1	4	1	5	3	2	2
643	1	2	1	4			3	2	1
644	1	2	1	0			1	2	2
645	1	2	1	0			1	2	1
646	2	2	1	2	0	2	1	2	2
647	1	2	1	0			2	2	1
648	1	2	1	4			2	1	1
649	2	2	2	0	0	0	0	0	0
650	2	2	1	2			3	2	1
651	2	2	1	0	1	1	1	2	2
652	2	2	1	2			2	2	1
653	2	2	1	0			1	2	2
654	2	2	2	0	0	0	0	0	2
655	2	2	1	2	0	2	1	2	2
656	2	2	2	0	0	0	0	0	2
657	2	2	2	0	0	0	0	0	2
658	1	2	1	2	0	2	1	2	2
659	2	2	1		7		3	2	2
660	2	2	0					0	0
661	2	2	1	3			2	1	2
662	2	2	2	0	0	0	0	0	2
663	2	2	1	3	0	3	1	1	2
664	1	2	1	1	0	1	1	2	2
665	1	2	2	0	0	0	0	0	2
666	1	2	2	0	0	0	0	0	2
667	1	2	1	1			2	2	1
668	1	2	2	0	0	0	0	0	2
669	1	2	2	0	0	0	0	0	2
670	1	2	2	0	0	0	0	0	2
671	1	2	2	0	0	0	0	0	2

Case #	Grv Feat	Pig Bur	Grv Gds	GG NO	GG O	Tot GG	Mat Typ	Cer Para	Beads
672	1	2	2	0	0	0	0	0	2
673	1	2	2	0	0	0	0	0	2
674	1	2	2	0	0	0	0	0	2
675	1	2	2	0	0	0	0	0	2
676	1	2	2	0	0	0	0	0	2
677	1	2	0					0	0
678	1	2	0					0	0
679	1	2	1	3	0	3	1	2	2
680	1	2	0					0	0
681	1	2	0					0	0
682	1	2	0					0	0
683	2	2	0					0	0
684	2	2	1	2			1	2	2
685	2	2	1	1	0	1	1	2	2
686	2	2	0					0	0
687	2	2	0					0	0
688	2	2	0					0	0
689	1	2	2	0	0	0	0	0	2
690	1	2	1	0				2	1
691	1	2	2	0	0	0	0	0	2
692	1	2	2	0	0	0	0	0	2
693	1	2	1	0			1	2	1
694	1	2	1	2	1	3	1	2	2
695	1	2	1	0				2	1
696	1	2	1	5	6	11	4	2	2
697	1	2	1	0				2	2
698	2	2	2	0	0	0	0	0	2
699	2	2	1	0	2	2	1	2	2
700	2	2	1	0			1	2	2
701	1	0	1				3	1	1
702	1	2	1	1			2	2	2
703	1	2	2	0	0	0	0	0	2
704	1	2	2	0	0	0	0	0	2
705	1	2	1	1	6	7	2	2	2
706	0	2	2	0	0	0	0	0	2
707	0	2	1	0			1	2	1
708	0	2	2	0	0	0	0	0	2
709	1	2	2	0	0	0	0	0	2
710	1	2	2	0	0	0	0	0	2
711	1	2	2	0	0	0	0	0	2
712	1	2	2	0	0	0	0	0	2
713	1	2	1	0	1	1	1	2	2
714	0	2	1	2	2	4	1	2	2
715	0	2	0					0	0
716	0	2	0					0	0
717	2	2	1	4	6	10	2	2	1
718	2	2	1	1	0	1	1	2	2
719	2	2	1	1			1	2	2
720	2	2	1	2			3	1	0
721	2	2	1	1			1	1	2
722	1	2	1	1	7	8	3	2	2
723	1	2	2	0	0	0	0	0	2
724	1	2	2	0	0	0	0	0	2

Case #	Grv Feat	Pig Bur	Grv Gds	GG NO	GG O	Tot GG	Mat Typ	Cer Para	Beads
725	1	2	1	0			2	2	2
726	1	2	1	2	0	2	1	1	2
727	1	2	1	1	0	1	1	2	2
728	1	2	1	0	1	1	1	2	0
729	1	2	1	0	1	1	1	2	2
730	1	2	1	1			2	2	2
731	1	2	1	0	1	1	1	2	2
732	1	2	1	2	0	2	1	2	2
733	1	2	2	0	0	0	0	0	2
734	1	2	2	0	0	0	0	0	2
735	1	2	1	2	0	2	1	2	2
736	1	2	1	1			1	2	0
737	2	2	2	0	0	0	0	0	2
738	1	2	1	2	0	2	1	2	2
739	1	2	2	0	0	0	0	0	2
740	1	2	1	0				2	2
741	1	2	1	1	0	1	1	2	2
742	1	2	1	0			1	2	2
743	1	2	1	1			1	2	2
744	1	2	1	1	0	1	1	2	2
745	1	2	1	2	0	2	1	1	2
746	2	2	1	1	1	2	1	2	2
747	2	2	2	0	0	0	0	0	2
748	2	2	1	14	270	284	2	1	1
749	2	2	1	1	0	1	1	2	2
750	2	2	1	1	0	1	1	2	2
751	2	2	2	0	0	0	0	0	2
752	2	2	1	1	0	1	1	2	2
753	2	2	2	0	0	0	0	0	2
754	1	2	1	1	0	1	1	2	2
755	1	2	1	2	0	2	1	1	2
756	1	2	2	0	0	0	0	0	2
757	1	2	2	0	0	0	0	0	2
758	1	2	1	2			1	2	2
759	1	2	1	11	1	12	2	2	2
760	1	2	1	1	1	2	1	2	2
761	1	2	1	1	0	1	1	1	2
762	1	2	1		0		2	2	2
763	1	2	1	1			1	2	2
764	1	2	1	7			3	1	2
765	1	2	2	0	0	0	0	0	2
766	1	2	1	18			2	2	2
767	1	2	1	10	0	10	1	2	2
768	1	2	1	10			3	2	2
769	1	2	2	0	0	0	0	0	2
770	1	2	1	2	0	2	1	2	2
771	1	2	1	0			2	2	2
772	1	2	1	7			1	2	2
773	1	2	1	5	0	5	2	1	2
774	1	2	1	1	0	1	1	2	2
775	1	2	1	1			3	2	1
776	1	2	2	0	0	0	0	0	2
777	1	2	2	0	0	0	0	0	2

Case #	Grv Feat	Pig Bur	Grv Gds	GG NO	GG O	Tot GG	Mat Typ	Cer Para	Beads
778	1	2	1	1	0	1	1	2	2
779	1	2	1	1			1	2	1
780	1	2	1	1	0	1	1	2	2
781	1	2	1	1			1	1	2
782	1	2	2	0	0	0	0	0	2
783	1	2	2	0	0	0	0	0	2
784	1	2	1	3	0	3	1	1	2
785	1	2	1	2	0	2	1	2	2
786	1	2	1	3	0	3	1	2	2
787	1	2	1	5	0	5	1	2	2
788	1	2	2	0	0	0	0	0	2
789	1	0	1	12			4	1	1
790	1	2	1	1	0	1	1	2	2
791	1	2	2	0	0	0	0	0	2
792	1	2	1	0	1	1	1	2	2
793	1	2	2	0	0	0	0	0	2
794	1	2	1	16	1	17	2	1	2
795	1	2	1	2			3	1	2
796	1	2	1	2	1	3	1	2	2
797	1	2	1	5	0	5	1	2	2
798	1	2	1	3	0	3	1	2	2
799	1	2	1	1	0	1	1	2	2
800	1	2	1	2	0	2	1	2	2
801	0	2	2	0	0	0	0	0	2
802	2	2	1	1	0	1	1	2	2
803	2	2	2	0	0	0	0	0	2
804	2	2	1	14	1	15	2	1	2
805	2	2	2	0	0	0	0	0	2
806	2	2	2	0	0	0	0	0	2
807	2	2	1	4	0	4	1	2	2
808	1	2	1	1			1	2	1
809	1	2	1	1	1	2	2	2	2
810	1	2	1	1	1	2	2	1	2
811	1	2	1	12	0	12	1	1	2
812	1	2	1	14			3	1	2
813	1	2	1	9	0	9	1	2	2
814	1	2	1	4	2	6	2	1	1
815	1	2	1	2	0	2	1	2	2
816	1	2	1	3	1	4	1	2	1
817	1	2	1	9	2	11	3	1	1
818	1	2	1	0	1	1	1	2	2
819	1	2	1	1	0	1	1	2	2
820	2	2	2	0	0	0	0	0	2
821	2	2	2	0	0	0	0	0	2
822	2	2	1	2			2	1	1
823	2	2	1	3	0	3	1	1	2
824	1	2	1	5	0	5	2	1	2
825	1	2	2	0	0	0	0	0	2
826	1	2	2	0	0	0	0	0	2
827	1	2	2	0	0	0	0	0	2
828	2	2	1	3			1	2	2
829	2	2	2	0	0	0	0	0	2
830	2	2	1	0				2	1

Case #	Grv Feat	Pig Bur	Grv Gds	GG NO	GG O	Tot GG	Mat Typ	Cer Para	Beads
831	2	2	1	1			1	2	1
832	2	2	1	2			1	2	1
833	2	2	1	1	0	1	1	2	2
834	2	2	1	0			1	2	1
835	2	2	2	0	0	0	0	0	2
836	2	2	2	0	0	0	0	0	2
837	2	2	2	0	0	0	0	0	2
838	2	2	1	3	1	4	3	2	2
839	2	2	2	0	0	0	0	0	2
840	2	2	0					0	0
841	2	2	0					0	0
842	2	2	1	3			2	2	0
843	2	2	2	0	0	0	0	0	2
844	2	2	2	0	0	0	0	0	2
845	2	2	2	0	0	0	0	0	2
846	2	2	1	1	2	3	2	1	1
847	2	2	2	0	0	0	0	0	2
848	2	2	2	0	0	0	0	0	2
849	2	2	1	1	0	1	1	2	2
850	2	2	1	1	0	1	1	2	2
851	2	2	1	1			1	2	1
852	2	2	2	0	0	0	0	0	2
853	2	2	2	0	0	0	0	0	2
854	2	2	0					0	0
855	2	2	0					0	0
856	2	2	1	1			2	2	1
857	2	0	1				3	2	1
858	2	0	1	1			2	2	1
859	2	0	1	1	0	1	1	2	2
860	2	0	1	1	1	2	2	2	1
861	2	0	0					0	0
862	2	0	1	1			3	2	1
863	2	0	1	0	2	2	1	2	1
864	2	0	0					0	0
865	2	0	0					0	0
866	2	0	1	1			2	2	1
867	2	0	0					0	0
868	2	0	0					0	0
869	2	0	1	1			2	2	1
870	2	0	1	3			3	2	1
871	2	1	1	16			3	2	1
872	1	0	1	4			2	2	1
873	2	0	1	1			2	2	1
874	2	0	1	1	0	1	1	2	2
875	2	0	1	1			2	2	1
876	2	0	1	0			1	2	1
877	2	0	1	1			1	2	1
878	2	0	2	0	0	0	0	0	2
879	2	0	1				2	2	1
880	2	0	1	0	1	1	1	2	1
881	2	1	2	0	0	0	0	0	2
882	2	1	2	0	0	0	0	0	2
883	2	1	1	0			1	2	1

Case #	Grv Feat	Pig Bur	Grv Gds	GG NO	GG O	Tot GG	Mat Typ	Cer Para	Beads
884	2	1	1	1			1	2	1
885	2	0	1	1			2	2	1
886	1	1	1	4			3	1	1
887	2	1	1	13			3	1	1
888	2	0	1	5			2	1	1
889	2	1	1				3	1	1
890	2	1	1	1			2	2	1
891	2	0	1	4			3	1	1
892	2	1	1	0			1	2	1
893	2	0	2	0	0	0	0	0	2
894	2	0	1	3			2	2	1
895	2	1	2	0	0	0	0	0	2
896	2	1	2	0	0	0	0	0	2
897	2	0	1	2	0	2	1	2	2
898	2	1	1	1			2	2	1
899	2	0	2	0	0	0	0	0	2
900	2	0	1	0			1	2	1
901	2	1	2	0	0	0	0	0	2
902	2	1	1	5			3	1	1
903	2	1	1	1			2	1	1
904	2	0	2	0	0	0	0	0	2
905	2	0	1	1	1	2	2	2	1
906	1	2	1	4	0	4	1	2	2
907	2	2	2	0	0	0	0	0	0
908	1	2	1		0		1	2	2
909	2	2	1	7	0	7	1	1	2
910	1	2	1	12	0	12	1	2	2
911	2	2	1	0	1	1	1	2	1
912	0	2	1	2	0	2	1	2	2
913	2	2	1	4	0	4	1	2	2
914	2	2	1	2	0	2	1	2	2
915	2	2	1	1	0	1	1	2	2
916	1	2	1	9	0	9	1	2	2
917	2	2	1	3	0	3	1	2	2
918	2	2	1	1	0	1	1	2	2
919	2	2	1	5	1471	1476	4	1	1
920	2	2	2	0	0	0	0	0	2
921	2	2	1	2	1352	1354	3	2	1
922	2	2	1	2	2111	2113	2	2	1
923	2	2	1	2	529	531	2	2	1
924	2	2	1	3	35	38	3	2	1
925	2	2	1	12	2968	2980	4	1	1
926	2	2	1	5	482	487	2	1	1
927	2	2	1	3	0	3	2	1	2
928	2	2	1	4	249	253	4	2	1
929	2	2	1	4	1158	1162	4	1	1
930	2	2	1	1	181	182	3	2	1
931	2	2	2	0	0	0	0	0	2
932	2	2	1	1	0	1	1	2	2
933	2	2	1	1	9	10	2	2	1
934	2	2	1	3	131	134	3	1	1
935	2	2	0					0	0
936	2	1	1	1	0	1	1	2	2

Case #	Grv Feat	Pig Bur	Grv Gds	GG NO	GG O	Tot GG	Mat Typ	Cer Para	Beads
937	2	2	1	3	16	19	2	2	1
938	2	2	0					0	0
939	2	2	0					0	0
940	2	2	0					0	0
941	2	2	1	29	60	89	4	2	1

Note: Artifact analyses are those presented by the original excavators, unless demarcated otherwise ([c] = C. King 1990; [d] = C. King ca. 1970s-a; [e] = C. King ca. 1970s-b; [f] = C. King ca. 1970s-c).

APPENDIX D
Data Table Summaries for Variables Relating to the Physical Body of the Deceased

Preface

Appendix D consists of data table summaries for the nominal/categorical variables presented in Chapter 6, variables 1–5, 7–8. The headings below match the respective chapter section heading exactly to facilitate comparison for the reader for the appropriate chapter section. Table data are not repeated here, but rather reference the original table numbers presented in Chapter 6.

Analysis of Variable 1: Burial Position

Burial Position for All Burials by Time Period Phase

When examining burial position for all burials by Early and Middle period phases (Table 6.3), there are 588 burials for which data are available. From these data, it is apparent that the flexed burial position dominates both Early period (72.5 %) and Middle period (80.1 %) phases. However, the proportion of extended, semi-flexed, and seated burials differs between the Early and Middle periods. For the Early period, seated (12.0 %) burials are the second most common type, followed by semi-flexed (9.5 %), and then extended (6.0 %) burial positions. For the Middle period, extended (12.5 %) burials are the second most common type, followed by seated (6.6 %), and then semi-flexed (0.7 %) burial positions. The difference between the Early and Middle period samples for burial position is highly significant (n = 588, $\chi^2 = 33.05$, $p < 0.001$).

Burial Position by Subadult and Adult Burials

When examining burial position by subadult and adult burials (Table 6.4), there are 546 burials for which data are available. From these data, it is apparent that the flexed burial position dominates both subadult (72.2 %) and adult (78.2 %) samples. For subadult burials, extended burials are the second most common (13.9 %), followed by seated (10.4 %), and then semi-flexed (3.5 %) burial positions. For adult burials, seated (9.3 %) burials are the second most common type. This is followed by semi-flexed (6.5 %) and extended (6.0 %) burial positions, which are very similar in proportion. The difference between subadult and adult burial samples for burial position is considered statistically significant (n= 546, $\chi^2 = 9.29$, $p = 0.03$).

Burial Position for Subadult and Adult Burials by Time Period Phase

In order to further examine the difference between adult and subadult burial position, the sample is divided into Early and Middle period sub-samples for analysis. Starting with the Early period sample of subadults and adults for burial position (Table 6.5), data are available for 300 burials. From these data, it is apparent that the flexed burial position continues to dominate both subadult (75.3 %) and adult (71.3 %) burials. However, the proportion of extended, semi-flexed, and seated burials differs between subadult and adult burials. Subadult burials maintain the same overall patterning, with extended burials (11.7 %) remaining the second most common burial position, followed by seated (7.8 %), and semi-flexed (5.2 %) burial positions. For adult burials, seated burials (12.6 %) are the second most common, followed closely in proportion by semi-flexed (11.6 %) burials, and finally extended (4.5 %) burial positions. The difference between subadult and adult burial samples for burial position is statistically significant (n = 300, $\chi^2 = 8.36$, $p = 0.04$).

Continuing with the Middle period sample of subadults and adults for burial position (Table 6.6), data are available for 246 burials. From these data, it is apparent that the flexed burial position continues to dominate both subadult (65.8 %) and adult (85.6 %) burials. For this Middle period sample, subadult and adult burials now share similar patterning in their respective proportions of extended, semi-flexed, and seated burials. Subadult burials maintain the same overall patterning as previously discussed, with extended burials (18.4 %) remaining the second most common burial position, followed more closely in relative proportion by seated (15.8 %) burials. The Middle period subadult sample had no cases of semi-flexed (0.0 %) burial positions. Middle period adult burials mimic the same proportional patterning as contemporaneous subadults, with extended (7.7 %) burials being the second most common burial position, followed closely in proportion by seated (5.8 %) burials, and finally semi-flexed (1.0 %) burial positions. Due to the presence of values in the table less than 5, the Fischer's Exact Test was used in place of the Chi-square test for independence. The difference in burial position for Middle period subadult and adult burials is considered statistically significant (n = 246, p = 0.02).

Burial Position for All Burials by Island and Mainland Contexts

When examining burial position by island and mainland contexts (Table 6.7), there are 588 burials for which data are available. From these data, it is apparent that the flexed burial position is predominant for both island (72.9 %) and mainland (80.8 %) contexts. However, the proportion of extended, semi-flexed, and seated burials differs between island and mainland contexts. For island contexts, seated burials are the second most common (11.0 %), followed in succession by semi-flexed (8.5 %) and extended (7.6 %) burial positions, which are fairly close in relative proportion. For mainland contexts, extended (11.1 %) burials are the second most common type, followed by seated (7.3 %), and semi-flexed (0.9 %) burial positions. The difference between island and mainland contexts for burial position is considered highly significant (n = 588, χ^2 = 20.16, p < 0.001).

Burial Position for Subadult and Adult Burials by Island and Mainland Contexts

In order to further examine the difference between adult and subadult burial position, the sample is divided into island and mainland context samples for analysis. Starting with the island context sample of subadults and adults for burial position (Table 6.8), data are available for 337 burials. From these data, it is apparent that the flexed burial position continues to dominate both subadult (75.0 %) and adult (72.3 %) burials. However, the proportion of extended, semi-flexed, and seated positions differs between subadult and adult burials. For subadult burials, extended (13.6 %) burials are the second most common burial position, followed by seated (6.8 %) and semi-flexed (4.5 %) burial positions, which are fairly close in proportion to one another. For adult burials, seated burials (11.7 %) are the second most common type, followed closely in proportion by semi-flexed (10.4 %) burials, and finally extended (5.6 %) burial positions. There is a statistically significant difference (n = 337, χ^2 = 9.48, p = 0.02) between subadult and adult burials coming from island contexts for burial position.

Continuing with the mainland context sample of subadults and adults for burial position (Table 6.9), data are available for 209 burials. From these data, it is apparent that the flexed burial position predominates both subadult (63.0 %) and adult (86.3 %) burials. For the mainland context sample, subadult and adult burials continue to differ in their respective proportions of extended, semi-flexed, and seated burials. Subadult burials coming from mainland contexts have seated (22.2 %) burials as the second most common burial position, followed more closely in relative proportion by extended (14.8 %) burials. The mainland context subadult sample had no cases of semi-flexed (0.0 %) burial positions. Adult burials from this sample have extended (6.6 %) burials as the second most common burial position, followed closely in proportion by seated (6.0 %) burials, and finally by semi-flexed (1.1 %) burial positions. Due to the presence of values in the table less than 5, the Fischer's Exact Test was used in place of the Chi-square test for independence. The difference in burial position for mainland contexts subadult and adult burials is considered statistically significant (n = 209, p = 0.01).

Burial Position for Infant, Child, and Adolescent Burials

In order to look at subadult patterning more closely, the subadult sample is further divided into three age groups: infant, child, and adolescent. When examining burial position by infant, child, and adolescent burials (Table 6.10), there are 115 burials for which data are available. From these data, it is apparent that the flexed burial position dominates infant (79.2 %), child (66.7 %) and adolescent (67.9 %) burials. However, the proportion of extended, semi-flexed, and seated burials differs among infant, child, and adolescent burials. For infant burials, extended (14.6 %) burials are the second most common type, followed by semi-flexed (4.2 %) and seated (2.1 %) burials, which are moderately close in proportion. For child burials, extended (17.9 %) burials are the second most common type, followed fairly close in proportion to seated (15.4 %) burials. There are no cases of semi-flexed (0.0 %) burial positions for burials belonging to children. For adolescent burials, seated (17.9 %) burials are the second most common type, which is followed in equal proportions by extended (7.1 %) and semi-flexed (7.1 %) burial positions. Due to the presence of values in the table less than 5, the Fischer's Exact Test was used in place of the Chi-square test for independence. The difference in burial position for infant, child, and adolescent burials is not considered statistically significant (n = 115, p = 0.07).

Burial Position for Infant, Child, and Adolescent Burials by Time Period Phase

In order to further examine the difference among infant, child, and adolescent burial positioning, the sample is divided into Early and Middle period samples for analysis. Beginning with the Early period sample of infant, child, and adolescent burials for burial position (Table 6.11), data are available for 77 burials. From these data, it is apparent that the flexed burial position continues to dominate infant (85.0 %), child (63.2 %), and adolescent (66.7 %) burials. It should be noted that flexed burials belonging to children and adolescents are more similar in proportion to one another than they are to the infant group. For infant burials, extended (10.0 %) burials are the second most common type, followed by semi-flexed (4.2 %) burials. There are no cases of seated (0.0 %) positions for burials belonging to infants. For child burials, extended (21.1 %) positions are also the second most common type, which is followed by seated (15.8 %) burials. There are no cases of semi-flexed (0.0 %) burial positions for burials belonging to children. For adolescent burials, seated (16.7 %) burials are the second most common type, followed by semi-flexed (7.1 %), and extended (5.6 %) burial positions. Due in part to small sample size (n < 100) and also to the presence of values in the table less than 5, the Fischer's Exact Test was used in place of the Chi-square test for independence. The difference in burial position for Early period infant, child, and adolescent burials is considered statistically significant (n = 77, p = 0.02).

Continuing with the Middle period sample of infant, child, and adolescent burials for burial position (Table 6.12), data are available for 38 burials. From these data, it is apparent that the flexed position continues to be the most common type for all groups. It should be noted that this value is lower for infant burials (50.0 %) when compared to the higher proportions of flexed burials for both child (70.0 %) and adolescent (70.0 %) burials, which are equal in proportion to one another. There are no cases of semi-flexed burial positions for burials belonging to infants (0.0 %), children (0.0 %), or adolescents (0.0 %). For infant burials, extended (37.5 %) positions are the second most common type, which is followed by seated (12.5 %) burials. For child burials, extended (15.0 %) and seated (15.0 %) burials are equally the second most common type. For adolescent burials, seated (20.0 %) positions are the second most common, followed by semi-flexed (10.0 %) burials. Due in part to small sample size ($n < 100$) and also to the presence of values in the table less than 5, the Fischer's Exact Test was used in place of the Chi-square test for independence. The difference in burial position for Middle period infant, child, and adolescent burials is not considered statistically significant ($n = 38$, $p = 0.69$).

Burial Position for Infant, Child, and Adolescent Burials by Island and Mainland Contexts

In order to further examine the difference among burial positions for infant, child, and adolescent burials, the sample is divided into island and mainland context samples for analysis. Beginning with the island context sample of infant, child, and adolescent burials for burial position (Table 6.13), data are available for 88 burials. The flexed burial position clearly continues to dominate infant (81.8 %), child (65.2 %), and adolescent (71.4 %) burials. Consistent with previous tests, the proportion of extended, semi-flexed, and seated burials differ among infant, child, and adolescent burials. For infant burials, extended (13.6 %) burials are the second most common type, followed by semi-flexed (4.5 %) burials. There are no cases of seated (0.0 %) burial positions for burials belonging to infants. For child burials, extended (21.7 %) burials are also the second most common type, which is followed by seated (13.0 %) burials. There are no cases of semi-flexed (0.0 %) burial positions for burials belonging to children. For adolescent burials, seated (14.3 %) burials are the second most common, followed by semi-flexed (9.5 %), and extended (4.8 %) burial positions. Due in part to small sample size ($n < 100$) and also to the presence of values in the table less than 5, the Fischer's Exact Test was used in place of the Chi-square test for independence. The difference in burial position for island contexts infant, child, and adolescent burials is considered statistically significant ($n = 88$, $p = 0.04$).

Continuing with the mainland context sample of infant, child, and adolescent burials for burial position (Table 6.14), data are available for 27 burials. The flexed burial position clearly continues to be predominant for infant (50.0 %), child (68.8 %), and adolescent (57.1 %) burials. It should also be noted that there are no cases of semi-flexed burial positions for burials belonging to infants (0.0 %), children (0.0 %), or adolescents (0.0 %). For infant burials, extended (25.0 %) burials and seated (25.0 %) burials are present in equal proportions, as the second most common burial positions. For child burials, seated (18.8 %) burials are also the second most common type, which is followed by extended (12.5 %) burials. For adolescent burials, seated (28.6 %) burials are the second most common, followed by extended (9.5 %) burial positions. Due in part to small sample size ($n < 100$) and also to the presence of values in the table less than 5, the Fischer's Exact Test was used in place of the Chi-square test for independence. The difference in burial position for Middle period subadult and adult burials is not considered statistically significant ($n = 27$, $p = 0.89$).

Analysis of Variable 2: Body Side

Body Side for All Burials by Time Period Phase

When examining body side by Early and Middle period phases (Table 6.15), there are 608 burials for which data are available. In the Early period, the supine (48.6 %) position occupies the largest proportion of the sample, followed by seated (21.0 %) positions. Coming after these two positions, at similar proportions, are anatomical left (12.5 %) and anatomical right (10.9 %) positions, with prone (7.0 %) positions being the lowest in proportion. In the Middle period, the prone (39.4 %) position becomes the largest proportion of the sample, followed by anatomical right (19.0 %) positions. Following this, at nearly equal proportions, are seated (15.4 %) and supine (15.1 %) positions, with anatomical left (7.5 %) positions being the lowest in proportion. The difference between the Early and Middle period samples for body side is highly significant ($n = 608$, $\chi^2 = 133.30$, $p < 0.001$).

Body Side by Subadult and Adult Burials

When examining body side by subadult and adult burials (Table 6.16), there are 572 burials for which data are available. From these data, it is apparent that the supine position dominates both subadult (33.8 %) and adult (33.5 %) burials, at nearly equal proportions. However, the proportion of anatomical right, anatomical left, prone, and seated burials differs between subadult and adult burials. For subadult burials, seated burials are the second most common (26.3 %), followed by prone (16.5 %), anatomical left (12.8 %), and anatomical right (3.5 %) positions. For adult burials, the prone (20.9 %) position is the second most common type, followed by anatomical right (17.1 %), seated (16.4 %), and anatomical left (12.1 %) positions. The difference between subadult and adult burial samples for body side is not statistically significant ($n = 572$, $\chi^2 = 9.23$, $p = 0.055$), however, the p-value is approaching significance.

Body Side for Subadult and Adult Burials Comparing Time Period Phase

In order to further examine the difference between adult and subadult body side, the sample is divided into Early and Middle period samples for analysis. Starting with the Early period sub-sample of subadults and adults for body side (Table 6.17), data are available for 315 burials. The supine position dominates both subadult (41.3 %) and adult (51.1 %) burials. However, the proportion of anatomical right, anatomical left, prone, and seated burials differs between subadult and adult burials. For subadult burials, seated (28.3 %) burials are the second most common type, followed by anatomical left (12.0 %), prone (9.8 %), and anatomical right (8.7 %) positions. For adult burials, the seated (17.5 %) position is also the second most common type, followed by anatomical left (13.0 %) and anatomical right (12.6 %), at very similar proportions, and finally prone (5.8 %) positions. The difference between subadult and adult burial samples for body side is not statistically significant ($n = 315$, $\chi^2 = 7.33$, $p = 0.12$).

Continuing with the Middle period sample of subadults and adults for body side (Table 6.18), data are available for 257 burials. From these data, it is apparent that the prone position is the most common body side for both subadult (31.7 %) and adult (36.6 %) burials. For this Middle period sample, subadult and adult burials continue to differ in their respective proportions of anatomical right, anatomical left, supine, and seated positions. For subadult burials, seated (22.0 %) burials are the second most common type, followed by supine (17.1 %), and anatomical left (14.6 %) and anatomical right (14.6 %) positions, at equal proportions. For adult burials, the anatomical right (21.8 %) position is also the second most common type, followed by supine (15.3 %) and seated (15.3 %) positions, at equal proportions, and finally anatomical left (11.1 %) positions. The difference between subadult and adult burial samples for body side is not statistically significant ($n = 257$, $\chi^2 = 2.45$, $p = 0.66$).

Body Side for All Burials by Island and Mainland Context

When examining body side by island and mainland contexts (Table 6.19), there are 608 burials for which data are available. From these data, it is apparent that the predominant body side for island contexts is supine (48.2 %), while the predominant body side for mainland contexts is prone (52.3 %). For island contexts, seated (23.4 %) burials are the second most common type, followed by anatomical left (13.2 %) and anatomical right (9.9 %) positions, and finally prone (5.3 %) positions. For mainland contexts, anatomical right (23.4 %) positions are the second most common type, followed in equal proportions by anatomical left (9.3 %) and seated (9.8 %) positions, and finally by supine (5.8 %) positions. The difference between the island and mainland contexts samples for body side is considered highly significant ($n = 608$, $\chi^2 = 249.57$, $p < 0.001$).

Body Side for Subadult and Adult Burials by Island and Mainland Contexts

In order to further examine the difference between adult and subadult body side, the sample is divided into island and mainland context samples for analysis. Starting with the island contexts sample of subadults and adults for body side (Table 6.20), data are available for 378 burials. From these data, it is apparent that the supine position continues to dominate both subadult (42.9 %) and adult (49.8 %) burials. The relative proportions of the other potential body side positions are very similar for both subadult and adult burials. For subadult burials, the seated (26.7 %) position is the second most common burial position, followed by anatomical left (13.3 %), and anatomical right (8.6 %) and prone (8.6 %) positions, at equal proportions. For adult burials, seated burials (22.0 %) are also the second most common type, followed by anatomical left (13.2 %), anatomical right (11.0 %), and finally prone (4.0 %) positions. The difference between island contexts subadult and adult burials for the variable burial position is not considered statistically significant ($n = 378$, $\chi^2 = 4.87$, $p = 0.30$).

Continuing with the mainland contexts sample of subadults and adults for body side (Table 6.21), data are available for 194 burials. From these data, it is apparent that the prone burial position predominates both subadult (46.4 %) and adult (48.8 %) burials. For this mainland contexts sample, subadult and adult burials differ in their respective proportions of anatomical right, anatomical left, supine, and seated positions. Subadult burials have seated (25.0 %) burials as the second most common body side, followed by anatomical right (17.9 %) and anatomical left (10.7 %) positions. There are no instances of supine (0.0 %) burials in this mainland subadult group. Adult burials from this sub-sample have anatomical right (27.1 %) burials as the second most common burial position, followed by anatomical left (10.2 %), seated (7.2 %), and supine (6.6 %) positions. Due to the presence of values in the table less than 5, the Fischer's Exact Test was used in place of the Chi-square test for independence. The difference in body side for mainland contexts subadult and adult burials is not considered statistically significant ($n = 194$, $p = 0.056$), however, the p-value is approaching significance.

Body Side for Infant, Child, and Adolescent Burials

In order to look at subadult patterning more closely, the subadult sample is further divided into three age groups: infant, child, and adolescent. When examining body side by infant, child, and adolescent burials (Table 6.22), there are 133 burials for which data are available. From these data, it is apparent that the supine position dominates infant (39.3 %) and adolescent burials (32.3 %), while the most common body side for children is split in equal proportions between supine (26.8 %) and seated (26.8 %) positions. For infant burials, seated (27.9 %) positions are the second most common type, followed by prone (16.4 %), anatomical right (11.5 %), and anatomical left (4.9 %) positions. For child burials, prone (22.0 %) burials are the second most common type, followed by anatomical left (19.5 %), and anatomical right (4.9 %) positions. For adolescent burials, seated (22.6 %) burials are the second most common type, followed by anatomical left (19.4 %), anatomical right (16.1 %), and prone (9.7 %) positions. The difference between island contexts subadult and adult burials for body side is not considered statistically significant (n = 133, χ^2 = 10.670, p = 0.190).

Body Side for Infant, Child, and Adolescent Burials by Time Period Phase

In order to further examine the difference among infant, child, and adolescent burial positioning, the sample is divided into Early and Middle period samples for analysis. Beginning with the Early period sample of infant, child, and adolescent burials for body side (Table 6.23), data are available for 92 burials. From these data, it is apparent that the supine body side continues to be predominate in infant (41.5 %), child (50.0 %), and adolescent (31.6 %) burials. For infant burials, seated (30.2 %) burials are the second most common type, followed by prone (15.1 %), anatomical right (7.5 %), and anatomical left (5.7 %) positions. For child burials, seated (30.0 %) burials are also the second most common type, which is followed by anatomical left (15.0 %), and prone (5.0 %) positions. There are no cases of anatomical right (0.0 %) burial positions for burials belonging to Early period children. For adolescent burials, anatomical left (26.3 %) is the second most common type, followed in equal proportions by anatomical right (21.1 %) and seated (21.1 %) positions. There are no cases of prone (0.0 %) burial positions for burials belonging to Early period adolescents. Due in part to small sample size (n < 100) and also to the presence of values in the table less than 5, the Fischer's Exact test was used in place of the chi-square test for independence. The difference in body side for Early period infant, child, and adolescent burials is not considered statistically significant (n = 92, p = 0.060).

Continuing with the Middle period sample of infant, child, and adolescent burials for burial side (Table 6.24), data are available for 41 burials. For this Middle period sample, infant, child, and adolescent burials differ in their respective proportions of anatomical right, anatomical left, supine, prone, and seated positions. For infant burials, anatomical right (37.5 %) positions are the most common type, followed in equal proportions by supine (25.0 %) and prone (25.0 %) positions, and finally seated (5.7 %) positions. There are no cases of anatomical left (0.0 %) burial positions for burials belonging to Middle period infants. For child burials, prone (38.1 %) positions are the most common type, which is followed in equal proportions by anatomical left (23.8 %) and seated (23.8 %) positions, and then by anatomical right (9.5 %), and supine (4.8 %) positions. For adolescent burials, supine (33.3 %) positions are the most common type, followed in equal proportions by prone (25.0 %) and seated (25.0 %) positions, followed in turn by anatomical right (8.3 %) and anatomical left (8.3 %) positions, also in equal proportions. Due in part to small sample size (n < 100) and also to the presence of values in the table less than 5, the Fischer's Exact test was used in place of the chi-square test for independence. The difference in body side for Middle period infant, child, and adolescent burials is not considered statistically significant (n = 41, p = 0.23).

Body Side for Infant, Child, and Adolescent Burials by Island and Mainland Contexts

In order to further examine the difference among burial positions for infant, child, and adolescent burials, the sample is further divided into island and mainland context samples for analysis. Beginning with the island contexts sample of infant, child, and adolescent burials for body side (Table 6.25), data are available for 105 burials. The supine burial position clearly dominates infant (42.9 %), child (44.0 %), and adolescent (41.7 %) burials. For infant burials, seated (28.6 %) positions are the second most common type, followed by prone (14.3 %), anatomical right (8.9 %), and anatomical left (5.4 %) positions. For child burials, seated (28.0 %) positions are also the second most common type, followed by anatomical left (24.0 %), and prone (4.0 %) positions. There are no cases of anatomical right (0.0 %) positions for burials belonging to children from island contexts. The second most common body side for adolescents is split in equal proportions between anatomical left (20.8 %) and seated (20.8 %) positions, followed by anatomical right (16.7 %) positions. There are no cases of prone (0.0 %) positions for burials belonging to island context adolescents. Due to the presence of values in the table less than 5, the Fischer's Exact test was used in place of the chi-square test for independence. The difference in body side for island contexts infant, child, and adolescent burials is considered statistically significant (n = 105, p = 0.049).

Continuing with the mainland contexts sample of infant, child, and adolescent burials for body side (Table 6.26), data are available for 28 burials. It should be noted that there are no cases of supine burials belonging to mainland infants (0.0 %), children (0.0 %), or adolescents (0.0 %). For infant burials, the most common body side is split in equal proportions between anatomical right (40.0 %) and prone (40.0 %) positions, followed by seated (20.0 %) positions. There are no cases of anatomical left (0.0 %) positions for burials belonging to mainland context infants. For child burials, prone (50.0 %) burials are the most common type, which is followed by seated (25.0 %) burials, and then in equal proportions by anatomical right (12.5 %) and anatomical left (12.5 %) positions. For adolescent burials, prone (42.9 %) burials are the most common type, followed by seated (28.6 %) positions, and then in equal proportions by anatomical right (14.3 %) and anatomical left (14.3 %) positions. Due in part to small sample size (n < 100) and also to the presence of values in the table less than 5, the Fischer's Exact Test was used in place of the Chi-square test for independence. The difference in body side for mainland contexts infant, child, and adolescent burials is not considered statistically significant (n = 28, p = 0.94).

Analysis of Variable 3: Burial Direction (Compass)

Burial Direction (Compass) for All Burials by Time Period Phase

When examining burial direction by Early and Middle period phases (Table 6.27), there are 603 burials for which data are available. For the Early period, west-oriented (23.3 %) burials are the most common type, followed by east-oriented (19.6 %), south-oriented (15.3 %), north-oriented (14.4 %), southwest-oriented (11.0 %), northwest-oriented (8.9 %), northeast-oriented (4.6 %), and finally southeast-oriented (2.8 %) burials. For the Middle period, east-oriented (24.6 %) burials are the most common type, followed by west-oriented (19.3 %), southwest-oriented (15.7 %), northwest-oriented (11.8 %), north-oriented (10.7 %), northeast-oriented (7.1 %), south-oriented (6.4 %), and finally southeast-oriented (4.3 %) burials. The difference between the Early and Middle period samples for burial direction is highly significant (n = 603, χ^2 = 22.04, p = 0.002).

Burial Direction (Compass) by Subadult and Adult Burials

When examining burial direction by subadult and adult burials (Table 6.28), there are 583 burials for which data are available. For subadult burials, east-oriented (23.1 %) burials are the most common type, followed by west-oriented (21.5 %), south-oriented (13.2 %), southwest-oriented (11.6 %), north-oriented (10.7 %), northwest-oriented (8.3 %), northeast-oriented (6.6 %), and finally southeast-oriented (5.0 %) burials. For adult burials, west-oriented (21.9 %) burials are the most common type, followed nearly equal in proportion by east-oriented (21.7 %) burials, then by southwest-oriented (14.0 %), north-oriented (12.5 %), northwest-oriented (10.8 %), south-oriented (10.1 %), northeast-oriented (5.8 %), and finally southeast-oriented (3.2 %)

burials. The difference between adult and subadult samples for burial direction is not considered statistically significant (n = 583, χ^2 = 2.93, p = 0.90).

Burial Direction (Compass) for Subadult and Adult Burials Comparing Time Period Phase

In order to further examine the difference between adult and subadult burial direction, the sample is divided into Early and Middle period samples for analysis. Starting with the Early period sample of subadults and adults for burial direction (Table 6.29), data are available for 308 burials. For Early period subadult burials, the most common orientation is split in equal proportions into east-oriented (26.6 %) and west-oriented (26.6%) burials, followed by south-oriented (12.7 %), north-oriented (10.1 %), and northwest-oriented (7.6 %) burials, then in equal proportions northeast-oriented (6.3 %) and southwest-oriented (6.3 %), and finally southeast-oriented (3.8 %) burials. For adult burials, west-oriented (22.8 %) burials are the most common type, followed by east-oriented (18.1 %), south-oriented (15.5 %), north-oriented (14.7 %), southwest-oriented (12.9 %), northwest-oriented (9.1 %), northeast-oriented (4.3 %), and finally southeast-oriented (2.6 %) burials. The difference between adult and subadult samples for burial direction is not considered statistically significant (n = 308, χ^2 = 6.62, p = 0.48).

Continuing with the Middle period sample of subadults and adults for burial direction (Table 6.30), data are available for 275 burials. For Middle period subadult burials, the most common burial direction is southwest-oriented (26.6 %), followed by east-oriented (16.7 %), south-oriented (14.3 %), then in equal proportions by north-oriented (11.9 %) and west-oriented (11.9 %), and finally followed in equal proportions by northeast-oriented (7.1 %) and southeast-oriented (7.1 %) burials. For adult burials, east-oriented (25.3 %) burials are the most common type, followed by west-oriented (21.0 %), southwest-oriented (15.0 %), northwest-oriented (12.4 %), north-oriented (10.3 %), northeast-oriented (7.3 %), south-oriented (4.7 %), and finally southeast-oriented (3.9 %) burials. The difference between adult and subadult samples for burial direction is not considered statistically significant (n = 275, χ^2 = 10.02, p = 0.18).

Burial Direction (Compass) for All Burials by Island and Mainland Context

When examining burial direction by island and mainland contexts (Table 6.31), there are 603 burials for which data are available. For burials coming from island contexts, the most common direction is west-oriented (20.8 %), followed nearly equal in proportions by east-oriented (20.2 %), and then south-oriented (15.2 %), north-oriented (13.6 %), southwest-oriented (11.1 %), northwest-oriented (10.0 %), northeast-oriented (5.5 %) and finally southeast-oriented (3.6 %) burials. For adult burials, east-oriented (24.5 %) burials are the most common type, followed closely in proportion by west-oriented (22.4 %), and then by southwest-oriented (16.3 %), north-oriented (11.4 %), northwest-oriented (10.6 %), northeast-oriented (6.1 %), south-oriented (5.3 %), and finally southeast-oriented (3.3 %) burials. The difference between island and mainland contexts for burial direction is considered statistically significant (n = 603, χ^2 = 18.46, p = 0.01).

Burial Direction (Compass) for Subadult and Adult Burials by Island and Mainland Contexts

In order to further examine the relationship between adult and subadult burial direction, the sample is divided into island and mainland context samples for analysis. Starting with the island contexts sample of subadults and adults for burial direction (Table 6.32), data are available for 342 burials. For subadult burials from island contexts, the most common direction is east-oriented (27.0 %), followed by west-oriented (23.6 %), south-oriented (11.2 %), north-oriented (10.1 %), then in equal proportions by northeast-oriented (9.0 %) and northwest-oriented (9.0

%), then followed by southwest-oriented (5.6 %) and finally southeast-oriented (4.5 %) burials. For adult burials, west-oriented (20.3 %) burials are the most common type, followed fairly close in proportion by east-oriented (18.4 %), then by south-oriented (15.6 %), north-oriented (14.1 %), southwest-oriented (13.3 %), northwest-oriented (10.2 %), northeast-oriented (4.7 %), and finally southeast-oriented (3.5 %) burials. The difference between island and mainland contexts for burial direction is not considered statistically significant ($n = 342$, $\chi^2 = 9.90$, $p = 0.20$).

Continuing with the mainland contexts sample of subadults and adults for burial direction (Table 6.33), data are available for 241 burials. For subadult burials from mainland contexts, the most common direction is southwest-oriented (28.1 %), followed by south-oriented (18.8 %), west-oriented (15.6 %), then in equal proportions by north-oriented (12.5 %) and east-oriented (12.5 %), and finally, also in equal proportions, by southeast-oriented (6.3 %) and northwest-oriented (6.3 %) burials. There are no cases of northeast-oriented (0.0 %) burials belonging to mainland contexts subadults. For adult burials, east-oriented (25.8 %) burials are the most common type, followed fairly close in proportion by west-oriented (23.9 %), then by southwest-oriented (14.8 %), northwest-oriented (11.5 %), north-oriented (10.5 %), northeast-oriented (7.2 %), south-oriented (3.3 %), and finally southeast-oriented (2.9 %) burials. Due to the presence of values in the table less than 5, the Fischer's Exact test was used in place of the chi-square test for independence. The difference in burial direction for mainland contexts subadult and adult burials is considered statistically significant ($n = 241$, $p = 0.005$).

Burial Direction (Compass) for Infant, Child, and Adolescent Burials

In order to look at subadult patterning more closely, the subadult sample is further sub-divided into three age groups: infant, child, and adolescent. When examining burial direction by infant, child, and adolescent burials (Table 6.34), there are 120 burials for which data are available. For infant burials, the most common direction is west-oriented (32.0 %), followed by east-oriented (28.0 %), south-oriented (14.0 %), north-oriented (10.0 %), northeast-oriented (6.0 %), then in equal proportions by southwest-oriented (4.0 %) and northwest-oriented (4.0 %), and lastly by southeast-oriented (2.0 %) burials. For child burials, west-oriented (19.5 %) burials are the most common type, followed by southwest-oriented (17.1 %), then, at equal proportions, by north-oriented (14.6 %) and northwest-oriented (14.6 %), followed by east-oriented (9.8 %), southeast-oriented (9.8 %) and south-oriented (9.8 %) burials, at equal proportions, and finally northeast-oriented (4.9 %) burials. For adolescent burials, east-oriented (34.5 %) burials are the most common type, followed in equal proportions by south-oriented (17.1 %) and southwest-oriented (17.1 %), then by northeast-oriented (10.3 %), which is subsequently followed in equal proportions by west-oriented (6.9 %) and northwest-oriented (6.9 %), and finally, also in equal proportions, by north-oriented (3.4 %) and southeast-oriented (3.4 %) burials. Due to the presence of values in the table less than 5, the Fischer's Exact test was used in place of the chi-square test for independence. The difference in burial direction for infant, child, and adolescent burials is not considered to be statistically significant ($n = 120$, $p = 0.20$).

Burial Direction (Compass) for Infant, Child, and Adolescent Burials by Time Period Phase

In order to further examine the relationship among infant, child, and adolescent burial direction, the sample is divided into Early and Middle period sub-samples for analysis. Beginning with the Early period sample of infant, child, and adolescent burials for burial direction (Table 6.35), data are available for 78 burials. For infant burials, the most common direction is west-oriented (33.3 %), followed closely by east-oriented (30.8 %), south-oriented (15.4 %), north-oriented (10.3 %), and finally, at equal proportions, northeast-oriented (5.1 %), and northwest-oriented (5.1 %) burials. There are no cases of southeast-oriented (0.0 %) or southwest-oriented (0.0 %) burials belonging to early period infant burials. For child burials, west-oriented (30.0 %) burials are the most common type, followed by northwest-oriented (15.0 %), then at equivalent proportions by north-oriented (10.0 %), east-oriented (10.0 %), southeast-oriented (10.0 %), south-oriented (10.0 %), and southwest-oriented (10.0 %) burials, and finally by northeast-oriented (5.0 %) burials. For adolescent burials, east-oriented (36.8 %) burials are the most common type, followed by southwest-oriented (15.8 %), then followed in equivalent proportions by northeast-oriented (10.5 %), south-oriented (10.5 %), and west-oriented (10.5 %), and finally, also in equivalent proportions, by north-oriented (5.3 %), southeast-oriented (5.3 %) and northwest-oriented (5.3 %). Due in part to small sample size (n < 100) and also to the presence of values in the table less than 5, the Fischer's Exact test was used in place of the chi-square test for independence. The difference in burial direction for Early period infant, child, and adolescent burials is not considered statistically significant ($n = 78$, $p = 0.10$).

Continuing with the Middle period sample of infant, child, and adolescent burials for burial direction (Table 6.36), data are available for 42 burials. For infant burials, the most common direction is west-oriented (27.3 %), followed in equal proportions by east-oriented (18.2 %) and southwest-oriented (18.2 %), and then followed in equivalent proportions by north-oriented (9.1 %), northeast-oriented (9.1 %), southeast-oriented (9.1 %), south-oriented (9.1 %) burials. There are no cases of northwest-oriented (0.0 %) burials belonging to Middle period infant burials. For child burials, southwest-oriented (23.8 %) burials are the most common type, followed by north-oriented (19.0 %), northwest-oriented (14.3 %), and then at equivalent proportions by east-oriented (9.5 %), southeast-oriented (9.5 %), south-oriented (9.5 %), west-oriented (9.5 %) burials, and finally by northeast-oriented (4.8 %) burials. For adolescent burials, the most common direction is split equally between east-oriented (30.0 %) and south-oriented (30.0 %) burials, followed by southwest-oriented (20.0 %) burials, and lastly, followed in equal proportions, by northeast-oriented (10.0 %) and northwest-oriented (10.0 %) burials. There are no cases of north-oriented (0.0 %), southeast-oriented (0.0 %), or west oriented (0.0 %) burial positions for Middle period adolescent burials. Due in part to small sample size (n < 100) and also to the presence of values in the table less than 5, the Fischer's Exact test was used in place of the chi-square test for independence. The difference in burial direction for Middle period infant, child, and adolescent burials is not considered statistically significant ($n = 42$, $p = 0.66$).

Burial Direction (Compass) for Infant, Child, and Adolescent Burials by Island and Mainland Contexts

In order to further examine the relationship for infant, child, and adolescent burials and burial direction, the sample is further divided into island and mainland context samples for analysis. Beginning with the island contexts sample of infant, child, and adolescent burials for burial direction (Table 6.37), data are available for 89 burials. For infant burials, the most common direction is split equally between east-oriented (31.0 %) and west-oriented (31.0 %) burials, followed by south-oriented (14.3 %), north-oriented (11.9 %), northeast-oriented (7.1 %), and finally by northwest-oriented (4.8 %) burials. There are no cases of southeast-oriented (0.0 %) or southwest-oriented (0.0 %) burials belonging to infant burials from island contexts. For child burials, west-oriented (25.0 %) burials are the most common type, followed by northwest-oriented (16.7 %), then followed in equal proportions by north-oriented (12.5 %) and southeast-oriented (12.5 %), and finally followed, at equivalent proportions, by northeast-oriented (8.3 %), east-oriented (8.3 %), south-oriented (8.3 %), and southwest-oriented (8.3 %) burials. For adolescent burials, east-oriented (39.1 %) burials are the most common grave direction type, followed in equal proportions by northeast-oriented (13.0 %) and southwest-oriented (13.0 %) burials, then followed in equivalent proportions by south-oriented (8.7 %), west-oriented (8.7 %), and northwest-oriented (8.7 %) burials, and finally followed, in equal proportions, by north-oriented (4.3 %) and southeast-oriented (4.3 %) burials. Due in part to small sample size (n < 100) and also to the presence of values in the table less than 5, the Fischer's Exact test was used in place of the chi-square test for independence. The difference in burial direction for island contexts infant, child, and adolescent burials is considered to be statistically significant (n = 89, p = 0.03).

Continuing with the mainland contexts sample of infant, child, and adolescent burials for burial direction (Table 6.38), data are available for 31 burials. It should be noted that there are no cases of northeast-oriented burials for infant (0.0 %), child (0.0 %), or adolescent (0.0 %) burials from mainland contexts. For infant burials, west-oriented (37.5 %) burials are the most common direction, followed by southwest-oriented (25.0 %) burials, and then in equivalent proportions by east-oriented (12.5 %), southeast-oriented (12.5 %), and south-oriented (12.5 %) burials. There are no cases of north-oriented (0.0 %) or northwest-oriented (0.0 %) burials belonging to infants from mainland contexts. For child burials, southwest-oriented (29.4 %) burials are the most common type, followed by north-oriented (17.6 %), then followed in equivalent proportions by east-oriented (11.8 %), south-oriented (11.8 %), west-oriented (11.8 %), and northwest-oriented (11.8 %) burials, and lastly by southeast-oriented (5.9 %) burials. For adolescent burials, south-oriented (50.0 %) burials are the most common direction, followed by southwest-oriented (33.3 %), and finally by east-oriented (16.7 %) burial positions. There are no cases of north-oriented (0.0 %), southeast-oriented (0.0 %), west-oriented (0.0 %), or northwest-oriented (0.0 %) burials belonging to adolescents from mainland contexts. Due in part to small sample size (n < 100) and also to the presence of values in the table less than 5, the Fischer's Exact test was used in place of the chi-square test for independence. The difference in burial direction for mainland contexts infant, child, and adolescent burials is not considered to be statistically significant (n = 31, p = 0.67).

Analysis of Variable 4: Interment Type

Interment Type for All Burials by Time Period Phase

When examining interment type by Early and Middle period phases (Table 6.39), there are 608 burials for which data are available. From these data, it is apparent that single interment types predominate both Early period (79.9 %) and Middle period (92.9 %) phases. For the Early period, dual interment types are the second most common (13.4 %) and occurring at nearly twice the frequency of multiple (6.7 %) interment types. For the Middle period, the proportion between dual and multiple interment types is much more similar, than what is seen in the Early period sample. For the Middle period, dual interment types are the second most common (4.0 %) occurring at a similar rate to multiple (3.1 %) interment types. The difference between the Early and Middle period samples for interment type is considered to be highly statistically significant (n = 608, χ^2 = 23.65, p < 0.001).

Interment Type by Subadult and Adult Burials

When examining interment type by subadult and adult burials (Table 6.40), there are 556 burials for which data are available. From these data, it is apparent that the single interment type is predominant for both subadult (77.9 %) and adult (89.4 %) burials. For subadult burials, the dual (15.6 %) interment type is the second most common, followed by the multiple (6.6 %) interment type. For adult burials, the dual (6.0 %) interment type is the second most common type, followed closely in proportion by the multiple (4.6 %) interment type. Despite the fact that both subadult and adult burials follow the same basic ordering for interment type, the proportional difference between subadult and adult burial samples for interment type is considered highly significant (n = 556, χ^2 = 12.98, p = 0.002).

Interment Type for Subadult and Adult Burials Comparing Time Period Phase

In order to further examine the difference between adult and subadult interment type, the sample is divided into Early and Middle period samples for analysis. Starting with the Early period sample of subadults and adults for interment type (Table 6.41), data are available for 236 burials. From these data, it is apparent that the single interment type is predominant for both subadult (73.9 %) and adult (82.0 %) burials. For subadult burials, the dual (20.3 %) interment type is the second most common type, followed by the multiple (5.8 %) interment type. For adult burials, the dual (10.2 %) interment type is the second most common type, followed closely in proportion by the multiple (7.8 %) interment type. The difference between Early period subadult and adult interment type is not considered to be statistically significant (n = 236, χ^2 = 4.47, p = 0.12).

Continuing with the Middle period sample of subadults and adults for interment type (Table 6.42), data are available for 320 burials. From these data, it is apparent that the single interment type is predominant for both subadult (83.0 %) and adult (94.0 %) burials. For subadult burials, the dual (9.4 %) interment type is the second most common, followed by the multiple (7.5 %) interment type. For adult burials, the dual (3.4 %) interment type is the second most common type, followed closely in proportion by the multiple (2.6 %) interment type. Due to the presence of values in the table less than 5, the Fischer's Exact test was used in place of the chi-square test for independence. The difference in interment type for Middle period subadult and adult burials is considered to be statistically significant (n = 320, p = 0.02).

Interment Type for All Burials by Island and Mainland Context

When examining interment type by island and mainland contexts (Table 6.43), there are 608 burials for which data are available. From these data, it is apparent that the single interment type is predominant for both subadult (81.6 %) and adult (93.4 %) burials. For subadult burials, the dual (11.8 %) interment type is the second most common type and occurs nearly twice as frequently as the multiple (6.6%) interment type. For adult burials, the dual (3.9 %) interment type is the second most common type, followed closely in proportion by the multiple (2.6 %) interment type. The difference between the island and mainland contexts samples for interment type is considered to be highly significant (n = 608, χ^2 = 19.58, p < 0.001).

Interment Type for Subadult and Adult Burials by Island and Mainland Contexts

In order to further examine the relationship between adult and subadult interment type, the sample is divided into island and mainland context samples for analysis. Starting with the island contexts sample of subadults and adults for interment type (Table 6.44), data are available for 285 burials. From these data, it is apparent that the single interment type is predominant for both subadult (73.4 %) and adult (84.5 %) burials. For subadult burials, the dual (19.0 %) interment type is the second most common type and occurs over twice as frequently as the multiple (7.6 %) interment type. For adult burials, the dual (8.7 %) interment type is the second most common type, followed closely in proportion by the multiple (6.8 %) interment type. The difference between the island contexts sample of subadults and adults for interment type is considered to be statistically significant (n = 285, χ^2 = 6.09, p = 0.047).

Continuing with the mainland contexts sample of subadults and adults for interment type (Table 6.45), data are available for 271 burials. From these data, it is apparent that the single interment type is predominant for both subadult (86.0 %) and adult (93.9 %) burials. For subadult burials, the dual (9.3 %) interment type is the second most common type and occurs nearly twice as frequently as the multiple (4.7 %) interment type. For adult burials, the dual (3.5 %) interment type is the second most common type, followed closely in proportion by the multiple (2.6 %) interment type. The difference between the mainland contexts sample of subadults and adults for interment type is not considered to be statistically significant (n = 271, χ^2 = 3.48, p = 0.15).

Interment Type for Infant, Child, and Adolescent Burials

In order to look at subadult patterning more closely, the subadult sample is further divided into three age groups: infant, child, and adolescent. When examining interment type by infant, child, and adolescent burials (Table 6.46), there are 122 burials for which data are available. From these data, it is apparent that the single interment type dominates infant (70.2 %), child (85.4 %), and adolescent (83.3 %) burials, with the latter two occurring at very similar proportions. For infant burials, dual (21.1 %) burials are the second most common type and occur over two times as frequently as the multiple (8.8 %) interment type. For child burials, both dual (7.3 %) and multiple (7.3 %) interment types are represented in equal proportions. For adolescent burials, dual (16.7 %) interment types are the second most common type. There are no cases of multiple (0.0 %) interment types for burials belonging to adolescents. Due to the presence of values in the table less than 5, the Fischer's Exact test was used in place of the chi-square test for independence. The difference in interment type for infant, child, and adolescent burials is not considered to be statistically significant (n = 122, p = 0.21).

Interment Type for Infant, Child, and Adolescent Burials by Time Period Phase

In order to further examine the difference among infant, child, and adolescent interment type, the sample is divided into Early and Middle period samples for analysis. Beginning with the Early period sample of infant, child, and adolescent burials for interment type (Table 6.47), data are available for 69 burials. It should be noted that there are no examples of multiple interment types for child (0.0 %) or adolescent (0.0 %) burials. From these data, it is apparent that the single interment type dominates infant (74.4 %), child (72.7 %), and adolescent (73.3 %) burials, at nearly equivalent proportions. For infant burials, dual (16.3 %) burials are the second most common type and occur nearly two times as frequently as the multiple (9.3 %) interment type. For child burials, dual (27.3 %) interment types are the second most common type, which is also true for adolescent burials, with dual (26.7 %) interment types occurring as the second most common type at a very similar proportion. Due in part to small sample size ($n < 100$) and also to the presence of values in the table less than 5, the Fischer's Exact test was used in place of the chi-square test for independence. The difference in interment type for Early period infant, child, and adolescent burials is not considered to be statistically significant (n = 69, p = 0.64).

Continuing with the Middle period sample of infant, child, and adolescent burials for interment type (Table 6.48), data are available for 53 burials. It should be noted that there are no examples of dual interment types for child (0.0 %) or adolescent (0.0 %) burials. From these data, it is apparent that single interments are the dominant type for infant (57.1 %), child (90.0 %), and adolescent (100.0 %) burials. For infant burials, dual (35.7 %) burials are the second most common type, followed by the multiple (7.1 %) interment type. For child burials, multiple (27.3 %) interment types are the second most common type. There are no examples of multiple

(0.0 %) interment types present for adolescent burials. Due in part to small sample size (n < 100) and also to the presence of values in the table less than 5, the Fischer's Exact test was used in place of the chi-square test for independence. The difference in interment type for Middle period infant, child, and adolescent burials is considered to be highly statistically significant (n = 53, p = 0.004).

Interment Type for Infant, Child, and Adolescent Burials by Island and Mainland Contexts

In order to further examine the difference among interment types for infant, child, and adolescent burials, the sample is further divided into island and mainland contexts samples for analysis. Beginning with the island contexts sample of infant, child, and adolescent burials for interment type (Table 6.49), data are available for 79 burials. The single interment type clearly continues to dominate infant (71.7 %), child (76.5 %), and adolescent (75.0 %) burials, at very similar proportions. For infant burials, dual (17.4 %) burials are the second most common type, followed by the multiple (10.9 %) interment type. For child burials, dual (17.6 %) interment types are the second most common type, followed by the multiple (5.9 %) interment type. For adolescent burials, dual (25.0 %) interment types are the second most common type. There are no examples of multiple (0.0 %) interment types present for adolescent burials. Due in part to small sample size (n < 100) and also to the presence of values in the table less than 5, the Fischer's Exact test was used in place of the chi-square test for independence. The difference in interment type for island contexts infant, child, and adolescent burials is not considered to be statistically significant (n = 79, p = 0.79).

Continuing with the mainland contexts sample of infant, child, and adolescent burials for interment type (Table 6.50), data are available for 43 burials. It should be noted that there are no examples of dual interment types for child (0.0 %) or adolescent (0.0 %) burials, and there are no examples of multiple interment types for infant (0.0 %) or adolescent (0.0 %) burials. The single interment type clearly continues to dominate infant (63.6 %), child (91.7 %), and adolescent (100.0 %) burials, with the latter two occurring at closer proportions to one another. For infant burials, dual (17.4 %) burials are the second most common type, and for child burials, multiple (8.3 %) interment types are the second most common type. Due in part to small sample size (n < 100) and also to the presence of values in the table less than 5, the Fischer's Exact test was used in place of the chi-square test for independence. The difference in interment type for mainland contexts infant, child, and adolescent burials is considered to be statistically significant (n = 43, p = 0.01).

Analysis of Variable 5: Interment Type Age Association

Interment Type Age Association for All Burials by Time Period Phase

Burials that are included in dual or multiple interments (n = 72) are examined more closely here to investigate interment type age association by Early and Middle period phases (Table 6.51). From these data, it is apparent that the adult and subadult type age association dominates both Early period (63.8 %) and Middle period (68.0 %) phases, at similar proportions. For the Early period, the all adult (27.7 %) type age association is the second most common type, followed by the all subadults (8.5 %) type age association. For the Middle period, the all adults (32.0 %) type age association is the second most common type. There are no examples of the all subadults (0.0 %) type age association for the Middle period sample. Due in part to small sample size (n < 100) and also to the presence of values in the table less than 5, the Fischer's Exact test was used in place of the chi-square test for independence. The difference in interment type age association for Early and Middle period burials is not considered to be statistically significant (n = 72, p = 0.45).

Interment Type Age Association by Subadult and Adult Burials

When examining interment type age association by subadult and adult burials (Table 6.52), there are 72 burials for which data are available. From these data, it is apparent that the adult and subadult type age association dominates both subadult (85.2 %) and adult (53.3 %) burials. For subadult burials, the all subadults (14.8 %) type age association is the second most common type. For adult burials, the all adults (46.7 %) type age association is the second most common type. Due to the presence of structural zeroes (indicated with dashes in table 6.52) in the contingency table, statistical significance testing could not be performed for analysis. However, the patterns evident can still potentially be meaningful in the overall interpretation of subadult burial trends.

Interment Type Age Association for Subadult and Adult Burials Comparing Time Period Phase

In order to further examine the difference between interment type age associations for adult and subadult burials, the sample is divided into Early and Middle period samples for analysis. Starting with the Early period sample of subadults and adults for interment type age association (Table 6.53), data are available for 47 burials. From these data, it is apparent that the adult and subadult (77.8 %) type age association is predominant for subadult burials, followed by the all subadults (22.2 %) type age association. For adult burials, the predominant age association type is also adult and subadult (55.2 %), but it is much closer in proportion to the second most common age association type, all adults (44.8 %). Due to the presence of structural zeroes (indicated with dashes in table 6.53) in the contingency table, statistical significance testing could not be performed for this analysis.

Continuing with the Middle period sample of subadults and adults for interment type age association (Table 6.54), data are available for 25 burials. For subadult burials, the only age association evident is the adult and subadult (100.0 %) type. There are no examples of the all subadults type age association for Middle period subadult burials. For adult burials, the predominant age association type is split equally into all adults (50.0 %) and adult and subadult (50.0 %) age association types. Due to the presence of structural zeroes (indicated with dashes in table 6.54) in the contingency table, statistical significance testing could not be performed for this analysis.

Interment Type Age Association for All Burials by Island and Mainland Context

When examining interment type age association by island and mainland contexts (Table 6.55), there are 72 burials for which data are available. For island contexts, burials with adult and subadult (67.3 %) type age association are predominant, followed by all adults (25.0 %), and finally by the all subadults (7.7 %) type age association. For mainland contexts, burials with the adult and subadult (60.0 %) type age association are also predominant, followed by all adults (40.0 %). There are no cases of burials having the all subadults (0.0 %) type age association for mainland contexts. Due in part to small sample size ($n < 100$) and also to the presence of values in the table less than 5, the Fischer's Exact test was used in place of the chi-square test for independence. The difference in interment type age association for island and mainland contexts is not considered to be statistically significant ($n = 72, p = 0.28$).

Interment Type Age Association for Subadult and Adult Burials by Island and Mainland Contexts

In order to further examine the relationship between adult and subadult interment type age association, the sample is divided into island and mainland context samples for analysis. Starting with the island contexts sample of subadults and adults for interment type age association (Table 6.56), data are available for 52 burials. For subadult burials coming from island contexts, the predominant age association type is the adult and subadult (81.0 %) type, followed by the all subadults (19.0 %) type age association. For adult burials coming from island contexts, the predominant age association type is also adult and subadult (58.1 %), followed by the all subadults (41.9 %) type age association. Due to the presence of structural zeroes (indicated with dashes in table 6.56) in the contingency table, statistical significance testing could not be performed for this analysis.

Continuing with the mainland contexts sample of subadults and adults for interment type age association (Table 6.57), data are available for 20 burials. For subadult burials from mainland contexts, the only age association type evident is the adult and subadult (100.0 %) type. There are no cases of all subadults (0.0 %) type age associations for subadult burials coming from mainland contexts. For adult burials coming from mainland contexts, the predominant age association is the all adults (57.1 %) type, followed by the adult and subadult (42.9 %) type. Due to the presence of structural zeroes (indicated with dashes in table 6.57) in the contingency table, statistical significance testing could not be performed for this analysis.

Interment Type Age Association for Infant, Child, and Adolescent Burials

In order to look at subadult patterning more closely, the subadult sample is further divided into three age groups: infant, child, and adolescent. When examining interment type age association by infant, child, and adolescent burials (Table 6.58), there are 27 burials for which data are available. For infant burials, the only age association type present is the adult and subadult (100.0 %) type. There are no cases of the all subadults (0.0 %) type age association for burials belonging to infants. For child burials, the predominant age association type is the adult and subadult (66.7 %) type, followed by the all subadults (33.3 %) type. For adolescent burials, the predominant age association type is split equally between all subadults (50.0 %) and adult and subadult (50.0 %) type age associations. Due in part to small sample size ($n < 100$) and also to the presence of values in the table less than 5, the Fischer's Exact test was used in place of the chi-square test for independence. The difference in interment type age association for infant, child, and adolescent burials is considered to be statistically significant ($n = 27$, $p = 0.02$).

Interment Type Age Association for Infant, Child, and Adolescent Burials by Time Period Phase

In order to further examine the difference among infant, child, and adolescent interment type age association, the sample is divided into Early and Middle period samples for analysis. Beginning with the Early period sample of infant, child, and adolescent burials for interment type age association (Table 6.59), data are available for 18 burials. For infant burials, the only age association type present is the adult and subadult (100.0 %) type. There are no cases of the all subadults (0.0 %) type age association for burials belonging to infants from the Early period sample. For child burials, the predominant age association type is all subadults (66.7 %), followed by the adult and subadult (33.3 %) type. For adolescent burials, the predominant age association type is split equally between the all subadults (50.0 %) and the adult and subadult (50.0 %) type. Due in part to small sample size ($n < 100$) and also to the presence of values in the table less than 5, the Fischer's Exact test was used in place of the chi-square test for independence. The difference in interment type age association for Early period infant, child, and adolescent burials is considered to be statistically significant ($n = 18$, $p = 0.02$).

Continuing with the Middle period sample of infant, child, and adolescent burials for interment type age association (Table 6.60), data are available for 38 burials. For infant burials, the only age association type present is the adult and subadult (100.0 %) type. There are no cases of the all subadults (0.0 %) type for burials belonging to infants from the Middle period sample.

For child burials, the only age association type is also the adult and subadult (66.7 %) type. There are no cases of the all subadults (0.0 %) type for burials belonging to children from the Middle period sample. For adolescent burials, there are no cases of the all subadults (0.0 %) or the adult and subadult (0.0 %) type for burials belonging to adolescents from the Middle period sample. Statistical tests of independence could not be computed because the variable is a constant.

Interment Type Age Association for Infant, Child, and Adolescent Burials by Island and Mainland Contexts

In order to further examine the difference among interment type age association for infant, child, and adolescent burials, the dataset is further divided into island and mainland contexts samples for analysis. Beginning with the island contexts sample of infant, child, and adolescent burials for interment type age association (Table 6.61), data are available for 21 burials. For infant burials, the only age association present is the adult and subadult (100.0 %) type. There are no cases of all subadults (0.0 %) type age association for burials belonging to infants from the island contexts sample. For child burials, the predominant age association type is split equally between the all subadults (50.0 %) and the adult and subadult (50.0 %) type. For adolescent burials, the predominant age association type is also split equally between the all subadults (50.0 %) and the adult and subadult (50.0 %) type. Due in part to small sample size ($n < 100$) and also to the presence of values in the table less than 5, the Fischer's Exact test was used in place of the chi-square test for independence. The difference in interment type age association for island contexts infant, child, and subadult burials is considered to be statistically significant ($n = 21, p = 0.01$).

Continuing with the mainland contexts sample of infant, child, and adolescent burials for interment type age association (Table 6.62), data are available for 6 burials. For infant burials, the only age association type present is the adult and subadult (100.0 %) type. There are no cases of the all subadults (0.0 %) type age association for burials belonging to infants from the mainland contexts sample. For child burials, the only age association type is also the adult and subadult (100.0 %) type. For adolescent burials, there are no cases of the all subadults (0.0 %) or the adult and subadult (0.0 %) type age association for burials belonging to adolescents from the mainland contexts sample. Statistical tests of independence could not be computed because the variable is a constant.

Analysis of Variable 7: Presence/Absence of Grave Features

Presence/Absence of Grave Features for All Burials by Time Period Phase

When examining presence/absence of grave features by Early and Middle period phases (Table 6.75), there are 526 burials for which data are available. From these data, it is apparent that the absence of grave features is predominant for both Early period (93.0 %) and Middle period (62.6 %) phases. For the Early period, presence (7.0 %) of grave features is the second most common type. For the Middle period, presence (37.4 %) of grave features is also the second most common type. The difference between Early and Middle period burial samples for presence/absence of grave features is considered highly statistically significant ($n = 526, \chi^2 = 38.62, p < 0.001$).

Presence/Absence of Grave Features by Subadult and Adult Burials

When examining presence/absence of grave features by subadult and adult burials (Table 6.76), there are 469 burials for which data are available. From these data, it is apparent that the absence of grave features is predominant for both subadult (92.4 %) and adult (64.3 %) burials. For subadult burials, presence (7.6 %) of grave features is the second most common type. For adult burials, presence (35.7 %) of grave features is also the second most common type. The difference between subadult and adult burial samples for presence/absence of grave features is considered highly statistically significant (n = 469, χ^2 = 20.74, p < 0.001).

Presence/Absence of Grave Features for Subadult and Adult Burials Comparing Time Period Phase

In order to further examine the relationship between adult and subadult grave features, the sample is divided into Early and Middle period samples for analysis. Starting with the Early period sample of subadults and adults for presence/absence of grave features (Table 6.77), data are available for 95 burials. From these data, it is apparent that the absence of grave features is predominant for both subadult (100.0 %) and adult (91.6 %) burials. There are no cases of grave features being present for subadult burials. For adult burials, presence (8.4 %) of grave features is the second most common type. Due in part to small sample size (n < 100) and also to the presence of values in the table less than 5, the Fischer's Exact test was used in place of the chi-square test for independence. The difference in grave features for Early period subadult and adult burials is not considered statistically significant (n = 95, p = 0.59).

Continuing with the Middle period sample of subadults and adults for presence/absence of grave features (Table 6.78), data are available for 374 burials. From these data, it is apparent that the absence of grave features is predominant for both subadult (90.7 %) and adult (57.2 %) burials from the Middle period sample. For subadult burials from the Middle period, presence (9.3 %) of grave features is the second most common type. For adult burials, presence (42.8 %) of grave features is also the second most common type. The difference between subadult and adult burial samples for presence/absence of grave features is considered highly statistically significant (n = 374, χ^2 = 22.09, p < 0.001).

Presence/Absence of Grave Features for All Burials by Island and Mainland Context

When examining presence/absence of grave features by island and mainland contexts (Table 6.79), there are 526 burials for which data are available. For island contexts, absence (96.7 %) of grave features is the predominant type, followed by presence (3.3 %) of grave features. For mainland contexts, absence (63.4 %) of grave features is the predominant type, followed by presence (36.6 %) of grave features. The difference between the island and mainland contexts samples for presence/absence of grave features is considered to be highly statistically significant (n = 526, χ^2 = 39.05, p < 0.001).

Presence/Absence of Grave Features for Subadult and Adult Burials by Island and Mainland Contexts

In order to further examine the relationship between adult and subadult grave features, the sample is divided into island and mainland context samples for analysis. Starting with the island contexts sample of subadult and adult burials for presence/absence of grave features (Table 6.80), data are available for 79 burials. For subadult burials from island contexts, absence (100.0 %) of grave features is the predominant type. There are no examples of presence (0.0 %) of grave features for subadult burials from island contexts. For adult burials from island contexts, absence (95.7 %) of grave features is also the predominant type, followed by presence (4.3 %) of grave features. Due in part to small sample size (n < 100) and also to the presence of values in the table less than 5, the Fischer's Exact test was used in place of the chi-square test for independence. The difference in grave features for island contexts subadult and adult burials is not considered to be statistically significant (n = 79, p = 1.00).

Continuing with the mainland contexts sample of subadults and adults for presence/absence of grave features (Table 6.81), data are available for 390 burials. From these data, it is apparent that the single interment type is predominant for both subadult (86.0 %) and adult (93.9 %) burials. For subadult burials from mainland contexts, absence (91.2 %) of grave features is the predominant type, followed by presence (8.8 %) of grave features. For adult burials from mainland contexts, absence (57.7 %) of grave features is also the predominant type, followed by presence (42.3 %) of grave features. The difference between the mainland contexts sample of subadults and adults for presence/absence of grave features is considered to be highly statistically significant (n = 390, $\chi^2 = 23.42$, $p < 0.001$).

Presence/Absence of Grave Features for Infant, Child, and Adolescent Burials

In order to investigate subadult patterning more closely, the subadult sample is further divided into three age groups: infant, child, or adolescent. When examining presence/absence of grave features by infant, child, and adolescent burials (Table 6.82), there are 65 burials for which data are available. For infant burials, absence (84.2 %) of grave features is the predominant type, followed by presence (15.8 %) of grave features. For child burials, absence (94.1 %) of grave features is the predominant type, followed by presence (5.9 %) of grave features. For adolescent burials, absence (100.0 %) of grave features is the only type evident. There are no cases of adolescent burials having grave features present (0.0 %). Due in part to small sample size (n < 100) and also to the presence of values in the table less than 5, the Fischer's Exact test was used in place of the chi-square test for independence. The difference in presence/absence of grave features for infant, child, and adolescent burials is not considered statistically significant (n = 65, p = 0.31).

Presence/Absence of Grave Features for Infant, Child, and Adolescent Burials by Time Period Phase

In order to further examine the relationship among infant, child, and adolescent grave features, the sample is divided into Early and Middle period samples for analysis. Beginning with the Early period sample of infant, child, and adolescent burials for presence/absence of grave features (Table 6.83), data are available for 11 burials. It should be noted that there are no examples of grave features being present for infant (0.0 %), child (0.0 %), or adolescent (0.0 %) burials, therefore absence of grave features for infant (100.0 %), child (100.0 %), and adolescent (100.0 %) burials makes up the entirety of the sample data. Statistical tests of independence could not be computed because the variable is a constant.

Continuing with the Middle period sample of infant, child, and adolescent burials for presence/absence of grave features (Table 6.84), data are available for 54 burials. For infant burials, absence (81.3 %) of grave features is the predominant type, followed by presence (18.8 %) of grave features. For child burials, absence (93.5 %) of grave features is the predominant type, followed by presence (6.5 %) of grave features. For adolescent burials, absence (100.0 %) of grave features is the only type evident. There are no cases of adolescent burials having grave features present (0.0 %). Due in part to small sample size ($n < 100$) and also to the presence of values in the table less than 5, the Fischer's Exact test was used in place of the chi-square test for independence. The difference in presence/absence of grave features for Middle period infant, child, and adolescent burials is not considered to be statistically significant (n = 54, p = 0.39).

Presence/Absence of Grave Features for Infant, Child, and Adolescent Burials by Island and Mainland Contexts

In order to further examine the relationship among infant, child, and adolescent grave features, the sample is divided into island and mainland contexts samples for analysis. Beginning with the sample of infant, child, and adolescent burials coming from island contexts for presence/absence of grave features (Table 6.85), data are available for 9 burials. It should be noted that there are no examples of grave features being present for infant (0.0 %), child (0.0 %), or adolescent (0.0 %) burials, therefore absence of grave features for infant (100.0 %), child (100.0 %), and adolescent (100.0 %) burials makes up the entirety of the sample data. Statistical tests of independence could not be computed because the variable is a constant.

Continuing with the mainland contexts sample of infant, child, and adolescent burials for presence/absence of grave features (Table 6.86), data are available for 56 burials. For infant burials from mainland contexts, absence (81.3 %) of grave features is the predominant type, followed by presence (18.8 %) of grave features. For child burials from mainland contexts, absence (93.5 %) of grave features is the predominant type, followed by presence (6.5 %) of grave features. For adolescent burials from mainland contexts, absence (100.0 %) of grave features is the only type evident. There are no cases of adolescent burials from mainland contexts having grave features present (0.0 %). Due in part to small sample size (n < 100) and also to the presence of values in the table less than 5, the Fischer's Exact test was used in place of the chi-square test for independence. The difference in presence/absence of grave features for mainland contexts infant, child, and adolescent burials is not considered to be statistically significant (n = 56, p = 0.28).

Analysis of Variable 8: Presence/Absence of Burial Pigmentation

Presence/Absence of Burial Pigmentation for All Burials by Time Period Phase

When examining presence/absence of burial pigmentation by Early and Middle period phases (Table 6.87), there are 654 burials for which data are available. For the Early period, presence (59.0 %) of burial pigmentation is the predominant type, followed by the absence (41.0 %) of burial pigmentation. For the Middle period sample, absence (83.7 %) of burial pigmentation is the predominant type, followed by the presence (16.3 %) of burial pigmentation. The difference between Early and Middle period burial samples for presence/absence of burial pigmentation is considered highly statistically significant (n = 654, χ^2 = 128.83, p < 0.001).

Burial Pigmentation by Subadult and Adult Burials

When examining presence/absence of burial pigmentation by subadult and adult burials (Table 6.88), there are 614 burials for which data are available. For subadult burials, presence (53.3 %) of burial pigmentation is the predominant type, followed by absence (46.7 %) of burial pigmentation. For adult burials, the absence (70.6 %) of burial pigmentation is the predominant type, followed by presence (29.4 %) of burial pigmentation. The difference between subadult and adult burial samples for presence/absence of burial pigmentation is considered highly statistically significant (n = 614, χ^2 = 26.91, p < 0.001).

Presence/Absence of Burial Pigmentation for Subadult and Adult Burials by Time Period Phase

In order to further examine the difference between adult and subadult burial pigmentation, the sample is divided into Early and Middle period samples for analysis. Starting with the Early period sample of subadults and adults for presence/absence of burial pigmentation (Table 6.89), data are available for 279 burials. For Early period subadult burials, presence (62.9 %) of burial pigmentation is the predominant type, followed by the absence (37.1 %) of burial pigmentation. Early period adult burials follow similar patterning, with presence (57.7 %) of burial pigmentation being the predominant type, followed by the absence (42.3 %) of burial pigmentation. The difference between subadult and adult burial samples for presence/absence of burial pigmentation is not considered statistically significant (n = 279, χ^2 = 0.71, p = 0.44).

Continuing with the Middle period sample of subadults and adults for presence/absence of burial pigmentation (Table 6.90), data are available for 335 burials. For Middle period subadult burials, the absence (70.0 %) of burial pigmentation is the predominant type, followed by the presence (30.0 %) of burial pigmentation. Middle period adult burials follow similar patterning, with the absence (88.1 %) of burial pigmentation being the predominant type, followed by the presence (11.9 %) of burial pigmentation. The difference between subadult and adult burial samples for presence/absence of burial pigmentation is considered highly statistically significant (n = 335, χ^2 = 9.61, p = 0.004).

Presence/Absence of Burial Pigmentation for All Burials by Island and Mainland Contexts

When examining presence/absence of burial pigmentation by island and mainland contexts (Table 6.91), there are 654 burials for which data are available. For island contexts, presence (56.4 %) of burial pigmentation is the predominant type, followed by the absence (43.6 %) of burial pigmentation. For mainland contexts, the absence (88.9 %) of burial pigmentation is the predominant type, followed by the presence (11.1 %) of burial pigmentation. The difference between the island and mainland contexts samples for presence/absence of burial pigmentation is considered to be highly significant (n = 654, χ^2 = 149.12, p < 0.001).

Presence/Absence of Burial Pigmentation for Subadult and Adult Burials by Island and Mainland Contexts

In order to further examine the relationship between adult and subadult burial pigmentation, the sample is divided into island and mainland context samples for analysis. Starting with the island contexts sample of subadults and adults for presence/absence of burial pigmentation (Table 6.92), data are available for 334 burials. For subadult burials from island contexts, presence (63.3 %) of burial pigmentation is the predominant type, followed by the absence (36.7 %) of burial pigmentation. Adult burials from island contexts follow the same general patterning, albeit at more equal proportions, with presence (53.3 %) of burial pigmentation being slightly predominant over the absence (46.7 %) of burial pigmentation. The difference between the island contexts sample of subadults and adults for presence/absence of burial pigmentation is not considered to be statistically significant (n = 334, χ^2 = 2.97, p = 0.10).

Continuing with the mainland contexts sample of subadults and adults for presence/absence of burial pigmentation (Table 6.93), data are available for 280 burials. For subadult burials from mainland contexts, absence (85.7 %) of burial pigmentation is the predominant type, followed by presence (14.3 %) of burial pigmentation. Adult burials from mainland contexts follow the same general patterning, with absence (92.1 %) of burial pigmentation being the predominant type, followed by the presence (7.9 %) of burial pigmentation. The difference between the mainland contexts sample of subadults and adults for presence/absence of burial pigmentation is not considered to be statistically significant (n = 280, χ^2 = 1.30, p = 0.28).

Presence/Absence of Burial Pigmentation for Infant, Child, and Adolescent Burials

In order to examine subadult patterning more closely, the subadult sample is further divided into three age groups: infant, child, and adolescent. When examining presence/absence of burial pigmentation by infant, child, and adolescent burials (Table 6.94), there are 137 burials for which data are available. For infant burials, presence (62.7 %) of burial pigmentation is the predominant type, followed by the absence (37.3 %) of burial pigmentation. For child burials, presence (54.8 %) of burial pigmentation is also the predominant type, followed fairly closely in proportion by the absence (45.2 %) of burial pigmentation. For adolescent burials, the general patterning present in infant and child burials is reversed, with the absence (71.0 %) of burial pigmentation being the predominant type over the presence (29.0 %) of burial pigmentation. The difference between infant, child, and adolescent burials for presence/absence of burial pigmentation is considered to be highly statistically significant ($n = 137$, $\chi^2 = 10.01$, $p = 0.006$).

Presence/Absence of Burial Pigmentation for Infant, Child, and Adolescent Burials by Time Period Phase

In order to further examine the difference among infant, child, and adolescent burial pigmentation, the sample is divided into Early and Middle period samples for analysis. Beginning with the Early period sample of infant, child, and adolescent burials for presence/absence of burial pigmentation (Table 6.95), data are available for 97 burials. For infant burials, presence (72.1 %) of burial pigmentation is the predominant type, followed by the absence (29.7 %) of burial pigmentation. For child burials, presence (68.8 %) of burial pigmentation is also the predominant type, followed by the absence (31.3 %) of burial pigmentation. For adolescent burials the general patterning apparent in infant and child burials is reversed, with the absence (70.0 %) of burial pigmentation being the predominant type, followed by the presence (30.0 %) of burial pigmentation. Due in part to small sample size ($n < 100$) and also to the presence of values in the table less than 5, the Fischer's Exact test was used in place of the chi-square test for independence. The difference in burial pigmentation for Early period infant, child, and adolescent burials is considered to be highly statistically significant ($n = 97$, $p = 0.003$).

Continuing with the Middle period sample of infant, child, and adolescent burials for presence/absence of burial pigmentation (Table 6.96), data are available for 40 burials. For Middle period infant burials, absence (78.6 %) of burial pigmentation is the predominant type, followed by the presence (21.4 %) of burial pigmentation. For Middle period child burials, absence (60.0 %) of burial pigmentation is also the predominant type, followed by the presence (40.0 %) of burial pigmentation. For Middle period adolescent burials, absence (72.3 %) of burial pigmentation is also the predominant type, followed by the presence (27.3 %) of burial pigmentation. Due in part to small sample size ($n < 100$) and also to the presence of values in the table less than 5, the Fischer's Exact test was used in place of the chi-square test for independence. The difference in presence/absence of burial pigmentation for Middle period infant, child, and adolescent burials is not considered to be statistically significant ($n = 40$, $p = 0.63$).

Presence/Absence of Burial Pigmentation for Infant, Child, and Adolescent Burials by Island and Mainland Contexts

In order to further examine the relationship among infant, child, and adolescent burial pigmentation, the sample is divided into island and mainland context samples for analysis. Starting with the island contexts sample of infant, child, and adolescent burials for presence/absence of burial pigmentation (Table 6.97), data are available for 109 burials. For infant burials from island contexts, presence (71.9 %) of burial pigmentation is the predominant type, followed by the absence (28.1 %) of burial pigmentation. For child burials from island contexts, presence (68.2 %) of burial pigmentation is also the predominant type, followed by the absence (31.8 %) of burial pigmentation. For adolescent burials from island contexts, the general patterning present in infant and child burials is reversed, with the absence (65.2 %) of burial pigmentation being the predominant type over the presence (34.8 %) of burial pigmentation.

Results from statistical testing suggest that this difference is highly statistically significant (n = 109, $\chi^2 = 10.30$, $p = 0.005$).

Continuing with the mainland contexts sample of infant, child, and adolescent burials for presence/absence of burial pigmentation (Table 6.98), data are available for 28 burials. For infant burials from mainland contexts, presence (90.9 %) of burial pigmentation is the predominant type, followed by the absence (9.1 %) of burial pigmentation. For child burials from mainland contexts, presence (77.8 %) of burial pigmentation is also the predominant type, followed by the absence (22.2 %) of burial pigmentation. For adolescent burials from mainland contexts, presence (87.5 %) of burial pigmentation is also the predominant type, followed by the absence (12.5 %) of burial pigmentation. Due in part to small sample size ($n < 100$) and also to the presence of values in the table less than 5, the Fischer's Exact test was used in place of the chi-square test for independence. The difference in burial pigmentation for mainland contexts infant, child, and adolescent burials is not considered to be statistically significant ($n = 28$, p = 0.81).

Histogram Presenting Grave Depth for All Burials

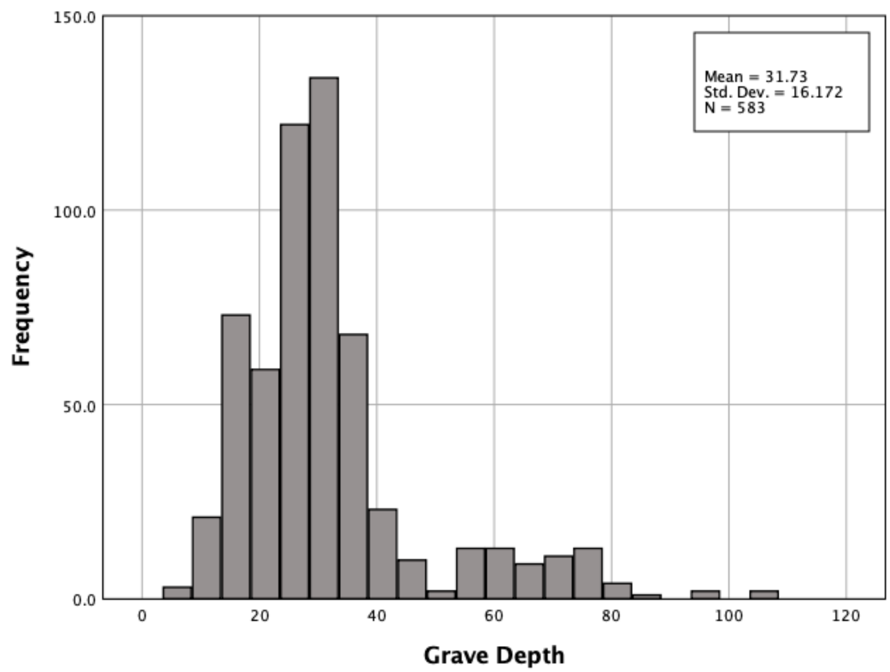

Figure D.1. Histogram presenting all burial data for grave depth.

APPENDIX E
Data Table Summaries for Variables Relating to Objects Associated with the Body of the Deceased

Preface

Appendix E consists of data table summaries for the nominal/categorical variables presented in Chapter 7, variables 9, 14, and 15. The subheadings below match the respective chapter section subheading exactly to facilitate comparison for the reader for the appropriate chapter section. Table data is not repeated here, but references the original table numbers presented in Chapter 7.

Variable 9: Presence/Absence of Grave Goods

Presence/Absence of Grave Goods for All Burials by Time Period Phase

When examining the presence and absence of grave goods by Early and Middle period phases (Table 7.1), there are 836 burials for which data are available. For both the Early and Middle periods, there are very similar rates of presence/absence of grave goods. Presence of grave goods predominates for both time periods, with the Early period (71.1 %) being slightly higher than the Middle period (69.8 %). Whereas the Middle period (30.2 %) has a slightly higher proportion for absence of grave goods than the Early period (28.9 %). The difference between the Early and Middle period samples for the presence/absence of grave goods is not considered to be statistically significant (n = 836, $\chi^2 = 0.159$, $p = 0.702$).

Presence/Absence of Grave Goods by Subadult and Adult Burials

When examining the presence/absence of grave goods by subadult and adult burials (Table 7.2), there are 777 burials for which data are available. From these data, it is apparent that the presence of grave goods is predominant for both subadult (74.9 %) and adult (69.8 %) burials. Adult burials have a slightly higher proportion of individuals lacking grave goods (30.2 %) than subadults (25.1 %). The difference between subadult and adult burial samples for the presence/absence of grave goods is not considered statistically significant (n = 777, $\chi^2 = 1.650$, $p = 0.216$).

Presence/Absence of Grave Goods for Subadult and Adult Burials by Time Period Phase

In order to further examine the difference between adult and subadult presence/absence of grave goods, the sample is divided into Early and Middle period groups for analysis. Starting with the Early period sample of subadults and adults for the presence/absence of grave goods (Table 7.3), data are available for 336 burials. From these data, it is apparent that the presence of grave goods is predominant for both subadult (79.0 %) and adult (68.8 %) burials. For adult burials, the absence of grave goods (31.2 %) is higher in proportion than that for subadults (21.0 %). The difference between the presence/absence of grave goods for the sample of Early period subadults and adults is approaching significance, but cannot be considered statistically significant (n = 336, $\chi^2 = 43.739$, $p = 0.066$).

Continuing with the Middle period sample of subadults and adults for presence/absence of grave goods (Table 7.4), data are available for 441 burials. From these data, it is apparent that the presence of grave goods is predominant for both subadult (68.2 %) and adult (70.4 %) burials, at very similar proportions. For subadult burials, the absence of grave goods (31.8 %) is slightly higher than the proportion present for adults (29.6%). The difference between the presence/absence of grave goods for the Middle period sample of subadults and adults is not statistically significant (n = 441, $\chi^2 = 0.132$, $p = 0.771$).

Presence/Absence of Grave Goods for All Burials by Island and Mainland Contexts

When examining the presence/absence of grave goods by island and mainland contexts (Table 7.5), there are 836 burials for which data are available. From these data, it is apparent that the presence of grave goods is predominant for both island (69.0 %) and mainland (71.6 %) context burials. Island contexts burials have a slightly higher proportion for absence of grave goods (31.0 %) than what is evident for mainland context burials (28.4 %). The difference between the island and mainland contexts samples for the presence/absence of grave goods is not considered to be statistically significant (n = 836, $\chi^2 = 0.682$, $p = 0.449$).

Presence/Absence of Grave Goods for Subadult and Adult Burials by Island and Mainland Contexts

In order to further examine the relationship between the presence/absence of grave goods for adult and subadult burials, the sample is divided into island and mainland context groups for analysis. Starting with the island contexts sample of subadults and adults for presence/absence of grave goods (Table 7.6), data are available for 387 burials. From these data, it is apparent that the presence of grave goods is predominant for both subadult (78.3 %) and adult (67.3 %) burials, with subadults having a higher proportion of burials with associated grave goods. Adult burials have a higher proportion of burials that lack grave goods (32.7 %) than do subadult burials (21.7 %). The difference between the island contexts sub-sample of subadults and adults for the presence/absence of grave goods is considered to be statistically significant (n = 387, $\chi^2 = 4.691$, $p = 0.038$).

Continuing with the mainland contexts sample of subadults and adults for presence/absence of grave goods (Table 7.7), data are available for 390 burials. From these data, it is apparent that the presence of grave goods is predominant for both subadult (67.9 %) and adult (71.9 %) burials at very similar proportions. Subadult burials have a slightly higher proportion for absence of grave goods (32.1 %) than what is evident for adult burials (28.1 %). The difference between the mainland contexts sample of subadults and adults for the presence/absence of grave goods is not considered to be statistically significant (n = 390, $\chi^2 = 0.375$, $p = 0.632$).

Presence/Absence of Grave Goods for Infant, Child, and Adolescent Burials

In order to examine subadult patterning more closely, the subadult sample is further divided into three age groups: infant, child, and adolescent. When examining the presence/absence of grave goods by infant, child, and adolescent burials (Table 7.8), there are 170 burials for which data are available. For infant burials, presence (78.6 %) of grave goods is the predominant type, followed by the absence (24.1 %) of grave goods. For child burials, presence (74.1 %) of grave goods is the predominant type, followed by the absence (25.9 %) of grave goods. For adolescent burials, presence (65.6 %) of grave goods is the predominant type, followed by the absence (34.4 %) of grave goods. In this case, the proportions of presence/absence of grave goods for infant and child burials are more similar to one another than they are to adolescent burials, however this difference is very slight. The difference between infant, child, and adolescent burials for the presence/absence of grave goods is not considered to be statistically significant (n = 170, $\chi^2 = 2.072$, $p = 0.370$).

Presence/Absence of Grave Goods for Infant, Child, and Adolescent Burials by Time Period Phase

In order to further examine the difference among the presence/absence of grave goods for infant, child, and adolescent burials, the sample is divided into Early and Middle period groups for analysis. Beginning with the Early period sample of infant, child, and adolescent burials for presence/absence of grave goods (Table 7.9), data are available for 104 burials. For infant burials, presence (81.0 %) of grave goods is the predominant type, followed by the absence (19.0 %) of grave goods. For child burials, presence (75.0 %) of grave goods is the predominant type, followed by the absence (25.0 %) of grave goods. For adolescent burials, presence (76.2 %) of grave goods is also the predominant type, followed by absence (23.8 %) of grave goods. In this case, the proportions of presence/absence of grave goods for child and adolescent burials are more similar to one another than they are to infant burials, however this difference is rather slight. Due to the presence of values in the table less than 5, the Fischer's Exact Test was used in place of the Chi-square test for independence. The difference in presence/absence of grave goods for Early period subadult and adult burials is not considered statistically significant (n = 104, p = 0.795).

Continuing with the Middle period sample of infant, child, and adolescent burials for presence/absence of grave goods (Table 7.10), data are available for 66 burials. For infant burials, presence (71.4 %) of grave goods is the predominant type, followed by the absence (28.6 %) of grave goods. For child burials, presence (73.5 %) of grave goods is also the predominant type, followed by the absence (26.5 %) of grave goods. For adolescent burials, the patterning present in infant and child burials is reversed, with the absence (54.5 %) of grave goods as the predominant type, followed by the presence (45.5 %) of grave goods. Due in part to small sample size (n < 100) and also to the presence of values in the table less than 5, the Fischer's Exact Test was used in place of the Chi-square test for independence. The difference in presence/absence of grave goods for Middle period infant, child, and adolescent burials is not considered statistically significant (n = 66, p = 0.237).

Presence/Absence of Grave Goods for Infant, Child, and Adolescent Burials by Island and Mainland Contexts

In order to further examine the relationship among infant, child, and adolescent burials for presence/absence of grave goods, the sample is divided into island and mainland context groups for analysis. Starting with the island contexts sample of infant, child, and adolescent burials for presence/absence of grave goods (Table 7.11), data are available for 115 burials. For infant burials from island contexts, presence (80.6 %) of grave goods is the predominant type, followed by the absence (19.4 %) of grave goods. For child burials, presence (80.0 %) of grave goods is the predominant type, followed by the absence (20.0 %) of grave goods. For adolescent burials, the presence (69.6 %) of grave goods is also the predominant type, followed by the absence (30.4 %) of grave goods. In this instance, infant and child burials have more similar patterning for proportions of presence/absence of grave goods than either group does when compared to the adolescent burials. Results from statistical testing suggest that the difference between island contexts infant, child, and adolescent burials for presence/absence of grave goods is not statistically significant (n = 115, χ^2 = 1.282, p = 0.549).

Continuing with the mainland contexts sample of infant, child, and adolescent burials for presence/absence of grave goods (Table 7.12), data are available for 55 burials. For infant burials from mainland contexts, presence (70.6 %) of grave goods is the predominant type, followed by the absence (29.4 %) of grave goods. For child burials, presence (69.0 %) of grave goods is the predominant type, followed by the absence (31.0 %) of grave goods. For adolescent burials, presence (55.6 %) of grave goods is also the predominant type, followed by the absence (44.4 %)

of burial pigmentation. In this instance, mainland contexts infant and child burials have more similar patterning for proportions of presence/absence of grave goods than either group does when compared to adolescent burials. Due in part to small sample size (n < 100) and also to the presence of values in the table less than 5, the Fischer's Exact Test was used in place of the Chi-square test for independence. The difference in presence/absence of grave goods for mainland contexts infant, child, and adolescent burials is not considered statistically significant (n = 55, p = 0.794).

Variable 14: Presence/Absence of Ceremonial Paraphernalia

Presence/Absence of Ceremonial Paraphernalia for All Burials by Time Period Phase

When examining the presence/absence of ceremonial paraphernalia by Early and Middle period phases (Table 7.61), there are 588 burials for which data are available. For the Early period, the absence (89.7 %) of ceremonial paraphernalia was predominant over the presence (10.3 %) of ceremonial paraphernalia. The Middle period exhibits similar patterning, but differs in proportional value; the absence (81.5 %) of ceremonial paraphernalia is predominant over the presence (18.5 %) of ceremonial paraphernalia. The difference between the Early and Middle period samples for the presence/absence of ceremonial paraphernalia is considered to be highly statistically significant (n = 588, χ^2 = 7.673, p = 0.007).

Presence/Absence of Ceremonial Paraphernalia by Subadult and Adult Burials

When examining the presence/absence of ceremonial paraphernalia by subadult and adult burials (Table 7.62), there are 550 burials for which data are available. Subadult and adult burials have nearly identical proportional values for presence/absence of ceremonial paraphernalia. For subadult burials, the absence (84.3 %) of ceremonial paraphernalia is predominant over the presence (15.7 %) of ceremonial paraphernalia. For adult burials, the absence (84.9 %) of ceremonial paraphernalia is also predominant over the presence (15.1 %) of ceremonial paraphernalia. The difference between subadult and adult burial samples for the presence/absence of ceremonial paraphernalia is not statistically significant (n = 550, χ^2 = 0.029, p = 0.888).

Presence/Absence of Ceremonial Paraphernalia for Subadult and Adult Burials by Time Period Phase

In order to further examine the difference between adult and subadult presence/absence of ceremonial paraphernalia, the sample is divided into Early and Middle period groups for analysis. Starting with the Early period sample of subadults and adults for the presence/absence of ceremonial paraphernalia (Table 7.63), data are available for 241 burials. For subadult burials, the absence (84.1 %) of ceremonial paraphernalia is predominant over the presence (15.9 %) of ceremonial paraphernalia. For adult burials, the absence (92.5 %) of ceremonial paraphernalia is also predominant over the presence (7.5 %) of ceremonial paraphernalia. The difference between the presence/absence of ceremonial paraphernalia for the sample of Early period subadults and adults is not statistically significant (n = 241, χ^2 = 4.015, p = 0.072), but it is approaching significance.

Continuing with the Middle period sample of subadults and adults for presence/absence of ceremonial paraphernalia (Table 7.64), data are available for 309 burials. For subadult burials, the absence (84.4 %) of ceremonial paraphernalia is predominant over the presence (15.6 %) of ceremonial paraphernalia. For adult burials, the absence (80.3 %) of ceremonial paraphernalia is also predominant over the presence (19.7 %) of ceremonial paraphernalia. The difference between the presence/absence of ceremonial paraphernalia for the Middle period sample of subadults and adults is not statistically significant (n = 309, χ^2 = 0.427, p = 0.550).

Presence/Absence of Ceremonial Paraphernalia for All Burials by Island and Mainland Contexts

When examining the presence/absence of ceremonial paraphernalia by island and mainland contexts (Table 7.65), there are 588 burials for which data are available. For island contexts, the absence (89.6 %) of ceremonial paraphernalia is predominant over the presence (10.4 %) of ceremonial paraphernalia. For mainland contexts, the absence (81.0 %) of ceremonial paraphernalia is also predominant over the presence (19.0 %) of ceremonial paraphernalia. The difference between the island and mainland contexts samples for the presence/absence of ceremonial paraphernalia is considered to be highly statistically significant (n = 588, χ^2 = 8.519, p = 0.004).

Presence/Absence of Ceremonial Paraphernalia for Subadult and Adult Burials by Island and Mainland Contexts

In order to further examine the relationship between the presence/absence of ceremonial paraphernalia for adult and subadult burials, the sample is divided into island and mainland context groups for analysis. Starting with the island contexts sample of subadults and adults for presence/absence of ceremonial paraphernalia (Table 7.66), data are available for 272 burials. For subadults from island contexts, the absence (84.3 %) of ceremonial paraphernalia is predominant over the presence (15.7 %) of ceremonial paraphernalia. For adults, the absence (92.3 %) of ceremonial paraphernalia is also predominant over the presence (7.7 %) of ceremonial paraphernalia. The difference between the island contexts sample of subadults and adults for the presence/absence of ceremonial paraphernalia is not considered to be statistically significant (n = 272, χ^2 = 4.233, p = 0.054), however it has nearly reached significance.

Continuing with the mainland contexts sample of subadults and adults for presence/absence of ceremonial paraphernalia (Table 7.67), data are available for 278 burials. For subadult burials, the absence (84.2 %) of ceremonial paraphernalia is predominant over the presence (15.8 %) of ceremonial paraphernalia. For adult burials, the absence (79.2 %) of ceremonial paraphernalia is also predominant over the presence (20.8 %) of ceremonial paraphernalia. The difference between the mainland contexts sample of subadults and adults for the presence/absence of ceremonial paraphernalia is not considered to be statistically significant (n = 278, χ^2 = 0.519, p = 0.524).

Presence/Absence of Ceremonial Paraphernalia for Infant, Child, and Adolescent Burials

In order to examine subadult patterning more closely, the subadult sample is further divided into three age groups: infant, child, and adolescent. When examining the presence/absence of ceremonial paraphernalia by infant, child, and adolescent burials (Table 7.68), there are 126 burials for which data are available. For infant burials, absence (89.2 %) of ceremonial paraphernalia is the predominant type, followed by the presence (10.8 %) of ceremonial paraphernalia. For child burials, absence (82.5 %) of ceremonial paraphernalia is the predominant type, followed by the presence (17.5 %) of ceremonial paraphernalia. For adolescent burials, absence (71.4 %) of ceremonial paraphernalia is also the predominant type, followed by the presence (28.6 %) of ceremonial paraphernalia. There appears to be a gradual increase in the proportion of presence of ceremonial paraphernalia as age increases. The difference between infant, child, and adolescent burials for the presence/absence of ceremonial paraphernalia is not considered to be statistically significant (n = 126, χ^2 = 3.883, p = 0.124).

Presence/Absence of Ceremonial Paraphernalia for Infant, Child, and Adolescent Burials by Time Period Phase

In order to further examine the difference among the presence/absence of ceremonial paraphernalia for infant, child, and adolescent burials, the sample is divided into Early and Middle period groups for analysis. Beginning with the Early period sample of infant, child, and adolescent burials for presence/absence of ceremonial paraphernalia (Table 7.69), data are available for 81 burials. For infant burials, absence (88.0 %) of ceremonial paraphernalia is the predominant type, followed by the presence (12.0 %) of ceremonial paraphernalia. For child burials, absence (80.0 %) of ceremonial paraphernalia is the predominant type, followed by the presence (20.0 %) of ceremonial paraphernalia. For adolescent burials, absence (75.0 %) of ceremonial paraphernalia is also the predominant type, followed by presence (25.0 %) of ceremonial paraphernalia. Due to the presence of values in the table less than 5, the Fischer's Exact Test was used in place of the Chi-square test for independence. There appears to be a gradual increase in the proportion of presence of ceremonial paraphernalia as age increases. The difference in presence/absence of ceremonial paraphernalia for Early period infant, child, and adolescent burials is not considered statistically significant ($n = 81$, $p = 0.438$).

Continuing with the Middle period sample of infant, child, and adolescent burials for presence/absence of ceremonial paraphernalia (Table 7.70), data are available for 45 burials. For infant burials, absence (93.3 %) of ceremonial paraphernalia is the predominant type, followed by the presence (6.7 %) of ceremonial paraphernalia. For child burials, absence (84.0 %) of ceremonial paraphernalia is the predominant type, followed by the presence (16.0 %) of ceremonial paraphernalia. For adolescent burials, the absence (60.0 %) of ceremonial paraphernalia is also the predominant type, followed by the presence (40.0 %) of ceremonial paraphernalia. There appears to be a gradual increase in the proportion of presence of ceremonial paraphernalia as age increases. Due in part to small sample size ($n < 100$) and also to the presence of values in the table less than 5, the Fischer's Exact Test was used in place of the Chi-square test for independence. The difference in presence/absence of ceremonial paraphernalia for Middle period infant, child, and adolescent burials is not considered statistically significant ($n = 45$, $p = 0.233$).

Presence/Absence of Ceremonial Paraphernalia for Infant, Child, and Adolescent Burials by Island and Mainland Contexts

In order to further examine the relationship among infant, child, and adolescent burials for presence/absence of ceremonial paraphernalia, the sample is divided into island and mainland context groups for analysis. Starting with the island contexts sample of infant, child, and adolescent burials for presence/absence of ceremonial paraphernalia (Table 7.71), data are available for 89 burials. For infant burials from island contexts, absence (88.7 %) of pigment is the predominant type, followed by the presence (11.3 %) of ceremonial paraphernalia. For child burials, absence (85.0 %) of ceremonial paraphernalia is the predominant type, followed by the presence (15.0 %) of ceremonial paraphernalia. For adolescent burials, the absence (68.8 %) of ceremonial paraphernalia is also the predominant type, followed by the presence (31.3 %) of ceremonial paraphernalia. There appears to be a gradual increase in the proportion of presence of ceremonial paraphernalia as age increases. Due in part to small sample size ($n < 100$) and also to the presence of values in the table less than 5, the Fischer's Exact Test was used in place of the Chi-square test for independence. Results from statistical testing suggest that the difference between island contexts infant, child, and adolescent burials for presence/absence of ceremonial paraphernalia is not statistically significant ($n = 89$, $p = 0.191$).

Continuing with the mainland contexts sample of infant, child, and adolescent burials for presence/absence of ceremonial paraphernalia (Table 7.72), data are available for 37 burials. For infant burials, absence (91.7 %) of ceremonial paraphernalia is the predominant type, followed by the presence (8.3 %) of ceremonial paraphernalia. For child burials, absence (80.0 %) of ceremonial paraphernalia is the predominant type, followed by the presence (20.0 %) of ceremonial paraphernalia. For adolescent burials, absence (80.0 %) of ceremonial paraphernalia is the predominant type, followed by the presence (20.0 %) of ceremonial paraphernalia. In this instance, mainland contexts child and adolescent burials have the same proportions of presence/absence of ceremonial paraphernalia than either group does when compared to infant burials. Due in part to small sample size ($n < 100$) and also to the presence of values in the table less than 5, the Fischer's Exact Test was used in place of the Chi-square test for independence. The difference in presence/absence of ceremonial paraphernalia for mainland contexts infant, child, and adolescent burials is not considered statistically significant ($n = 37$, $p = 0.701$).

Variable 15: Presence/Absence of Beads

Presence/Absence of Beads for All Burials by Time Period Phase

When examining the presence and absence of beads by Early and Middle period phases (Table 7.73), there are 793 burials for which data are available. For the Early period, the presence (52.9 %) of beads is just barely predominant over the absence (47.1 %) of beads. Whereas the Middle period, has the absence (72.3 %) of beads as predominant, followed by the presence (27.7 %) of beads. The difference between the Early and Middle period samples for the presence/absence of beads is considered to have a high level of statistical significance ($n = 793$, $\chi^2 = 51.958$, $p < 0.001$).

Presence/Absence of Beads by Subadult and Adult Burials

When examining the presence/absence of beads by subadult and adult burials (Table 7.74), there are 740 burials for which data are available. Subadult burials have the presence (51.8 %) of beads just barely predominant over the absence (48.2 %) of beads. Whereas adult burials have the absence (65.6 %) of beads predominant over the presence (34.4 %) of beads. The difference between subadult and adult burial samples for the presence/absence of beads is considered to be highly statistically significant ($n = 740$, $\chi^2 = 16.466$, $p < 0.001$).

Presence/Absence of Beads for Subadult and Adult Burials by Time Period Phase

In order to further examine the difference between adult and subadult presence/absence of beads, the sample is divided into Early and Middle period groups for analysis. Starting with the Early period sample of subadults and adults for the presence/absence of beads (Table 7.75), data are available for 309 burials. For Early period subadult burials, absence (68.0 %) of beads is predominant over absence (32.0 %) of beads. For adult burials, absence (51.2 %) of beads is just barely predominant over presence (48.8 %) of beads. The difference between the presence/absence of beads for the sample of Early period subadults and adults is highly statistically significant ($n = 309$, $\chi^2 = 10.071$, $p = 0.002$).

Continuing with the Middle period sample of subadults and adults for presence/absence of beads (Table 7.76), data are available for 431 burials. From these data, it is apparent that the absence of beads is predominant for both subadult (73.4 %) and adult (73.8 %) burials, at very similar proportions. For subadult burials, the presence of beads (26.6 %) is nearly equal to the proportion of adults with beads present (26.2 %) in their burial assemblage. The difference between the presence/absence of beads for the Middle period sample of subadults and adults is not statistically significant ($n = 431$, $\chi^2 = 0.005$, $p = 1.000$).

Presence/Absence of Beads for All Burials by Island and Mainland Contexts

When examining the presence/absence of beads by island and mainland contexts (Table 7.77), there are 793 burials for which data are available. For island contexts, the presence (52.5 %) of beads is just barely predominant over the absence (47.8 %) of beads. Whereas for mainland contexts, the absence (74.6 %) of beads is predominant over the presence (25.4 %) of beads. The difference between the island and mainland contexts samples for the presence/absence of grave goods is considered to have a high level of statistical significance ($n = 793$, $\chi^2 = 59.941$, $p < 0.001$).

Presence/Absence of Beads for Subadult and Adult Burials by Island and Mainland Contexts

To further examine the relationship between the presence/absence of beads for adult and subadult burials, the sample is divided into island and mainland context groups for additional analysis. Starting with the island contexts sample of subadults and adults for presence/absence of beads (Table 7.78), data are available for 361 burials. For island contexts subadult burials, the presence (66.7 %) of beads is predominant over the absence (33.3 %) of beads. While for adult burials, the absence (52.4 %) of beads is just barely predominant over the presence (47.6 %) of beads. The difference between the island contexts sample of subadults and adults for the presence/absence of beads is considered to be highly statistically significant ($n = 361$, $\chi^2 = 11.232$, $p = 0.001$).

Continuing with the mainland contexts sample of subadults and adults for presence/absence of beads (Table 7.79), data are available for 379 burials. For both mainland contexts, the absence of beads for subadult (79.2 %) and adult (75.8 %) burials is predominant, at very similar proportions. Adult burials have a slightly higher proportion for presence (24.2 %) of beads than what is evident for subadult (20.8 %) burials. The difference between the mainland contexts sample of subadults and adults for the presence/absence of beads is not considered to be statistically significant ($n = 379$, $\chi^2 = 0.305$, $p = 0.609$).

Presence/Absence of Beads for Infant, Child, and Adolescent Burials

In order to examine subadult patterning more closely, the subadult sample is further divided into three age groups: infant, child, and adolescent. When examining the presence/absence of beads by infant, child, and adolescent burials (Table 7.80), there are 163 burials for which data are available. For infant burials, presence (55.7 %) of beads is the predominant type, followed by the absence (44.3 %) of beads. For child burials, absence (52.8 %) of beads is the predominant type, just slightly higher in proportion than the presence (47.2 %) of beads. For adolescent burials, the presence (51.6 %) of beads is the predominant type, just slightly higher in proportion than the absence (48.4 %) of beads. In this case, the proportions of presence/absence of beads for infant and adolescent burials are more similar to one another than they are to child burials. The difference between infant, child, and adolescent burials for the presence/absence of beads is not considered to be statistically significant ($n = 163$, $\chi^2 = 0.928$, $p = 0.640$).

Presence/Absence of Beads for Infant, Child, and Adolescent Burials by Time Period Phase

In order to further examine the difference among the presence/absence of beads for infant, child, and adolescent burials, the sample is divided into Early and Middle period groups for analysis. Beginning with the Early period sample of infant, child, and adolescent burials for presence/absence of beads (Table 7.81), data are available for 99 burials. For infant burials, presence (67.8 %) of beads is the predominant type, followed by the absence (32.2 %) of beads. For child burials, presence (70.0 %) of beads is the predominant type, followed by the absence (30.0 %) of beads. For adolescent burials, presence (70.0 %) of beads is also the predominant type, followed by absence (30.0 %) of beads. Early period infant burials have only a very slight difference in proportions of presence/absence of beads than child and adolescent burials. Due in part to small sample size ($n < 100$) to the presence of values in the table less than 5, the Fischer's Exact Test was used in place of the Chi-square test for independence. The difference in presence/absence of beads for Early period infant, child, and adolescent burials is not considered statistically significant ($n = 99$, $p = 1.000$).

Continuing with the Middle period sample of infant, child, and adolescent burials for presence/absence of beads (Table 7.82), data are available for 64 burials. For infant burials, absence (80.0 %) of beads is the predominant type, followed by the presence (20.0 %) of grave goods. For child burials, absence (66.7 %) of beads is the predominant type, followed by the presence (33.3 %) of beads. For adolescent burials, the absence (81.8 %) of beads is the predominant type, followed by the presence (18.2 %) of beads. In this instance, infant and child burials are more similar in relative proportions to one another than either group is when compared to child burials. Due in part to small sample size ($n < 100$) and also to the presence of values in the table less than 5, the Fischer's Exact Test was used in place of the Chi-square test for independence. The difference in presence/absence of beads for Middle period infant, child, and adolescent burials is not considered statistically significant ($n = 64$, $p = 0.475$).

Presence/Absence of Beads for Infant, Child, and Adolescent Burials by Island and Mainland Contexts

In order to further examine the relationship among infant, child, and adolescent burials for presence/absence of beads, the sample is divided into island and mainland context groups for analysis. Starting with the island contexts sample of infant, child, and adolescent burials for presence/absence of beads (Table 7.83), data are available for 111 burials. For infant burials from island contexts, presence (65.1 %) of beads is the predominant type, followed by the absence (34.9 %) of beads. For child burials, presence (72.0 %) of beads is the predominant type, followed by the absence (28.0 %) of beads. For adolescent burials, the presence (65.2 %) of beads is also the predominant type, followed by the absence (34.8 %) of beads. In this instance, infant and adolescent burials have more similar patterning for proportions of presence/absence of beads than either group does when compared to child burials. Results from statistical testing suggest that the difference between island contexts infant, child, and adolescent burials for presence/absence of grave goods is not statistically significant ($n = 111$, $\chi^2 = 0.413$, $p = 0.855$).

Continuing with the mainland contexts sample of infant, child, and adolescent burials for presence/absence of beads (Table 7.84), data are available for 52 burials. For infant burials from mainland contexts, absence (81.3 %) of beads is the predominant type, followed by the presence (18.8 %) of beads. For child burials, absence (75.0 %) of beads is the predominant type, followed by the presence (25.0 %) of beads. For adolescent burials, absence (87.5 %) of beads is also the predominant type, followed by the presence (12.5 %) of beads. In this instance, mainland contexts infant and adolescent burials have more similar patterning for proportions of presence/absence of beads than either group does when compared to child burials. Due in part to small sample size ($n < 100$) and also to the presence of values in the table less than 5, the Fischer's Exact Test was used in place of the Chi-square test for independence. The difference in presence/absence of beads for mainland contexts infant, child, and adolescent burials is not considered statistically significant (n = 52, p = 0.728).

Histogram Presenting Total Number of Grave Goods for All Burials

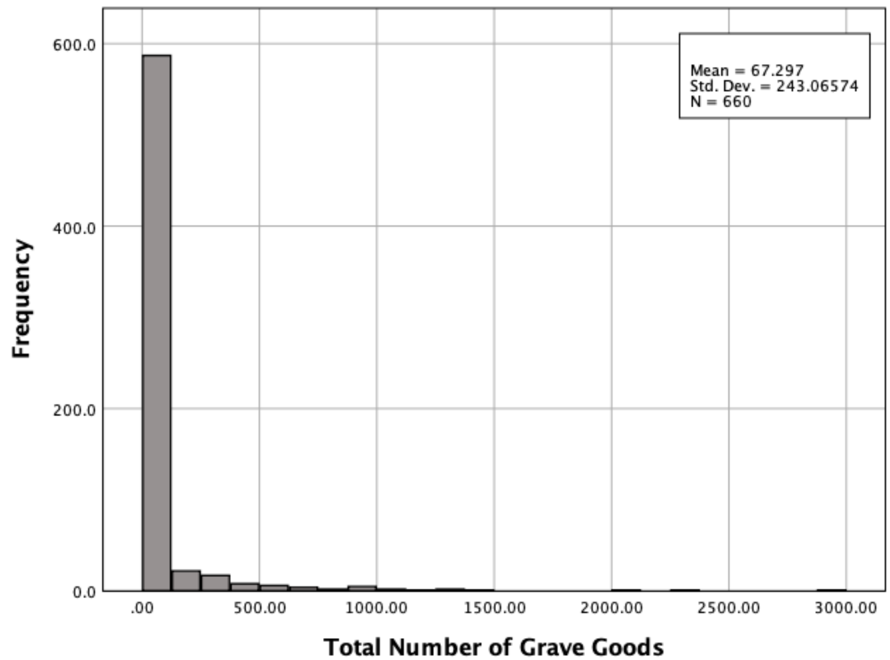

Figure E.1. Histogram presenting all burial data for total number of grave goods.[13]

[13] Total numbers of grave goods could only be assessed for burials with grave good quantities (e.g., no "unknown" values) in both ornament and non-ornament categories (Variables 10 and 11). See Chapter 5 for further discussion.