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Working During College, Transfer and Completion: Clarifying Assets and Institutional Support for Latinx and Other Racial/Ethnic Groups

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Working During College, Transfer and Completion: Clarifying Assets and Institutional Support for Latinx and Other Racial/Ethnic Groups

A dissertation submitted in partial satisfaction of the requirements for the degree of Doctor of Philosophy in Education

by

Hector Vicente Ramos

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ABSTRACT OF THE DISSERTATION

Working During College, Transfer and Completion: Clarifying Assets and Institutional Support for Latinx and Other Racial/Ethnic Groups

by

Hector Vicente Ramos

Doctor of Philosophy in Education

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Professor Sylvia Hurtado, Chair

Latinx student enrollment in college has dramatically increased in recent years, yet they are more likely than other racial groups to enroll at open access and public two-year institutions (Rodriguez, 2015). While public-two-year sector provides an encouraging postsecondary pathway for Latinx students, only 13% of all community college students transferred and earned a baccalaureate degree within six years (Teacher's College, 2017). This study used the NCES Beginning Postsecondary Students Longitudinal Study 2012/2017 to identify the social identities, behaviors, attributes, and institutional characteristics for working students at community colleges that maximize transfer and college completion. The primary focus was on Latinx students (3,280) compared with Black (3,170), White (13,030) and Asian students (1,020). Specifically, this study assessed the effects of working 0-1 hours, 2-20 hours, 21-35 hours, and 36+ hours per week during

college while also testing an asset-bundle framework (Johnson & Bozeman, 2012), to assess successful transfer to four-year institutions for community college students, and six-year baccalaureate attainment for all students who began either as first year students or transferred to four-year institutions. Findings indicate that working during college is not a detriment to transfer and completion, controlling for all other factors in the model. Part-time work while enrolled (2-35 hours per week) and High School GPA are important positive predictors of Latinx student transfer, while enrolling part-time and having dependents had a negative impact on transfer for Latinx students. Results also show that part-time work while enrolled, High School GPA, and academic advising had the strongest positive effect on college completion, while having dependents, part-time attendance, and having an income below $35,000 per year were the strongest negative predictors for baccalaureate degree attainment. The theoretical framework was effective in revealing the importance of providing critical institutional support for Latinx students, such as providing financial support and academic advising. Moreover, future research can continue to explore the Asset-Bundle model, as it is evident that controlling for the various assets improves prediction of Black and Latinx academic outcomes and explains some of the disparities.

The dissertation of Hector Vicente Ramos is approved.

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Cobian, K.P., Ramos, H., & Hurtado, S. (March, 2019). Institutional policies and practices thatsupport undergraduate STEM talent development: Lessons from exemplar institutions. Presentation at Understanding Interventions Conference in Baltimore, MD.

Ramos, H. (June, 2015). Foundations of Early Mexican Thought: Positivism, The Porfiriato, and Modernization in Mexico 1867-1910. Presented as Senior Honors Thesis at University of California, Davis. Davis, Ca.

CHAPTER ONE: BACKGROUND AND PROBLEM STATEMENT

In recent years, Latinx enrollment in post-secondary education has increased dramatically. From 1976 to 2016 Hispanic student enrollment has increased from 4% to 18% at degree-granting non-profit postsecondary institutions (Snyder, de Brey & Dillow, 2019). A comparison with their White peers illustrates this dramatic rise, as White student enrollment has decreased from 84% in 1976 to 57% in 2016 (Snyder et al., 2019). Furthermore, since the Hispanic make-up of the United States population is 18%, Latinx students reflects the same post-secondary enrollment percentage as their representation in the general U.S. population; whereas non-Hispanic Whites show a 3% decrease in their representation of the college student population (63%) when compared to the general U.S. population (60%) (United States Census Bureau, 2019). However, the experiences of these students merit further study given the stratification and diversity of postsecondary institutions in the U.S. (Birnbaum 1988).

The extraordinary increase in Latinx student enrollment may indulge the narrative that racial and ethnic disparities no longer exist in U.S. higher education for Latinx students. Recent literature on Latinx student enrollment examined by institutional selectivity indicates that this is not the case. Although Latinx student enrollment has increased significantly, they tend to enroll at open access and public two-year institutions (Rodriguez, 2015). In fact, 44% of all Hispanic students that are enrolled in college attend a public two-year institution, compared to 35% of Black students, and 31% of White students (Baumen, 2017). Furthermore, Latinx students are overrepresented in the public two-year sector when compared to the overall population; enrollment at public two-year institutions is 25% Hispanic, 14% Black, and 51% White (Snyder et al., 2019). These data indicate that

community colleges have become the primary postsecondary institutions for Latinx students' educational objectives.

Community colleges serve a highly diverse student body. Traditionally conceptualized and created to help reduce growing wealth inequality and provide an alternative pathway for economic advancement through post-secondary education for those with less privilege (Brint & Karabel, 1989), these public two-year institutions have become a major pathway for Latinx students to achieve their degree objectives primarily because they are low-cost, conveniently located near Latinx communities, and offer classes at a variety of times that accommodate employed students. The services postsecondary institutions provide as far as convenience (i.e. offices opened at off hours) for employed students is exceptionally important for the Latinx community and identifying Latinx students as simply students that are working just to minimize economic hardships belies the profound effect that having a job plays in the Latinx community. Many Latinx students identify through their work, as the overwhelming Latin-American diaspora in the United States (im)migrated for historically economic reasons and over 70% of native and foreign born Latinxs believe in hard work for economic advancement (Pew Hispanic Research Center, 2012). Furthermore, Latinxs are more likely than any other group to have multiple wage earners in an extended household (Ellers, 2011). Given the value of wage labor to Latinx students and their families, it is important to include this component into any study that includes Latinx students.

While an increase in Latinx student enrollment, along with an accessible public-two-year sector provides an encouraging postsecondary pathway for Latinx students, community colleges suffer from lower baccalaureate degree attainment rates than four-

year institutions, in fact, only 13% of all community college students earned a baccalaureate degree within six years total time to degree (Teacher's College, 2017). However, it is important to note, that when controlling for successful transfer and other variables, some studies have shown that these lower attainment rates show no significant differences for Latinx students compared to other groups (Bowen et al, 2009). Furthermore, community college students that successfully transfer have similar degree completion rates as those that begin at a four-year institution (Melguizo, 2010).

Moreover, financing post-secondary education has become a more difficult endeavor for many students and their families. After controlling for inflation, tuition at post-secondary institutions has increased by over 25% since the 2006-2007 school year (NCES, 2017). Concurrently, housing costs have increased at twice the inflation rate, while wages have grown at a rate lower than inflation, particularly for the lower-income groups (Pan, 2018). These economic challenges create an atmosphere that leaves students with few options, none of which optimize their potential academic outcomes. Options for students include either taking out more loans and increasing the debt burden to address later in their careers or consider wage employment throughout their post-secondary experience. Given the increase in college attendance for Latinx students along with the rise in college costs, and the importance of employment to Latinx students and their family, many Latinx students end up working while attending college; in fact, many Latinx students choose to work to avoid burdensome student loans (IHEP, 2014). In fact, high percentages of underrepresented students report working along with enrollment in open-access institutions, along with carrying a heavy student loan debt burden (Carnevale, Smith & Melton, 2015). Since many Latinx students end up employed throughout their

postsecondary experience, research into the specific type of employment such as on campus or off-campus, and opportunity costs is necessary (Titus, 2010). Furthermore, because of the aforementioned conditions, further research is also necessary to extend an understanding of the behaviors and conditions that can maximize positive academic outcomes for these working underrepresented students.

Prior research on student employment while enrolled in college has focused on the negative or positive effects of hours worked as predictors for various student outcomes which include graduation, GPA, and graduate school attendance (Neyt et al, 2017). Overwhelmingly, studies compare working students with non-working students as well as part-time vs full-time. Overall, the results of these studies have been mixed, with some identifying student employment as beneficial, others as detrimental, and some have no effect (Stinebrickner 2003, Bozick 2007, Astin 1993). While these various studies have identified important characteristics of concurrent enrollment and employment, few have attempted to identify specific work-related behaviors that promote positive outcomes for students under the assumption that these students will be employed throughout their post-secondary experiences. Given the current post-secondary landscape, choosing to work throughout college is not necessarily a worse option than taking on student loans. For example, working students end up with less student loan debt and move into managerial positions at a higher rate than students without work experience (Carnevale et al., 2015). Consequently, working students have shown some advantages over non-working students when under specific conditions. However, low-income students are more likely to work in food and personal service employment, which are among the lowest-paying jobs in the United States (BLS, 2018). Also, students currently have the highest amount of student

debt in history, and in the last 10 years, debt has increased by over 100%, wherein 2009 Americans held approximately $772 billion in student loans, and in 2019 they held $1.6 trillion (Hess, 2019). Since low-income students are more likely to enroll at community colleges and Latinx students are more likely to be low-income, it is imperative to conduct research into student worker behaviors and characteristics of Latinx students that will yield positive academic outcomes such as successful transfer to a four-year institution and baccalaureate attainment.

Purpose

The purpose of this study is to identify factors for working students at community colleges that maximize their academic outcomes which are identified as successful transfer to four-year institutions for students that initially enroll at public two-year institutions, and baccalaureate attainment for working students that begin at public two-year institutions when compared to those that began their postsecondary experiences at four-year institutions. The focus of the study is working Latinx students at public two-year institutions, however, to gain a comprehensive understanding of working students' postsecondary landscape, the analysis included students from different ethnic/racial demographics, as well as students that began their education at four-year institutions for comparisons. This study examined working students' post-secondary behaviors and characteristics including social identities, educational endowments, material resources, college readiness, social networks, and other student assets that may identify the effects of on or off-campus student employment on post-secondary students' academic outcomes. In this study, when controlling for students' asset bundles, the socio-economic and social identity disparities were greatly reduced as Bozeman & Johnson (2012)

hypothesized. Previous research indicates that student work reduces Latinx students' academic attainment outcomes and is even more deleterious for low-income Latinx students (Carnevale et al, 2015). Furthermore, institutional selectivity may play a role in the likelihood of Latinx student enrollment, financial support and need to work, and eventual attainment. With a reduction in these disparities based on the asset bundles, it is possible that this research can provide data to increase support for working Latinx students, including financial resources or reduction of specific types of work hours. The following research questions will guide this study:

1. What are the effects of varying levels of student employment (hours or type of work) on transfer to four-year institutions for Latinx, Black, and White students who begin their studies at community colleges?
2. What are the effects of varying levels of student employment (hours or type of work) on baccalaureate attainment for Latinx, Black, Asian, and White students who begin their studies at community colleges when compared to those students that begin their studies at four-year institutions?
3. What predictors are unique to Latinx college outcomes, and what implications do these have in assisting this group to achieve their educational goals in two and four-year colleges?

Scope of the Study

To accomplish this national study, I used a quantitative research design to control for measures of specific asset bundles and social identities that help explain the effects of varying levels of on or off-campus student work on academic outcomes. Survey data from the National Center for Education Statistics (NCES), Beginning Postsecondary Students

(BPS) Longitudinal Study 2012/2017 was used to conduct this study. Derived from the Scientific Technical Human Capital Theory (STHCT), Johnson & Bozeman (2012) propose an Asset Bundle Model, where asset bundles are the specific sets of abilities and resources students develop to help them succeed in educational and professional tasks, such as science and research (Johnson & Bozeman, 2012). The assets include educational endowments, science socialization, network development, family expectations, and material resources. To test this theory, variable selection occurred using social identities and the corresponding asset bundles among working community college students and students who begin at four-year colleges. I specifically investigated the effects of hours worked, type of work, social identity, and the varying effects of five asset bundles on Latinx students when compared to Black, Asian, and White students. The first research question was restricted to community college students, comparing Latinx, Black, and White students, while the second research question looked at Latinx, Black, Asian and White students and controlled for students that began at community colleges.

Significance of the Study

This study considers different approaches in the literature to the study of working community college Latinx students. As a result of the mixed outcomes of previous studies on how student work affects academic outcomes, the theory used in this study identified important variables as consistent predictors for academic outcomes that can be examined for potential policy implications. For example, since the material resources asset bundle identified expected family contribution as a predictor for Latinx baccalaureate attainment, then policymakers should consider legislation that will provide Latinx students with more student aid in the form of money.

Next, since the study identified implications specific to Latinx students, it is possible that certain factors conceivably affect Latinx students more, and therefore policymakers can promote programs that will target services to Latinx students specifically. For example, since Latinx students attend community colleges and are employed at high rates, work study programs may provide much needed opportunities for Latinx students. Moreover, since I predicted both transfer and baccalaureate attainment for these students, the results will hopefully help policymakers understand the importance of having critical support systems for working Latinx students at community colleges, which might include providing sufficient student aid so that they may reduce employment that is not related to their academics.

Also, this study will become a catalyst for future in-depth qualitative studies on the experiences of working Latinx community college students. While this study identified predictors for student transfer and baccalaureate attainment, it would be useful to understand Latinx students and whether they believe student work has a profound effect on their post-secondary experiences. The beliefs and opinions students have about their experiences is crucial to understanding the impact certain behaviors have on their lives while enrolled at institutions of higher learning. These are the types of questions and research that need qualitative methodology and are beyond the scope of this quantitative study. In addition, having a comprehensive understanding of these student behaviors that differ by race/ethnicity and assets (financial and educational) that contribute to academic outcomes can facilitate policy decisions both at the government and institutional level.

Finally, this study was only the second to use the asset-bundle theory as well as the first to use the new NCES longitudinal dataset to analyze working Latinx students. Findings may help settle the questions in the literature to how work affects Latinx student outcomes.

The next chapters address the previous literature focused on working students and attainments (Chapter 2), which is followed by the research design and methods (Chapter 3). Chapter 4 provides results of multivariate analyses and post-hoc tests of differences between comparison groups. Chapter 5 provides a summary and discussion linking results with existing literature, restating contributions to the study of Latinx and other working students in U.S. higher education.

CHAPTER TWO: LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

Over the last twenty years, employment while attending college has become a significant source of income for students in pursuit of postsecondary education (Perna, 2010). In fact, both financially dependent and independent students work a significant number of hours. Independent undergraduate students work an average of 34.5 hours per week while enrolled, while dependent undergraduate students work an average of 24.5 hours per week while enrolled across all sectors (Perna, 2010). Furthermore, nearly 40% of all students in the 2011-2012 school year worked while enrolled (NCES, 2018). Today, we have large swaths of the student population where employment while enrolled in postsecondary institutions has become a necessary component of student life. Recently, many researchers have analyzed the effects of concurrent work and enrollment. These studies look at various outcomes including GPA, baccalaureate attainment, transfer, student engagement with university activities, student engagement with faculty, and postgraduate alumni income/salary.

The previous scholarship on working students applies across institutional sectors. However, the overwhelming research in this field compares working students to non-working students. In contrast, this study focused on heterogeneity among working students. This chapter will review the aforementioned literature, as well as the literature on Latinx community college students, on BA attainment and on various social identities and assets that maximize academic outcomes for Latinx and working students. This study will contribute to the literature on working students by using Johnson and Bozeman's Asset Bundle model to identify student assets and social identities that maximize academic outcomes for working students at community colleges and four-year institutions. I also

employed Johnson and Bozeman's (2012) asset bundle framework as an alternative framework to examine working students rather than the traditional opportunity cost or student engagement theoretical models prevailing in higher education literature (Titus, 2010; Hui, Winsler, Kitsantas, 2014; Astin, 1993). Concurrently, this chapter will review the scholarship that focuses on characteristics and behaviors of Latinx working students that affect college transfer, baccalaureate attainment, GPA, salary after graduation, and other outcomes prevalent in the literature on working students.

Theoretical Framework: Asset Bundles

Johnson & Bozeman (2012) developed an Asset Bundle Model that combined the scientific and technical human capital (STHC) model with social identity contingencies theory (SIC) (Johnson & Bozeman, 2012). The authors identify asset bundles as the specific sets of abilities and resources students develop to help them succeed in educational and professional tasks (Johnson & Bozeman, 2012). Johnson and Bozeman propose that developing the students' asset bundles will decrease those insecurities and disadvantages that emanate from minoritized social identities. Consequently, the authors address the "various social cues that signal devaluation of certain identities" (Johnson & Bozeman, 2010, p. 1), which allows for greater minority recruitment and retention. When applied to working community college students, this model provides a foundation that guides variable selection in these quantitative analyses and allows for organizing an in-depth examination of the literature on working students. Understanding how these asset bundles affect Latinx working students may allow students and policymakers to identify how to maximize academic outcomes such as transfer and graduation. Moreover, this model was developed for use in the Science Technology Engineering and Math (STEM) disciplines, however, this

study extended application of the model to students in all majors as well as focus on Latinx students. This theory is advantageous when juxtaposed with more traditional models such as Pierre Bourdieu's Capital Theory; Johnson and Bozeman's Asset-Bundle approach was specifically designed for racial minority students, consequently potentially accounting for specific characteristics and behaviors that are unique to students of color. While Bourdieu's theory provides a strong framework for students with social class differences, it is more difficult to apply his model to students of color, as the circumstances to French culture and practices were very different in the 1970s and 80s than today's post-secondary atmosphere in the United States. For example, France has a long history of secularism and a hostility towards even asking French citizens about racial characteristics, this phenomenon is virtually embedded in their society, therefore, it is questionable whether a theory developed under such circumstances accounts for practices that are unique to racially minoritized students in the United States.

Working Students

Opportunity Cost and Asset Bundles

Prior research on working students discusses a broad range of topics, however, one theme appears across the majority of the literature: the worktime/study-time trade-off as a model for looking at student employment (Titus, 2010). The worktime/study-time trade-off indicates that as the amount of time a student spends working increases, the time those students will spend on activities relevant to their school-related activities will decrease (Titus, 2010). This concept has roots in economics and is known as opportunity cost. The opportunity cost is the next best choice after the chosen activity (Buchanan, 2017). For example, if a student chooses to work, the opportunity cost is the time a student spends on

academic endeavors. While opportunity cost attempts to measure the next best decision for students, asset bundles can help explain what students attempt to pursue. For example, given the increase in college costs, working students decide to work to develop their material resources asset bundles; on the other hand, those students that decide to spend more time on academic activities might enhance their educational endowments asset bundles. The reality of the current academic environment is that students must balance both their educational endowments and material resources asset bundles, and the simple worktime/study-time trade-off does not provide for the dynamic decision-making process these students must endure. Fortunately, Johnson and Bozeman's asset bundle theory allows one to examine how working students may develop their asset bundles without the trade-off. For example, students may develop their educational asset bundles and material resources through work study or on-campus employment, or paid academic-related activities (e.g., undergraduate research) that provide the benefit of further developing their asset bundles without necessarily sacrificing academic time.

Opportunity cost is prevalent in the literature on working students, since full-time work for students (defined as working over 35 hours per week) has been associated with negative academic outcomes including GPA and persistence (out). Although work over 35 hours has been associated with negative academic outcomes, the results are mixed as work hours fall below 35 hours (Neyt et al, 2017). There is also research that shows when controlling for other variables such as student engagement, work-study vs off-campus work, and GPA, work has no negative effect on outcomes such as GPA, standardized tests, and persistence (Perna, 2007). Furthermore, whether student work is harmful or beneficial also varies according to the degree of work and the type of outcome

variable. Student employment appears to have an inverse relationship with baccalaureate degree attainment rates for students working over 15 hours per week, while students working between 1-15 hours per week have higher baccalaureate attainment rates than their non-working peers (Perna, 2007). However, research also shows that student work has shown no relationship with GPA or standardized test scores (Pascarella & Terenzini, 2005).

The research with respect to opportunity cost and academic outcomes including GPA, baccalaureate degree attainment, and persistence, and standardized tests is therefore mixed, however, when analyzing the literature further, several patterns emerge. First, the results of employment while in college on student GPA appear mixed, with some showing work as beneficial, some detrimental, and others showing no differences depending on the outcomes. Second, while the results are mixed, the literature consistently shows that students that work 1-15 hours per week have higher GPAs when compared to non-working students (Pascarella et al., 2005; Perna, 2007; Hui, Winsler, Kitsantas, 2014), and, working students have a longer time to degree completion than non-working students; as work hours increase, students begin to shift from full-time to part-time (Pascarella & Terranzini, 2005; Titus, 2010). Next, working students actually have higher initial salaries after degree attainment than non-working students (Titus, 2014; Carnevale et al., 2015). Given the patterns for working students leads to the conclusion that students are faced with difficult decisions as to whether or not to extend their time to degree and perhaps gain a higher initial salary, yet this also comes with a price tag of increased tuition costs and perhaps a higher debt burden.

On-Campus & Off-Campus Employment

Several studies discuss the effects of on-campus vs off-campus student work on academic outcomes. Early studies indicate that off-campus employment, part-time employment, and full-time employment has been negatively associated with student retention at four-year institutions (Astin, 1993). In fact, Astin (1993) found that the single largest negative effect on student retention was working full-time. However, Astin used student work as a measure of low-level involvement variable to study student retention. This type of conceptual assumption used for predicting retention designates work as a barrier to student involvement. The proposed asset bundle model identified student work as an asset through controlling for other various measures to test whether student work hinders academic outcomes (transfer/graduation) if at all. Next, early studies and more recent research have shown that off-campus student work has a negative relationship with academic GPA (Astin, 1993, DeSimone, 2008). Using a Generalized Method of Moments model, DeSimone (2008) found that for every extra hour worked either off or on-campus, student GPA dropped by .011. Although this quasi-experimental model provides strong evidence for GPA decline for working students, the decline only occurs when interpreting mean hours of work, with an actual large increase in GPA for students who worked up to 7 hours per week. This suggests that the relationship between student work hours and GPA is non-linear.

Next, off-campus student work has been negatively associated with retention and time to graduation (Levin et al., 2010; Dadgar, 2012; Darolia, 2014). Levin et al. (2010) argue that non-working students at both four-year institutions and community colleges are more likely to persist than working students, defining persistence as nine or more months of consistent enrollment. However, they do claim that working in a related field may

provide distinct advantages for students that include the opportunity to apply the skills they have learned in their corresponding major (Levin et al., 2010). Thus, students who work off-campus while enrolled are at an increased risk of taking longer to graduate and having a lower GPA compared to those students that do not work. Since this study applied the asset bundle model, this study identified when (how many hours, and on or off campus) work for some students is an asset while also controlling for various measures, particularly among community college Latinx students.

In contrast to off-campus work, recent research on work-study and working in a related field to the student's major, which has been used to further define on-campus student work, is associated with the completion of more college credits at the end of a students' first semester; as work-study pay increases, the number of credits a student completes also increases (Soliz & Long, 2016). Also, on-campus work has been associated with a host of positive academic outcomes when compared to both off-campus work and non-working students. For example, when researching the effect of Federal Work Study (FWS) on academic outcomes (Scott-Clayton & Minaya, 2016) found that for students that already have jobs or would have jobs regardless of Federal Work Study opportunities, were more likely to graduate with a B.A. degree within six years. Furthermore, their research also suggests that students in the FWS program were more likely to graduate within four years, and more likely to persist with concurrent enrollment after two years when compared to working students not in the FWS but still work (Scott-Clayton & Minaya, 2016). Although FWS indicates positive outcomes when compared to other working students not in the FWS program (off-campus), when compared to non-working students, the results change slightly. GPA is lower among students in the FWS program than non-

working students, yet B.A. attainment and post baccalaureate employment increases among those FWS-employed (Scott-Clayton & Minaya, 2016). Their results are fairly consistent with the corresponding literature; however, most researchers have found that GPA is higher among students that work on-campus and work study (Bureau of Labor Statistics, 2017; Pike et al., 2008). Overall, the literature is consistent that on-campus work is advantageous when compared to off-campus working and non-working students. For this reason, I consider employment as part of the asset bundle of material resources in the Johnson & Bozeman (2012) framework.

Community College Students: Upward Transfer, Completion & Employment

Recent research also indicates that students that begin their studies at community colleges are less likely to attain a baccalaureate degree within six years when compared to students that begin at four-year institutions (Lichtenberger & Dietrich, 2017). The scholarship on community colleges compares these students to students at four-year institutions. However, community college students have their own unique experiences, characteristics, and challenges. For example, community college students need to focus on two or perhaps even three distinct objectives prior to baccalaureate degree attainment. First, they must take some form of assessment before they can even enroll in college level courses (Ngo & Kwon, 2015). For many years, these assessments came in the form of math and English placement tests (Ngo & Kwon, 2015). These exams became huge barriers to student transfer and correspondingly baccalaureate attainment; briefly, the lower the student scored on the placement exam, the longer the time to degree completion (Melguizo, 2008; Bailey et al., 2008). Recently, many community colleges have jettisoned the placement exam and applied a survey assessment (Smith College, 2019). Second,

community college students also need to transfer to a four-year institution that will grant a baccalaureate degree. This objective adds another layer to the milestones a community college student must achieve prior to having the opportunity to achieve a bachelor's degree. They must spend a great deal of time in the year before they transfer, filling out applications and writing personal statements simply to have the opportunity to take upper division courses. Students at four-year institutions do not need to spend time on this during their sophomore year. Further, many four-year institutions have course requirements for admission to specific majors and community college students must take these courses to effectively transfer to a desired major. Many times, students lose credits when attempting vertical transfer because of the four-year institution not recognizing or accepting the community college courses (Jenkins & Fink, 2015). Finally, once a community college student transfers to a four-year institution they must get adapted to the four-year college to begin focusing on coursework for the baccalaureate degree.

When applied to working students enrolled in the community college, the literature is sparser than that for four-year students, however, the differences in the types of students that work, and the types of work students perform becomes quite clear. Community college working students work in fields outside of their potential career and academic major, and the most common fields for the students to work in are sales, office support, and food service (Carnevale et al., 2015). Furthermore, the community college students work at higher rates than students at four-year institutions (Carnevale et al., 2015), attend campuses that have higher minority student enrollment (Carnevale et al., 2015) and work longer hours (Carnevale et al., 2015).

Traditionally, the challenges community college students experience when compared to their four-year counterparts result from the fact that these are two completely different types of institutions. Students enrolled at four-year institutions pursue the baccalaureate degree, and the institutions are designed to support this goal, while community colleges must support a much wider variety of goals and objectives, as well as a much more diverse student population (Brint & Karabel, 1989). Historically, the community college has provided both a pathway to the baccalaureate degree through transfer to a four-year institution, a terminal degree in the form of vocational training, and the opportunity for lifelong learning for adult students (Brint & Karabel, 1989). These competing missions present many challenges for the community college system, and students become wrapped up in the chaos within the system, resulting in low transfer rates and lower baccalaureate attainment than their four-year counterparts (Long & Kurlaender, 2009; Brand, Pfeffer & Goldrick-Rab, 2012).

The research landscape on community college student outcomes is comprehensive. However, the research narrows significantly when looking only at working students. While several studies identify community college student work as an independent variable comparing working to non-working students, this study will identify what specific work types and related student characteristics maximize academic outcomes for Latinx students who begin their studies in community colleges. This study also proposes that when controlling for specific assets, community college Latinx students are not at a disadvantage when compared to their non-working and four-year counterparts.

Currently, researchers have identified issues that include upward transfer rates to four-year institutions, what student or institutional characteristics affect these transfer

rates, and baccalaureate degree completion rates for community college students and the types of behaviors that affect completion. A 2003 report from the American Council on Education identified the transfer rate at approximately 25% of students whose objective was transfer. Other studies are equally disappointing with respect to overall transfer rates to four-year institutions for community college students. Furthermore, previous scholarship has examined whether beginning at a two-year instead of a four-year college affects the likelihood of completing a baccalaureate degree. Long and Kurlaender (2009) performed a study on students in Ohio and discovered that students that began their postsecondary journey at a community college had a 14.5 percentage point lower probability of completing a bachelor's degree than students that began at a 4-year institution. Also, data on students in Chicago suggests a lower graduation rate among community college students when compared to non-selective four-year institutions of three to four percent (Brand et al., 2012).

Brint & Karabel (1989) argue that community colleges objectives are to democratize education, meaning that they play a type of role as an equalizer for those students that may not have had the privileged upbringing that promotes attendance at a four-year institution. Unfortunately, they also assess that democratizing education conflicts with the American economic milieu in the sense that the United States is divided into a class structure that does not necessitate the democratizing of education (Brint & Karabel, 1989). These theories indeed play out in the results of many studies that identify community college transfer and completion outcomes. However, a great deal of the current literature uses deficit frameworks to not only assess community college students, but students of color as well. These theories operate under the underlying assumptions that

beginning at a community college or identifying as a racially minoritized student begins as a disadvantage (Chen & Starobin, 2018; Byun, Meece, Irvin & Hutching 2012; Karp, Hughes & O'Gara, 2008; Astin, 1993). This study identified community college students as a different type of student; a student that perseveres, and when controlling for important characteristics will perform the same or even outperform their counterparts. Although many challenges exist for community college students, the fact is that these institutions provide open access to students that otherwise would not have the opportunity to enroll at a four-year institution.

One of the most important roles that community colleges play within higher education is their service to underserved and minority communities (Rosenbaum, Deil-Amen & Person, 2006). Since these institutions are open access because of their unique missions, many students in underserved and minority communities take the opportunity to enroll in college and pursue a baccalaureate degree that otherwise would not have the income nor resources for such an endeavor (Levesque, 2018; Blackmon 2014). While these institutions play a critical role in educating large swaths of disadvantaged and racially minoritized students, the Latinx community has enrolled in these institutions at the highest rates (Melguizo, 2011). These colleges are specifically targeted for enrollment by many Latinx students due to the proximity to their homes and places of employment, their low costs, and the flexibility to attend at various hours (Chen, 2020; Reyes, Gerbino & Rios-Aguilar, 2018; Bailey, 2006).

Latinx Students and variables predicting academic outcomes

Latinx students have recently had a spike in college enrollment, and most of those students attend community college (NCES, 2020, Chen, 2020). Although there is a large

spike in college attendance for Latinx college students, there are a great deal of variables that must be controlled for to accurately predict degree attainment when compared to other groups that maximize the potential of these students. These variables are extensive, and many are specific to Latinx students (Fry & Taylor, 2013; Arbon & Nora, 2007; Bobbit & Zeher, 2007). Using the asset bundle model (Johnson & Bozeman, 2012) as well as the prevailing scholarship on Latinx students guided this study's variable selection. These variables that predict degree attainment include the aforementioned in this literature review as well as the following: income, gender, race/ethnicity, immigration status, dependents, single parenthood, GPA, AP courses, attendance intensity, family expectations, STEM, math remediation, interaction with faculty, importance of academic advising, student engagement, interactions with friends, distance from place of employment, Pell grant recipient, expected family contributions, avoiding loans through employment increase in hours, and the type of institution attended. Each of these variables fits into a corresponding asset bundle, social identity, or institutional measure. The following section will discuss the literature related to the corresponding variables.

Social Identity Measures

Family Income

The effects of membership to specific income groups among Latinx students has been well established in the literature. For many American Latinx students, they begin their post-secondary journeys as members of a lower family income group when compared to their White peers (Schneider, Martinez & Owens, 2006). These limited economic resources present a difficult challenge for Latinx students pursuing a baccalaureate degree. There is an exceptional amount of previous research that indicates that family income affects

virtually every possible outcome variable with respect to Latinx students and college. For example, Fry (2002) found that higher income Hispanics were more likely to obtain a college education than low-income Hispanics. Also, the National Center for Education Statistics found in 2015 that even high achieving low-income students graduated college at lower rates than high income students. These income outcomes for graduation fall in line with other academic outcomes for Latinx students. In another study, Hurtado (1997) found that high income students were more likely to apply to multiple colleges than middle and low-income students. A related study on progress for Latinx students indicates that while there is progress in attending a variety of institutions, and there was no difference between low- and high-income students with respect to how many colleges a student applied to, once several key asset measures are controlled (Hurtado, Ramos, Perez & Lopez, 2020). This study also used the asset bundle model to look at Latinx college going behaviors and characteristics that had maximized a high school student's choice of institutional selectivity and the number of colleges they applied to. The fact that the income effect disappeared in both equations with the introduction of the assets indicates the power of the theory and has strong implications for why Latinx students need specific types of support.

Gender

Gender plays a crucial role in understanding academic outcomes for Latinx students and therefore needs to be addressed in understanding working Latinx student transfer and graduation outcomes. The research on graduation outcomes for Latinas indicates that women are more likely than men to graduate with a baccalaureate degree (Arbona & Nora, 2007; Otero, Rivas & Rivera, 2007; Cole, 2008; Crisp, Taggart, & Nora, 2015). For example,

Arbona & Nora (2007) found using logistic regression analysis that Latinas that begin their postsecondary education at community colleges are 33% more likely to graduate with a baccalaureate degree than their male counterparts. Phanor (2007) found that being male was negatively associated with GPA. Cole (2008) in a study looking at educational satisfaction also found that GPA and educational satisfaction was significantly higher for Latinas. Finally, Crisp, Taggart, & Nora (2015) also found that being female was significantly positively associated with GPA, persistence decisions, and odds of degree completion. These consistent results with respect to gender indicate that Latinas appear to have a significant advantage over Latinos with respect to academic outcomes, however, when analyzing the research further, there is still progress to be made for Latinas. For example, Hurtado, Ramos, Perez & Lopez (2020) found that while Latinas have higher high school GPAs, they are less likely to attend a highly selective institution than Latinos. These results indicate potential undermatch and require further analysis on Latinas' educational progress.

Overall, the literature on gender has breadth as well as depth, and therefore is critical in understanding the outcomes for working Latinx students at community college. Are Latinas at an advantage after accounting for similar assets? This is one critical question this study will potentially answer.

Prior scholarship has indicated that when controlling for institutional characteristics, Latinx students' lower baccalaureate degree attainment rate between transfer students and those that started at a four-year does not result from the institution they are enrolled, but rather from individual characteristics (Melguizo, 2009). If indeed it is true that the institution may not affect the corresponding outcomes, then it is important to identify

which characteristics affect the student and how the institution can develop an infrastructure that supports Latinx student characteristics that promote graduation, transfer, and persistence.

Race/Ethnicity

The scholarship on race and ethnicity is extremely broad and deep, therefore, this review will narrow the literature to the effects of race and ethnicity on working Latinx students at community colleges and four-year colleges. The literature on employment for Latinx students when compared to other groups indicates that low-income students, specifically low-income African Americans and Hispanics experience the negative effects of student employment while enrolled on their academic outcomes (Carnevale et al, 2013). In a descriptive study Levin et al. (2009) found that part time work for Latinx community college students is associated with lower persistence rates than their White and Asian counterparts, but higher persistence rates defined as nine months or more of continued enrollment, than their Black counterparts. However, their full-time work analysis suggests that Latinx students have slightly higher persistence rates than White and Black students, but slightly lower than Asian students (Levin et al., 2009).

The research on working students at community colleges is not nearly as broad as that of students at four-year institutions, and much of the literature that does look at student work does not focus on employed students, but rather on the effect of work on graduation controlling for community college attendance. One of the possible reasons for this is that most community college students have jobs, and therefore it is difficult to compare working students at community colleges to non-working students. The number of working students at community college has been measured as high as 80% (NCES,

2009). However, Crisp and Nora (2009) found that Hispanic students that attend community college are less likely to transfer, persist, or graduate as work hours increase. These results challenge the overall literature discussed earlier in this chapter on working students, which indicates that students that work part time outperform non-working students and students that work full-time (Neyt et al., 2017; Perna, 2007). It is quite possible that differences arise with Latinx students because of social identities or asset bundles unique to this population which affects them at the community college level. For example, single motherhood among Latinx students at community college is rather ubiquitous and this variable must be controlled for to identify the assistance in education in order to maximized potential academic outcomes for this demographic (Contreras, 2018) In another study, Greene, Marti & McClenney (2008) researched students with multiple risk factors, and they identified the amount of hours worked as a significant risk factor for Hispanic students that hindered GPA, engagement, and graduation.

Finally, the literature on working Latinx students at community college identifies work as a barrier to transfer and completion (Carnevale et al, 2015; Levin et al., 2010; Perna, 2007). However, there are few studies that show direct negative effects of work on Latinx students at community college when compared to Latinx students that do not work, which could be a result that over one-quarter of full-time Latino community college students work at least full-time, and half of part-time students work full-time. (Hood, 2010). This study potentially provided an answer to this question. Furthermore, this study attempted (perhaps unsuccessfully) to challenge the narrative that community college is a disadvantage for baccalaureate degree attainment for working Latinx students (Carnevale

et al., 2015). Many Latinx students that attend community college are workers that choose to attend school part-time, and it is difficult to compare these types of students to traditional students at four-year institutions. For example, Carnevale et. al. (2015) report that working students are disproportionately non-traditional, and non-traditional students tend to have lower rates of completion than their traditional counterparts (Carnevale et al., 2015). Since there is an overwhelming number of Latinx students at community college, then it is important to understand that the academic outcomes for Latinx students at community college may result not necessarily from work, but from a multitude of risk factors that these students may experience such as single-parenthood, or independence as the sole source of income. These are all variables that this study took into consideration that many others lack (Hui et al, 2014; Titus, 2010; Levin et al, 2010; Perna, 2007). Many of these risk factors along with the assets can be used to identify where practitioners can focus to improve outcomes for Latinx working students, specifically at community colleges.

Citizenship/Immigration Status

The scholarship on how immigration status affects academic outcomes is particularly unique to Latinx students (Darder, Torress & Gutierrez, 1997). Since many Latinx students are first generation in this country or the first to arrive in the United States, large numbers of these students are directly affected by either their own immigration status, or their parents' and family members'. In fact, approximately 33% of the Latinx population in the United States are immigrants from Latin-America (Pew Research Center, 2017). This has a profound effect on Latinx students and there is a great deal of scholarship that finds the harmful effects of not having an infrastructure to support Latinx Immigrant students, which many researchers argue has had a detrimental effect on educational attainment and

college enrollment (Bean & Tienda, 1987; Lowell & Suro, 2002; Chapa & De la Rosa, 2004; Kaufman, Alt & Chapman, 2001, Wainer, 2004). In California, immigrants make up approximately 25% of community college students (Llosa & Bunch, 2011).

Independent Students and Dependents

The community college sector is unique with respect to independent students and having dependents. For example, Ma & Baum (2016) found that independent students with dependents make up approximately 32% of students at community college, while at public four-year institutions the number is 15% and 17% at private non-profit four-year institutions. It should be noted that the only sector with higher independent students with dependents is the for-profit sector at 52%, however, these colleges are beyond the scope of this study.

Next, independent students with dependents are more likely to be women of color and Latinas are more likely than their White peers to have dependents while attending college (Cruise, Eckerson & Gault, 2020). Latinx students are therefore disproportionately represented in the community college sectors, more likely to be independent, and more likely to have dependents, it is critical to control for independent students with dependents to understand what type of support these students need to improve educational outcomes. The reason for this lies with the fact that the National Center for Education Statistics (2016) specifically identifies having dependents and financial independence as undergraduate risk factors. Given these risk factors, identifying the effect of these risk factors helped in analyzing how different asset bundles facilitate Latinx student success while also understanding how institutions can provide support for these students,

effectively providing a comprehensive study that accounts both individual and institutional determinants of degree completion.

Educational Endowments

GPA & Attendance Intensity

It is well established in higher education that a high GPA and attendance intensity are among the strongest predictors for transfer and graduation outcomes. The overwhelming scholarship on high school and college GPA indicates that students with higher GPAs are more likely to both transfer and graduate with a baccalaureate degree, and the same follows for Latinx students (Garcia & Bayer, 2005). In fact, Garcia & Bayer (2005) found that Hispanic students with high academic performance were almost twice as likely to graduate than those with lower academic performance. Moreover, when analyzing transfer, persistence, and completion for Latinx students, Nora, Kraemer, & Hagedorn (1997) discovered that as Hispanic students' college GPAs increased, the more likely they were to transfer, persist, and graduate. The consensus on GPA is clear across the research, Latinx students with higher GPAs have higher academic outcomes than those with lower GPAs. Although a high GPA is important for Latinx students, it is important to understand the variables that affect GPA, and this is why asset bundle theory is important in constructing this model. Controlling for GPA will allow me to understand which assets are most specific to Latinx students. Another important asset for working Latinx students is the attendance intensity, which describes whether students attend part-time or full-time (Nora et al., 2005). Another important factor in applying asset bundle theory is whether a student majors in STEM. For example, a STEM major represents the science socialization asset bundle, yet it is important to note that Latinx students are not often receiving the

opportunities in STEM fields when compared to other ethnic groups (Greene et al, 2013). For example, Dowd (2010) found that Latinx students majoring in STEM are very unlikely to graduate with a baccalaureate degree if they begin their education at a community college. This study is important in that it identifies a STEM major as an asset for Latinx students and it is likely that when controlling for the other asset bundles, Latinx STEM majors will graduate and transfer at higher rates than their non-STEM counterparts.

Working students are more likely to attend school part-time, and therefore have reduced attendance intensity than non-working students, and students that work full-time are even more likely to attend part-time. Unfortunately, attending school part-time is another risk factor for completion and transfer according to the NCES (2018), and therefore must be included in the model. Previous scholarship indicates that part-time attendance is a barrier to completion, and Latinx student's part-time attendance is tied to other risk factors previously discussed, it is thus imperative to understand that many of the previously mentioned risk factors might be the cause for part-time attendance. Several studies have identified part-time attendance as negatively associated with lower levels of transfer and persistence (Nora et al, 2005; Center for Community College Student Engagement, 2017). Indeed, the Center for Community College Student Engagement Report (2017) found that students that attend even one semester of college full-time have an edge on transfer and graduation than those that have only attended part-time.

The results of the scholarship clearly exemplify how important of an asset a high GPA, enrolling in AP courses, and attending college full-time is for Latinx student achievement. These are critical to the educational endowments asset bundle and must be

accounted for in a model that attempts to predict the academic outcomes for working Latinx students.

Science Socialization

STEM major vs Social Sciences/Humanities Major & Remedial Math

Another important factor in applying asset bundle theory is whether a student majors in STEM. For example, a STEM major represents the science socialization asset bundle, yet it is important to note that Latinx students are not often receiving the opportunities in STEM fields when compared to other ethnic groups (Greene et al, 2013). For example, Dowd (2010) found that Latinx students majoring in STEM are very unlikely to graduate with a baccalaureate degree if they begin their education at a community college. This study is important in that it identifies a STEM major as an asset for Latinx students and it is likely that when controlling for the other asset bundles, Latinx STEM majors will graduate and transfer at higher rates than their non-STEM counterparts.

Family Expectations

Parent's Education

A student's parental level of education has been shown to have a significant benefit for a host of academic achievement outcomes, particularly college completion (Cataldi, Bennet & Chen, 2018). Parental level of education has also been recognized as a way of measuring cultural capital. Maxwell, McNeely & Carboni (2016) used Pierre Bourdieu's cultural capital framework to predict college graduation and identified that Parental level of education is a strong positive predictor for college enrollment. This study will thus measure family expectations or cultural capital using the parents' level of education.

Network Development

Interaction with Faculty, Importance of Academic Advising, Sense of Belonging & Interaction with Friends

How students interact with faculty, peers, and advisors has also played an important role in student success. Several studies have identified these variables as assets for Latinx students and will be a part of the network development asset bundle. Prevailing scholarship indicates that the more students interact with faculty, the higher the academic outcomes (Astin, 1993). However, more recent studies have shown significant nuance in how faculty interaction affects students, particularly racially minoritized students. The scholarship indicates that there are differences with respect to how students interact with faculty. For example, Kim & Sax (2009) found that differences among race, class, and gender exist based not only on the frequency of student/faculty interaction, but also on whether they were interacting with faculty for research purposes, or general questions on academic issues related to classes. Latinx students spent much of their interactions discussing course related matters, as opposed to Asian and White students who assisted faculty as volunteers (Kim & Sax, 2009). Although it would be optimal to disaggregate research experiences from simple course related interaction, this study is limited by the measures that simply accounts for the number of interactions with faculty.

Another important engagement variable is the importance of academic advising for community college students. The prevailing scholarship on academic advising at community colleges discusses the success of advisement in the form of successful remediation. Bahr (2008) found that Hispanic students were more likely to have successful remediation with advising than without advising, however, White, and Asian students had more successful advising than Hispanic students. For Black students, advising proved less

effective, with students that did not have advising less likely to remediate successfully than those without advising.

Students' interaction with their peers is also an important factor with respect to their academic outcomes. These interactions are of particular importance to Latinx students, as there is a great deal of literature that discusses the importance of diversity and the campus racial climate, for example many high achieving Latinx students with high levels of traditional achievement metrics have described hostilities in their racial climate in four-year colleges (Hurtado, 1994). Furthermore, in a 2006 study, Locks, Hurtado, Bowman & Oseguera (2008) found that students of color were more likely to experience racial tension on campus that affected their sense of belonging. These student interactions are of particular importance to this study since I will address positive student interactions and revisit this measure for progress among Latinx students. I will be able to identify whether their interactions will have a positive effect on transfer and completion.

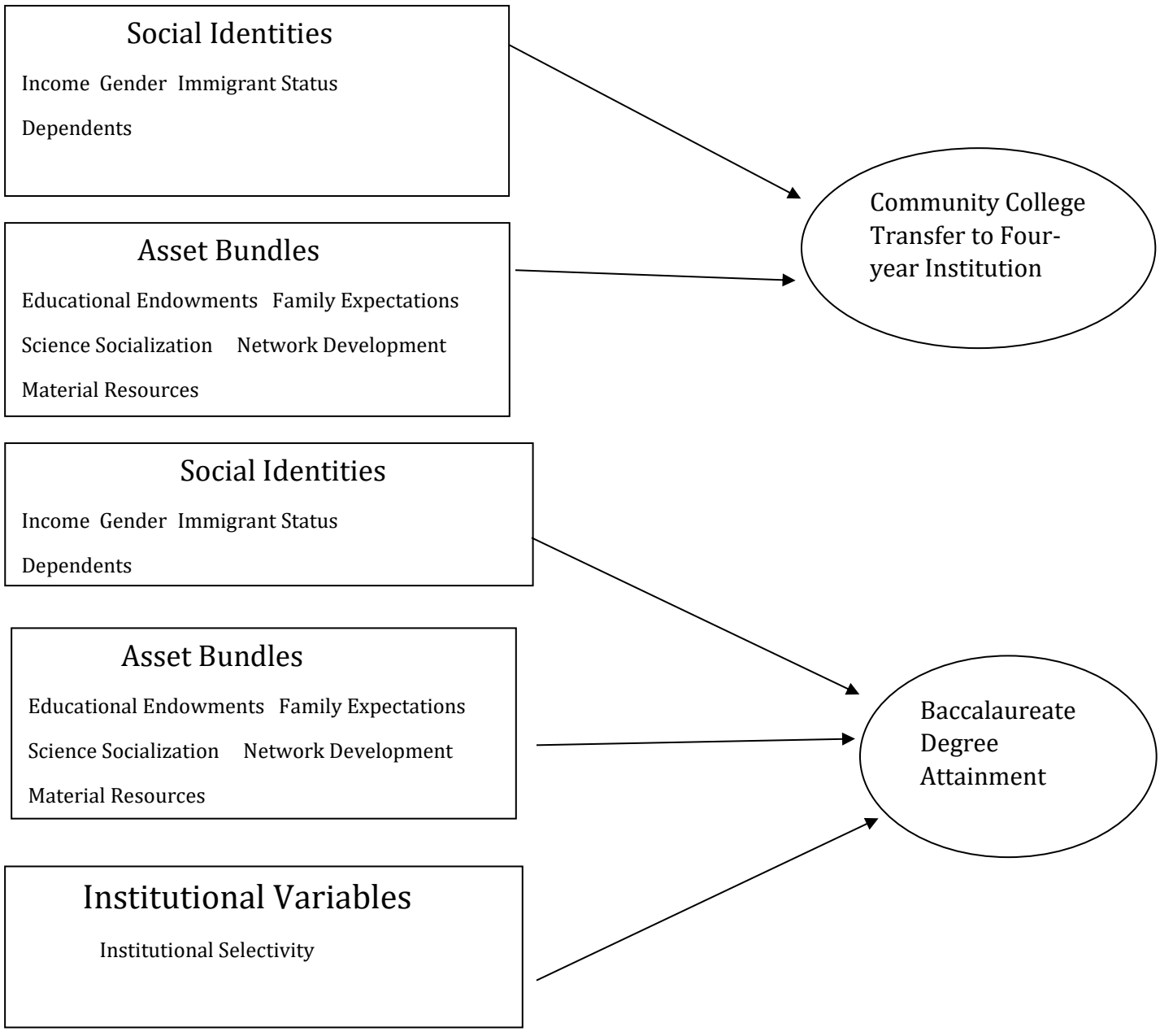
Material Resources

Pell Grants, Family Contributions, and Avoiding Loans Through Work

Several studies have identified the importance of a student's material resources on academic outcomes. Among these material resources asset bundles are student aid measures such as whether students are Pell Grant recipients, the financial contributions that a student's family can provide, and the avoidance of student loans through employment. Research shows that 35% of Pell Grant Recipients attend community college (The College Board, 2013). Most Pell Grant Recipients are in high-risk groups (Campbell, Deil-Amen, Rios-Aguilar, 2015). Although these students are in high-risk groups, Pell grant recipients have been shown to have positive academic outcomes across various metrics

including access to selective institutions, persistence to the degree, and completion (Hurtado et al., 2020; McKinney & Novak, 2013; Mendoza, Mendez & Malcolm, 2009). Although receiving a Pell Grant has been associated with positive academic outcomes, research exists that show for students of color, the Pell Grant program has punitive elements such as delays in disbursement (prevention of "Pell runners" and procedural and eligibility issues (dependency status) that that need to be addressed (Campbell, Deil-Amen, Rios-Aguilar, 2015). Through the controlling of various assets, this study can help answer whether receiving a Pell Grant while attending community college and identifying as Latinx will promote transfer and completion. Another important variable previously mentioned in this review is Latinx students' aversion to student loans and opting instead to work.

To summarize, an overview of the conceptual model is provided below (Figure 1 & Figure 2.)



The literature in this section has discussed the important variables that must be accounted for transfer and completion, to assess the effects of varying levels of student work on Latinx community college students and their peers at four-year institutions. This study proposes that once the various asset bundles and social identities are controlled for, the disadvantages suffered by Latinx students may diminish, and perhaps even turn to an advantage. The literature in this study asserts that many of the assets and social identities that I describe are disadvantages to students, for example, a STEM major, or being an independent student with dependents. However, these are the assets and social identities of the students that attend community colleges specifically because it fits their lifestyles and social identities; therefore, it is imperative to not assess these students and their communities with such a deficit lens and understand that these variables must be controlled to show the success many of these students have achieved. Furthermore, this research will help practitioners change policy and perhaps open restrictions on financial aid and certain types of student funding that are critical for Latinx students to accomplish their postsecondary objectives.

CHAPTER THREE: STUDY DESIGN AND METHODOLOGY

Given the post-positivist philosophical nature of the primary questions guiding this research, which attempts to identify the effects of specific predictor variables on academic outcomes, this study benefits most from a quantitative methodological approach (Creswell, 2014). Quantitative research design provides the researcher with the ability to answer deterministic types of questions (Creswell, 2014). These questions result from the tradition of post-positivist philosophers that challenged the faculty of absolute objective truth (Creswell, 2014). Although post-positivists pursue objectivity, they argue that because of inherent biases, only approximate answers to questions involving human behavior exist (Taylor & Lindloff, 2011; Robson, 2002). Since this national study uses primarily survey data to investigate the effects of variables on outcomes, the knowledge that will arise from this study meets the criteria for a quantitative methodological approach. It attempts to reduce ideas to a set of measured variables, reflecting observations and reality as seen through the perspectives of respondents, and employs statistical techniques using a testable theory (Creswell, 2014).

This chapter discusses this study's methodology in detail. First, I restate the research questions and provide the rationales and hypotheses for the corresponding questions. The next section explains the research design, provides a description of the data, sample, variable selection, and analytic techniques. The final section discusses the data and research design limitations.

Positionality Statement

Since researchers select studies due to interest and experience, this study warrants a discussion on positionality. It becomes critical to acknowledge that I may have my own

biases with respect to this research. Considering my social identity and the unique path I navigated through postsecondary education in my journey from a community college to a four-year institution and beyond. I understand that my identity as a Latino born in Puerto Rico, as well as a transfer student from the California Community College system to the University of California system, and my full-time worker status over the course of my education at several public two-year institutions may present a challenge to the objectivity of my study but also provides a critical perspective on assumptions, research choices, and results. Therefore, I approach this with a critical quantitative stance (Rios-Aguilar, 2015).

Research Questions, Hypotheses, and Rationale

This study's purpose is to identify and examine how varying levels of student employment while attending college affect academic outcomes for Latinx students at community colleges. Pointedly, this study tests Johnson and Bozeman's (2012) asset bundle theory through concepts that guide variable selection in order to specifically identify which social identities and student assets have significant effects on students' academic outcomes: transfer and college completion. The following research questions guide these objectives:

1. What are the effects of varying levels of student employment (hours or type of work) on transfer to four-year institutions for Latinx, Black, and White students who begin their studies at community colleges?
2. What are the effects of varying levels of student employment (hours or type of work) on baccalaureate attainment for Latinx, Black, Asian and White students who

begin their studies at community colleges when compared to those students that begin their studies at four-year institutions?

3. What predictors are unique to Latinx college outcomes, and what implications do these have in assisting this group to achieve their educational goals in two and four-year colleges?

Hypotheses

The first research question addresses the effects of varying levels of student employment on transfer to four-year institutions from community colleges. Based on previous scholarship, there are lower rates of transfer among students that work full-time when compared to non-working students; whereas the transfer rates are higher for those students that work on-campus when compared to non-working students from part-time through full-time. The results of specific work hours are mixed in the literature with several studies indicating negative effects for students working over 20 hours per week, positive effects between 2-20 hours, and negative full-time employment effects (Levin et al., 2010).

Prior research also suggests that Latinx and Black students are at a disadvantage when working at varying levels off-campus when compared to their White counterparts (Carnevale et al., 2015). However, this study proposes that using the asset bundle model, Latinx and Black students may not necessarily have a disadvantage when controlling for the variation in assets they bring to college. I propose that the results of this study will show that when controlling for various asset bundles for community college students, the racial disparities will disappear, showing no significant differences between groups, or possibly a positive relationship.

The second research question addresses the varying levels of student work on baccalaureate attainment for Latinx, Black, Asian, and White students who begin their studies at community colleges compared to those that begin their studies at four-year institutions. The current scholarship suggests that community college students are at a disadvantage when compared to students who begin at four-year institutions (Ma & Baum, 2016). This study hypothesizes that the asset bundles will identify where these disparities exist and that, when controlling for the various asset bundles, the advantage for students that begin at four-year institutions will disappear as well. For example, compared to freshmen with similar high school GPAs and test scores, "transfer students are much more likely to graduate" (Bowen, Chingos & McPherson, 2009. P. 142).

The final research question attempts to identify unique predictors for Latinx students' college outcomes compared to other groups. This study proposes that working Latinx students will not be at a disadvantage when compared to their 4-year counterparts or their peers in other racial groups. Furthermore, this study will show that Latinx students that receive financial support and have strong networks among their friends and family will significantly improve outcomes for Latinx students such as transfer and graduation with a bachelor's degree.

Data and Sample

This study analyzed data from the U.S. Department of Education's National Center for Education Statistics (NCES). The survey data is from the Beginning Postsecondary Students Longitudinal Study 2012-2017 (BPS:12/17, released in 2019). This longitudinal study surveyed first-time, beginning students at three points in time: the end of their first year, at the end of their third year, and at the end of their sixth year of postsecondary

education, thus the data was collected in 2012, 2014, and 2017, respectively. The BPS:12/17 student survey included data elements used in previous BPS surveys that include, postsecondary enrollment history, financial aid and borrowing, employment, and career expectations (Bryan et al., 2019). The BPS attempts to contribute to a better understanding of how the data elements relate to three key postsecondary outcomes: persistence, degree attainment, and employment (Bryan et al., 2019).

For the first research question, preparation for data analysis included careful selection of community college students to obtain a sample of the appropriate population. First, I only included community college students to predict transfer. I filtered out all other students and only included students that begin their college going experience at public, non-profit, two-year, and less than two-year colleges. Next, I filtered out all students whose objective is not transfer or pursuit of a baccalaureate degree. Next, I ran a full model controlling for race. Finally, I ran a model for each individual race category filtering out the race/ethnicity from all other groups. Therefore, the final sample for the first research question only included Black, Latinx, and White community college students with the expressed goal of transfer or baccalaureate attainment. The final sample included (1,100) Latinx students, (990) Black students and (3,400) White students.

For the second research question, I included all students (beginning at two and four-year colleges) whose objective was to attain a baccalaureate degree. I also controlled for students that began at a community college and other institutional levels. Next, I ran a full model controlling for race. Finally, I ran a model for each individual race category filtering out the race/ethnicity from all other groups. Therefore, the final sample for the second research question only included Black, Latinx, Asian, and White students at four-year

public and private not for profit institutions to predict baccalaureate degree attainment. The final sample included (2,180) Latinx students, (2,180) Black students, (1,030) Asian students, (9,630) White students.

For the final research question, I tested coefficients from the separate group analyses in research question 1 & 2, considering the different sample sizes. This analysis allowed me to identify which assets and employment measures are unique to Latinx student outcomes when compared to other racial groups.

Quantitative Methodology

To examine working Latinx community college students, I employed a quantitative methodology that helped me analyze the effects of social identities and various measures that reflect the Asset Bundle model (Johnson & Bozeman, 2012) that may influence academic outcomes. The hypothesis testing and descriptives allow for a scrupulous analysis of the selected variables, and the use of survey data from the National Center for Education Statistics (NCES) provides the ability to identify trends numerically (Creswell, 2014). First, I analyzed the percent distribution of Latinx, Asian, Black, and White students across several student academic outcomes. Frequency distributions of the measures of transfer and baccalaureate attainment were computed to understand patterns. This descriptive part of the study compares means and standard deviations and evaluates missing data to understand unusual patterns that may affect assumptions of logistic regression. After completing the descriptives, to achieve the study's primary objective, I performed binary logistic regression on the selected independent variables to assess their effect on transfer and B.A. attainment. I predicted whether specific asset bundles affect the corresponding outcomes, which included transfer to a four-year institution and

baccalaureate attainment (dependent variables). The specific model for the first research question estimated from the data was:

logit(transfer)= β_0 (intercept)+β_1(income)+ β_1 (gender)+ β_3(citizenship/immigration status) + β_2 (dependents)+ β_3(race)+ β_4 (high school GPA) + β_5 (attendance intensity)+ β_6(parental education)+ β_7 (STEM major)+ β_8(Math)+ β_9 (Pell grant)+ β_{10}(expected family contributions)+ β_{11} (avoid loans through work) B_{12}(interaction with faculty)+ β_{13} (academic advising)+ β_{14}(sense of belonging)+ β_{15} (interaction with friends)+ β_{16}(hours worked)+β_{17}(on campus work)

Given the model, the DV is transfer, $\beta_0$is the estimate for the intercept, and (β_1, β_2, β_3…β_{17}) are estimates for the coefficients of the 17 predictors for the first research question.

Successful transfer is important in understanding the success of a student-worker at a community college, as it increases their chances of completing a bachelor's degree. Baccalaureate attainment is important in assessing the college completion of working students at community colleges when compared to their four-year counterparts. The specific model for the second research question estimated from the data was:

logit(baccalaureate attainment)= β_0 (intercept)+β_1(income)+ β_1 (gender)+ β_3 (citizenship/immigration status)+ β_2 (dependents)+ β_3(race)+ β_4 (high school GPA)+ β_5 (attendance intensity)+ β_6(parental education)+ β_7 (STEM major)+ β_8(Math)+ β_9 (Pell grant)+ β_{10}(expected family contributions)+ β_{11} (avoid loans through work) B_{12}(interaction with faculty)+ β_{13} (academic advising)+ β_{14}(sense of belonging)+ β_{15} (interaction with friends)+ β_{16} (hours worked)+β_{17}(on campus work)+β_{18}(institutional selectivity)

Given the model, the DV is baccalaureate attainment, β_0 is the estimate for the intercept, and (β_1, β_2, β_3... β_{18}) are estimates for the coefficients of the 18 predictors for the second research question.

Independent variables were selected based on prior literature assessing the social identity characteristics for working students at community college, and accounting for measures that align with the Asset Bundle theory that include educational endowments, family expectations, financial/material resources, network development, and science socialization. For example, educational endowments included measures such as High School GPA, and the student's attendance intensity while in college; financial resources include having received financial aid in the form of Pell grants, expected financial contributions for support for education, and whether or not the student's increase in work was related to student loan aversion; network development includes interaction with faculty, the importance the student places on academic advising, sense of belonging, and positive interactions with friends; science socialization includes majoring in STEM and having taken remedial math courses, and family expectations or cultural capital is measured by the parent's level of education.

Logistic Regression

One of several types of regression models, Logistic Regression is especially suitable for studying categorical outcomes (Peng et al., 2002). This study uses dichotomous dependent variables: transfer and baccalaureate attainment. Furthermore, Logistic Regression also does not require independent variables to have a normal distribution, nor do they require a linear relationship between the independent and dependent variables as they do with Ordinary Least Squares (OLS) regression (Peng et al, 2002).

Assumptions of Logistic Regression

Unlike OLS regression, logistic regression provides more flexibility with respect to assumptions. There are five main assumptions for logistic regression (Schreiber-Gregory & Jackson, 2018): appropriateness of outcome, observation independence, absence of multicollinearity, linearity of independent variables and log odds, and sufficient sample size.

Appropriateness of Outcome

This assumption presumes that in binary logistic regression the outcome variable is binary (Schrieber-Gregory & Jackson, 2018). This has been met as both dependent variables are binary.

Linearity between the independent variables and the log odds

In logistic regression the continuous independent variables must be linear with the log odds. This study uses the Box-Tidwell approach to check for this linearity between the independent variables and log odds (Hosmer & Lemshow, 2000).

Observation Independence

Observation Independence assumes that observations do not come from matched data or repeated measurements (Schrieber-Gregory & Jackson, 2018). The BPS 2012/2017 meets this requirement as the chosen independent variables are not repeated measurements as the variables were selected from specific years within the survey. For example, the 2013-2014 school year was selected from the survey for employment weekly hours.

Absence of Multicollinearity

Logistic regression requires that independent variables are not highly correlated (Schrieber-Gregory & Jackson, 2018). This requires analysis of Variance Inflation Factor lower than seven. SPSS statistical software is used for this analysis.

Linearity of Variables and Log Odds

This assumption requires that variables be linearly related to the log odds (Schrieber-Gregory & Jackson, 2018).

Sufficient Sample Size

General guidelines suggest a minimum of 10 cases with the least frequent outcome for each independent variable in your model.

Logistic Regression Model

To analyze transfer among community college students, logistic regression is used to determine the probability of student transfer. The odds ratios are calculated using the following model:

$$\ln(\text{ODDS}) = ln\left(\frac{p}{1-p}\right) = \beta_0 + \beta_i X_i$$

with "p" as the predicted probability of a student successfully transferring. Since students either successfully transfer to a four-year institution or they do not, this variable is dichotomous.

To analyze baccalaureate attainment, logistic regression is used to determine the probability of graduation. The odds ratios are calculated using the following model:

$\ln (\text{ODDS}) = ln\ (\frac{p}{1-p}) = \beta_0 + \beta_i X_i$

with "p" as the predicted probability of a student successfully attaining a baccalaureate degree. Since students either successfully graduate or not, this variable is dichotomous.

Filters

Community College. For the first research question (predicting transfer) I only included students at public two-year institutions in pursuit of a baccalaureate degree.

Pursuit of a baccalaureate degree. Only students in pursuit of a four-year degree were included in the sample for the first research question (predicting transfer).

Race/Ethnicity. A separate model was run for each individual race/ethnicity for both research questions. The Latinx logistic regression models' significant variables were then compared to other race/ethnicities using a test of the equality of regression coefficients for unequal sample size differences to determine which predictors are strongest across race/ethnicity that predict transfer (Paternoster, Brame, Mazerolle & Piquero, 1998).

Variables

Table 3.0 describes how each of the variables are measured in the survey, what follows is how they relate to the research question and model.

Table 3.0 Logistic Regression Model

Dependent Variable (Survey Year 2012-2017)	**Response Codes**
Transfer to four-year institution	Transferred to four-year institution 1=Yes 0=No
Baccalaureate Attainment	Attained a four-year degree 1=Yes 0=No
Independent Variables	
Social Identity (2012)	
Income Group	1= Yes, <35K 1= Yes, 35K-75K 1=Yes 75K< (referent)
Gender/Female	1=Male (referent) 2=Female
Immigration Status (dummy coded)	U.S. Citizen (referent), 1=Yes, 0=No U.S. Resident, 1=Yes 0=No International Student, 1=Yes 0=No
Race/Ethnicity (dummy Coded)	White (referent), 1=Yes, 0=No Latinx, 1=Yes, 0=No Black, 1=Yes, 0=No Asian, 1=Yes, 0=No
Dependents	Does the student have dependents? 1=Yes 0=No

Educational Endowments (2012 survey)

HS GPA	1=0.0-0.9 2=1.0-1.4 3=1.5-1.9 4=2.0-2.4 5=2.5-2.9 6=3.0-3.4 7=3.5-4.0
Attendance Intensity in College	Full-Time or Part-Time 1=Full-Time (12 units of more) 2=Part-Time (Less than 12 units)

Family Expectations (2012 Survey)

Parent's Education	1=Did not complete High School 2=High School Graduate 3=Some College, 4=Baccalaureate Degree 5=Graduate Degree

Science Socialization
(2012)

Social Sciences and Humanities STEM (referent)	Major in STEM 1=STEM 2=Social Sciences/Humanities
Remedial Math Courses	1=None 2=One 3=Two 4=Three or More

Network Development (2014)

Quality of Interaction with Faculty	Indicates whether interactions with faculty are positive. 1=Mostly Negative

	2=Neither 3=Mostly Positive
Importance of Academic Advising in college	1=Not Important 2=Somewhat Important 3=Important 4=Very Important
Sense of Belonging	Student Felt like they were a part of the institution 1=Strongly disagrees 2=Somewhat disagrees 3=Neither agree nor disagree 4=Somewhat agrees 5=Strongly agrees
Quality of Interactions with Friends	Indicates whether students' interactions with friends are positive 1=No 2=Neither 3=Yes

Material Resources
(2012)

Pell Grant	1=$0-$1000 2=$1001-$2500 3=$2501-$4000 4=$4001-$5500
Expected Family Contributions	1=$0-$10001 2=$10001-$20,000 3=$20001-$30000 4=$30001
Avoiding loans by working more	Whether or not Students work more to avoid student loans 1=Yes 0=No

Employment
(2013-2014 Survey)

Hours Worked While Attending College (Dummy Coded)	No Work (referent), 1=Yes, 0=No Part-Time,2-20 hours, 1=Yes, 0=No Part-Time, 21-35, 1=Yes, 0=No Full-Time, 36+ hours, 1=Yes, 0=No
On-Campus Work	1=Off-Campus 2=On=Campus
Institutional Variable (Dummy Coded)	
	Highest Selectivity (referent), 1=Yes, 0=No Moderately Selective 1=Yes, 0=No Minimally Selective 1=Yes, 0=No Open Admission (four-year) 1=Yes, 0=No Community College 1=Yes, 0=No

Source: U.S. Department of Education, National Center for Education Statistics, Beginning Postsecondary Students Longitudinal Study, 2012-2017.

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Dependent variables

Transfer. Transfer is the dependent variable for the first research question and is dichotomous. This variable is coded as 1=successful transfer to a four-year institution from a 2-year public institution, and 0=no transfer to a four-year institution from a 2-year public institution.

Baccalaureate Attainment. Baccalaureate attainment is the dependent variable for the second research question. This variable is also dichotomous and is coded as 1=attained baccalaureate degree, and 2=did not attain a baccalaureate degree.

Independent variables

Social Identity

Income. Income is an independent variable and is ordinal. This variable is organized into income groups of low, middle, and high income, with high income as the referent. Income is necessary in this study as an overwhelming amount of literature identifies income as one of the strongest predictors for both dependent variables: transfer and baccalaureate attainment (Dowd, 2006; Wyner et al., 2007; Schmertz & Carney, 2013)

Gender. Another social identity variable, gender is an independent variable and is dichotomous. Gender is coded as 1=male and 2=female. This variable is necessary in understanding transfer and baccalaureate attainment as females are attaining more associate and baccalaureate degrees than males (US Department of Education, 2018).

Citizenship/Immigration Status. Immigration status is an independent variable and ordinal. This variable is organized into U.S. citizen, U.S. Resident, and international student. Since this study focuses on Latinx students it is necessary to identify immigration status as a predictor of as Latinx students and their families are affected by U.S. immigration laws (Vargas, 2017; Philbin, 2018).

Dependents. This variable is dichotomous and identifies whether a student has dependents. The variable is coded as 1=dependents, 0=no dependents. This variable is also important in understanding community college and working Latinx students and as community college students have higher rates of independent students with dependents and that rate is even higher for Latinx students (Ma & Baum, 2016).

Hours worked while enrolled. Hours worked while enrolled is a key variable in this study. This variable is ordinal and is divided into hours worked with 0-2 as the referent. The hours worked are 0-2, 2-20, 21-35, and 36+. This breakdown is used in the

BPS survey to determine part-time vs full-time work, and the breakdown for the hours from 21-35 is added as some literature shows negative effects for part-time work over 20 hours (Hui et al., 2014). The effects of varying levels of student work are also discussed extensively in the literature review (chapter 2), as well as the associations between work hours at community colleges and four-year institutions.

On-Campus Work. The on-campus work variable describes whether a student worker's place of employment is on-campus. This variable is ordinal and is coded as on-campus work, off-campus work. This variable is also discussed extensively in the literature review (chapter 2) as well (Soliz & Long, 2016; Scott-Clayton, & Minaya, 2016).

Educational Endowments

GPA. High School GPA is a continuous variable on a 4.0 scale. High school GPA is a strong predictor in almost all the literature on student outcomes which includes success at the community college level measured as GPA and transfer, and higher baccalaureate attainment among Hispanic students (LaSota & Zumeta, 2016; Crisp & Nora, 2010). This variable is also discussed extensively in the literature review and Hispanic students at community colleges with a strong GPA are more likely to have success in their 3rd and 4th years of four-year college (Crisp & Nora, 2010).

Attendance Intensity. Attendance intensity is the variable that determines the student's course load throughout the quarter or semester. This variable is dichotomous and divided into part-time and full-time. Attendance intensity has been shown to predict successful transfer to four-year institutions as well as baccalaureate attainment (Wang, 2012; Lam, 2007)

Family Expectations

Parents' Education. Family expectations will be measured as Parent's Education, which is measured as an ordinal variable coded as did not complete High School, High School graduate, Some College, Baccalaureate degree, and Graduate degree. This variable is important for several reasons. Primarily, Latinx students with higher parental educational attainment also have higher degree attainment, yet Latinx students with parents that do not have college degrees achieve graduate degrees at higher rates than their Asian and White counterparts in Engineering and Science (NSF, 2017).

Science Socialization

STEM. The STEM variable is dichotomous and indicates whether a student has a Science, Technology, Engineering, or Math major. The variable is coded as 1=STEM, 2=Social Sciences and Humanities major. This variable is important in identifying the transfer and baccalaureate attainment of Latinx students in STEM fields and how work affects their outcomes.

Remedial Math Courses. Remedial math courses are an important variable with respect to the science socialization asset bundle. Community college students that begin their studies in remedial math courses are significantly less likely to transfer and graduate than those that begin with college-level math (Bahr 2013; Bahr, 2008; Bailey, 2009). Given that STEM majors require higher level math courses than non-STEM, this will potentially increase the time to transfer or degree. The remedial math course variable is ordinal and accounts from 0 courses to above 3 courses.

Network Development

Interaction with faculty. This variable describes whether students have positive interactions with their professors and is coded as 1=mostly negative, 2=neither, and 3=mostly positive.

Importance of Academic Advising. This variable predicts whether a student's belief that academic advising is important increases the likelihood that students will transfer to a four-year institution or achieve a baccalaureate degree. The variable is ordinal and coded as Not Important, Somewhat Important, Important, Very Important.

Sense of Belonging. Sense of Belonging has been extensively studied in higher education literature and is used to identify important networks students' have at their institutions in line with the asset bundle theory. This variable is ordinal and predicts whether a student feeling as part of the institution predicts transfer and baccalaureate degree attainment. Coding is 1= the student does not feel a part of the institution, 2= The student somewhat disagrees that they feel a part of the institution, 3=The student neither agrees nor disagrees that they feel a part of the institution, 4=The student somewhat agrees that they feel a part of the institution, 5=the student strongly agrees that they feel a part of the institution.

Interactions with Peers. This variable indicates whether students believe they have positive interactions with other students. Students are asked if their interactions with other students are positive and are coded as Disagree, Neither, or Agree.

Material Resources

Pell Grant. This variable predicts transfer and baccalaureate attainment for students that have received Pell Grants. This variable is ordinal and coded as $13-$1000, $1001-$2500, $2501-$4000, $4001-$5500. Pell Grants have been identified in the literature as associated

with higher transfer rates and baccalaureate attainment rates, particularly with Black and Latinx students (Carnevale et al., 2015).

Expected Family Contribution. This variable identifies the amount a student's family helped pay for education expenses in their first year of college. The variable is ordinal and coded from $0-$5000, $5001-$10,000, $10001-$15,000, and $15,001+.

Avoiding Loans by Working More. This variable identifies whether a student's job is to avoid falling further in debt because of student loans. The variable is dichotomous and coded as 1=Yes, 0=No. This variable is important in understanding the motive behind a student's employment and controlling for this variable may facilitate an understanding of the academic outcomes for students that work because they have no other option and those that work to limit the amount of debt they incur.

Institutional Variables

Institutional Selectivity. This is an institutional variable and indicates the selectivity of the institution the student attended. This variable is important because research has shown that students that attend selective institutions have higher rates of completion and retention (Alon & Tienda, 2005; Bowen, Chingos & McPherson, 2009; Long, 2008; Melguizo, 2005), however, other research has shown that institutional selectivity does not have an independent effect on graduation (Heil, Reisel, & Attewell, 2014). This study will attempt to identify direct effects on graduation when controlling for the various asset bundles. The variable will be ordinal and coded as 1=Very Selective, 2=Moderately Selective, 3=Minimally Selective, 4=Open Admission four-year institution, and 5=Community College.

Missing Data

Several variables in the analysis contain missing data because of unit non-response. To account for the missing data, a careful missing data analysis using the SPSS software was conducted. First, ran Little's missing completely at random test (LMCR) and the results indicate that the data were not missing completely at random (MCAR). Next, I examined the missing value patterns to determine whether data were missing at random (MAR) or not missing at random (NMAR). This analysis determines the direction to follow for multiple imputation. After careful analysis of the missing value tables, I identified that the most common missing value pattern was one which indicated that no missing value patterns were present across all variables. Although the most common pattern may be no missing values, there are often patterns with missing values across several variables. These numbers were much lower, therefore, I determined that multiple imputation would be the most appropriate method for handling missing data. Finally, multiple imputation for missing data was accomplished using the SPSS software, which also calculated the most appropriate method for the multiple imputations, and subsequently required the use of pooled results for the findings.

Limitations

This study suffers from several limitations related to the statistical methodology, data, and sample. First, this study uses logistic regression, which creates a limitation because of only identifying the direct effects of the independent variable on the dependent variable (Ranganathan, Pramesh, & Aggarwal, 2017). It does not account for indirect effects or latent variables. This study uses logistic regression to assess how strong the ability of the asset-bundle theory is on predicting completion and transfer. Once it is established that

this theory provides a strong foundation for assessing the various outcomes, further studies can begin to assess the indirect effects of the variables on transfer and completion.

Another limitation is that since the survey begins at the end of a student's first year, those students that dropped out in their first year are unable to participate in the survey. Therefore, it is difficult to assess how work affects transfer and completion for those students that drop out in their first year.

Next, the reason this study does not have a variable for net out of pocket cost is that net cost is calculated as a percentage of income, and this study already controls for income, thus it would violate the assumptions of logistic regression. Furthermore, when reading the codebook and performing descriptive analysis, there are significant variations in how out-of-pocket costs are identified year to year. Essentially, when considering income, both out-of-pocket cost when controlling for income and net cost as percentage of income should match, yet when running crosstabulations, this was not the case. Also, there was high multicollinearity with the out-of-pocket variable and material resource variables for the individual groups. This is highly inconsistent, so given the questionable nature of how these variables are coded, and the contradiction between them, I decided to leave these variables out of the model.

Finally, this study is limited by the sample sizes for the selected variables. For example, the number of working Asian students at community colleges was not sufficient to truly determine a conclusion for this population and was dropped from community college model.

CHAPTER FOUR: RESULTS

This chapter shares the results of the study. Two dependent variables were analyzed, using the Asset Bundles model proposed by Johnson and Bozeman (2012). First, the model was used to predict vertical transfer to a four-year institution for community college students, and then predict baccalaureate degree attainment for all students controlling for institutional selectivity. The primary objective of the study was to examine how working while enrolled in college affects transfer and baccalaureate degree attainment for Latinx students, controlling for various asset bundles and social identities. Furthermore, this study also analyzed Black, Asian, and White students' academic outcomes in order to ascertain the significance of each asset-bundle and social identity characteristic for each individual racial/ethnic group. Previous research (Hurtado et al, 2020) used Johnson and Bozeman's asset bundle model in order to test for significant predictors of college access and institutional selectivity for Latinx student's college enrollment. This previous study resulted in several significant predictors based on the various asset bundles, and the results presented here extend previous work by demonstrating that the theory also applies to transfer and degree completion outcomes. The various models in this chapter include logistic regression analyses for each individual racial/ethnic group (Latinx, Black, Asian, and White) as well as a model for all students that demonstrates how aspects of the model works differently for Latinx and other racial/ethnic groups. The separate racial group models allow for an in-depth analysis of each group, consequently providing characteristics unique to each community. Variables were organized according to the models' key areas: social identities, asset bundles, employment, and institutional selectivity.

Checking for Multicollinearity

Prior to analyses, collinearity diagnostics were performed to determine the extent of Multicollinearity. VIF and Pearson correlation coefficients were used to determine the strength of the relationship between the independent variables. While there is debate as to the level of correlation and VIF that is acceptable, for example, Kim (2019) advises caution for a VIF between 5 and 10. Vatcheva et al. (2016) explains that there is debate as to the acceptable levels of collinearity, with some using a VIF threshold of 5 and others 10. This study used a VIF of .6 and a correlation above .7 to establish any issues with multicollinearity. Collinearity diagnostics suggested that AP courses and High school gpa had problematic levels at a VIF of .767. Consequently, the AP course variable was removed from the study.

Comparing Effects Across Racial/Ethnic Groups

This chapter provides a comprehensive summary of the study's results according to the asset bundles with subsequent across racial group comparisons, using an appropriate test for the equality of regression coefficients to account for sample size differences (Paternoster et al., 1998). The following equation calculates significant differences, accounting for sample size:

$$z = \frac{b_1 - b_2}{\sqrt{SEb_1^2 + SEb_2^2}}$$

The equation for equality of regression coefficients helped answer the question as to whether one group's coefficients are significantly different from others. For the transfer dependent variable two z-scores were calculated for each significant Latinx predictor variable: Latinx v Black (LvB), and Latinx v White (LvW). For the community college

samples, Asian students had an insufficient sample size that precluded that racial group in separate analyses. However, Asian students were sufficient in sample size and were used in the baccalaureate degree attainment analyses. For the baccalaureate degree attainment samples, three z-scores were calculated for each significant Latinx predictor variable: Latinx v Black (LvB), Latinx v Asian (LvA), and Latinx v White (LvW). Since this study focuses on Latinx students, comparisons across racial groups were made in relation for Latinx students, and only coefficients for those significant predictors for Latinx students were calculated. For example, I compared Latinx students to Black, Asian, and White students, but did not compare Black students to Asian students or White students to Black students.

Odds Ratios

Since this study uses logistic regression analysis, the results are reported in odds ratios (exp B). An odds ratio of "1" means that the independent variable predicts that the event (i.e., transfer/no transfer) is equally likely to happen. An odds ratio less than "1" indicates that the event is less likely to happen, and an odds ratio more than "1" indicates that the event is more likely to happen. Therefore, odds ratios less than 1 indicate less likelihood of transfer or graduation, while odds ratios greater than 1 indicate a greater likelihood of transfer or graduation. For example, an odds ratio of 3 would indicate that a student is three times as likely to transfer than the reference group. Furthermore, to contextualize the odds ratios, if the odds ratio for a variable is 3.0, this means that the likelihood for a student to transfer would increase by 200%. Therefore, when using the terms 3 times as likely, this would indicate that a student is 200% more likely, while 2 times as likely indicates that a student is 100% more likely. Finally, if the odds ratio is .5,

this indicates that the student with characteristics of the independent variable is half as likely to transfer.

Predicting Vertical Transfer

Table 4.1 shows the results of the full student sample logistic regression analysis and initial correlations for vertical transfer, controlling for student employment while enrolled, the various asset bundles, and social identities (including race). First, Pearson correlations show prevalent patterns where Latinx and Black students have lower rates of transfer than White and Asian students. Working students have higher rates of transfer at lower work hours while students that work a higher number of hours have lower rates of transfer. However, when controlling for the various social identities and asset bundles in the multivariate models, the transfer disparities disappear for Latinx and Black students when compared with white students. In contrast, Asian Americans are more likely than all other groups to transfer. The total group regression results indicate that the model may explain racial and employment differences in probability of transfer, but separate group analyses are necessary to inform how assets may work differently for specific groups, including intersections of income and work experiences that differ within racial groups.

Other key findings that will be important to compare across groups in subsequent results include several social identities that are significant predictors for vertical transfer with being a non-citizen U.S. resident as the strongest positive predictor for transfer where non-citizen U.S. residents were 66.4% more likely (odds ratio of 1.664) to transfer than U.S. citizens. Asian students were 13.6% more likely (odds ratio of 1.136) to transfer than White students while differences for Latinx and Black students were not significant when controlling for other variables. Next, the strongest negative predictor was being a low-

income student (below $35,000 per year). These students were 41.7% less likely (odds ratio .583) as high-income students (above $75,000 per year) to transfer. Another strong negative significant predictor for transfer was having dependents, where students were 23.5% less likely (.765 odds ratio) to transfer than students without dependents.

Important findings that need further analysis in individual groups also include educational endowments, where the full sample results show that they play an important role in vertical transfer. Both educational endowment variables were significant predictors of transfer, with high school GPA as a strong positive predictor and part-time attendance as a strong negative predictor. In fact, part time attendance was one of the strongest negative predictors in the entire model, as students that attended part-time were 30.8% less likely (.692 odds ratio) to transfer than students who attended full-time.

Selected as a proxy for family expectations, the Parental Education variable indicates that students with parents that have higher levels of education are significantly more likely ($p<.001$) to transfer than students with parents at lower levels of education. This variable can also be further explored in individual group analysis.

Another important group of variables that were not significant but will be included in separate group analyses are the Science Socialization college variables. In the full sample, results indicated that there were no significant differences in transfer between STEM major and Social Science and Humanities major or students taking remedial math courses in college.

A student's Material Resources had a significant effect on vertical transfer for the full sample. Both Pell grants and expected family contributions were positive significant predictors for vertical transfer. However, Pell grants were initially negatively correlated

with transfer, yet when controlling for other variables in the model, Pell grants became positive predictors for transfer ($p<.001$). Thus, this is an important variable to further explore in individual group analyses, and suggests how assets work together to ensure transfer

In the Social Network Development asset bundle, how important a student viewed academic advising while initially positively correlated with vertical transfer, became insignificant once controlling for other variables. This also occurred with student sense of belonging. However, in the survey most students identified that they felt that they were part of the institution (the community college), which may have influenced the outcome.

Since this study focuses on working students, it is critical to identify the effects of varying levels of student work on transfer. These are variations in experience that also must be explored within racial groups. Initial correlations identified work from 2-20 hours of work per week and 21-35 hours of work per week as positively correlated with transfer, while full-time work (35+ hours per week) was weakly correlated with transfer. Once controlling for the various asset bundles and social identities, all levels of student work were positive predictors of transfer when compared to students that did not work at all. Students that work 2-20 hours had the highest odds of transfer with almost twice as likely (1.96 odds ratio or 96% more likely) to transfer than non-working students($p<.001$). Students that worked 21-35 hours per week were 36% more likely (1.36 odds ratio) to transfer than non-working students($p<.001$). Finally, students that worked full-time were 12% more likely (1.12 odds ratio) to transfer than non-working students($p<.001$). On campus employment, while initially positively correlated with vertical transfer, became insignificant after controlling for social identities and asset bundles. These findings provide

evidence that indicates that working during college is not a detriment to transfer, so long as students possess other important assets or are assisted in obtaining them. This is further confirmed in separate group analyses conducted by racial group.

Table 4.1 Predicting Vertical Transfer to 4-year Institution, All Community College Students (Weighted *N*=5,230)

	R	*b*	*Standard Error*	*sig*	*exp(B)*
Social Identities					
<35,000	-.129***	-.540***	.131	.000	.583
35,000-75,000	.035*	-.083	.059	.156	.920
75,000+ (referent)					
Gender					
Female (male)	.027	.067	.070	.332	1.070
Citizenship					
Non-Citizen (resident)	.056***	.509***	.135	.000	1.664
International Student	-.116***	-.015	.085	.862	.985
US citizen (referent)					
Dependents	-.115***	-.268*	.119	.024	.765
Race					
Latinx	-.029*	-.023	.028	.424	.978
Black	-.045**	.034	.049	.487	1.035
Asian	.072***	.128***	.039	.001	1.136
White (referent)					
Educational Endowments					
HS GPA	.115***	.069***	.016	.000	1.071
Part-Time attendance	-.116***	-.368***	.067	.000	.692
Family Expectations					
Parent's Education	.097***	.090***	.027	.001	1.094
Science Socialization					
Social Sciences/ Humanities major	.023	.124	.095	.188	1.132
STEM major (referent)					
Remedial Math Course	.000	-.007	.048	.885	.993
Material Resources					
Offered Pell Grant	-.032*	.114***	.035	.001	1.121
Expected Family contribution	.111***	.139*	.062	.024	1.149
Avoiding Loans through work while enrolled	.004	-.016	.019	.417	.985
Network Development					
Quality of interaction with faculty	.020	.117	.080	.147	1.124
Importance of academic advising while in college	.078***	.014	.010	.152	1.014
Sense of belonging	.033*	.038	.036	.293	1.039
Quality of Interactions with Friends	-.036*	.102	.056	.067	1.108
Employment					
Hours worked per week while attending College					
0-1(referent)					
2-20	.211***	.676***	.049	.000	1.967
21-35	.130***	.312***	.029	.000	1.367
36+	-.005	.116***	.027	.000	1.122
On Campus employment	.086***	.239	.149	.108	1.270

Note: Measures were weighted using the NCES construct WTA000 to adjust for nonresponse bias and reflect the original sample size. **p=<.05; **p=<.01, ***p=<.001.* The sample is composed of all community college students who stated their intent was to obtain a baccalaureate degree. Source: U.S. Department of Education, National Center for Education Statistics, Beginning Postsecondary Students Survey, 2012-2017

To avoid repeating results with each group. The next sections follow aspects of the model to report independent variables that influence transfer and compare groups. Because the

main focus is understanding Latinx, I begin with that group and compare results. Table 4.2 shows the results of the Latinx student sample logistic regression analysis and initial correlations for vertical transfer controlling for student employment while enrolled, and the various asset bundles. Since this sample only includes Latinx students, results identify specific social identities, asset bundles, and student employment behaviors that are unique to Latinx students. Furthermore, equality of regression coefficients is used to compare racial groups and are shown in this model. First, Pearson correlations show prevalent patterns where low income Latinx students have lower rates of transfer than Latinx students from other income groups. Working Latinx students have higher rates of transfer at lower work hours while students that work a higher number of hours have lower rates of transfer. However, when controlling for the various social identities and asset bundles, the transfer disparities begin to disappear for Latinx low-income students (i.e., effects are non-significant), and are approximately the same across all Latinx income groups.

Table 4.2 Predicting Vertical Transfer to 4-year Institution for Latinx Community College Students (*N*=1,100)

	r	*b*	*Standard Error*	*sig*	*exp(B)*	*LvB*	*LvW*
Social Identities							
Income							
<35,000	-.098***	-.115	.316	.716	.891		
35,000-75,000	.052	.085	.146	.563	1.088		
75,000+ (referent)							
Gender							
Female (male)	-.005	-.076	.150	.611	.927		
Citizenship							
Non-Citizen (resident)	.036	.326	.224	.145	1.386		
International student	-.013	-.077	.177	.665	.926		
U.S. Citizen (referent)							
Dependents	-.151***	-.972**	.349	.005	.378	-1.862	-1.254
Educational Endowments							
High School GPA	.137***	.106*	.046	.022	1.112	0.182	0.338
Part-Time attendance	-.150***	- .479***	.149	.001	.619	-1.138	-0.289
Family Expectations							
Parent's Education	.043	.045	.050	.368	1.046		
Science Socialization							
Social Sciences/Humanities major	.074*	.419*	. 212	.049	1.520	.401	1.403
STEM major (referent)							

Remedial Math Course	.020	.073	.098	.459	1.076		
Material Resources							
Offered Pell Grant	.030	.116	.072	.106	1.123		
Expected Family contribution	.098***	.369*	.174	.034	1.447	-0.748	1.374
Avoiding Loans through work while enrolled	-.012	-.023	.042	.585	.977		
Network Development							
Quality of interaction with faculty	.073*	.326	.179	.071	1.385		
Importance of academic advising while in college	.087**	.020	.022	.352	1.020		
Sense of belonging	.035	-.098	.071	.176	.902		
Quality of Interactions with Friends	-.056	.088	.128	.491	1.092		
Employment							
Hours worked per week while attending College							
0-1(referent)							
2-20	.178***	.582***	.100	.000	1.790	.373	-1.096
21-35	.139***	.315***	.062	.000	1.370	.224	-0.438
36+	-.006	.093	.059	.113	1.097		
On Campus employment	.099***	.652*	.319	.041	1.920	.537	.797

Note: Measures were weighted using the NCES construct WTA000 to adjust for nonresponse bias and reflect the original sample size. **p=<.05; **p=<.01, ***p=<. 001.* Source: U.S. Department of Education, National Center for Education Statistics, Beginning Postsecondary Students Survey, 2012-2017

Table 4.3 shows the results of the Black student sample logistic regression analysis and initial correlations for vertical transfer controlling for student work while enrolled, the various asset bundles, and institutional characteristics. Since this sample only includes Black students, the model identifies specific social identities, asset bundles, and student employment behaviors that are unique to Black students. First, Pearson correlations show prevalent patterns where low-income Black students have lower rates of transfer than high income Black students (p<.001). Working students have higher rates of transfer at lower work hours while students that work a higher number of hours have lower rates of transfer. However, when controlling for the various social identities and asset bundles, the transfer disparities are no longer significant for Black low-income students.

Table 4.3 Predicting Vertical Transfer to 4-year Institutions for Black students (Weighted *N=980*)

	r	*b*	*Standard Error*	*sig*	*exp(B)*

Social Identities					
Income <35,000	-.124***	-.122	.424	.774	.885
35,000-75,000	.076**	.143	.202	.481	1.153
75,000+ (referent)					
Gender Female	.037	.223	.166	.178	1.250
(male)					
Citizenship Non-Citizen	.044	.490	.297	.099	1.632
(resident)					
International Student	.003	-.016	.191	.932	.984
U.S. Citizen (referent)					
Dependents	-.097**	-.193	.231	.402	.824
Educational Endowments					
HS GPA	.116***	.096**	.034	.005	1.101
Part-Time attendance	-.078*	-.232	.158	.142	.793
Family Expectations					
Parent's Education	.100**	.120*	.059	.042	1.128
Science Socialization					
Social Science/Humanities Major	.019	.288	.237	.225	1.334
Remedial Math Course	.065*	.157	.099	.114	1.170
Material Resources					
Pell Grant amount	-.005	.141	.080	.076	1.152
Expected Family contribution	.124***	.571**	.209	.006	1.770
Avoiding Loans through work while enrolled	.018	-.019	.045	.680	.982
Network Development					
Quality of interaction with faculty	-.032	-.117	.172	.496	.889
Importance of academic advising while in college	.034	.020	.023	.389	1.020
Sense of belonging	.043	.004	.075	.962	1.004
Quality of Interactions with Friends	.046	.297*	.126	.018	1.346
Employment					
Hours worked per week while attending College					

0-1(referent)					
2-20	.136***	.522***	.125	.000	1.686
21-35	.128***	.293***	.076	.000	1.340
36+	.020	.111	.061	.068	1.118
On Campus employment	.087**	.404	.346	.242	1.498

Note: Measures were weighted using the NCES construct WTA000 to adjust for nonresponse bias and reflect the original sample size. **p=<.05; **p=<.01, ***p=<.001.* Source: U.S. Department of Education, National Center for Education Statistics, Beginning Postsecondary Students Survey, 2012-2017

Table 4.4 shows the results of the White student sample logistic regression analysis and initial correlations for vertical transfer controlling for student work while enrolled, the various asset bundles, and institutional characteristics. Since this sample only includes White students, it is unique insofar as it can identify what specific social identities, asset bundles, and student employment behaviors that are unique to White students. Pearson correlations show prevalent patterns where low-income (below $35,000) White students have lower rates of transfer than high-income (Above $75,000) White students. Working students have higher rates of transfer at lower work hours while students that work a higher number of hours have lower rates of transfer. However, one interesting finding that departs from other racial groups is that White student initial correlations mostly remained significant when controlling for various asset bundles, social identities, and work-related behaviors. That is, low-income White students are significantly less likely to transfer regardless of asset bundles.

Table 4.4 Predicting Vertical Transfer to 4-year Institution for White Students (Weighted *N=3400*)

	r	*B*	*Standard Error*	*sig*	*exp(B)*
Social Identities					
<35,000	-.130***	-.496***	.149	.001	.609
35,000-75,000	.020	-.101	.065	.121	.904
75,000+(referent)					
Gender					
Female (male)	.018	.011	.083	.896	1.011
Citizenship					

Non-Citizen (US Resident)	.036*	.617***	.189	.001	1.853
International Student	-.010	-.068	.121	.576	.934
U.S. citizen (referent)					
Dependents	-.122***	-.300*	.148	.043	.741
Educational Endowments					
HS GPA	.113***	.055**	.020	.006	1.057
Part-Time attendance	-.127***	-.430***	.080	.000	.651
Family Expectations					
Parent's Education	.111***	.117***	.033	.000	1.124
Science Socialization					
Social Sciences/Humanities Major	.020	.085	.111	.445	1.089
Remedial Math Course	-.018	-.068	.060	.252	.934
Material Resources					
Offered Pell Grant	-.041*	.098*	.043	.022	1.102
Expected Family contribution	.117***	.112	.068	.099	1.119
Avoiding Loans through work while enrolled	.001	-.020	.023	.374	.980
Network Development					
Quality of interaction with faculty	.024	.120	.089	.177	1.128
Importance of academic advising while in college	.077***	.006	.012	.635	1.006
Sense of belonging	.029	.037	.046	.427	1.037
Quality of Interactions with Friends	-.047**	.089	.068	.191	1.093
Employment					
Hours worked per week while attending College 0-1(referent)					
2-20	.215***	.707***	.058	.000	2.027
21-35	.139***	.346***	.034	.000	1.414
36+	-.001	.142***	.032	.000	1.153
On Campus employment	.096***	.360*	.179	.044	1.433

Note: Measures were weighted using the NCES construct WTA000 to adjust for nonresponse bias and reflect the original sample size. **p=<.05; **p=<.01, ***p=<.001.* Source: U.S. Department of Education, National Center for Education Statistics, Beginning Postsecondary Students Survey, 2012-2017

Within Group Social Identity Findings and Transfer

This study's Latinx student sample results show that the strongest negative social identity predictor was having any dependents where the student provided more than half their financial support. A student with dependents was 22.2% (.378 odds ratio) less likely ($p<.01$) to transfer than a student without dependents whom they must financially support (at least 50%). Other social identity variables were insignificant, however, being low-income was initially negatively correlated with vertical transfer until controlling for other asset variables. Latinx students are significantly more likely to be first generation in college, and therefore low-income compared to all other racial groups (Balemian & Feng, 2013), indicating that other assets are key to successful transfer.

The Black student sample also shows that the social identities did not result as significant predictors for transfer according to logistic regression analyses. However, being low income and having dependents was initially negatively correlated ($p<.001$) with transfer, yet when controlling for other asset variables, there was no statistical significance. In contrast to other groups, logistic regression analyses show being low-income, and White is a negative predictor for transfer ($p<.001$), where low-income Whites are39.1% (.609 odds ratio) less likely to transfer than high income White students. The strongest positive predictor for White students was being a non-citizen U.S. resident ($p<.001$), while a significant negative predictor was having dependents ($p<.05$).

When comparing equality of coefficients across groups Latinx v Black (LvB) and Latinx v White (LvW) show no significant differences even though results show that dependency is not a predictor for transfer for Black students. Instead, the results show how

identity characteristics work slightly differently within racial groups can be explained by assets the student possesses or that institutions provide.

Asset Bundle: Educational Endowments

Among the Latinx sample, Educational Endowments show that high school GPA is a positive predictor for transfer ($p<.05$), but it is not the strongest predictor. Part-time attendance is the strongest negative predictor for transfer. Part-time Latinx students are 38.1% (.619 odds ratio) less likely to transfer($p<.001$) as full-time Latinx students.

In contrast, Educational Endowments measured as high school GPA is a strong positive predictor for Black transfer students ($p<.01$). Part-time attendance was initially negatively correlated ($p<.05$) with transfer for Black students, but when controlling for other asset variables part-time attendance did not predict transfer. Similarly, among White students, results show high school GPA as a strong positive predictor for vertical transfer ($p<.01$). However, part-time attendance is a very strong negative predictor for transfer ($p<.001$).

High school GPA was a significant positive predictor across all groups, and tests of the equality of regression coefficients show no significant differences comparing Latinx and the other two groups.

Asset Bundle: Family Expectations

Results among the Latinx students sample show no significant difference with respect to parental education level, while Black students' parental education was a significant positive predictor for transfer ($p<.05$), and White students' parental education as a *strong* positive predictor ($p<.001$) for vertical transfer. Across group comparisons

were not calculated for this asset bundle for transfer since the result for Latinx students was not statistically significant.

Asset Bundle: Science Socialization

Latinx students that majored in non-STEM fields (Social Sciences and Humanities) were 52% more likely (odds ratio 1.52) to transfer than STEM majors($p<.05$). Black students had no significant differences with respect to transfer for STEM majors vs Social Sciences and Humanities majors. Math remediation was initially negatively correlated ($p<.05$) with transfer for Black students, yet when controlling for other variables, it was also not a significant predictor for transfer. Similarly, having a Social Sciences and Humanities major or math remediation were not predictive of transfer for the White student sample. Across group coefficient comparisons result in no significant differences across groups when comparing Latinx to Black and Latinx to White students.

Asset Bundle: Material Resources

The expected family contribution among Latinx students was the strongest positive predictor for transfer ($p<.05$). Similarly, among the Black student sample, the expected family contribution was the strongest positive predictor for transfer ($p<.05$). Although expected family contributions resulted as a positive significant predictor for all three groups, equality of regression coefficients showed no statistical significance across the groups. Material resources in the form of Pell grants was an interesting finding for the White student population. While Pell grants were initially negatively correlated ($p<.05$) with transfer, once controlling for all other variables, receiving a Pell grant became a positive predictor ($p<.05$).

Asset Bundle: Network Development

Among Latinx students, the importance of academic advising ($p<.001$) and how positively a student perceived their interaction with faculty ($p<.05$) were both initially positively correlated with transfer, but this became non-significant when controlling for other asset variables. Black students' strongest network development positive predictor was how positively they perceived their interaction with friends. Therefore, Black students that had more positive interactions with friends were significantly more likely to transfer ($p<.05$). In contrast, White students had no significant predictor variables for transfer with respect to network development in the multivariate analysis; however, students perceived academic advising was initially positively correlated($p<.001$), while positive interactions with their friends was negatively correlated($p<.01$) with transfer.

The Network Development asset-bundle yielded different statistically significant variables for each group, and while networks are important, other assets are unique contributors to transfer. Black students were the only group where peer networks positively predicted transfer.

Employment Hours During College (2013-2014)

This study's Latinx student sample results show that the strongest positive predictor for vertical transfer ($p<.001$) is having a part-time job working below 35 hours per week. Latinx students that worked 2-20 hours per week were 79% more likely (odds ratio 1.79) to transfer as non-working students, while those that worked 21-35 hours per week were 37% more likely (odds ratio 1.37) to transfer than non-working students. Finally, students that worked full-time showed no significant differences when compared to non-working students. Working on campus was also a positive predictor for vertical transfer ($p<.05$).

The strongest predictor for Black student vertical transfer was having a part-time job with low levels of student work ($p<.001$). Black students working between 2-20 hours per week were 1.68 times 68% more likely (odds ratio 1.68) to transfer than non-working students, while those that worked between 21-35 hours were 34% more likely (odds ratio 1.34) to transfer than non-working students. Full-time work was not predictive of transfer when compared to non-working students, and on campus work, while initially positively correlated with transfer, was also not predictive once controlling for the various asset bundles and Black social identities.

Working while enrolled was also a strong positive predictor of vertical transfer for White students at all levels of work ($p<.001$). White students that worked 2-20 hours per week were 102% (odds ratio 2.02) more likely to transfer than non-working students, while those that worked 21-35 hours per week were 41 % (odds ratio 1.41) more likely to transfer than non-working students. Finally, even full-time workers were more likely to transfer than non-working students (15% times more likely). On-campus employment also predicted transfer. White students that worked on campus were 14% (odds ratio 1.14) more likely ($p<.05$) to transfer than those students that did not work on campus.

Equality of regression coefficients yielded no significant differences across groups for employment characteristics. Although, all three groups had low levels of part-time work as a positive significant predictor for transfer.

Predicting Baccalaureate Six-Year Degree Attainment

Table 4.5 shows the results of the full student sample logistic regression analysis and initial correlations for baccalaureate degree attainment, controlling for student work while enrolled, the various asset bundles, social identities (including race) and institutional

selectivity. First, Pearson correlations show prevalent patterns where Latinx and Black students have lower rates of baccalaureate degree attainment than White students ($p<.001$). Working students have higher rates of baccalaureate attainment at lower work hours and lower rates of attainment at higher work hours; however, when controlling for the various social identities, asset bundles, and institutional selectivity, the work disadvantage becomes insignificant even at higher work hours.

Key findings that are important to compare across groups in subsequent results include several social identities that are significant predictors for baccalaureate attainment for this study's full sample. Students with family incomes below $35,000 per year are one of the strongest negative predictors ($p<.001$) for baccalaureate attainment, and low-income students are 52.2% less likely (odds ratio .478) to graduate than high income (above $75,000) students. Middle income ($35,000-$75,000) students are also less likely to graduate than high income students ($p<.001$), yet their likelihood is .867 (or 13.3% less likely). Females are more likely to graduate than males ($p<.001$) and so are non-US citizen residents. Black students are significantly less likely to graduate than White students ($p<.001$) with an odds ratio of .793 (or 21.7% less likely), and Latinx students are also significantly less likely ($p<.05$) with an odds ratio of .952 (or 4.8% less likely) to graduate than White students. Students with dependents were also significantly less likely (odds ratio .638, $p<.001$) to graduate than students without dependents. It is important to identify how important each of these variables are within each racial group.

Other key findings in the full sample that are indicative of further separate racial group inquiry include both educational endowment variables, which were significant predictors of graduation, with high school GPA as a strong positive predictor ($p<.001$) and

part-time attendance as a strong negative predictor (p<.001). In fact, part time attendance was one of the strongest negative predictors in the entire model, as students that attended part-time were 39.3% (odds ratio .607) less likely to graduate than students who attended full-time.

The next findings that signal further inquiry across groups is math remediation, which results as a significantly negative predictor for baccalaureate attainment for all students. Parental level of education was also a variable where students were significantly more likely to graduate if they had parents with higher levels of education than students who came from households where parents have lower levels of education (p<.001). This is important to investigate with Latinx students since they are the racial group with the lowest levels of parental education (Araque, Wietstock & Cova, 2017).

A student's material resources had a significant effect on baccalaureate attainment for the full sample. All three variables were positive and significant predictors for graduation: Pell grant amount (p<.01), expected family contributions (p<.001), and avoiding loans through working while enrolled (p<.01). However, Pell grants were initially negatively correlated with college completion, yet when controlling for other variables, Pell grants became positive predictors for BA attainment (p<.001).

In terms of Network Development, positive interactions with faculty, how important a student viewed academic advising, and sense of belonging were all strong significant positive predictors for baccalaureate degree attainment (p<.001) in the full sample.

Initial correlations identified work from 2-20 hours of work per week as positively correlated with baccalaureate attainment, while full-time work (35+ hours per week) was negatively correlated with graduation. Once controlling for the various asset bundles and

social identities, part-time levels of student work (below 35 hours) were positive predictors of BA completion when compared to students that did not work at all. However, full-time work (above 36 hours) was a negative predictor for graduation. Students that work 2-20 hours had the highest odds of baccalaureate attainment and were 71% more likely (odds ratio 1.71) to graduate than non-working students($p<.001$). Students that worked 21-35 hours per week were 16% times more likely (odds ratio 1.16) to graduate than non-working students($p<.001$). Surprisingly, there were no significant differences between students that worked full-time and non-working students when controlling for all other asset variables. Students that worked on campus were 50% more likely (odds ratio 1.50) to graduate than students who did not work on campus. Further separate racial group analyses can provide a more in depth understanding of how employment functions differently with each racial/ethnic group.

Because BA attainment depends on both student and institutional factors (Titus, 2006), the type of institution was also added to the college completion model. Institutional selectivity plays a significant role in predicting baccalaureate degree attainment. For the full sample, the higher the selectivity level of the institution, the more likely a student was to graduate. For example, students whose first institution was a community college were 88.9% less likely (odds ratio .111) to attain a baccalaureate degree within six years when compared to students that attended highest selectivity institutions first. Students that began at open-admission four-year institutions were 80.2% less likely (odds ratio .198) to graduate than those at the highest selectivity schools, while those at minimally selective four-year colleges were 49.3% less likely (odds ratio .507) to complete college. Finally, students at moderately selective institutions were 34.7% less likely (odds ratio .653) to

finish than those at the highest selectivity institutions. Extensive separate group analyses and results are provided in the next section for the aforementioned asset bundle measures.

Table 4.5 Predicting Six-Year Bachelor Degree Attainment, All Students (Weighted *N*=14,980)

	r	*b*	*Standard Error*	*sig*	*exp(B)*
Social Identities					
Income					
<35,000	-.316***	-.739***	.099	.000	.478
35,000-75,000	-.015	-.143***	.039	.000	.867
Gender					
Female (male)	.059***	.196***	.050	.000	1.216
Citizenship					
Non-Citizen (resident)	-.010	.509***	.116	.000	1.664
International Student	-.002	.056	.061	.357	1.058
Dependents	-.190***	-.450***	.140	.001	.638
Race					
Latinx	-.108***	-.050*	.022	.027	.952
Black	-.147***	-.232***	.038	.000	.793
Asian	.069***	.042	.027	.115	1.043
Educational Endowments					
HS GPA	.311***	.183***	.019	.000	1.201
Part-Time attendance	-.264***	-.500***	.055	.000	.607
Family Expectations					
Parent's Education	.269***	.128***	.021	.000	1.136
Science Socialization					
Social Sciences /Humanities Major STEM major (referent)	.073***	.034	.061	.577	1.035
Remedial Math Course	-.203***	-.179***	.0456	.000	.836
Material Resources					
Offered Pell Grant	-.190***	.086**	.028	.002	1.089
Expected Family contribution	.316***	.175***	.035	.000	1.191
Avoiding Loans through work while enrolled	.047***	.041**	.014	.003	1.042
Network Development					
Quality of interaction with faculty (Positive)	.081***	.218***	.055	.000	1.244
Importance of academic advising while in college	.221***.	.042***	.008	.000	1.043
Sense of belonging	.116***	.097***	.025	.000	1.098
Quality of Interactions with Friends	-.128***	.062	.043	.152	1.064
Employment					
0-1(referent)					
*2-20****	.336***	.540***	.032	.000	1.716
*21-35****	.005	.153***	.022	.000	1.165
36+	-.113***	-.043	.023	.065	.958
On Campus employment	.310***	.410***	.069	.000	1.507
Community College (first institution)	-.507***	-2.197***	.076	.000	.111
Open Admission (four year)	-.141***	-1.618***	.103	.000	.198
Minimally Selective	.067***	-.679***	.100	.000	.507
Moderately Selective	.273***	-.426***	.070	.000	.653
Very Selective (referent)					

Note: Measures were weighted using the NCES construct WTA000 to adjust for nonresponse bias and reflect the original sample size. **p=<.05; **p=<.01, ***p=<.001.* Source: U.S. Department of Education, National Center for Education Statistics, Beginning Postsecondary Students Survey, 2012-2017

Table 4.6 shows Latinx student sample results from logistic regression analysis and initial correlations for baccalaureate attainment, controlling for student work while enrolled, the various Asset Bundles, and institutional characteristics (selectivity). Since this sample only includes Latinx students, it can identify specific social identities, Asset Bundles, institutional characteristics, and student employment behaviors that are unique to Latinx students. Furthermore, equality of regression coefficients is used in order to compare Latinx students to the other three racial/ethnic groups. Pearson correlations show prevalent patterns where low- income Latinx students are less likely to attain a BA degree compared to high income Latinx students. Working while enrolled is positively correlated with degree attainment at lower work hours while Latinx students that work a higher number of hours have a negative correlation with graduation. However, when controlling for the various social identities, asset bundles, and institutional characteristics, the graduation disparities begin to disappear for Latinx students that work even at higher hours. This suggests that working during college is not a detriment to Latinx degree attainment if they have requisite assets and institutional support as identified in the model. Detailed comparisons regarding all aspects of the model follow the tables for other racial groups.

Table 4.6. Predicting Bachelor Six -Year Degree Attainment, Latinx Students (Weighted *N*=2,180)

	r	*b*	*S.E.*	*sig*	*exp(B)*	*LvB*	*LvA*	*LvW*
Social Identities								
Income								
<35,000	-.200***	-.733***	.261	.005	.481	1.287	-1.382	-0.663
35,000-75,000	.000	-.264*	.113	.020	.768	0.122	-0.866	-0.373
75,000+ (referent)								
Gender								
Female (male)	.075***	.181	.124	.144	1.198			
Citizenship								
Non-Citizen (US resident)	-.048*	.349	.216	.107	1.417			
International student	.018	.176	.132	.183	1.192			

U.S.Citizen (referent)								
Dependents	-.176***	-1.223***	.373	.001	.294	-1.161	-0.325	-2.050*
Educational Endowments								
HS GPA	.279***	.210***	.052	.000	1.234	1.894	-0.649	-0.141
Part-Time attendance	-.281***	-.477***	.131	.000	.621	0.421	1.156	2.239*
Family Expectations								
Parent's Education	.163***	.052	.043	.228	1.053			
Science Socialization								
Social Sciences/Humanities Major	.096***	.152	.158	.336	1.164			
STEM major (referent)								
Remedial Math Course	-.146***	-.146	.099	.140	.864			
Material Resources								
Pell Grant	-.019	.122	.065	.058	1.130			
Expected Family contribution	.238***	.095	.106	.372	1.099			
Avoiding Loans through work while enrolled	.060**	-.033	.034	.336	.968			
Network Development								
Quality of interaction with faculty (Positive)	.065**	.238	.144	.101	1.269			
Importance of academic advising while in college	.238***	.052**	.019	.005	1.054	-0.447	2.130*	.429
Sense of belonging	.063**	.007	.064	.898	1.008			
Quality of Interactions with Friends	-.096***	.052	.110	.639	1.053			
Employment								
Hours worked per week while attending College 0-1(referent)								
2-20	.269***	.408***	.080	.000	1.504	-1.178	0.970	-1.721
21-35	.057***	.241***	.053	.000	1.272	0.559	3.118*	1.47
36+	-.092***	.030	.056	.594	1.030			
On Campus employment	.327***	.687***	.179	.000	1.988	1.789	-0.337	1.332
Institutional Selectivity								
Community College (1st institution)	-.504***	-2.432***	.195	.000	.088	1.051	-0.604	-1.467
Open Admission (four-year)	-.092***	-1.810***	.254	.000	.164	-0.738	1.24	-0.849
Minimally Selective	.112***	-.537*	.262	.040	.584	1.151	-0.489	0.147
Moderately Selective	.286**	-.549*	.186	.003	.578	-0.054	-0.045	-0.870
Very Selective (referent)								

Note: Measures were weighted using the NCES construct WTA000 to adjust for nonresponse bias and reflect the original sample size. **p=<.05; **p=<.01, ***p=<.001.* Source: U.S. Department of Education, National Center for Education Statistics, Beginning Postsecondary Students Survey, 2012-2017

Table 4.7 shows the Black student sample logistic regression analysis and initial correlations for baccalaureate attainment, controlling for student work while enrolled, the

various asset bundles, and institutional characteristics. First, Pearson correlations show prevalent patterns where low-income Black students have a negative correlation with degree attainment when compared to high income Black students. After controlling for asset bundles and institutional selectivity, these income differences remain significant. Working while enrolled is positively correlated with degree attainment at lower work hours but working a higher number of hours has a negative correlation with graduation. However, another interesting finding is when controlling for the various social identities, asset bundles, and institutional characteristics, completion disparities become non-significant for Black students that work even at higher hours.

Table 4.7 Predicting Bachelor Six-Year Degree attainment, Black Students (Weighted *N*=2180)

	r	*b*	*Standard Error*	*sig*	*exp(B)*
Social Identities					
Income					
<35,000	-.277***	-1.231***	.287	.000	.292
35,000-75,000	-.090***	-.284*	.122	.020	.752
75,000+ (referent)					
Gender					
Female (male)	.045*	.183	.126	.148	1.200
Citizenship					
Non-Citizen (resident)	.055*	.918***	.247	.000	2.505
International student	.011	-.001	.151	.997	.999
U.S. citizen (referent)					
Dependents	-.201***	-.647	.327	.048	.523
Educational Endowments					
HS GPA	.201***	.085*	.040	.036	1.088
Part-Time attendance	-.240***	-.560***	.148	.000	.571
Family Expectations					
Parent's Education	.146***	.045	.051	.384	1.046
Science Socialization					
Social Sciences/ Humanities Major	.053*	-.084	.162	.601	.919
STEM major (referent)					
Remedial Math Course	-.154***	-.082	.106	.442	.921
Material Resources					
Offered Pell Grant	-.090***	.176*	.070	.011	1.193
Expected Family contribution	.239***	.341**	.129	.008	1.407
Avoiding Loans through work while enrolled	.025	-.004	.036	.921	.996
Network Development					
Quality of interaction with faculty (Positive)	.038	.124	.140	.382	1.131
Importance of academic advising while in college	.223***	.064***	.019	.001	1.066
Sense of belonging	.011	.101	.061	.097	1.101

Quality of Interactions with Friends	.038	.168	.108	.119	1.183
Employment					
Hours worked per week while attending College 0-1(referent)					
2-20	.339***	.627***	.085	.000	1.872
21-35	.051*	.198***	.056	.000	1.218
36+	-.080***	-.049	.061	.426	.952
On Campus employment	.302***	.245	.172	.155	1.278
Institutional Selectivity					
Community College (First Institution)	-.457***	-2.520***	.214	.000	.080
Open Admission (Four-year)	-.096***	-1.544***	.258	.000	.295
Minimally Selective	.043*	-1.221***	.256	.000	.295
Moderately Selective	.307***	-.535**	.184	.004	.586
Very Selective (referent)					

Note: Measures were weighted using the NCES construct WTA000 to adjust for nonresponse bias and reflect the original sample size. **p=<.05; **p=<.01, ***p=<.001.* Source: U.S. Department of Education, National Center for Education Statistics, Beginning Postsecondary Students Survey, 2012-2017

Table 4.8 shows the Asian student results from logistic regression analysis and initial correlations for baccalaureate attainment controlling for student work while enrolled, the various Asset Bundles, and institutional characteristics. Pearson correlations show prevalent patterns where low-income Asian students have a negative correlation with degree attainment when compared Asian students from high income families. Working while enrolled is positively correlated with degree attainment at lower work hours (2-20), yet when Asian students work above 21 hours there is a negative employment correlation with graduation. However, when controlling for the various social identities, asset bundles, and institutional characteristics, work becomes a non-significant predictor even above 21 hours. This suggests that working or not working does not predict Asian college completion so long as they possess other assets or college support.

Table 4.8 Predicting Six-Year Bachelor Degree attainment, Asian students (Weighted *N*=1020)

	r	*b*	*Standard Error*	*sig*	*exp(B)*
Social Identities					
<35,000	-.243***	-.462	.358	.197	.630
35,000-75,000	.039	.067	.162	.678	1.070
Gender					
Female (male)	.099***	.255	.176	.147	1.290
Citizenship					
Non-Citizen (resident)	.015	.580**	.223	.009	1.786
International student	-.033	.044	.119	.713	1.045

U.S. Citizen (referent)					
Dependents	-.129***	-.975	.665	.143	.377
Educational Endowments					
HS GPA	.329***	.272***	.080	.001	1.313
Part-Time attendance	-.252***	-.206	.196	.292	.814
Family Expectations					
Parent's Education	.149***	.024	.061	.699	1.024
Science Socialization					
Social Sciences/Humanities Major	.131***	.279	.193	.147	1.322
STEM major (referent)					
Remedial Math Course	-.216***	-.313	.181	.083	.731
Material Resources					
Pell Grant	-.141***	-.014	.091	.878	.986
Expected Family contribution	.243***	.094	.135	.487	1.098
Avoiding more Loans through work while enrolled	.033	.018	.049	.714	1.018
Network Development					
Quality of interaction with faculty (Positive)	.016	-.155	.184	.401	.857
Importance of academic advising while in college	.179***	-.020	.028	.471	.980
Sense of belonging	.102**	.018	.094	.846	1.018
Quality of Interactions with Friends	-.147***	-.270	.159	.090	.763
Employment					
Hours worked per week while attending College					
0-1(referent)					
2-20	.262***	.276*	.110	.013	1.318
21-35	-.096**	-.063	.082	.442	.939
36+	-.064*	-.117	.104	.260	.889
On Campus employment	.310***	.793**	.259	.002	2.209
Institutional Selectivity					
Community College (first institution)	-.516***	-2.250***	.232	.000	.105
Open Admission (Four-year)	-.164***	-2.556***	.547	.000	.078
Minimally Selective	.064*	-.199	.436	.649	.820
Moderately Selective	.118***	-.536*	.221	.015	.585
Very Selective (referent)					

Note: Measures were weighted using the NCES construct WTA000 to adjust for nonresponse bias and reflect the original sample size. **p=<.05; **p=<.01, ***p=<.001.* Source: U.S. Department of Education, National Center for Education Statistics, Beginning Postsecondary Students Survey, 2012-2017

Table 4.9 shows the White student sample logistic regression analysis results and initial correlations for baccalaureate attainment controlling for student work while enrolled, the various asset bundles, and institutional characteristics. Pearson correlations show prevalent patterns where low and middle income($p<.001$) White students have a lower

chance of degree attainment (negative correlation) when compared to high income White students. Working while enrolled is positively correlated with degree attainment at part-time work hours (2-20), yet when White students work above 35 hours there is a negative correlation with college completion.

Table 4.9 Predicting Bachelor Six-Year Degree attainment, White students (Weighted *N*=9630)

	r	*b*	*Standard Error*	*sig*	*exp(B)*
Social Identities					
<35,000	-.310***	-.680**	.114	.000	.507
35,000-75,000	-.041***	-.134***	.043	.002	.875
75,000+ (referent)					
Gender					
Female (male)	.063***	.173**	.057	.003	1.189
Citizenship					
Non-Citizen (resident)	-.031**	.514**	.176	.004	1.672
International student	-.008	.084	.083	.308	1.088
U.S. Citizen (referent)					
Dependents	-.220***	-.387**	.166	.019	.679
Educational Endowments					
HS GPA	.322***	.218***	.023	.000	1.243
Part-Time attendance	-.267***	-.524***	.064	.000	.592
Family Expectations					
Parent's Education	.295***	.170***	.025	.000	1.185
Science Socialization					
Social Sciences/Humanities Major	.058***	-.004	.072	.959	.996
STEM (referent)					
Remedial Math Course	-.205***	-.189***	.056	.001	.828
Material Resources					
Offered Pell Grant	-.189***	.081*	.034	.017	1.084
Expected Family contribution	.314***	.179***	.037	.000	1.196
Avoiding Loans through work while enrolled	.046***	.049**	.016	.002	1.050
Network Development					
Quality of interaction with faculty (Positive)	.095***	.259***	.065	.000	1.295
Importance of academic advising while in college	.220***	.043***	.009	.000	1.044
Sense of belonging	.144***	.116	.031	.000	1.100
Quality of Interactions with Friends	-.139***	.068	.051	.185	1.070
Employment					

Hours worked per week while attending College					
0-1(referent)					
2-20	.336***	.560***	.038	.000	1.751
21-35	-.004	.155***	.025	.000	1.168
36+	-.122***	-.045	.026	.082	.955
On Campus employment	.309***	.426***	.080	.000	1.532
Institutional Selectivity					
Community College (first institution)	-.511***	-2.121***	.088	.000	.120
Open Admission (four-year)	-.147***	-1.573***	.118	.000	.207
Minimally Selective	.068***	-.618***	.115	.000	.539
Moderately Selective	.280***	-.375***	.081	.000	.687
Very Selective (referent)					

Note: Measures were weighted using the NCES construct WTA000 to adjust for nonresponse bias and reflect the original sample size. **p=<.05; **p=<.01, ***p=<.001.* Source: U.S. Department of Education, National Center for Education Statistics, Beginning Postsecondary Students Survey, 2012-2017

Within Group Social Identity Findings and Baccalaureate Attainment

The Latinx student sample results show that the strongest negative social identity predictor was having dependents. A student with dependents was 70.6% less likely (odds ratio .294, p<.001) to receive a baccalaureate degree than a student without dependents. Also, having less income than the highest income group ($75,000 +) are also negative predictors for baccalaureate attainment, even when controlling for other variables. For example, low-income students are .481 times as likely (or 51.9% less likely) to graduate than high income students, and middle-income students are 23.2% less likely (odds ratio .768) to graduate than high income students. One interesting finding was that female students were initially positively correlated with graduation, however, when controlling for other variables, gender resulted in no significant differences between Latinx males and females.

For the Black student sample, having an income below $35,000 per year was the strongest negative predictor (p<.001) for baccalaureate attainment when compared to the

highest income group, low-income Black students are 70.8% less likely (odds ratio .292) to graduate than the highest income group. Middle income Black students are also significantly less likely ($p<.05$) to graduate than high income Black students as well. Non-citizen U.S. resident Black students are significantly more likely ($p<.001$) to graduate than U.S. citizens. In fact, being a Black non-citizen U.S. resident is the strongest positive predictor for baccalaureate attainment in the entire Black student model. Non-citizen U.S. residents are more than twice (2.505 times) as likely to graduate than U.S. citizens. Another very interesting finding was that having dependents is not a negative predictor for college completion for Black students. Initially, having dependents was significantly negatively correlated($p<.001$) with baccalaureate attainment, however, when controlling for the various asset bundles, social identities, employment behaviors, and institutional characteristics, there are no significant differences between Black students with dependents and those without dependents.

The only positive significant predictor($p<.01$) for graduation with respect to Social Identities for the Asian student sample is being a non-citizen U.S. resident. Being an Asian female was initially positively correlated with baccalaureate attainment, although when controlling for other variables, gender was not predictive of college completion. Being low-income and having dependents were also initially negatively correlated, but also not significant once controlling for the rest of the variables in the model for Asian students.

In contrast, low ($p<.001$) and middle($p<.01$) income White students are significantly less likely to graduate with a baccalaureate degree than high income students. Low-income White students are 49.3% less likely (odds ratio .507) to graduate than high income White students, while middle income white students are 12.5% less likely (odds ratio .875 times)

to graduate than high income White students. White females are significantly more likely ($p<.01$) (odds ratio, 1.189) to graduate than males once controlling for all other variables. Non-citizen U.S. residents are also more likely ($p<.01$) (1.672) to graduate than U.S. citizens, although this variable is initially negatively correlated, it becomes positive when controlling for other variables. Finally, having dependents is a negative predictor($p<.05$) for baccalaureate attainment for the White student sample even when controlling for all other variables.

Testing the equality of regression coefficients indicated no significant differences between Latinx v Black students (LvB), Latinx v Asian students (LvA), and Latinx v White students (LvW). However, with the exception of Asian students who showed no statistical significance for low-income students against high income students, low-income students were significantly less likely to graduate than those in the high-income groups.

Asset Bundle: Educational Endowments

The Latinx students' high school GPA was a significant positive predictor($p<.001$) (odds ratio, 1.234) for baccalaureate attainment, while part-time attendance was a significant negative predictor ($p<.001$) (odds ratio, .621) for college completion. Black students' high school GPA was also a significant positive predictor for baccalaureate attainment ($p<.05$), whereas those students who attended school part-time were significantly less likely ($p<.001$) to graduate than full-time Black students. In fact, part-time attendance was one of the strongest negative predictors of the entire model for Black students. White students followed the same pattern, a lower high school GPA and part-time attendance significantly hinders college completion ($p<.001$ for each measure).

While Asian students with a higher GPA were significantly more likely($p<.001$) to graduate with a baccalaureate degree than those with a lower GPA; in contrast with other groups, part-time attendance was not a significant predictor for baccalaureate degree attainment when controlling for other variables, however it was initially negatively correlated ($p<.001$).

High school GPA, while a positive predictor for each individual group, resulted in no significant differences with Latinx students and other groups after calculating the test of the equality of regression coefficients. The coefficient differences for part-time attendance were not statistically significant for Latinx v Black students or Latinx v Asian students, however, a z-score of 2.239 for Latinx and White students (LvW) indicates that part-time attendance is a stronger negative predictor for both Latinx and Black students than for White students.

Asset Bundle: Family Expectations

For Latinx students, parental education was significantly positively correlated with baccalaureate attainment, yet, when controlling for the various asset-bundles, employment behaviors, social identities, and institutional characteristics, this variable showed no difference. This suggests that Latinx students were able to overcome low levels of parent education so long as they possessed other assets and institutional support measured in the model. Black students' parental education was not significantly associated with college completion. Similarly, Asian students' parental level education was not a significant predictor for baccalaureate attainment once controlling for other variables, however, students that had parents with higher levels of education were initially positively

correlated with graduation. In contrast to all other groups, White students' parental education is a strong predictor($p<.001$) for baccalaureate attainment.

Asset Bundle: Science Socialization

For Latinx students, STEM Socialization variables were not significant when controlling for other variables in the model for baccalaureate attainment. Results indicated that there were no significant differences in graduation between STEM majors and Social Science and Humanities majors or taking remedial math courses. The same findings are evident in the Black sample, although initial correlations among Black students showed a positive association between having a Social Sciences and Humanities major and graduation, while taking remedial math was negatively correlated with graduation. A similar pattern was evident among the Asian student sample: Initially positively correlated($p<.001$) with baccalaureate attainment, while remedial math was initially negatively correlated with graduation. Both variables were not statistically significant once controlling for asset bundles, social identities, employment, and institutional selectivity. Although there was no significant difference in White students that majored in Social Sciences and Humanities compared with STEM majors, in contrast to other groups, taking a remedial course in math remained a strong negative predictor ($p<.001$) of college completion among White students.

Asset Bundle: Material Resources

In the Latinx student sample, expected family contribution and avoiding loans by working were initially positively correlated with baccalaureate attainment, although once controlling for the other variables, these financial sources were not a significant predictor for graduation. Latinx students that received Pell grants were not more or less likely to

complete college than non-recipients. In contrast, Pell grants (p<.01) and expected family contributions (p<.01) are significant positive predictors for the baccalaureate attainment for Black students. Material Resources did not predict baccalaureate degree attainment for Asian students in the logistic regression model, however, Pell grants (p<.001) were initially negatively correlated with graduation and expected family contribution was initially positively correlated(p<.001) with graduation.

In contrast, all three Material Resource variables were positive significant predictors of baccalaureate attainment for White students. White students that received Pell grants were initially negatively correlated with graduation, however when controlling for other variables, Pell grants became a positive predictor of completion (p<.05). White students that expected more money from their families were also more likely(p<.001) to graduate, and finally, those that work to avoid student loans are also more likely(p<.01) to achieve a baccalaureate degree.

Asset Bundle: Network Development

For Latinx students, the importance of academic advising was a strong significant predictor for baccalaureate attainment (p<.001) (odds ratio, 1.054), even after accounting for all other variables in the model. It may well be that Latinx students rely on institutional agents to guide them to completion, especially since many are the first in their family to go to college. Sense of belonging and having positive interactions with faculty were positively correlated, but not significant once controlling for other asset variables and institutional characteristics. Both measures may indirectly affect college completion. Similarly, the most important predictor for Black students with respect to network development is how important they perceive academic advising. The more important Black students

considered academic advising, the more likely (p<.001) (odds ratio, 1.066) they are to attain a baccalaureate degree presumably because they are using the services and relying on guidance to degree completion. In contrast, Network Development did not significantly predict baccalaureate attainment for Asian students, although the importance of academic advising and sense of belonging was initially positively correlated with graduation.

Positive interactions with faculty, the importance of academic advising while in college, and sense of belonging were all positive significant(p<.001) predictors for graduation in the White student sample. While the importance of Academic advising while in college resulted as a significant positive predictor for the Latinx, Black and White sample, tests of the equality of regression coefficients showed no significant differences between Latinx and the other two groups.

Employment During College and Degree Attainment

Working Latinx students appear to have an advantage over non-working Latinx students at levels of work from 2-20 hours and 21-35 hours (p<.001). Students that work from 2-20 hours per week are 50.4% (odds ratio 1.504) more likely to attain a bachelor's degree than students that don't work, while students that work 21-35 hours are 27.2% (odds ratio 1.272) more likely to graduate than non-working students. Full-time work (above 36 hours), which is initially negatively correlated with baccalaureate attainment, is not a significant predictor for Latinx students, controlling for the various asset bundles, social identities, and institutional selectivity.

Black students that work while enrolled at lower levels are significantly more likely(p<.001) to graduate than non-working students, while higher levels of work (over 36 hours per week) results in no significant differences with non-working students. Black

students that work 2-20 hours per week are therefore 87.2% (odds ratio 1.872) more likely to graduate than non-working students, while Black students that work 21-35 hours per week are 21.8% (odds ratio 1.218) more likely to graduate than non-working students.

Asian students that worked between 2-20 hours per week ($p<.05$) were 31.8% more likely (odds ratio 1.318) to graduate than non-working Asian students. However, at levels above 20 hours per week there was no statistical significance between working and non-working students in the logistic regression model. Initial correlations show a negative relationship between working over 21 hours per week and graduation, and it is important to evaluate work in tandem with other assets and institutional support. On campus employment was the strongest positive predictor ($p<.01$) for Asian students' college completion. When controlling for all other variables, Asian students that work on campus are 120.9% more likely (odds ratio 2.209) to attain a baccalaureate degree than students that do not work on campus.

On campus employment is a strong positive predictor($p<.001$) for graduation among White students as it was for other student groups. White students that are employed while enrolled are more likely($p<.001$) to attain a baccalaureate degree than non-working students at levels between 2-35 hours in the final logistic regression model. In fact, White students that work between 2-20 hours per week are 1.751 times as likely to graduate than non-working students to graduate, while those students that work 21-35 hours are 16.8% more likely (odds ratio 1.168) to graduate than non-working students. Students that work full-time are initially negatively correlated with graduation($p<.001$), however when controlling for all other variables, that variable becomes statistically non-significant. The tests of the equality of regression coefficients only show significant

differences between the Latinx sample and the Asian sample (LvA) for employment between 21-35 hours (z-score>1.96; z-score <-1.96). These results indicate that work is a stronger predictor of baccalaureate attainment for Latinx, Black and White students when compared with Asian students. In fact, Latinx students were more likely to graduate when working between 21-35 hours than those non-working students, while for the Asian student sample work between 21-35 hours did not significantly predict baccalaureate attainment.

Institutional Selectivity and College Completion

Previous work has reinforced the notion that students should select the highest selectivity for which they are accepted because it ensures college completion (Bowen, Chingos, and McPherson, 2009). In the Latinx student sample, institutional selectivity significantly predicts baccalaureate attainment. When compared to the highest selectivity institutions, Latinx students that attend all other institutional selectivity levels are significantly less likely to achieve a baccalaureate degree. Beginning college in community colleges and open admission 4-year institutions are the strongest negative predictors for graduation ($p<.001$) with odds ratios of .088 and .164 respectively, while minimally selective and moderately selective institutions are also significantly less likely to achieve a baccalaureate degree ($p<.01$). Similarly, Black students that attend community college as their first institution are significantly less likely ($p<.001$) (odds ratio, .080) to attain a baccalaureate degree than those Black students that began at the highest selectivity institution. In fact, every institutional selectivity level was a negative predictor for graduation when compared to the highest selectivity institution.

Institutional selectivity also significantly predicts baccalaureate attainment for Asian students. Beginning at a community college and open admission 4-year institutions are both strong negative predictors($p<.001$) for graduation when compared to the highest selectivity institutions with odds ratios of .105 and .078 respectively. Asians that attend moderately selective institutions are also significant predictors of baccalaureate attainment($p<.05$) with odds ratio of .585.

White students that begin at the highest selectivity institutions are significantly more likely ($p<.001$) to graduate with a baccalaureate degree than all other institutional levels. Students that begin at community colleges are 88% less likely (odds ratio .120) to graduate than students at the highest-level institutions, while those at open admission four-year institutions are .79.3% less likely (odds ratio .207) to graduate than students at the highest level institution. White students at minimally selective institutions are 46.1% less likely (odds ratio .539) to receive a baccalaureate degree, while those at moderately selective institutions are .31.3% less likely (odds ratio .687) to complete college compared with those at high selectivity institutions.

Although all racial/ethnic groups showed that institutional selectivity was a predictor for baccalaureate degree attainment, tests of the equality of regression coefficients resulted in no significant differences between Latinx and the three other groups.

Since this study began with a focus on community college students, it is quite possible that the lower odds ratios for baccalaureate degree attainment across all ethnic groups is attributable to the time it takes a student to transfer. For example, baccalaureate degree attainment is measured over six years at the longest, yet many community college

students take longer than two years to transfer, which would automatically put them on a longer time to degree than their four-year counterparts. It is possible that many community college students complete a baccalaureate degree, however, due to the logistics of transfer it may take longer than six years.

CHAPTER FIVE: CONCLUSIONS AND IMPLICATIONS FOR WORKING STUDENT VERTICAL TRANSFER AND BACCALAUREATE ATTAINMENT

The key objective of this study was to identify the student behaviors, attributes, and institutional characteristics for working students at community colleges that maximize their academic outcomes. Specifically, the goal was also to assess the effects of working (hours per week) during college. I tested an asset-bundle framework (Johnson & Bozeman, 2012) to assess outcomes measured as successful transfer to four-year institutions for students that initially enroll at public two-year institutions, and baccalaureate attainment for all students who began either as first year students or transferred to four-year institutions. This study explored the effects of various social identities, asset bundles, employment behaviors, and institutional characteristics on vertical transfer and baccalaureate degree attainment, with an emphasis on working Latinx students. While the focus of the study is on the success of Latinx students who began at public two-year institutions, I conducted analyses using models for community college students from different ethnic/racial demographics, as well as students that began their education at four-year institutions. Social identities, educational endowments, material resources, science socialization, social networks, employment behaviors, and institutional selectivity determined post-secondary students' academic outcomes. Once these elements of the analytical model were controlled, many socio-economic and social identity disparities were greatly reduced as Bozeman & Johnson (2012) hypothesized. Furthermore, working during college, particularly below 35 hours per week, showed benefits for several racial/ethnic groups. These key findings have significant implications for the current research landscape on working students.

Advances in Approach, Analysis and Significance of the study

This study confirmed several previous findings, while also contributing some new unique findings that offer answers to several important questions. It is important to note, since previous research on working students show mixed results, this study contrasts with several studies (Astin, 1993; Titus, 2010; Levin, Montero-Hernandez & Cerven, 2010; Neyt et al., 2017). For example, these previous studies identified full-time work as a negative predictor for various academic outcomes, and while full-time employment is negatively correlated between GPA and persistence, when controlling for various assets, multivariate analyses show that full-time work is a non-significant predictor of completion and transfer. This may well be because the study used national, longitudinal data and logistic regression with the most recent databases (Beginning Postsecondary Student Survey from 2012-2017) available to analyze student academic outcomes. It also considers the importance of identifying the predictors unique to each racial/ethnic group, allowing for understanding a great deal of variation in how these diverse students navigate the postsecondary milieu.

This study also contributes to prior research by examining important characteristics among each individual racial/ethnic group. Since the data is longitudinal, it was possible to control for variables that later predicted transfer and degree attainment. The prevailing scholarship on working students overwhelmingly controls for race, however, this study extends previous research, and allows for an in-depth analysis into how work affects each community by disaggregating and completing separate group analyses. Researchers have not examined Latinx working students using the Asset-Bundle model, nor has there been a study on working students using the most recent Beginning Postsecondary Student Survey

from 2012-2017. The post-secondary landscape has changed significantly in terms of cost of attendance, student employment, and community college attendance for racially minoritized students since the administration of the 2004/2009 BPS.

Furthermore, this study also examines work on a scale previously unmeasured in other studies, which helps specifically identify where specific employment hours during college stops or starts affecting performance. Most of the research on working students divides students into part-time employment and full-time employment, and the part-time employment variables are usually in a wide range of hours, for example 2-35 hours per week (Levin et al., 2010). This is too broad of a range of hours with the higher end leaning closer to full-time. More than usual, a broad range of hours for variables have been used by other researchers because of insufficient sample sizes to run an accurate model. Combining the hours allows for a larger sample size but does not allow for accurate comparisons between different increments of work hours. Finally, since this study controls for asset bundles and institutional measures, it helps identify how important critical support systems are for working Latinx students. Such support systems include financial aid, childcare, and employment opportunities.

Key questions and Hypothesis according to Asset-Bundle Framework

This study's primary research questions guided the analysis and concluded with the following findings. First, the results of various social identities, assets, and employment behaviors will be reviewed in order to determine the effects of varying levels of student work on vertical transfer. Next, the various social identities, assets, and employment behaviors, and institutional selectivity will be examined to determine how varying levels of student work affects baccalaureate attainment for students that begin at community

college compared with students that begin at four-year institutions. Finally, the results of the characteristics unique to Latinx students will be examined and compared to Black, Asian, and White students.

Student Employment as a predictor for vertical transfer.

This study's first research question asks: What are the effects of varying levels of student employment (hours or type of work) on transfer to four-year institutions for Latinx, Black, and White students who begin their studies at community colleges? What are the strongest predictors of transfer for the various racial/ethnic groups when assessing the vertical transfer models? These research questions will be discussed within the Asset-Bundle Framework.

This study's first hypothesis states that contrary to prior research, Latinx and Black students that work full-time will not have lower rates of transfer than those that do not work when controlling for variation in asset-bundles. The justification for this hypothesis began with the Douglas (2019) study that suggested employment has a benefit when analyzing outcomes long after graduation, for example, future earnings. It is possible that if long-term outcomes of employment show benefits, then there might be variables that are not accounted for in previous studies that could help identify whether it is the work that is causing the negative effect, or some alternative explanation. After examining the results of the logistic regression model, the hypothesis is confirmed for both Black and Latinx students. First, since initial correlations for Latinx students suggest a very weak negative correlation, it is likely that employed Latinx students may not be at a disadvantage when compared to non-working students if they possess the same assets and institutional support. That is, once all other variables are controlled, there are no significant differences

between students that work full-time and those that do not work at all among transfer for Latinx students.

For Black students, there is a very weak positive correlation on full-time employment and transfer when compared to non-working students and vertical transfer, and that difference is not statistically significant in the multivariate model. These results indicate that both Latinx and Black students that work full-time are not less likely to transfer than non-working Latinx and Black students provided they have similar assets and other measures in the model. White students also had an initial weak negative correlation with full-time work, however, when controlling for the various assets, full-time work became a positive predictor of vertical transfer for White students. One of the reasons for this could also be that it is easier for White working students to handle the out-of-pocket costs of attending community college. It is clear that the out-of-pocket costs are higher for community college students regardless of how low the tuition is (Dougherty, 2006; Wetzel et al, 1999; Dougherty, 1992) and students that are employed may have a more stable financial profile than those that are unemployed. Moreover, students must balance the lower likelihood of degree completion with the reduced out-of-pocket costs of attending a community college (Flynn, 2018). This study's second hypothesis is also confirmed and consistent with some of the literature. Low levels of part-time work have been associated with better academic outcomes and as these hours increase work becomes less beneficial. For example, it is clear that work between 2-20 hours is a strong positive predictor for vertical transfer. This result is consistent with previous literature (Perna 2007; Pascarella et al., 2005). However, results for 21-35 hours are mixed in the literature, with some studies showing negative effects on completion and persistence (Pascarella et

al., 2005; Hui et al., 2014) and other studies showing no differences between GPA, standardized tests, and persistence (Perna, 2007). This study shows students working between 21-35 hours as a strong positive predictor of vertical transfer when controlling for the various social identities and asset-bundles for Latinx, Black, and White students. There are three possible reasons for this higher level of working hours during colleges as such a strong positive predictor for transfer. First, it is likely that students that are employed are accustomed and have learned to have a great deal of responsibility, and when controlling for the various asset-bundles, this exposes the benefits of employment. Another possibility is that students that are employed and the asset-bundles control for measures that are key predictors of successful transfer and when all students possess these (holding all variables constant), work is not detrimental but a normal part of Latinx experiences. This indicates that perhaps as a result of their employment, they developed good habits. It also may indicate that these students have become accustomed to persevering under pressure and would outperform non-working students regardless of work status. Unfortunately, we can only establish associations and causal inference goes beyond the scope of this study. These results contradict some of the findings of several studies (Neyt et al, 2017; Hui et al, 2014;Titus, 2010;DeSimone, 2008; Astin, 1993), and there are many possible reasons. For example, the way the most recent survey measured working hours while enrolled differed from prior waves. In the most current BPS, a detailed employment history was required in order to assess whether or not students worked while enrolled, while in prior waves, students were simply directly asked whether or not they worked while enrolled and how many hours per week. This resulted in a much more accurate account and lower number of working students in this study than in previous studies. For example, the 2006 BPS survey

indicated that approximately 63% of students stated that they worked while enrolled, while in the 2014 survey approximately 51% of students were identified as working while enrolled, using the more detailed employment history questions. How working hours are identified and who works has important implications for future research and ability to compare with past research. It is important to re-emphasize that initial correlations indicate either a very weak negative correlation or very weak positive correlation that are not significant for all racial groups between full-time work and vertical transfer, however, the full multivariate model indicated that full-time work was a positive predictor (compared with no work) in the largest individual group sample, which was White students.

It is also likely that since most community college students work at significantly higher rates than students attending four-year colleges (Carnevale et al, 2015), that those students may have better time management skills and are accustomed to having a very high degree of responsibility and are high performing. This essentially means that the profile of the community college student is different from that of students at four-year institutions, where past research shows full-time work as detrimental to graduation (Neyt et al., 2017; Perna, 2007; Astin, 1993). However, the dynamics of how students navigate community colleges and transfer to college completion are very different. Moreover, understanding how community college students navigate the transfer pathway underscores the importance of prioritizing institutional support specifically for Latinx and Black students. Herrera & Jain (2013) propose that underrepresented, low-income, and first-generation transfer students need targeted institutional support that prioritizes their needs, lived experiences, and financial resources. While Herrera and Jain use a Critical

Race Pedagogical framework in their research, this study's asset-bundle model also supports their suggestions. For example, the results of this study suggest that the material resources and social identity asset bundles are a key factor in transfer outcomes. Therefore, Herrera & Jain's (2013) transfer receptive culture elements which include institutional support are underscored by this study's results and its theoretical framework.

Another important social identity negative predictor for the vertical transfer of Latinx students was having dependents. Having dependents falls under Social Identities (e.g., parents, caregivers, etc.) and these results indicate the importance of controlling for the intersections of Social Identities. This result confirms the literature that suggests students with dependents are less likely to transfer. However, the Black student sample shows a very interesting result: controlling for the various asset bundles, Black students with dependents were not less likely to transfer than Black students without dependents. This result exemplifies the power of the Asset-Bundle model in identifying experiences that facilitate the transfer of Black students and confirms the importance of providing institutional support for these students to receive support for the various asset-bundles. It also contradicts previous research that identifies students having dependents as a significant risk factor transfer (NCES, 2016), as this is not true for all groups. The results of this variable is key to understanding what Johnson & Bozeman (2012) were trying to accomplish with their theoretical model: the more the asset bundles are supported and acquired, the better racially minoritized students will perform.

White students, on the other hand, were significantly less likely to transfer if they had dependents. In fact, White students with dependents were 25.9% less likely to graduate than those without dependents. This also confirms prior research (NCES,

2016). Furthermore, since White students are not racially minoritized it is also expected that the Asset-Bundle model may not predict their outcomes in the same manner. This is a key reason why this study uses Johnson & Bozeman (2012), which was devised specifically for students from underrepresented identities rather than Bourdieu's Social Capital Theory that focuses primarily on class differences.

Finally, it is interesting that Latinx and Black students were initially less likely to transfer in the full sample, yet when controlling for other assets, the results showed no statistical significance. It is possible that as Johnson & Bozeman (2012) predicted, accounting for the various Asset-Bundles improves assessments of outcomes for these minoritized students. These important indicators are discussed in the next section. Unfortunately, the same results were not evident for baccalaureate degree attainment, where the disparities in completion between groups are still salient.

Educational Endowments are among the most important predictors for vertical transfer for Latinx students. The Educational Endowments Asset Bundle considers High School GPA and Part-Time attendance. Confirming the overwhelming amount of prior research (Hayward, 2020; Johnson & Mejia, 2020), High School GPA is a strong positive predictor for vertical transfer, and part-time attendance is a strong negative predictor for transfer. In fact, in almost every previous study across various outcomes, a strong High School GPA is a positive predictor and part-time attendance is a strong negative predictor of transfer and baccalaureate attainment. White students appear to follow a similar pattern with Educational Endowments as Latinx students, which also confirms the literature on academic outcomes regarding High School GPA and part-time attendance. However, the results of the Black student model is once again intriguing. While

High School GPA is a positive predictor for vertical transfer, part-time attendance once again is initially negatively correlated with transfer, yet once controlling for all other variables, part-time attendance is not a significant predictor. This further exemplifies the power of the Asset-Bundle model for Black students and contradicts previous research (Handel, 2009). As a result of using the Asset-Bundle model in this study, it is clear that Black students with significant institutional support can improve their educational outcomes.

Science Socialization also predicts transfer for Latinx students. STEM majors are less likely to transfer than Social Science/Humanities majors when controlling for all other variables. This confirms previous literature (Wang, 2020). Interestingly, for Black and White students, there is no difference in transfer for STEM and non-STEM majors which contradicts some of the literature on STEM transfer (Wang, 2020).

Material Resources play a key role in transfer for not only Latinx students but all students. The strongest positive predictor for transfer is the expected family contribution. This variable measures how much financial support for college is estimated from family income. This variable shows that students with higher expected family contribution are more likely to transfer than students from low family contributions. This confirms previous research that suggests that students with more financial support tend to have better academic outcomes (Millea, Willis & Molina, 2018). Furthermore, the expected family contribution may also indicate that students have a social network that supports their postsecondary academic endeavors.

The expected family contribution proved a significant predictor for transfer for both Black and Latinx students. It is important to note that there are large differences between

racial groups and how much their families can financially support them due to variations in income and wealth or financial capital (Santiago, 2005). With all other assets in place, Latinx students from families that can financially support their educational aspirations are more likely to succeed. Black students also followed the same pattern as Latinx students, while White students appeared to benefit the most from Pell Grants, indicating that when familial financial support for higher education is not available, Pell grants are critical. Previous research suggests that familial support improves college going among both Latinx and Black students (Wagner, 2015), and one study (Carey, 2016) describes this phenomenon as *familial capital*. One of the most likely reasons for family financial support is such an important predictor of college success among Latinx and Black students is that many of these students are the first in their families to go to college and may not have the support systems and resources in place to navigate a postsecondary environment. As a result, the amount of financial support students receive from their families, both financial and emotional, has profound implications in higher education.

Student Employment and Baccalaureate Attainment

This study's second research question asks: What are the effects of varying levels of student employment (hours or type of work) on baccalaureate attainment for Latinx, Black, Asian, and White students who begin their studies at community colleges when compared to those students that begin their studies at four-year institutions? This study hypothesized that the asset bundles will identify where academic disparities exist and that, when controlling for the various asset bundles, the advantage for students as freshmen that begin at four-year institutions will disappear as well. For example, previous research concluded that compared to freshmen with similar high school GPAs and test scores,

"transfer students are much more likely to graduate" (Bowen, Chingos & McPherson, 2009. P. 142).

After careful analysis, the full and group specific model results contradict my hypothesis and confirms the prevailing literature on community college student baccalaureate attainment (Lichtenberger & Dietrich, 2017; Ma & Baum, 2016). In fact, after controlling for all of the asset-bundles, social identities, employment behaviors, and institutional characteristics, community college students were still significantly less likely to graduate in six years than students that began at four-year institutions, with the biggest difference between students that began at community college and those that began at the highest selectivity four-year institutions. It is important to note that this study only included community college students who indicated at entry that they intended to pursue a baccalaureate degree.

The current scholarship suggests that community college students are at a disadvantage when compared to students who begin at four-year institutions (Ma & Baum, 2016). However, there are studies that suggest that when controlling for test scores and High School GPA, community college transfer students are not at a disadvantage (Bowen, Chingos & McPherson, 2009). This study in fact controls for High School GPA, and many other variables that affect student performance, yet the results in the present study consistently show less likelihood of degree attainment within six years for those that begin at community colleges. It is likely that the reason community college students graduate at lower levels has nothing to do with performance, social identities, or the asset-bundles; it is possible it has to do with institutional characteristics, including peer environments with other highly motivated students that this study does not control for. For example, it is a

well-known phenomenon that community college students have a much more difficult time navigating between different institutions and changing post-secondary atmospheres, and they might be taking longer than six years total time to complete the degree. As discussed in earlier chapters, community college students take two years simply to be eligible for transfer, and many students do not transfer until three or even four years. The amount of time it takes to apply to four-year institutions, credit transfers for only some courses, and adjusting to a new environment might be burdensome, and future studies should examine these phenomena. Moreover, it is very difficult to find national, longitudinal studies that follow students longer than six years for both four-year and community college students. Unfortunately, this study cannot confirm exactly why this occurs.

Next, the results of student employment on baccalaureate attainment confirms this study's hypothesis that work is not a disadvantage for Latinx students. In fact, work is a positive predictor of degree completion for every individual group at lower levels of part-time work (2-20 hours per week), and a positive predictor for Latinx, Black, and White students at higher work levels (21-35 hours per week). The only group that showed an exception were Asian American students. These results confirm literature that suggests that low levels of work are positively associated with degree completion (Levin et al, 2010; Perna 2007), however, this study goes further and asserts that even higher levels of part-time work are not negatively associated with degree completion once controlling for the various Social Identities, Asset-Bundles, and Institutional Selectivity.

Another important employment variable is whether there is an advantage to working on campus. On-campus employment is a significant positive predictor in the literature on working students (Soliz & Long, 2016; Scott-Clayton & Minaya, 2016). This

study confirms the prevailing scholarship in the full sample, the Latinx sample, Asian sample, and White sample. The only group where on campus employment was not a significant predictor of completion was for Black students. However, on-campus employment was initially positively correlated with completion, and when controlling for all other variables, on-campus employment for Black students became insignificant. This result appears to follow a pattern: When controlling for the various asset-bundles for Black students, certain disparities are no longer significant. For example, off-campus employment is a disadvantage compared to on-campus employment in the literature on working students (Soliz & Long, 2016). However, for Black students, off-campus employment is not a significant disadvantage when the asset-bundles are considered. This result appears to follow a similar pattern for Black students. Since off-campus employment is usually associated with lower degree outcomes than on-campus employment, controlling for the asset-bundles appears to show that Black students may benefit from institutional support.

The current scholarship on degree attainment also suggests that Social Identities, specifically, low-income students are less likely to complete a baccalaureate degree than high-income students (Conlin & Rubenstein, 2007; AAC&U, 2018; NCES, 2018). This study confirms previous research. Having a family income below $35,000 per year is a significant negative predictor of completion when compared to those that have a family income over $75,000 per year for the full sample, Latinx students, and White students. However, the Asian students sample suggests that when controlling for the various social identities, asset-bundles, and employment characteristics, having a low-income is not a significant predictor of completion. That is, low-income students are equally likely to complete as

those in higher income levels. Also, this study goes even further and identifies middle income students ($35,000-$75,000) as less likely to complete a baccalaureate degree than high income students for the Latinx, Black, and White sample. Unfortunately, this study has not identified why low-income students are less likely to complete a baccalaureate degree than high income students. This regression model controls for the various social identities, employment behaviors, and asset-bundles, and low-income students still show a significant disadvantage for virtually every group. Further research is necessary to inform quantitative studies that could potentially identify why even when controlling for so many assets, behaviors, and institutional characteristics, low-income students continue to have significant challenges. While this study confirms previous studies on income inequality and college completion, it does not specifically identify characteristics that can reduce these income disparities.

The full sample model for baccalaureate attainment results indicates that social identities play an important role in completion. Race is a key factor in predicting baccalaureate attainment regardless of controlling for all other variables. However, for the full sample, race is not the strongest social identity predictor. For example, Latinx students are only 4.8% less likely to graduate than White students ($p<.05$) in the multivariate model. While having dependents or being low-income is a much stronger negative predictor. However, it is important to acknowledge that the full sample is overwhelmingly White, and the full-sample results almost mirror those of the White individual sample. Black students are 20.7% less likely ($p<.001$) to complete a degree than White students when controlling for all other variables. Although identifying as Black is a stronger negative predictor for degree completion when compared to White students, it is

important to reassert that in the race-specific models, controlling for the various asset bundles changes several negatively correlated variables to positive predictors of degree outcomes for Black students. These results can help tailor policy to specific racial groups to improve inclusion and academic success.

Educational Endowments are key predictors for baccalaureate attainment of Latinx students and this study confirms the overwhelming amount of prior research: High School GPA is a strong positive predictor for degree completion, and part-time attendance is a strong negative predictor for degree completion (Garcia & Bayer, 2005; Nora et al, 1997). In fact, in almost every study across various outcomes, a strong High School GPA is a positive predictor and part-time attendance is a strong negative predictor for many different measures of academic outcomes (Nora et al, 2005; Center For Community College Student Engagement, 2017). Yet once controlling for all other variables, part-time attendance is not a significant predictor for degree completion for Asian students.

While several Science Socialization variables are initially correlated with baccalaureate attainment, only taking Remedial Math courses negatively predicts degree completion for White students. The literature on math remediation suggests that taking more remedial math courses is negatively associated with degree completion (Cohen & Kelly, 2019) since accelerated learning in developmental coursework is implemented in very few community colleges. This study contradicts previous research for Latinx, Black, and Asian students, but White students show a less likelihood of degree completion which is consistent with prior studies. It is likely that once other variables are controlled, the talent of many minority students is exposed. For example, graduation is initially negatively

correlated for , however, when these assets are considered, the model displays the incredible talent these students have and their potential for academic success.

The Material Resources asset-bundle also predicts baccalaureate degree attainment. However, for the Latinx student sample, Material Resources are not significant predictors for degree completion. Since Expected Family Contributions and Avoiding Loans through Work are initially positively correlated with completion, it is likely that controlling for variables such as Pell Grants accounted for the variance in those measures. For Black students, Expected Family Contributions and receiving Pell Grant money were significant positive predictors of baccalaureate degree attainment. This finding provides an example of how this assets-based model is advantageous for Black students and public material resources are essential to their success. These results confirm previous literature that suggests Pell Grants are a positive predictor of degree attainment for all students (Protopsaltis & Parrot, 2017).

All three Material Resource variables were positive significant predictors of baccalaureate attainment for White students. Controlling for other variables, Pell grants were a positive predictor of completion ($p<.05$). Since the White student sample is much larger than the Black, Latinx, and Asian student sample it is likely that the statistical significance is a result of a much larger sample size, however, since initial correlations behave similarly, it is also likely that when controlling for other income variables, that income behaves in a similar manner across groups.

Network Development was a key predictor for Latinx, Black, and White students with respect to the importance of academic advising. This variable was a strong significant predictor for baccalaureate attainment. It is likely that Latinx and Black students depend

on the institution to facilitate baccalaureate attainment as a result of their likelihood of first-generation student status. It is also possible that lower-income and first-generation White students may experience the same phenomenon. These results confirm the literature on advising and degree completion (Stevens et al, 2018), which suggests that students that have more quality advising have higher levels of degree completion.

Institutional Selectivity and College Completion

The prevailing scholarship on institutional selectivity indicates that students that attend the highest selectivity institution are more likely to achieve a baccalaureate degree (Bowen, Chingos, and McPherson, 2009). In every student sample of this study, institutional selectivity significantly predicts baccalaureate attainment. When compared to the highest selectivity institutions, students that attend all other institutional selectivity levels are significantly less likely to achieve a baccalaureate degree. In fact, every institutional selectivity level was a negative predictor for graduation when compared to the highest selectivity institution. This suggests that students should attend the most selective institution for which they are qualified, as they are likely to be exposed to more institutional resources, opportunities, and highly motivated peers at these institutions.

It is a fortunate finding that when working students are supported, they are not less likely to graduate than non-working students. Yet, it is unfortunate that students who begin at less selective institutions are less likely to finish even when controlling for so many variables with respect to income, grades, and advising. Since there are still many variables that result as statistically significant with respect to income, race, and institutional selectivity as negative predictors for graduation or transfer, it means that

more intentional practices at every institution still need to be done in order to implement practices that can support Latinx and low-income students more effectively.

The value of the Asset-Bundle model

It is important to re-emphasize that for Latinx student transfer, the Asset-Bundle model is effective at identifying explanations that reduce the effects of income disparities. In the final model, low-income Latinx students are not less likely to transfer than high income Latinx students. This finding is key in understanding the importance of the Asset-Bundle model and how it captures the dynamic experiences of working Latinx community college students.

Another finding that is worth revisiting are the results for Black student transfer and completion. Controlling for the various assets is extremely beneficial for studying this student population. For example, Black students that attend part-time are not less likely to transfer. This finding is indeed surprising because of the negative correlation between part-time attendance and graduation in previous research (Johnson & Mejia, 2020). Also, Black students that received Pell Grant money were more likely to complete college, after accounting for all other measures in the model. This means that it is critical to provide more Pell Grant money for Black students, or more institutional financial support. The fortunate thing is that we know ways to improve Black student outcomes: provide more financial support, support for students with dependents, those with lower incomes, and those that cannot attend full-time.

Implications for Future Scholarship

This study has provided a comprehensive analysis into not only working Latinx students at community colleges, but also Black, Asian, and White working students at four-

year institutions. Given the study's results, the implications for future research are broad. First, future research can use Johnson and Bozemen's Asset-Bundle Model with Hierarchical Linear Modeling to test more measures of institutional effects than was possible in this study. Furthermore, Structural Equation Modeling can begin to model direct and indirect effects to provide more structure to the Asset-Bundle model as a theory and identify latent variables that affect transfer and graduation. Further work is needed to identify those variables that this study's models could not account for in explanations for reducing outcome disparities. It is also possible to use propensity score matching to identify treatment groups more accurately for students with the corresponding assets. Research on community college students and transfer student experiences are necessary to determine the continuing barriers to college completion. This may include research on why income disparities are less with respect to transfer than baccalaureate attainment.

Also, future research can also use a qualitative research design to confirm whether or not this study's results manifest in how students perceive the post-secondary atmosphere at community colleges and four-year institutions. This type of research would be particularly beneficial, as a qualitative study can directly interview working Latinx students to understand their resilience, motivation, and forms of support they require. Furthermore, perhaps a future study can identify why low-income students are less likely to graduate than high income students even when controlling for so many variables. This is of particular importance, as many studies have tried to control for income variables and very few have arguably succeeded in explaining disparities. It is especially interesting that the Asset-Bundle model results in no differences between low-income and high-income students with respect to transfer, which is worth exploring further. Having a

low-income is a significant disadvantage for transfer before controlling for any other variables, so it is essential that we continue to explore the Asset-Bundle model for community college students. I believe that the low-income finding with respect to transfer is perhaps one of the most important findings along with the employment variables. Moreover, these results also suggest that receiving institutional support is critical to student transfer; clearly students that receive more institutional support such as valuable advising are more likely to transfer than those that do not.

With respect to work while enrolled, this study has shown that low levels of work are strong positive predictors for both transfer and baccalaureate attainment; it is consistent with much of the literature, and therefore does not necessitate too much future study. However, higher levels of part-time and full-time work need further study, as the results begin to show that many of these students also outperform non-working students. In fact, the lowest levels of transfer and baccalaureate attainment are among non-working students, and students that work full-time when compared to students that work part-time. Early theoretical models that involved student-involvement and retention identified work as a negative predictor because of lack of time spent in on-campus activities (Astin, 1993; Tinto, 1975). Clearly, this research was not supported in the data. Therefore, it is necessary to explore higher levels of student work (both qualitatively and quantitatively) using the Asset-Bundle model.

Finally, when properly controlling for other asset variables and institutional, racial disparities for Latinx and Black students in the transfer model are explained by other factors. Future scholarship can begin to identify why racial disparities improve at community colleges; yet at four-year institutions, the model does not explain away race

outcome differences. Continuing this research on separate racial/ethnic groups is critical in examining racial disparities and how to reduce them. It is especially concerning that so much research controls for a slew of variables, yet with respect to baccalaureate attainment, very few models use indicators that explain racial disparities. This clearly exemplifies systemic racism in our society, and until we can find a variable to control for systemic racism, it will be difficult to effectively address how we can improve these disparities.

Implications for future policy

The results of this study provide an opportunity for a wide range of policy implications. Importantly, since it is evident that the Asset-Bundles Model has identified that controlling for specific assets and Social Identities better accounts for factors that influence academic outcomes, practitioners and education leaders can push for policy initiatives that facilitate acquisition and support for those resources and experiences that improve transfer and graduation. For example, results indicate that transfer odds of Black students with dependents change from a negative correlation to no differences between students with dependents against students without dependents when controlling for all other variables. Consequently, policies that support Black students with dependents should be pursued, including access to childcare, and increased financial aid, for example. Also, since engagement with faculty resulted as a significant positive predictor, it is necessary to create institutional mechanisms that incentivize faculty to work closer with students.

Another example that has important policy implications is that the full sample model improves prediction of transfer for low-income Latinx students. Latinx students

that receive more financial support have a greater likelihood of vertical transfer, thus policy initiatives that provide much needed financial assistance to Latinx community college students are necessary. Policies that support student work (eligibility for work-study), scholarship, and grant support are critical to improving Latinx transfer outcomes. Also, President Joe Biden has proposed a $109 billion investment for free community college (Jaschik, 2021). This investment is a start at assisting community college student material resources asset-bundle, yet more is necessary to facilitate the out-of-pocket costs. Moreover, the President has also proposed $39 billion for families earning under $125,000 per year to attend HBCUs, minority serving institutions, or tribal colleges (Jaschik, 2021).

Specifically, it is necessary to address Pell Grants and finally put an end to the controversy over whether Pell Grants are improving academic outcomes. The evidence is clear on Pell Grants: when controlling for all other factors, students that receive Pell Grants outperform those that do not receive Pell Grants. Previously politicians have used negative correlations as an excuse to cut this necessary funding, and this study's more complex multivariate research can provide critical evidence against such policies (Murakami, 2020). Currently, the federal government proposes to double Pell grant funding in future years to cover more costs and extend support for more students (Warick, 2021). In fact, the Biden administration has proposed, under the American Families Plan, $80 billion to increase Pell Grants (Warick, 2021; Jaschik, 2021). Currently, this will increase Pell Grants per student by $1875 per year (Warick, 2021). This is a promising policy aligned with outcomes of this study. Finally, Increased funding of not only Pell Grants, but overall financial support is critical to the success of Latinx and Black students, and one other action we can take is to

streamline the process of applying for FAFSA, since many Latinx students do not even apply for financial aid.

Implications for institutional practice

This study has several implications for how institutions can support working Latinx and Black students. It is clear that Latinx and Black students use the institutional support they are provided in order to achieve their post-secondary objectives. Therefore, it is important for these campuses to begin to institutionalize any practices that can contribute to reducing racial and income disparities. Previous research has identified strategies that campuses use to institutionalize changes that help students achieve their academic goals (Cobian & Ramos, 2021). For example, since this study identified on-campus employment as beneficial for Latinx student completion and transfer, campuses can embed on-campus employment opportunities for Latinx students. Also, since part-time attendance is identified as a negative predictor of completion for Latinx students, it is possible for institutions to create a permanent support system for students that are unable to attend full-time for them to increase their course loads. Further, campuses can explore support for summer course enrollment, and use of financial aid, to assist completion in a timely manner.

Finally, it is necessary for campuses to understand that by institutionalizing these types of support systems, they are less likely to be cut or removed; these systems must become embedded in the institution to the degree that they are as important as having a financial aid office or even a faculty. Once these systems are institutionalized, it is possible that over the long-term we will begin to see results in reducing race and wealth disparities in educational outcomes. The objective of leveling the playing field against those that have

held perennial privilege in the academic environment will benefit individual students as well as states and communities that can benefit from social mobility, thereby advancing citizenship and economic progress.

References

Alon, S., & Tienda, M. (2005). Assessing the "Mismatch" hypothesis: Differences in college graduation rates by institutional selectivity. *Sociology of Education*, *78*(4), 294–315. https://doi.org/10.1177/003804070507800402

Araque, Juan & Wietstock, Cathy & Cova, Heather & Zepeda, Steffanie. (2017). Impact of Latino parent engagement on student academic achievement: A pilot study. *School Community Journal.* 27. 229-250.

Arbona, C., & Nora, A. (2007). The influence of academic and environmental factors on Hispanic college degree attainment. *The Review of Higher Education*, *30*(3), 247–269. https://doi.org/10.1353/rhe.2007.0001

Astin, A. W. (1993). What matters in college? Four critical years revisited. Jossey-Bass.

Bahr, P. R. (2008). Does mathematics remediation work?: A comparative analysis of academic attainment among community college students. *Research in Higher Education*, *49*(5), 420–450. https://doi.org/10.1007/s11162-008-9089-4

Bailey, T. (2008). Beyond traditional college: The role of community colleges, career and technical postsecondary education in preparing a globally competitive workforce. *Teachers College Columbia University*

Balemian, K., & Feng, J. (2013). First generation students: College aspirations, preparedness and challenges. New York: College Board. http://research.collegeboard.org/sites/default/files/publications/2013/8/presentation-apac-2013-first-g eneration-college-aspirations-preparedness-challenges.pdf

Bauman, K. (2017). *School Enrollment of the Hispanic Population: Two Decades of Growth*. The United States Census Bureau. Retrieved December 2, 2020, fromhttps://www.census.gov/newsroom/blogs/random-samplings/2017/08/school_enrollmentof.html

Bean, F. D., & Tienda, M. (1987). The Hispanic population of the United States. *Russell Sage Foundation.*

Birnbaum, R. (1988). How colleges work. The cybernetics of academic organization and leadership. Jossey-Bass Inc.

Blackmon, S. M., & Thomas, A. J. (2014). Linking contextual affordances: Examining racial–ethnic socialization and parental career support among african american college students. *Journal of Career Development*, *41*(4), 301–320. https://doi.org/10.1177/0894845313495588

Bobbitt-Zeher, D. (2007). The gender income gap and the role of education. *Sociology*

of Education, 80(1), 1–22. https://doi.org/10.1177/003804070708000101

Bowen, W. G., Chingos, M. M., & McPherson, M. S. (2009). Crossing the finish line: Completing college at America's public universities. *Princeton University Press.*

Bozick, R. (2007). Making it through the first year of college: The role of students' economic resources, employment, and living Arrangements. *Sociology of Education, 80*(3), 261–285. https://doi.org/10.1177/003804070708000304

Brand, J. E., Pfeffer, F. T., & Goldrick-Rab, S. (2014). The community college effect revisited: The importance of attending to heterogeneity and complex counterfactuals. *Sociological Science, 1*, 19.

Brint, S., & Karabel, J. (1989). The Diverted Dream: Community colleges and the promise of educational opportunity in America, 1900-1985. Oxford University Press, Inc.

Bryan, M., Cooney, D., & Elliott, B. (2018). 2012/17 Beginning postsecondary students longitudinal study (BPS:12/17). *National Center for Education Statistics*

Buchanan, J. M. (1978). Cost and choice: An inquiry in economic theory. *University of Chicago Press.*

Bunch, G., Endris, A., Panayotova, D., Romero, M., & Llosa, L. (2011). Mapping the Terrain: Language testing and placement for US-Educated language minority students in California's community colleges. https://escholarship.org/uc/item/31m3q6tb

Bureau of Labor Statistics. (2018). Characteristics of minimum wage workers, 2018: *BLS Reports: U.S. Bureau of Labor Statistics*. Retrieved December 10, 2020, from https://www.bls.gov/opub/reports/minimum-wage/2018/home.htm

Bureau of Labor Statistics. (2018). *May 2018 National Occupational Employment and Wage Estimates*. Retrieved December 2, 2020, from https://www.bls.gov/oes/2018/may/oes_nat.htm

Byun, S., Meece, J. L., & Irvin, M. J. (2012). Rural-nonrural disparities in postsecondary educational attainment revisited. *American Educational Research Journal, 49*(3), 412–437. https://doi.org/10.3102/0002831211416344

Byun, S., Meece, J. L., Irvin, M. J., & Hutchins, B. C. (2012). The role of social capital in educational aspirations of rural Youth*. *Rural Sociology, 77*(3), 355–379. https://doi.org/10.1111/j.1549-0831.2012.00086.x

Campbell, Courtney & Deil-Amen, Regina & Rios-Aguilar, Cecilia. (2015). Do Financial Aid Policies Unintentionally Punish the Poor, and What Can We Do About It?. *New Directions for Community Colleges*. 2015. 67-76. 10.1002/cc.20164.

Carey, Roderick. (2016). “Keep that in mind…You’re Gonna go to College”: Family influence on the college going processes of Black and Latino high school boys. *The Urban Review*. 48. 10.1007/s11256-016-0375-8.

Carnevale, A., Smith, N., & Melton, M. (2015). Earning while learning. The new normal. *Georgetown University Center on education and the workforce*. https://cew.georgetown.edu/wp-content/uploads/Working-Learners-Report.pdf

Cataldi, Emily & Bennett, Christopher & Chen, Xianglei. (2018). First-Generation Students: College Access, Persistence, and Postbachelor’s Outcomes.
Center for Community College Student Engagement. (2017). *CCCSE - 2017 National Report*. retrieved from https://www.ccsse.org/NR2017/

Chapa, J., & De La Rosa, B. (2004). Latino Population Growth, Socioeconomic and Demographic Characteristics, and Implications for Educational Attainment. *Education and Urban Society*, *36*(2), 130–149. https://doi.org/10.1177/0013124503261320

Chen, Y. (April), & Starobin, S. S. (2018). Formation of social capital for community college students: A second-order confirmatory factor analysis: *Community College Review*. https://doi.org/10.1177/0091552118815758

Chin-Newman, C., & Shaw, S. (2013). The anxiety of change: How transfer students face challenges. *Journal of College Admission, 221*, 15–21.

Cobian, K.P., Ramos, H.V. A cross-case analysis of developing program sustainability and institutionalization in early stages of a multisite biomedical student diversity initiative. *BMC Med Educ* **21,** 254 (2021). https://doi.org/10.1186/s12909-021-02663-2

Cole, D., & Espinoza, A. (2008). Examining the academic success of Latino students in Science Technology Engineering and Mathematics (STEM) Majors. *Journal of College Student Development*, *49*(4), 285–300. https://doi.org/10.1353/csd.0.0018

Community College Research Center. (2020.). *Community College FAQs*. *Teachers College Columbia University*. Retrieved December 2, 2020, from https://ccrc.tc.columbia.edu/Community-College-FAQs.html

Cohen, Richard & Kelly, Angela. (2019). The impact of community college science and mathematics coursetaking on graduation, transfer, and non-Completion. *Review of Higher Education*, The. 42. 595-617. 10.1353/rhe.2019.0008.

Contreras, G. (2018) The challenges facing single Hispanic parents and their needs to improve family services. *Electronic Theses, Projects, Dissertations*. 733. https://scholarworks.lib.csusb.edu/etd/733

Creswell, J. W. (2014). Research design: Qualitative, quantitative, and mixed methods

approaches. SAGE.

Crisp, G., & Nora, A. (2010). Hispanic student success: Factors influencing the persistence and transfer decisions of Latino community college students enrolled in developmental education. *Research in Higher Education, 51*(2), 175–194.

Crisp, G., Taggart, A., & Nora, A. (2015). Undergraduate Latina/o Students: A systematic review of research identifying factors contributing to academic success outcomes. *Review of Educational Research, 85*(2), 249–274. https://doi.org/10.3102/0034654314551064

Cruse, L. R., Holtzman, T., Gault, B., Croom, D., & Polk, P. (2020). Parents in college by the numbers. https://iwpr.org/iwpr-issues/student-parent-success-initiative/parents-in-college-by-the-numbers/

Dadgar, M. (2012). The Academic consequences of employment for students enrolled in community college. *Community College Research Center, Columbia University*.

Darder, A., Torres, R. D., & Gutiérrez, H. (Eds.). (1997). Latinos and education: A critical reader (1st edition). Routledge.

Darolia, R. (2013). Working (and studying) day and night: Heterogeneous effects of working on the academic performance of full-time and part-time students. *Economics of Education Review, 38*. https://doi.org/10.1016/j.econedurev.2013.10.004

DeSimone, J. S. (2008). The impact of employment during school on college student academic performance. *National Bureau of Economic Research, Inc.* https://ideas.repec.org/p/nbr/nberwo/14006.html

Dickert-Conlin, S. & Rubenstein, R. (2007). Economic inequality and higher education: access, persistence, and success. *Industrial & Labor Relations Review*.

Dodd, B. G., Fitzpatrick, S. J., De Ayala, R. J., & Jennings, J. A. (2002). An Investigation of the Validity of AP® Grades of 3 and a Comparison of AP and Non-AP Student Groups. Research Report No. 2002-9. In *College Board*. College Board. https://eric.ed.gov/?id=ED561017

Dodson, L., & Deprez, L. S. (2019). "Keeping us in our place": Low-Income Moms Barred From College Success. *Contexts, 18*(1), 36–41. https://doi.org/10.1177/1536504219830675

Dougherty, D. 1992. A practice-centered model of organizational renewal through product in- novation. *Strategic Management Journal*, 13: 77-92

Dougherty, C., Mellor, L., & Jian, S. (2006). The Relationship between advanced

placement and college Graduation. 2005 AP Study Series, Report 1. In *National Center for Educational Accountability*. National Center for Educational Accountability. https://eric.ed.gov/?id=ED519365

Douglas D and Attewell P (2019) The relationship between work during college and post college earnings. *Front. Sociol.* 4:78. doi: 10.3389/fsoc.2019.00078

Dowd, A. C. (2010). Improving transfer access for low-income community college students. In A. Kezar (Ed.), Recognizing and serving low-income students in postsecondary education: An examination of institutional policies, practices, and culture (pp. 217-231). New York: Routledge.

Ellers, Elizabeth. (2011). *The Hispanic work ethic*. ANR Blogs. Retrieved December 2, 2020, https://ucanr.edu/blogs/blogcore/postdetail.cfm?postnum=6052

Flowers, L. A. (2008). Racial differences in the impact of participating in Advanced Placement programs on educational and labor market outcomes. Educational Foundations, 22(1-2), 121-132.

Flynn, K. (2018). *How much do you really save by going to community college?* Saving for college. https://www.savingforcollege.com/article/how-much-do-you-really-save-by-going-to-community-college

Fry, R., & Taylor, P. (2013). Hispanic high school graduates pass whites in rate of college enrollment. *Pew Research Center*

Garcia, L. M., & Bayer, A. E. (2005). Variations between Latino groups in U.S. post-secondary educational attainment. *Research in Higher Education*, *46*(5), 511–533. https://doi.org/10.1007/s11162-005-3363-5

Giddings, L. S., & Grant, B. M. (2006). Mixed methods research for the novice researcher. *Contemporary Nurse*, *23*(1), 3–11. https://doi.org/10.5172/conu.2006.23.1.3

Goldrick-Rab, S. (2009). Passing the torch: Does higher education for the disadvantaged pay off across the generations? Russell Sage Foundation. 2007. 268 pages.*Social Forces*, *88*(2), 979–980. https://doi.org/10.1353/sof.0.0263

Greene, K. M., Lee, B., Constance, N., & Hynes, K. (2013). Examining youth and program predictors of engagement in out-of-school time programs. *Journal of Youth and Adolescence*, *42*(10), 1557–1572. https://doi.org/10.1007/s10964-012-9814-3

Greene, T. G., Marti, C. N., & McClenney, K. (2008). The effort–outcome gap: differences for african american and hispanic community college students in student engagement and academic achievement.

Handel, S.J. (2009). *Transfer and the part-time student*. Change, 48-54. Retrieved from

http://web.ebscohost.com/libproxy.eku.edu

Hayward, Craig. (2020). The decay function of the predictive validity of high school GPA. *The RP Group*.10.13140/RG.2.2.22141.90089.

Heil, S., Reisel, L., & Attewell, P. (2014). College selectivity and degree completion. *American Educational Research Journal*, *51*(5), 913–935. https://doi.org/10.3102/0002831214544298

Herrera, A. and Jain, D. (2013), Building a Transfer-Receptive Culture at Four-Year Institutions. New Directions for Higher Education, 2013: 51-59. https://doi.org/10.1002/he.20056

Hess, A. (2019). Student debt increased by 107% this decade, Federal Reserve data shows. *CNBC.* https://www.cnbc.com/2019/12/30/student-debt-totals-increased-by-107percent-this-decade.html

Hood, L. (2010). *Unique challenges for Latino community college students*. The Hechinger Report. https://hechingerreport.org/unique-challenges-for-latino-community-college-students/

Huie, F. C., Winsler, A., & Kitsantas, A. (2014). Employment and first-year college achievement: The role of self-regulation and motivation. *Journal of Education and Work*, *27*(1), 110–135. https://doi.org/10.1080/13639080.2012.718746

Hurtado, S. (1994). The Institutional climate for talented Latino students. *Research in Higher Education*, *35*(1), 21–41.

Hurtado, S., & Carter, D. F. (1997). Effects of college transition and perceptions of the campus racial climate on Latino college students' sense of Belonging. *Sociology of Education*, *70*(4), 324–345. https://doi.org/10.2307/2673270

Hurtado, S., Inkelas, K. K., Briggs, C., & Rhee, B.-S. (1997). Differences in college access and choice among racial/ethnic Groups: Identifying continuing barriers. *Research in Higher Education*, *38*(1), 43–75.

Hurtado, S., Ramos, H. V., Perez, E., & Lopez-Salgado, X. (2020). Latinx student assets, college readiness, and access: Are we making progress? *Education Sciences*, *10*(4), 100. https://doi.org/10.3390/educsci10040100

Institute For Higher Education Policy (2014). Many students forgo borrowing despite financial need. *News and Events.* retrieved from https://www.ihep.org/press/many-students-forgo-borrowing-despite-financial-need/

Jaschik, S. (2021). *Biden Proposes Free Community College, Pell Expansion*. Inside

Higher Ed. Retrieved from https://www.insidehighered.com/news/2021/04/28/biden-proposes-free-community-college-18-trillion-plan

Jenkins, D., & Fink, J. (2015). *What We Know About Transfer*. New York, NY. Columbia University, Teachers College, Community College Research Center. Retrieved from http://ccrc.tc.columbia.edu/publications/what-we-know-about-transfer.html

Johnson, J., & Bozeman, B. (2012). Perspective: Adopting an asset bundle model to support and advance minority students' careers in academic medicine and the scientific pipeline. *Academic Medicine: Journal of the Association of American Medical Colleges, 87*(11), 1488–1495. https://doi.org/10.1097/ACM.0b013e31826d5a8d

Johnson, H., & Mejia, M. (2020). *Increasing community college transfers*. Public Policy Institute of California.https://www.ppic.org/wp-content/uploads/0920hjr-appendix.pdf

Hosmer, D. & Lemeshow, S. (2004). Applied logistic regression. John Wiley & Sons.

Karp, M. M., Hughes, K. L., & O'Gara, L. (2010). An Exploration of Tinto's integration framework for community college students. *Journal of College Student Retention: Research, Theory & Practice*, *12*(1), 69–86. https://doi.org/10.2190/CS.12.1.e

Karp, M. M., O'Gara, L., & Hughes, K. L. (2008.). Do support services at community colleges encourage success or reproduce disadvantage? An exploratory study of students in two community colleges. *Teachers College Columbia University*

Kaufman, P. (2001). Dropout Rates in the United States: *National Center for Education Statistics*

Kim, Y. K., & Sax, L. J. (2009). Student–faculty interaction in research universities: Differences by student gender, race, social class, and first-generation status. *Research in Higher Education*, *50*(5), 437–459. https://doi.org/10.1007/s11162-009-9127-x

Kim J. H. (2019). Multicollinearity and misleading statistical results. *Korean journal of anesthesiology, 72*(6), 558–569. https://doi.org/10.4097/kja.19087

Lam, A. (2007). Knowledge networks and careers: Academic scientists in Industry–University Links*. *Journal of Management Studies*, *44*(6), 993–1016. https://doi.org/10.1111/j.1467-6486.2007.00696.x

Landau, S., & Everitt, B. (2004). A handbook of statistical analyses using SPSS. Chapman & Hall/CRC.

LaSota, R. R., & Zumeta, W. (2016). What matters in increasing community college students' upward transfer to the Baccalaureate degree: Findings from the Beginning Postsecondary Study 2003-2009. *Research in Higher Education*, *57*(2), 152–189. https://doi.org/10.1007/s11162-015-9381-z

Levesque, E. M. (2018). Improving community college completion rates by addressing structural and motivational barriers. *Brookings*. https://www.brookings.edu/research/community-college-completion-rates-structural-and-motivational-barriers/

Levin, John., Montero-Hernandez, Virginia., & Cerven, Christine (2010). Overcoming adversity: community college students and work. In Laura Perna: Understanding the working college student (1097-1519). Sterling, VA: Stylus

Lichtenberger, E., & Dietrich, C. (2017). The community college penalty? Examining the bachelor's completion rates of community college transfer students as a function of time. *Community College Review*, *45*(1), 3–32. https://doi.org/10.1177/0091552116674550

Locks, A. M., Hurtado, S., Bowman, N. A., & Oseguera, L. (2008). Extending notions of campus climate and diversity to students' transition to college. *Review of Higher Education*, *31*(3), 257–285.

Long, B. T., & Kurlaender, M. (2009). Do community colleges provide a viable pathway to a baccalaureate degree? *Educational Evaluation and Policy Analysis*, *31*(1), 30–53. https://doi.org/10.3102/0162373708327756

Long, M. C. (2008). College quality and early adult outcomes. *Economics of Education Review*, *27*(5), 588–602.

Lowell, B. Lindsay and Suro, Roberto, 2002, How many undocumented: The numbers behind the U.S.—Mexico Migration Talks. *A Pew Hispanic Center Report*

Ma, Jennifer, & Baum, Sandy. (2016). Trends in community colleges: Enrollment, prices, student debt, and completion. *College Board Research*

Maxwell, S. P., McNeely, C. L. & Carboni, J. L. (2016) Cultural capital efficacy: A research note on parental and student aligned expectations for postsecondary matriculation, *Journal of Education and Human Development, 5(1), 1–12.*

McFarland, J., Hussar, B., Wang, X., Zhang, J., Wang, K., Rathbun, A., Barmer, A., Forrest Cataldi, E., Bullock Mann, F. (2018). The condition of education 2018 (NCES 2018-144). *U.S. Department of Education, National Center for Education Statistics.* https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2018144

McKinney, L., & Novak, H. (2013). The Relationship between FAFSA filing and persistence among first-year community college students. *Community College Review*, *41*(1), 63–85. https://doi.org/10.1177/0091552112469251

Melguizo, T. (2008). Quality Matters: Assessing the impact of attending more selective

institutions on college completion rates of minorities. *Research in Higher Education*, *49*(3), 214–236. https://doi.org/10.1007/s11162-007-9076-1

Melguizo, T. (2010). Are students of color more likely to graduate from college if they attend more selective institutions? Evidence from a cohort of recipients and nonrecipients of the Gates Millennium Scholarship Program. *Educational Evaluation and Policy Analysis*, *32*(2), 230–248.

Mendoza, P., Mendez, J. P., & Malcolm, Z. (2009). Financial Aid and persistence in community colleges: Assessing the effectiveness of federal and state financial Aid programs in Oklahoma. *Community College Review*, *37*(2), 112–135. https://doi.org/10.1177/0091552109348045

Millea, M., Wills, R., Elder, A., & Molina, D. (2018). What matters in college student success? Determinants of college retention and graduation rates. *Education 3-13, 138*, 309-322.

Murakami, K. (2020). *A new call to increase Pell.* Inside Higher ed. https://www.insidehighered.com/news/2020/07/21/amid-concerns-about-college-affordability-call-increase-pell

National Center for Education Statistics. (2013). *College Enrollment Rates*. The Improving Educational Profile of Latino Immigrants. *Pew Research Center's Hispanic Trends Project*. https://www.pewresearch.org/hispanic/2002/12/04/the-improving-educational-profile-of-latino-immigrants/

National Center for Education Statistics. (2017). Digest of education statistics tables and figures. https://nces.ed.gov/programs/digest/d18/tables/dt18_330.20.asp

Neyt, B., Omey, E., Verhaest, D., and Baert, S. (2017). Does student work really affect educational outcomes? A review of the literature. *J. Econ. Surveys* 33, 896–921. doi: 10.1111/joes.12301

Ngo, F., & Kwon, W. (2015). Using multiple measures to make math placement decisions: Implications for access and success in community colleges. *Research in Higher Education, 56*(5), 442-470. https://doi.org/10.1007/s11162-014-9352-9

Otero, R., Rivas, O., & Rivera, R. (2007). Predicting persistence of Hispanic students in their 1st year of college. *Journal of Hispanic Higher Education*, *6*(2), 163–173. https://doi.org/10.1177/1538192706298993

Pan, D. (2018). *Home prices outpace income, inflation*. Retrieved December 2, 2020, from https://www.usatoday.com/story/money/business/2018/06/06/home-prices-outpace-income-inflation/679451002/

Pascarella, E. T., & Terenzini, P. T. (2005). How college affects students: A third

decade of research. Volume 2. In *Jossey-Bass, An Imprint of Wiley*. Jossey-Bass, An Imprint of Wiley.

Paternoster, R., BRAME, R., Mazerolle, P., & Piquero, A. (1998). Using the correct statistical test for equality of regression coefficients. *Criminology*, *36*, 859–866. https://doi.org/10.1111/j.1745-9125.1998.tb01268.x

Peng, C.-Y. J., So, T.-S. H., Stage, F. K., & St. John, E. P. (2002). The Use and Interpretation of Logistic Regression in Higher Education Journals: 1988-1999. *Research in Higher Education*, *43*(3), 259–293.

Peng, J., Lee, K., & Ingersoll, G. (2002). An Introduction to Logistic Regression Analysis and Reporting. *Journal of Educational Research - J EDUC RES*, *96*, 3–14. https://doi.org/10.1080/00220670209598786

Perna, L. W. (2007). The sources of racial-ethnic group differences in college enrollment: A critical examination. *New Directions for Institutional Research*, *2007*(133), 51–66. https://doi.org/10.1002/ir.204

Perna, L. W. (2010). Understanding the working college student: New research and its implications for policy and practice. In *Stylus Publishing, LLC*. Stylus Publishing, LLC.

Pew Research Center. 2012 National Survey of Latinos. *Pew Research Center's Hispanic Trends Project*. https://www.pewresearch.org/hispanic/2014/04/18/2012-national-survey-of-latinos/

Phanor, H. E. (2015). A phenomenological study of first-generation Latino graduates of community college and protective factors of academic resilience. *Fisher publications*

Philbin, M. M., Flake, M., Hatzenbuehler, M. L., & Hirsch, J. S. (2018). State-level immigration and immigrant-focused policies as drivers of Latino health disparities in the United States. *Social Science & Medicine (1982)*, *199*, 29–38. https://doi.org/10.1016/j.socscimed.2017.04.007

Pike, G. R., Kuh, G. D., & Massa-McKinley, R. C. (2009). First-year students' employment, engagement, and academic achievement: Untangling the relationship between work and Grades. *Journal of Student Affairs Research and Practice*, *45*(4). https://doi.org/10.2202/1949-6605.2011

Protopsaltis, S., and Parrot, S. (2017) Pell *Grants—a key tool for expanding college access and economic opportunity— need strengthening, not Cuts*. https://www.cbpp.org/sites/default/files/atoms/files/7-27-17bud.pdf

Ranganathan, P., Pramesh, C. S., & Aggarwal, R. (2017). Common pitfalls in statistical analysis: Logistic regression. *Perspectives in Clinical Research*, *8*(3), 148–151. https://doi.org/10.4103/picr.PICR_87_17

Reyes, M., Dache-Gerbino, A., Rios-Aguilar, C., Gonzalez-Canche, M., & Deil-Amen, R. (2019). The "Geography of Opportunity" in community colleges: The role of the local labor market in students' decisions to persist and succeed. *Community College Review*, *47*(1), 31–52. https://doi.org/10.1177/0091552118818321

Richards, D., & Awokoya, J. (2012). Understanding HBCU retention and completion. *United Negro College Fund*/paper/Understanding-HBCU-Retention-and-Completion.-Richards-Awokoya/845487961bd7276be064b6b11192834b553665c2

Rios-Aguilar, C. (2014). Using big (and Critical) data to unmask inequities in community colleges. *New Directions for Institutional Research*. https://doi.org/10.1002/ir.20085

Rios-Aguilar, C., Kiyama, J. M., Gravitt, M., & Moll, L. C. (2011). Funds of knowledge for the poor and forms of capital for the rich? A capital approach to examining funds of knowledge. *Theory and Research in Education*, *9*(2), 163–184. https://doi.org/10.1177/1477878511409776

Rios-Aguilar, C., & Lyke, A. (2020). The California College Promise: A Promise to What, for Whom, and Where? *Policy Analysis for California Education*

Robson, C. (2002). Real world research: A resource for social scientists and practitioner-researchers. Oxford, UK: Blackwell Publishers.

Rodriguez, A. (2015). Tradeoffs and limitations: Understanding the estimation of college undermatch. *Research in Higher Education*, 56(6), 566–594.

Rosenbaum, J., Deil-Amen, R., & Person, A. (2006). After admission: From college access to college success. Russell Sage Foundation. https://arizona.pure.elsevier.com/en/publications/after-admission-from-college-access-to-college-success

Schneider, Barbara, Sylvia Martinez, and Ann Owens. (2006).Barriers to educational opportunities for Hispanics in the U.S.. Pp. 179-227 in *Hispanics and the Future of America,* edited by Marta Tienda. Washington, DC: National Academies Press.

Schreiber-Gregory, D., Jackson, H. M., & Bader, K. S. (2018). Logistic and linear regression assumptions: Violation recognition and control. /paper/Logistic-and-Linear-Regression-Assumptions-%3A-and-Schreiber-Gregory-Jackson/78116fb1b6a105d62c44dc0c931febd1fce5edfd

Scott-Clayton, J., & Minaya, V. (2016). Should student employment be subsidized? Conditional counterfactuals and the outcomes of work-study participation. *Economics of Education Review*, *52*(C), 1–18.

Shaw, E., & Mattern, K. (2013). Examining student under- and overperformance in college to identify risk of attrition. *Educational Assessment*, *18*, 251–268. https://doi.org/10.1080/10627197.2013.846676

Smith College. (2018). *Offices—Registrar—Examinations & Papers—Placement*. Smith College. Retrieved December 2, 2020, fromhttps://www.smith.edu/about-smith/registrar/placement-exams

Snyder, T.D., de Brey, C., and Dillow, S.A. (2019). *Digest of Education Statistics 2017* (NCES 2018-070). National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education. Washington, DC.

Soliz, A., Long, B. (2016). Does working help or hurt students? The effect of federal work-study participation on student outcomes. *Harvard University, Cambridge, MA.*

Tessema, M., Ready, K., & Astani, M. (2014). Does Part-Time job affect college students' satisfaction and academic performance (GPA)? The case of a mid-sized public university. *International Journal of Business Administration*, *5*. https://doi.org/10.5430/ijba.v5n2p50

Stinebrickner, R. and Stinebrickner, T. R. (2003). Working during school and academic performance, *Journal of Labor Economics*, 21 (2): 473-491.

Teacher's College (2017). *Community college faqs*. Teachers College Columbia University. https://ccrc.tc.columbia.edu/Community-College-FAQs.html

Tinto, Vincent. (1975). Drop-Outs from higher education: A theoretical synthesis of recent research. *Review of Educational Research.* 45. 89-125. 10.2307/1170024.

Titus, M. (2006). Understanding college degree completion of students with low socioeconomic status: The influence of the institutional financial context. *Research in Higher Education*, *47*, 371–398. https://doi.org/10.1007/s11162-005-9000-5

Titus, M. A. (2010). *Understanding the relationship between working while in college and Future salaries.* In Laura Perna: Understanding the working college student (loc. 4965-5254). Sterling, VA:Stylus.

US Census Bureau. (2019). *Census.gov*. Census.Gov. Retrieved December 2, 2020, from https://www.census.gov/en.html

Vargas, E. D., & Ybarra, V. D. (2017). U.S. Citizen children of undocumented parents: The link between state immigration policy and the health of Latino children. *Journal of Immigrant and Minority Health*, *19*(4), 913–920. https://doi.org/10.1007/s10903-016-0463-6

Vatcheva KP, Lee M, McCormick JB, Rahbar MH. Multicollinearity in regression

analyses conducted in epidemiologic studies. *Epidemiology (Sunnyvale).* 2016 Apr;6(2):227. doi: 10.4172/2161-1165.1000227. Epub 2016 Mar 7. PMID: 27274911; PMCID: PMC4888898.

Wainer, H. (2004). Introduction to a special issue of the Journal of Educational and Behavioral Statistics on value-added assessment. *Journal of Educational and Behavioral Statistics*, *29*(1), 1–3. https://doi.org/10.3102/10769986029001001

Wang, X., Lee, Y., & Wickersham, K. (2019). The role of community college attendance in shaping baccalaureate recipients' access to graduate and professional education. *Educational Researcher*, *48*(2), 84–100. https://doi.org/10.3102/0013189X19825659

Warwick, C. (2021). *President Biden Proposes Historic Pell Grant Increase in First Budget*. National College Attainment Network.

Wyner, J. S., Bridgeland, J. M., & DiIulio, J. J. (2007). Achievement trap: How America is failing millions of high-achieving students from lower-income families. In *Civic Enterprises*. Civic Enterprises, LLC. https://eric.ed.gov/?id=ED503359

Wetzel, J.N., O'Toole, D. & Peterson, S. Factors affecting student retention probabilities: A case study. *J Econ Finan* 23, 45–55 (1999). https://doi.org/10.1007/BF02752686