Emerging from the Pipeline: Post Graduation Labor Market Outcomes for Black UC Bachelor's Degree Recipients

By

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ABSTRACT

Emerging from the Pipeline: Post Graduation Labor Market Outcomes for Black UC Bachelor's Degree Recipients

This research study examined earning disparities between five cohorts of Black and White bachelor's degree recipients at the University of California two (N = 33,428), four (N = 30,096), six (N = 29,829), and ten (N = 29,330) years post-graduation. Results show that without adjustments, there is a sizeable and compounding Black-White wage gap. With pre-college adjustments and both pre-college adjustments and post-matriculation adjustments, Black-White wage gaps for the UC graduates were statistically insignificant with pre-college adjustments diminishing the race effect showing that graduates with similar pre-college characteristics fared the same in the labor market regarding earnings. No statistically significant differences were observed between the earnings of Black and White first-generation students. Differences in earnings between Black and White graduates who earned subsequent degrees were small and not statistically significant with Black and White graduates with a subsequent degree earning less than their peers without one signaling that going to graduate school equals time out of the labor market which works to the advantage of those who decide not to pursue a subsequent degree. From a gender perspective, Black males were found to earn less than White males and White females earned more than Black females. This study focused on the general pay gap, so more research is needed to explore potential Black-White occupational wage gaps. Some implications for policy and practice include providing Black students with access to high-paying fields of study, closing Black-White academic achievement gaps starting the K-12 level, and providing access to internships and study abroad programs in an equitable way.

Keywords: wage disparity, earnings, racial discrimination, labor market

DEDICATION

Throughout my childhood, my mother exemplified what it meant to have a strong work ethic. She would often say, “You will reap what you sow so make sure you sow appropriately.” That instilled in me the drive to do the best that I can with whatever work is placed in front of me. My mother did not go to college, and she never had the opportunities that I have been blessed with, so I dedicate this milestone to her memory and hope that she is proud of what I have been able to achieve. I never thought I would earn a doctorate, but I had people in my life who saw more in me than I saw in myself. My loving mother would constantly tell me I was the only one standing in the way of anything I wanted to accomplish and that if I didn’t believe I could, then I won’t. As I get closer to the end of my CANDEL journey, I now agree wholeheartedly with her.

Most importantly, this has a generational impact as I am now passing the encouragement down to my children, motivating them to dream big dreams and throw off all imaginary limitations that their minds might place on them. I believe that people of color need additional support to show up in academic and professional doctoral spaces because oftentimes, it is not a question of ability but more of opportunity. So, it is also critical for me to dedicate this work to my children as well to show them what is possible. Even though neither of them understood why I would want to go back to school after so many years, I am grateful for their daily support and how they constantly made sure that I rested when I needed to.

This dissertation is dedicated to my mother and my children – Sena Shoga, Tami, and Tobi Popoola, and also to my team at the University of California Office of the President. Thank you to my mother for being that still small voice that is always present in the crevices of my heart, and my children for being there for me through this important educational journey. Thank you to my team – Abhi, Raj, Poorani, Carol, Chris H., Chris F., Pavani, Pavan, Mukhesh, Pamela, Jenna, Courtney and Julienne for their unwavering help and support.

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This work could not have been accomplished without the support and effort of many. This dissertation is a fitting example of the popular saying, “It takes a village.” I would like to acknowledge the tireless help and support of my advisor, Dr. Paco Martorell. I first met Dr. Martorell in my first year of the program during the exposure to formulating and influencing policy. I knew the area I wanted my research to be in and his influence as an Economist was very attractive to me. I was excited when it was announced that he would be my advisor. From the start, he was patient and took time to not just help me with making research decisions but ensuring I understood why certain decisions were being made. He met with me regularly and spent time and energy to reviewing my dissertation chapters and providing actionable feedback. Because of his gracious treatment of me and my research study, I am extremely motivated to keep doing this type of research around wage disparities by race and gender well into the future.

I would also like to salute and express my deepest gratitude to my committee members, Dr. Michal Kurlaender, Dr. Lee Martin, and Dr. Patti Herrera. Since my first class in the program, Dr. Kurlaender has been a strong source of support. If I needed her help, all I needed to do was ask. Her kind words were instrumental in preparing me for my Qualifying Exam (QE). Dr. Patti Herrera met with me via Zoom on many occasions to provide valuable feedback on my writing, especially my literature review and theoretical framework chapters. Starting from her class on education finance, she reinforced much-needed confidence and helped me get rid of the horrid feelings of imposter syndrome. When I felt I did not have what it would take to be successful with the dissertation process, she was an avid cheerleader of mine.

In addition, I would like to thank Dr. Fateemah Mustafa, Dr. Carolynne Beno, and Dr. Elizabeth Montanõ for their help in the last two years of the program. Their diligent and thorough walkthrough of the dissertation process has been invaluable to my success. Their feedback on my writing and the provision of great resources helped me develop the necessary skills required for academic writing.

I would also like to acknowledge the other members of my cohort – cohort 17, known as the "Quarantine Seventeen". Right from the beginning, we defined our values to include things like being present, compassion for self and others, embracing multiple perspectives, embracing vulnerability, calling each other in versus calling one another out, supporting one another, embracing the journey, showing mutual respect, and most importantly having fun along the way. I appreciated the way we worked as a team during the program from taking group notes on readings and supporting one another with assignments and projects. Even though we are all at various stages of the dissertation process, we continue to support one another and provide suggestions and resources to one another to help one another in our journey.

Finally, I will be remiss not to mention my mother and my children again as well as my eldest brother, Kayè who cheered me on all the way from the United Kingdom. As a first-generation doctoral student, I am grateful for all the opportunities that were given to me and the sacrifices my mother made to get me here. My diligence and drive to succeed comes from watching the struggles of my mother until I was old enough to be a source of support to her, and seeing how important it is to show my children that even single parents can make it if they work hard and keep reaching for more.

POEM – I WALK ALONE - LONNIE POCO

As a small native child
I walk alone
along a dusty dirt road
near the Wichita.

My dark brown skin and black hair
make me who I am
brother to the sun
and all the world.

Those who laugh at me
laugh at their own
inanition.

Those who scourge me
tell me that the great spirit
is dead
and that the creator to all the
world is white.

They try to convince me
That color makes no difference
Yet they feel deep down
That they are right,
That white is right.

These things I see
As a small child
As I walk alone
Along a dusty dirt road
Near the Wichita.

1981

Fiske-Rusciano & Cyrus (2009)

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CHAPTER 1 – INTRODUCTION & CONTEXT

1.1. Background

In 1991, Turner, Fix, and Struyk conducted a study with sets of Black and White job seekers. The paired Black and White candidates had the same credentials and were directed to apply for the same entry-level jobs. Findings showed that Black applicants were less likely to be invited for an interview when compared to their White counterparts, and even if they secured an interview, their interview times were shorter, with more negative comments (Kaufman, 2010). Regarding criminal records, Black people with no criminal records receive fewer responses to applications than White people with criminal records. If Black non-offenders fall behind White offenders in the labor market, this is a puzzling phenomenon as it alludes to the influence of race in the hiring process (Pager, 2003 as cited in Kaufman, 2010). Even as Black workers scale the application and hiring process and are able to secure employment, they may experience a wage discrepancy when compared with equally qualified White workers. This troublesome Black-White wage disparity is historical and still evident today (see Appendix G). Wilson & Rodgers III (2016) clarify that these gaps are much larger today than they were in 1979. While these disparities have not happened in a linear trajectory, it still makes efforts to eradicate wealth inequality between Black and White citizens in America almost impossible as income is one of the key drivers of wealth accumulation.

Black or White, we all seek the American dream. We all want good jobs. We all desire nice homes, sound businesses, and good families. We all want to build wealth, send our kids to good schools, and create wealth and a legacy for the next generation. Income provides the power of choice regarding what we want to do and how we want to live our lives. It provides the opportunity to purchase a home in a safer neighborhood, start or invest in businesses, save for retirement, and support oneself and one's family. Wealth functions as a straightforward definition of a family's financial net worth (Emmons & Ricketts, 2017; Fiske-Rusciano & Cyrus, 2009).

The United States has long seen itself and claimed to be a country where anyone could make it if they invested in education and worked hard. Moreover, the education industry does not fail to advertise how having a college degree helps to achieve economic mobility and reduce Black-White disparities in earnings. Yet the power of a college degree to reduce or eliminate these gaps remains unproven because acquiring a degree has shown a meager effect on racial and ethnic wealth gaps, meaning the "work hard" blueprint seems to be less than a guarantee of financial stability and success for Black people. As Meschede et al. (2017) put it:

> A college education has been linked to higher lifetime earnings and better economic achievements, so the expectation would be that it is also linked to higher net wealth for everybody. However, recent analyses challenge this hypothesis and find that the expectation holds true for White college educated households but not for Black college-educated households (p. 121).

Nevertheless, researchers have concluded that attaining a college degree is worth it from a social and economic perspective for all racial groups (Barrow & Rouse, 2005; Gillen et al., 2013), even though student loan data shows a dire situation for Black borrowers that is different for other racial groups (Jones et al., 2020). The question that needs addressing is not whether there is some benefit to acquiring a degree from a within-group perspective but whether the level of earnings differs across racial groups.

Scholars also highlight that Black people earn less than White people at all levels of educational attainment (see Appendix F), with Black people with master's degrees having lifetime earnings lower than White people with bachelor's degrees (Carnevale et al., 2011; Wilson, 2016). Does a bachelor's degree provide the same level of earnings based on race/ethnicity? How could it be possible that the minority groups that need to advance economically through the acquisition of a degree earn less regardless of their stock of human capital? There are competing explanations regarding wage disparities and the disadvantages faced by Black people. One reason is that even as more Black students enter into higher

education, they are still only half as likely to earn a degree compared to White students. Furthermore, as the educational gap between Black and White people reduces significantly, the quality of education received by Black people is still deemed inferior due to notable differences in academic achievement and family background (O'Neill, 1990). For example, the quality of teachers and the student-teacher ratios in predominantly Black schools adversely affect the quantity and quality of schooling that Black students receive. Extensive research shows a negative correlation between the student-teacher ratio and academic achievement. This indicates that as the average number of teachers per student increases, the academic achievement of students decreases (Ajani & Akinyele, 2014; Diaz et al., 2003; Koc & Celik, 2015).

The root cause of wage inequality is a complex combination of personal and social factors - personal factors consisting of education, training, skill, effort, and luck; and social factors include labor market laws and educational policies. The social factors have the power to override the personal factors to determine how much graduates can prosper post-graduation (Mendez-Carbajo, 2022). Some scholars take the stance that income inequality happens due to variations in biological, cultural, behavioral, and educational experiences, believing that factors such as lower intelligence and weaker cognitive ability, lack of work ethic, lower academic attainment, lower quality of education, and family structure are responsible for earning disparities (Arrow, 1971; Brimmer, 1988; Keister & Moller, 2000 as cited in Herring & Henderson, 2016). They are convinced Black people earn less and are more likely to live in poverty because they are often led by unmarried women with too many children. This is not surprising as Black women's marriage rates declined drastically from 60.9% in 1970 to 36.8% in 2010 (Cancian & Haskins, 2014), and having multiple siblings means reduced cognitive development and educational attainment with the belief that every additional child causes a reduction in the level of human and social capital investment (Cáceres-Delpiano, 2006; Hill & Stafford, 1977; Skog, 2016; Temel, 2011). A greater effect of lower human capital and social capital investment is noticeable in poorer families who

have fewer resources to start with (Brimmer, 1988; Keister & Moller, 2000 as cited in Herring & Henderson, 2016; Skog, 2016). Authors like Daniel Patrick Moynihan argued that enacting civil rights legislation alone will not create Black-White equality as a plethora of social issues continue to prevent Black citizens from achieving economic parity with their White counterparts. Positive attempts to dislodge Jim Crow ideologies are one thing, but eliminating the negative stereotypes that perpetuate Black disadvantage in the labor market is a different matter (Bobo & Charles, 2009; Geary, 2015; Wilson, 2009).

Lang & Lehman (2012) attest that even though segregation has diminished over the last 30 years, continued elevated levels of segregation, influenced by discrimination (Manduca, 2018) means Black people live in poorer neighborhoods and attend lower quality schools, resulting in lower cognitive abilities, academic achievements and negative behavior that translates into poor labor market outcomes. While some researchers ascribe Black-White test gaps to weaker cognitive ability and poor scholarship (Thernstrom & Thernstrom, 1997 as cited in Goldsmith et al., 1998), others believe cognitive abilities explain very little when it comes to earnings and productivity (Bowles & Gintis, 1975; Bowles et al., 2001 as cited in Carnoy, 2020). Nevertheless, researchers like Murnane et al. (2000) found in their study that cognitive skills do have a modest impact on earnings, and because many Black students are often from low-income households with no familial role models who are instrumental in supporting educational attainment, modeling education as a family value, and providing education and career advice that lead to personal and professional success; family members that have good jobs to demonstrate that dedicated work in school pays off, and as a result, the interest to grow these skills is low (Bryant & Zimmerman, 2003; Rankin et al., 2020).

The pervasive opinion that Black employees earn less because of lower academic achievement reinforces the inaccurate belief that all that Black people need to do to achieve pay parity is stop making excuses and take personal responsibility for their self-sabotaging attitudes and behaviors. If they do this, their low socioeconomic position will vanish, and equality will be

achieved (Aja et al., 2014 as cited in Hamilton & Darity, 2017). This falsity rests on the presupposition that all racial groups have equal access to chances to steer their lives in a way that guarantees economic stability if only they would stop making bad choices because the barriers they face are behavioral and not structural (Emmons & Ricketts, 2017).

Researchers who deny the existence of structural racial discrimination focus instead on racial group experiences and human capital profiles (Altonji & Doraszelski, 2005; Black et al., 2006; Brimmer, 1988; Charles et al., 2009; Lawrance, 1991; Welch, 1973). These race-neutral views revolve around the works of Wilson (n.d., 2003, 2011, 2012, 2015) and his controversial book, The Declining Significance of Race (1978, 1980 2nd. ed.). While scholars like Hamilton & Darity (2017) emphasize that race is a much stronger predictor of wealth than class, Wilson proposes that class has superseded race as the most significant factor in explaining the situation faced by Black people in America. He faults non-racial economic factors, including the skill segmentation of labor markets, the movement of industries out of central cities, and the decline in the manufacturing of goods relative to the production of services for creating a social and economic situation that perpetuates Black poverty. Wilson claims that Black people are over-represented in the lower class because of past discrimination and remain there because of non-racial economic factors. Wilson's idea quickly gained popularity because it diminishes the subject of racism and denies the need to explain how stubborn societal racial hierarchies are consistently reproduced. In contrast, proponents of the view that racism is the cause of Black-White economic gaps point to a legacy of past discrimination, persistent discriminatory practices, and racialized policies in labor, housing, and credit markets as critical sources of structures that perpetuate and sustain racial wealth disparities (De La Fuente & Navarro, 2020; Hamilton et al., 2015; Thomas, 2000). The illusion of race-neutrality and colorblindness in the labor market only serves to preserve the normalcy of ongoing anti-Blackness (Curry & Curry, 2018). Moreover, if we insist that societal systems are fair and impartial, we ignorantly assume

an ideal society. But the reality is that we do not live in an ideal and equitable society and anti-Black racism is real. According to Gutmann (1996):

> If we assume an ideal society, with no legacy of racial injustice to overcome, then there is everything to be said for the color-blind standard for making public policy. Fair opportunity requires that every qualified applicant receive equal consideration for a job on the basis of his or her ability to do the job well, not on some other basis. Preferential hiring or firing considers something other than a candidate's ability to do the job well. It considers race, gender, class, or another characteristic that is not strictly speaking a qualification for the job (p. 305).

This study will focus on wage differentials between Black bachelor's degree recipients and their White counterparts and will investigate whether a bachelor's degree operates as an economic mobility equalizer for both groups where the levels of Black-White earnings are comparable based on educational attainment. Prior literature in this area explores labor market discrimination based on residential and labor market segmentation (Kaufman 1983; McLafferty & Preston, 1992; Wang, 2008), racial discrimination (Arrow, 1971; Arrow, 1998; Lippens et al., 2022), cognitive ability and intelligence (Heckman et al., 2006; Kerckhoff et al., 2001; Lee & Newhouse, 2012; Lin et al., 2018), family structure (Cancian & Haskins, 2014; Darity et al., 1998; Powell & Parcel, 1997; Tilly & Albelda, 1994), academic attainment (Baird, 1985; Marks & Ainley; 1999; Watts, 2020) quality of education and college choice (Card & Krueger, 1992; Dearden et al., 2002; James et al., 1989), employer taste-based discrimination (Becker, 1971 as cited in Lang & Lehmann, 2012; Thijssen, 2016), employer statistical discrimination (Arrow, 1971 as cited in Thijssen, 2016; Phelps, 1972 as cited in Thijssen, 2016), and unconscious discrimination (Thijssen, 2016; Quillian, 2008).

This research will add to the existing literature by exploring earning disparities using the wage data of a specific higher education institution with the aim of providing insight into the supply-side labor market characteristics and how policies and practices might be employed to

ensure similar economic outcomes for graduates of the institution regardless of their racial background.

1.2. Problem Statement

Despite the advancements in race relations post the Civil Rights enactments, research still shows that the Black-White wage gaps continue to pervade the American job market across many industries (Strayhorn, 2008). When college students and their families invest in higher education, the expectation is that higher education will level the economic playing field for people from different racial groups. The main question this study will answer is whether the labor market provides similar earnings for Black graduates who earned bachelor's degrees within the University of California (UC) system as it does for White graduates. Whenever Black graduates experience a disadvantage regarding post-graduate earnings and career progression, this form of discrimination tends to accumulate over life's course and impedes the ability of Black people to earn, invest, and save the money necessary to amass wealth (Conley, 1999; Thomas et al., 1994 as cited in Herring & Henderson, 2016).

1.3. Purpose of Study

Using a critical quantitative inquiry approach, a methodology that guides researchers in the use of quantitative methods in conjunction with critical race theory to explore issues associated with race and ethnicity (Garcia et al., 2018), the primary goal of this study is to examine higher education outcomes in the labor market to explore average earning differences between Black and White high-achieving bachelor's degree recipients from the UC system who started as freshmen from California public and private high schools This type of study that controls for both pre-college and post-matriculation characteristics provides the best chance to explore earning because it takes into consideration the influence of these characteristics on the

relationship between earnings and race. It ensures that measures that have the potential to confuse the association between race and earnings are accounted for.

Although extensive UC research is available on earning disparities by gender, no studies have been done regarding race-based earning differences as they pertain to UC degree recipients.

1.4. Research Relevance

Without equitable pay and promotion opportunities to advance in the labor market post-graduation, it may suggest that higher education does not even the playing field. As such, any research into earning disparities and the development of educational and labor market policy implications that can help to improve labor outcomes for Black students is beneficial. Moreover, achieving racial and ethnic pay equity in the labor force benefits both the employee and the employer. Inequitable treatment of the workforce not only affects the economic standing of employees but also affects employee behavior and performance. Employers may also lose the benefits associated with having a diverse and culturally competent workforce. As reported by the Equality and Human Rights Commission, race-related pay gaps reflect a wider systemic issue that must be confronted to achieve a fairer society (Longhi & Brynin, 2017).

Finally, UC, the object of this analysis is the world's leading public research university system, with top spots in the U.S. News and World Report's 2023 Best Colleges rankings. An examination of what happens after UC students graduate and enter the labor market is of utmost importance.

1.5. Research Questions

To better understand the impact of race on post-bachelor degree attainment earnings of freshmen entrants into UC from California high schools, and potential factors that might impact earnings, this research study will explore the following questions:

1. How do average earnings of Black UC bachelor's degree recipients compare to that of their White counterparts two years, four years, six years, and ten years post-graduation?
    a. Sub-question 1: What are the raw differences between the average earnings of Black bachelor's degree recipients compared to their White counterparts?
    b. Sub-question 2: What are differences between the average earnings of Black bachelor's degree recipients compared to their White counterparts while adjusting for pre-college characteristics (parental income, first-generation status, SAT score and high school GPA)?
    c. Sub-question 3: What are differences between the average earnings of Black bachelor's degree recipients compared to their White counterparts while adjusting for pre-college (parental income, first-generation status, SAT score and high school GPA) and post-matriculation characteristics (field of study, college GPA at graduation and subsequent degree attainment)?
2. How do the differences in average earnings between Black and White UC bachelor's degree recipients vary across student subgroups?
    a. Sub-question 1: What are the differences in average earnings between Black and White UC bachelor's degree recipients who are first-generation compared to those who are non-first generation while adjusting for pre-college and post-matriculation characteristics?
    b. Sub-question 2: What are the differences in average earnings between Black and White UC bachelor's degree recipients who earned subsequent degree(s) compared to those who did not while adjusting for pre-college and post-matriculation characteristics?
    c. Sub-question 3: What are the differences in average earnings between Black and White UC bachelor's degree recipients who are males compared to those who are females while adjusting for pre-college and post-matriculation characteristics?

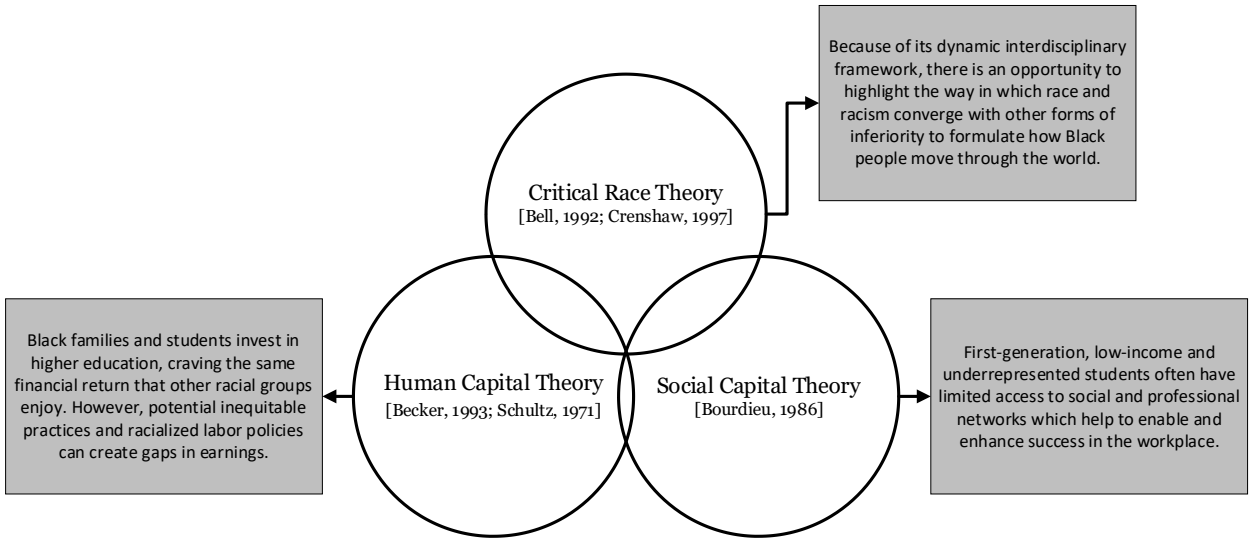
CHAPTER 2 – THEORETICAL FRAMEWORKS

2.1. Introduction

This research study is grounded in critical race (CRT), human capital (HCT), and social capital theories (SCT).

Figure 1

Theoretical Frameworks



Note. The interaction of critical race theory, human capital theory and social capital theory

The coaction of these theoretical frameworks rests on the opinion that race and ethnicity impact wages and career progression in the labor market, just as much as the learnings, skills, and knowledge workers bring to the marketplace. All three theories bring together exploration opportunities into the interplay between human capital factors, the social connections, networks, and relationships that aid one's success in the workplace, and Black-White earning differentials (Hartog, 1986; Kaufman, 1983). This study on earning disparities between Black and White bachelor's degree recipients at UC is unique principally because the majority of the research on labor market wage disparities focuses mainly on the human capital aspect of the supply side of labor, and how proposed changes in policies should be centered on remediation

strategies to increase education, knowledge and skills (Ben-Porath, 1967; Dabla-Norris et al., 2015; Gabriel, 2004).

2.2. Human Capital Theory (HCT)

The roots of HCT can be found in the economics discipline. Originally developed by Becker (1962) and Rosen (1976), it is closely related to the concepts of manpower and human resources. It is a function of future earnings reflecting the increase in the economic value of individuals (Schultz, 1972). Nafukho et al. (2004) describe the fundamental principle around HCT as the notion that the ability to learn and develop marketable skills is similar to the processes involved in manufacturing goods and services. Thus, the aim of acquiring a college degree and the training associated with such an investment is to gain human capital. Essentially, individuals are a form of moneymaking capital developed via further education and training. The proposition is that increases in skills and knowledge through education, training, and a lifelong learning mindset are expected to cause a long-term rise in productivity which translates into an increase in wages and career progression (Galor, 1990 as cited in Kwon, 2009; Levin, 2012; Sicherman, 1991 as cited in Kwon, 2009).

There is no doubt that schooling has a profound effect on productivity, earnings, career choice, the ability to adapt to the changing world of technology, and career progression. This makes an individual's prioritization of investments in human capital important to actively compete in today's labor market. Not only is human capital through education a personal advantage for those who elect to create it, but it also contributes to the state and national economic development. This makes adequate education funding a prime strategy for economic development. If the goal to equalize earning potential amongst White and Black people is to be accomplished, Beverly & Sherraden (1997) suggest that some amount of focus must be placed on equalizing human capital development through quality education available to minority groups.

HCT is instrumental in taking the focus away from the labor market and business and placing it squarely on the shoulders of individuals, saying the issue of wage inequality has more to do with education, skills, and abilities than it has to do with race. HCT posits that without an intentional focus and investment in quality education for Black citizens, the sizable wage disparities between Black and White workers will persist. The awareness of human capital is especially important to this study because it implies that across-group wage disparities can be explained by education and skill differences across groups. This motivates the analyses I conduct where I examine earnings differences by race among UC bachelor's degree recipients while holding constant pre-college and post-matriculation measures. If differences by races are still found, it would suggest that human capital in isolation is insufficient as a framework for explaining across-group differences or that there are other unobserved skill differences that are unaccounted for in the data available for research.

Nevertheless, HCT is critical as more Black students invest in education at the undergraduate and graduate levels, craving the same financial rewards as White or other racial group students expect. Because of HCT, it is no surprise that in attempting to explain the disadvantage that Black people experience in the labor market, scholars focus mainly on the importance of human capital. While some make the argument that Black-White cognitive abilities are a major hindrance to the economic progress of Black people (Carnoy, 2020), others point to a legacy of past discrimination, persistent inequitable practices, and racialized policies in labor as legitimate reasons for the gaps in earnings. To believe that wage gaps are largely due to pre-market skills and simply prioritizing human capital accumulation will bring about labor market equity is not only naïve but further propagates the illusion of race-neutrality and color-blindness. This normalizes persistent antiblackness (Carruthers & Wanamaker, 2017; Curry & Curry, 2018; De La Fuente & Navarro, 2020; Hamilton et al., 2015; Thomas, 2000). Race and racism do not mean that Black students do not benefit from the acquisition of a college degree. The attainment of a degree is accompanied by an increase in cognitive abilities, positive changes

in values, attitudes, and behavior, and the ability to follow organizational rules and norms such as collaboration, punctuality, and respect for authority (Beverly & Sherraden, 1997).

Higher education institutions are instrumental in expanding the stock of human capital by growing both the demand as well as the supply of skill and talent needed in the local communities they serve, as well as nationally and around the world (Abel & Deitz, 2012). For example, UC is viewed as a generator of human capital in the State of California, and an engine of economic and social mobility. [1] With companies having an urgent need to enlarge and maintain their competitive advantage, and grow their organizational human capital, the rise in the use of strategies like psychometrics and other types of screening tests to evaluate potential hires is imminent. This places a burden on higher education institutions to prepare students for the development of these aptitudes, attitudes, and skills that help to increase students' stock of human capital, especially first-generation, low-income, and underrepresented students (Carruthers & Wanamaker, 2017) as parents who have acquired elevated levels of human capital themselves are able to provide necessary resources to ensure an intergenerational transfer of this important form of capital. This is the main goal of this study – to address implications for policy and practice that facilitate the accrual of these essential benefits to prepare Black graduates to excel in the labor market.

2.3. Social Capital Theory (SCT)

With its origin in sociology, SCT operates on the hypothesis that relationships have influence and that social networks are invaluable assets. It sums up the aphorism, "It's not just what you know, but who you know." It reinforces the concept that we derive benefits from social relationships with others (Claridge, 2018). SCT is especially critical to my research study

[1] Source: University of California. Office of Institutional Research & Academic Planning (2021). Fiat Lux: What is the value of a UC degree? https://www.ucop.edu/institutional-research-academic-planning/_files/value-of-degree-full-report.pdf.

because of its close relationship with HCT. Social capital has the potential to be a key factor in both college and post-college success, especially for first-generation and low-income students.

It is important to note that first-generation, low-income, and underrepresented students often have limited access to social and professional networks, which tends to exacerbate income gaps (D'Agostino, 2022). Including first-generation status as a measure in this study allows for the exploration of its relationship with earnings. If the ability to leverage these important networks is unavailable to first-generation graduates, they miss opportunities they may be more than qualified for but simply lack access to information about. For example, Fernandez-Kelly (1995) as cited in Aguilera (2002) discovered that Black inner-city teenagers do not have access to information on what employers are looking for during the recruitment and interview process because the majority of the people in their network do not provide such information. Even when they are hired, the ability to form these networks in the workplace influences income and career progression, and they struggle with building these relationships. Bonilla-Silva & Baiocchi, (2001) go one step further and declare that "social networks and norms of social behavior are often mobilized to defend racial exclusion in a racialized society (p. 92)", and in a racialized society, certain individuals are prevented from access to these networks as the networks themselves are racialized just like the society in which they operate.

This interplay between SCT and CRT reveals the complication that first-generation, low-income, and underrepresented students face – the normalcy of racism in society and the lack of access to social capital in the form of information, connections, and support that can aid in career progression and economic prosperity. When we as educators begin to understand the association between the development of HCT and SCT as it pertains to CRT, we can start to recognize the compounding effect of race and social class as it relates to labor market outcomes for graduates.

2.4. Critical Race Theory (CRT)

CRT surfaced through the work of Derrick Bell and Alan Freeman as a response to the momentum of racial transformation in America, specifically with the impact of race and racism in the area of law and justice. It explores the impact race has in maintaining economic disparities between dominant and underrepresented minoritized groups (DeCuir & Dixson, 1995 as cited in Hiraldo, 2010; Delgado, 1995 as cited in Hiraldo, 2010; Ladson-Billings as cited in Hiraldo, 2010; Ladson-Billings & Tate as cited in Hiraldo, 2010). With a cry to equalize the labor market outcomes for Black graduates, I approach this research study through the lens of CRT mainly because benefits amassed from HCT and SCT are controlled by racism and racist structures that are explored and explained using CRT.

CRT has been recognized as a methodology to evaluate inequity in higher education, research, and practice (Hiraldo, 2010). The five tenets of CRT that drive its use as an important component of the theoretical framework in this study are (1) the neutrality or the normalcy of racism and the non-peculiarity of its existence in American society, (2) racism as a social construct and not biologically natural, (3) the concept of interest convergence where interests of racially minoritized groups are only taken into consideration when they serve the interest of White groups and (4) a stand for social justice and a commitment to overcome any form of racial subordination and discrimination by challenging dominant ideologies, and (5) using storytelling and counter storytelling as a way of telling the stories of those who have been marginalized, and challenging the narratives of the dominant culture structured to maintain power and dominance while centering Black experiences and voices (Hartlep, 2009; Lynn & Dixson, 2013; Yosso & Solórzano, 2005). Historically, some scholars have reached for many reasons outside White supremacy for the variations in economic mobility, earnings, and wealth accumulation between Black and White people (Freeman, 1978; Wilson, 2003). Freeman (1978) highlights background differences as being more important to wage disparities than discrimination. Factors such as the increasing number of female family-headed households, low socioeconomic conditions, poor

backgrounds, low-quality schools, and chronic unemployment are viewed as more likely to be the culprit in the investigation of why Black people appear to earn less than their White counterparts. The truth is that low socioeconomic conditions, poor backgrounds, low-quality schools, and chronic unemployment are all fruits of racial discrimination.

Employing CRT in this study further highlights the multiple ways that race can influence earnings in the labor market and the powerful repercussions that it can have. As a dynamic interdisciplinary framework, the task is to highlight and oppose the manner in which race and racism converge with other innovative forms of inferiority to formulate the way people of color move through the world (Delgado & Stefancic, 2012 as cited in Yosso & Burciaga, 2016). One's membership in a marginalized group, despite the accrual of human and social capital through the acquisition of a college degree, can hit a glass ceiling when it comes to financial rewards in the labor market. Using CRT as a framework allows the unveiling of racial stratification in the labor market both internally and externally and provides society with an opportunity to respond responsibly to issues of racial and socio-economic justice. In actuality, the lengths to which Black and White people have to go to accomplish the same economic and professional goals are vastly different (Hudson, 2021).

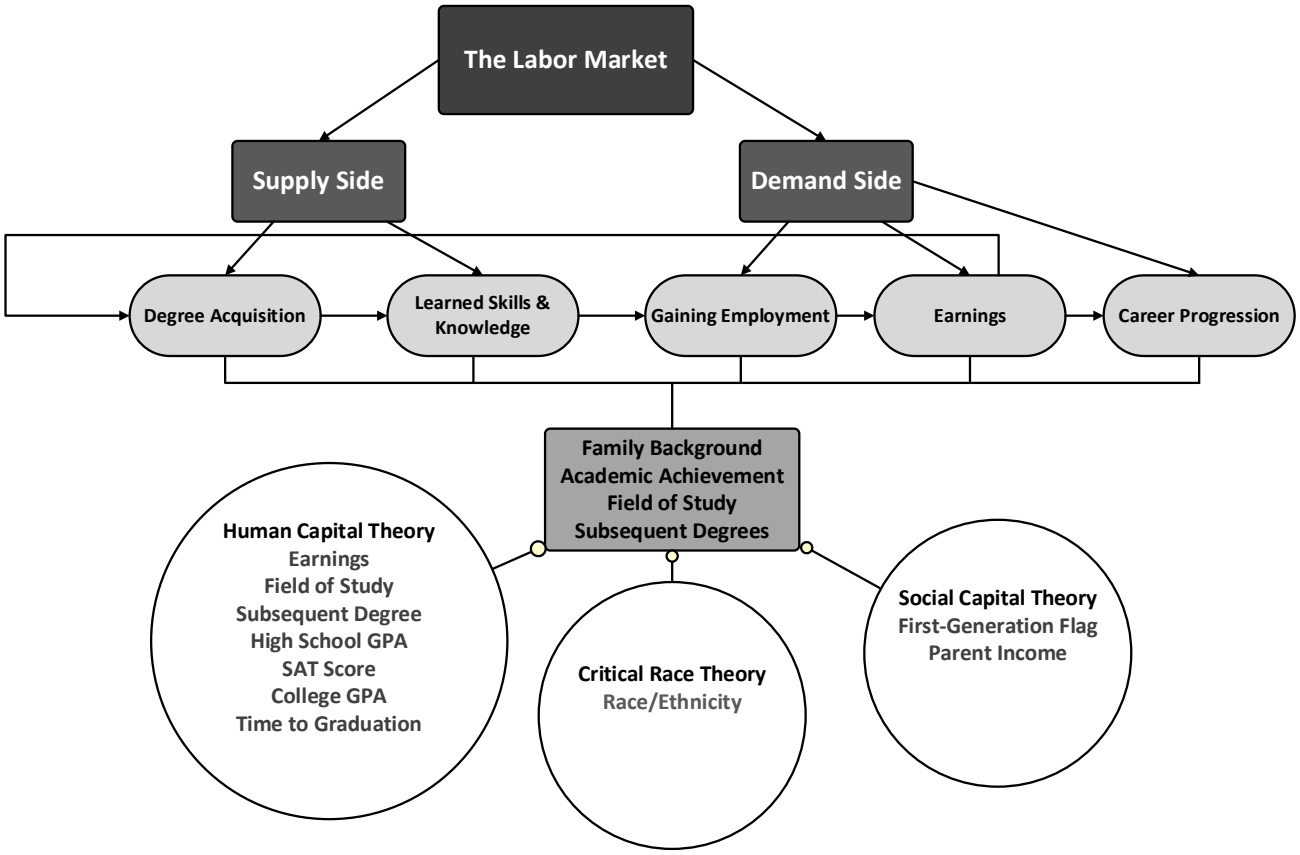
CRT serves as an academic framework upon which racial stratification in labor market returns can be explored and interrogated. As Black people continue to face limitations in the labor market, the linear view of progress is grossly inadequate. Anti-Blackness continues to be a vital conceptualization that can be utilized to explain this stubborn and persistent inequity. This research is particularly important as anti-Blackness is almost often never used by labor economists as a way of elucidating Black economic inequality (Porter, 2021; Ray et al., 2017). The prevalence of anti-Blackness is and always will be about a form of institutional power that has never been possessed by Black people in any aspect of society (Yosso & Solórzano, 2005).

Researchers have long investigated the reasons for the pertinacious race-based unemployment and wage disparities and have settled on two main approaches – supply-side

approaches and demand-side approaches. The supply side focuses on what individuals bring to the labor market in the form of human capital and explanations for variations in employment and earnings which is mainly focused on qualifications, training, and skill differences. For the purposes of this study, social capital is also viewed as assets that an individual possesses, with both human and social capital anchored by CRT. The demand side centers on the organizations or corporations in the labor market and the job specifications, market and organizational structures, earnings provided, and human resources and personnel practices (Kaufman, 2010).

Figure 2

Conceptual Frameworks



Note. Conceptual framework showing both the supply and demand sides of the labor market

An aspect of the supply-side approach is the investment in education and the skills and knowledge acquired during academic processes. When one earns a bachelor's degree, they gain learnings that increase their human capital. The act of investing in years of schooling assumes that more education translates to social mobility, improved productivity, and higher earnings (Boudarbat & Montmarquette, 2009; Favara et al., 2021). Research shows that degrees matter and are seen as the most valuable asset an individual can possess and are recognized by the labor market (Jaeger & Page, 1996). Employers may actually value the acquisition of a bachelor's degree too much, especially when there is a considerable gap between the educational qualifications that employers demand that job seekers have and the level of education of workers who already perform the same functions. This gap can be as much as 20 percentage points (Sigelman, 2014).

However, even with a degree, Black people continue to face obstacles in securing employment. According to Kaufman (2010), a study conducted by Turner et al. (1991) revealed that Black and White applicants receive differential treatment for entry-level positions even when equally qualified, with White applicants being three times more preferable than Black applicants. If Black applicants get hired, they are likely to earn less than their counterparts with the debated reasons for the disparity being discrimination or differences in human capital (Rode & Shukla, 2018). The promise of career progression also eludes them regardless of how much human and social capital is accumulated. This negates the assertion of scholars like Sicherman & Galor (1990) who propose that occupational upgrading that comes with additional years of schooling to support the labor market claims that career progression is mainly a factor of human capital accretion. Contrary to this belief, authors like Garbuzov et al. (2022) maintain there is a lack of equity when it comes to career progression opportunities.

With a focal point on HCT and SCT-related measures like family background factors and academic achievements, this conceptual framework will guide this study with research questions that investigate the extent to which the earnings of Black bachelor's degree recipients differ from

those of their White counterparts two, four, six and ten-years post-graduation and the effects of family background and academic achievement characteristics on earnings.

Because there is no available direct data from organizations on hiring, salary and benefits, training and development, and promotional opportunities, theories that drive organizational choices like taste-based discrimination, statistical discrimination, and implicit or unconscious discrimination, are out-of-scope of this research study.

2.5. Summary

The explanation for earning disparities between Black and White people has always been fully placed at the doorstep of variations in education, education quality, skills, and experience, and explained by HCT. According to the Economic Policy Institute, it is indeed possible for Black workers to earn less in relation to their educational achievements (see Appendix F) with Black workers earning about eighty cents to the dollar earned by White workers of similar education (Wilson & Darity, 2022). However, it is clear that this explanation is terribly insufficient because even with the same educational attainment, skills, and experience, these disparities persist. This means it is important to go beyond human capital to explain these variations in labor market outcomes (Hartog, 1986), and that is exactly what this study intends to do by guiding the research with an integration of HCT, CRT, and SCT.

CHAPTER 3 – LITERATURE REVIEW

3.1. Pre-College Characteristics

3.1.1. Race & Earnings

Research has demonstrated that roughly a quarter of wage disparities between Black male workers and their White counterparts occur because of differences in educational attainment and experience, and about a third of the gap for women (Wilson & Rodgers III, 2016). Studies also show that Black people earn less than their White counterparts at every education level (Aizer et al., 2020; Chetty et al., 2020; Link et al., 1976; Meschede et al., 2017; Miller, 2020; Patten, 2016; Strayhorn, 2008; Thomas et al., 1994; Thomas, 2000; Tienda & Lii. 1987). Wilson (2016) declares that since 1979, wage disparities between Black and White workers with degrees have expanded the most. More schooling can provide the opportunity for wage increases for Black people, but simply earning a degree cannot eradicate the impact of racial discrimination when it comes to employment and wages. Even after acquiring degrees, Black workers may still make less money than White people with a high school diploma. How do Black workers escape poverty, create generational wealth, and catch up economically without parity of wages and opportunities for career progression?

According to Wilson & Darity (2022), the assumption of a free and perfectly competitive labor market is a myth because there is an imbalance of power that creates an obstacle for Black workers. These authors highlight two key features of racial inequality in the labor market: (1) 2-to-1 variance in unemployment of Black people compared to White people (see Appendix H), and (2) pay disparities between Black and White workers. Based on a study conducted by Bertrand & Mullainathan (2004), Black applicants do poorly in the labor market, especially when they have African American sounding names. They get fewer callbacks from potential employers regardless of their skills and qualifications. In an effort to avoid predicted discrimination and adapt to it, some Black applicants practice “resume whitening,” a process

that involves concealing or downplaying racial signals in their applications and resumes (Kang et al., 2016).

Based on the economic theories like taste-based discrimination and statistical discrimination employed by economists to explain these disparities, it is clear that there is an ongoing denial of the effect of race-based discrimination on Black unemployment (see Appendix H) and the Black-White wage gap (see Appendix G). Even though taste-based discrimination has an underlying bias associated with it, the mere mention of preferences where for example, an employer favors White workers as opposed to Black workers, is not called out for being racially biased, but rather, it is esteemed that they have a preference based on prior experience of Black workers even though the pool of applicants is different (Lang & Spitzer, 2020). When research shows some indication of the significance of race, economists married to these conventional theories ignore both discrimination as a potential explanation of disparities and the deficiencies in using them as tools for the analysis of racial discrimination; instead, they lean on the existence of some unobserved, unquantifiable or omitted variable (Porter, 2021). Then again, racial discrimination is pervasive and affects multiple dimensions of life – education, housing, health systems, employment, income, and promotion, financial systems, and the justice system (Branscombe et al., 1999; Reskin, 2012; Series, 2019) and the expectation that it can be understood by a single discipline is reaching (Arrow, 1998).

Nevertheless, stubborn disparities in earnings leading to lower economic outcomes for Black people, especially males, continue to persist (Aizer et al., 2020; Chetty et al., 2020; Lang & Lehmann, 2012), and regardless of any progress that Black people are making in high school and college completion, the unemployment gap remains virtually unchanged (see Appendix H). According to Patten (2016), notable racial and gender wage gaps persist in the U.S. even after some progress over the years, with Black people in 2015 earning 75% as much as Whites in median hourly earnings and generally women earning 85% as much as men. All racial groups, except Asian men, earn less than White men in terms of median hourly wages. Per hour and

on average, Black men earned $14. White men earned $21. The hourly earnings of White women were $17 an hour, and Black women earned $13. Even with a bachelor's degree, wage gaps by gender, race, and ethnicity persist, with college-educated Black men earning about 80% of the hourly wages of White college-educated men. White college-educated women also earn 80% of the hourly wages of white college-educated men. However Black women with a college degree earn 70% of the hourly wages of similarly educated White men (Patten, 2016).

A Pew Research Center (2016) report documents that roughly two-thirds of Black people in America believe Black people are treated less fairly than White people in the workplace when it comes to hiring, pay, and promotion. Only a fifth of White people agree. More interestingly, 21% of Black adults express equitable treatment in hiring, pay, or promotion compared to 4% of Whites; 40% of Black people say being Black has made it difficult for them to succeed in life, while just 5% of Whites say the same. [2] There is no doubt that extensive research has been performed on labor market disparities based on race and the inequity in earnings (Link et al., 1976; Meschede et al., 2017; Strayhorn, 2008; Thomas, 2000; Thomas et al., 1994; Tienda & Lii. 1987). There is considerable support for the notion that marked differences in earnings between college-educated, historically marginalized Black men in comparison to non-Hispanic White men are a result of variations in pre-market conditions such as levels of educational attainment. The naive conclusion is that the U.S. labor market is essentially race-neutral with the same labor market outcomes for Black men and White men as long as factors such as educational attainment are equal.

Labor market variances are chalked up to prejudice aimed at an individual being part of a historically marginalized group that refuses to assimilate into the dominant White culture rather than racism. The intellectual yet naive recommended solution to eliminating racial wage

[2] Source: Pew Research Center (2016). On views of race and inequality, Blacks and Whites are worlds apart. https://www.pewresearch.org/social-trends/2016/06/27/on-views-of-race-and-inequality-blacks-and-whites-are-worlds-apart/.

disparities is to simply remove the barriers to skill development that plague Black people (Black et al., 2006). If only this fix could help resolve this stubborn enigma that has plagued the U.S. society for many a decennium. It is indeed possible that differences in socioeconomic status (SES) impact labor market outcomes within and across racial groups (Almquist, 1987). Blacks are still yet to achieve income equality with Whites in the labor market even after controlling for socioeconomic and demographic variables. When low SES rises, racial disparities increase. This buttresses the notion that earning disparities between Blacks and Whites are not due to deficiencies in human capital. These differences can be attributed to the struggles that Black graduates might face while attempting to convert their human capital gains into labor market returns. Unfortunately, the more human capital Black people acquire, the further away they fall behind their White counterparts (Thomas & Moye, 2015).

The time has come for active scrutiny to be placed on identifying why Black people continue to earn substantially less than their White counterparts. Miller (2020) recognized that even after more than five decades since the passage of the Civil Rights Act, equal pay for equal work is still a dream. In contrast, he maintains that from an average earning perspective, Black people are the only racial group that fails to achieve pay equality to Whites. Based on a survey of 1.8 million employees between January 2012 and February 2019, Black men earn 87 cents for every dollar earned by White men. With the same experience and education, and doing the same job in the same location, black men earned 98 cents for every dollar earned by men of other racial backgrounds. Spalter-Roth (2007) concluded that:

> The labor market and the workplace are neither neutral nor color blind despite laws that prohibit deliberate discrimination. Employers are likely to be White, and as a result of their perceptions, decisions, and rankings, workers are concentrated by race and ethnicity among industries and occupations, work arrangements and positions, and pay levels. Statistical data and sociological research suggest that not everyone who is qualified has an equal opportunity to work in an equally wide range of fields and

positions. Differences in education, experience, and skills explain some, but not all labor market disparities. Race is a key factor in employment decisions (p. 276).

It is necessary to clarify the circumstances surrounding the reference to discrimination in this study. Racial discrimination is used in the context of structural discrimination at the group level rather than at the individual level. The concern here is about direct or indirect anti-Blackness at a systemic level as part of doing business as usual (Heckman, 1998; Marvasti & McKinney, 2007), emphasizing one of the tenets of CRT regarding the normalcy and non-peculiarity of racism in society. It communicates the influence of race on the sustainability of economic disparities between Black and White graduates, nullifying the expectation that education ought to accomplish meritocracy such that Black and White graduates are afforded similar chances of success regardless of race or gender (Budig et al., 2021).

3.1.2. Gender & Earnings

Since 1999, women have consistently outnumbered males in the acquisition of a college degree at UC. According to Georgetown University's The Feed, women made up 59.5% of all U.S. college students, and more of them are completing their degrees with 65% of female students who started their degrees at a 4-year college in 2012 graduated by 2018, compared to 59% of males. [3] As women continue to surpass men in college education, the correlation between degree acquisition and labor market success will mean that women are poised to make as much as men in the very near future. Consequently, one would expect that this increased pace at which women attend college will reduce or maybe even eliminate the gender-based wage gap but the increased number of women with college degrees has yet to translate into a reduction in earnings gaps (Bobbitt-Zeher, 2007). Yet, gender-based pay disparities continue to be one of the most salient forms of employment inequity in America (Fan & Sturman, 2019).

[3] Source: George Town University. The Feed. https://feed.georgetown.edu/access-affordability/women-increasingly-outnumber-men-at-u-s-colleges-but-why/.

On average, college-educated men in their mid-20s make up to $7,000 annually more than college-educated women. Even when college attended are similar in terms of selectivity, and pre-college and post-matriculation characteristics such as ACT/SAT scores and field of study are homogeneous, the wage gap could be as much as $4,000 a year (Bar-Haim et al., 2018; Bobbitt-Zeher, 2007). Research shows that women earn significantly less than men (Fan & Sturman, 2019) as they continue to make around 15% less than men early in their careers while other studies show no wage disparities between males and females in the early careers of engineers. Analysis of gender-based disparities in the early years of graduates' careers is critical as initial gaps appear to persist over time. These early years are when variations such as differences in life experiences, employment history, and skills are minimized but educational qualifications and experience matter the most (Bobbitt-Zeher, 2007).

HCT assumes an educational and productivity-based wage determination, indicating that the expected economic benefits of having a degree should be the same regardless of gender. However, this is not the case (Nunez & Livanos, 2010) because women still face considerable obstacles to pay equity. Four measures are enmeshed in the explanation regarding gender-based wage disparities. They are all centered around the human capital perspective: (1) field of study (2) standardized test scores (3) educational attainment and (4) the selectivity of the college attended. Due to job segregation, women are inclined to major in fields that pay less. For example, disciplines such as engineering and computer science tend to bestow higher earnings than education and humanities. Graduates in female-dominated fields earn 20% less annually than graduates in male-dominated fields (Bobbitt-Zeher, 2007). Traits believed to be linked to femininity such as empathy, gentleness, nurturing, and caring appear to be less valued than what is viewed as masculine traits like courage, strength, and leadership which might prevent women from pursuing male-dominated disciplines of study; and degrees based on these disciplines tend to command higher earnings (Bobbitt-Zeher, 2007; Leuze & Strauß, 2016; Rabovsky & Lee, 2018). Common stereotypes around the strength of women, the possibility that

they are married and as such have a lesser need for high earnings, and their preferences such as commitment to family life also lead to lower wages and less investment in the professional development of women (Nunez & Livanos, 2010; Rabovsky & Lee, 2018). There is also the credence that the career achievements of women are lower than those of their male counterparts because of the domestic responsibilities they have at home (Almquist, 1987).

Standardized test scores are closely linked to cognitive skills, with the aptitude for math and science closely linked to higher income, and a reduction in the gender-based wage disparities. Human capital differences are also seen as a causal factor in wage disparities. Even though women are making great educational advances because of the acquisition of more bachelor's degrees and the human capital disparities between men and women have narrowed (NCES 2005 as cited in Bobbitt-Zeher, 2007; Rabovsky & Lee, 2018), they still slightly earn less advanced degrees (NCES 2005 as cited in Bobbitt-Zeher, 2007), which result in higher earnings, than men which may add to the issue of lower average earnings for women. The subscription of women to less selective, low-cost institutions may also contribute to the returns to degree acquisition experienced in the labor market (Bobbitt-Zeher, 2007; Nunez & Livanos, 2010).

When looking at gender-based wage disparities, it is also important to consider power and privilege based on race and social class, which runs contrary to the focus on variations in HCT as the sole reason for wage-based parity. In reality, adjusting for education, skill, training, and experience does not totally explain the wage differences in labor market outcomes. Unfortunately, there are few research studies that explore the intersection of race and gender regarding earnings. For example, generically saying that men make more money than women may not be accurate as White women earn more than Black men (Browne & Misra, 2003). According to Thomas & Moye (2015), Black and White women aren't significantly affected by segregation. However, White women and White men were similar in that their earnings rose more sharply with increasing SES than they did for Black men or women. Because of the challenges that Black males face while attempting to convert their human capital into income in

segregated areas, the estimated earnings of women with high SES are similar to those of Black men of high SES. Thomas & Moye (2015) also found support for research that White women were able to gain access to positions predominantly held by White men with much ease and at a faster rate than Black men and women. White men also enjoyed a racial advantage that increased as their SES increased. This advantage was even more noticeable in neighborhoods with extra segregation. Based on what is termed "competition literature" which suggests that the size of the minority population is positively correlated to the degree of discrimination members of these groups experienced.

Jaynes (1990) commented that any changes seen in the economic progression of Black citizens are simply a move in the direction of American society as a whole. The valuation of Black people and their contributions to the labor market has not advanced in any significant way between 1970 and 1990.

3.1.3. Family Background

Factors held responsible for earnings gaps in the labor market apart from race include family background (Kiker & Heath, 1985), human capital in the form of academic achievement and employable skills (Tan, 2022), and college choice and quality (Brewer et al., 1996). For example, researchers like Backes et al. (2015) blame lower educational attainment, poor academic achievement, chosen fields of study, and low levels of high school and college completion for the gaps in earnings that students from low socioeconomic backgrounds endure.

Family background factors such as family size, parental income, and SES have an impact on earnings, with SES believed to be the most important variable in reducing earning differentials between Black and White people. Research shows that socioeconomic background has an important in predicting individual earnings (Bowles, 1972; Duncan et al., 1972 as cited in Kiker & Heath, 1985; Goodman, 1980 as cited in Kiker & Heath, 1985; Hill & Stafford, 1977; Kiker & Condon, 1979; Stiglitz, 1973; Mendolia & Siminski, 2017; Pontinen & Uusitald, 1975 as

cited in Kiker & Heath, 1985; Querton, 1974 as cited in Kiker & Heath, 1985). Thus, although there is an acknowledgment of earning disparities between Black and White people, these authors argue that for these differences to be attributed to racial discrimination, Black and White people will need to be comparable in every way except race.

Mendolia & Siminski (2017) showed that family background defined by wages is important to earnings so much so that the earnings of one's family influence one's own earnings in the future. They found in their research that people at the 75th percentile ($24.00 per hour or $49,920 annually) of their family background determinants had expected earnings that were 21.5% higher than people at the 25th percentile ($15.00 per hour or $31,200 annually). Participants in the 90th of the family background determinants ($29.00 per hour or $60,320 annually) had expected earnings that were 39% higher than those at the 10th percentile ($11.00 per hour or $22,880 annually). [4] They concluded that family background factors such as parental income are a major predictor of economic well-being in Australia and the United Kingdom with a positive correlation between education and earnings. In the U.S., Kiker & Heath (1985) also deduced that family background determinants such as parental income have a direct or indirect impact on the earnings and SES of children, with a significant direct effect on earnings for Black people.

Witteveen & Attewell (2017) found in their study that family background has a long-lasting effect on the income of offspring in a dataset that followed a large representative sample of bachelor's degree recipients ten years post-graduation such that even when students from low-income families earn a bachelor's degree, they earn considerably less than graduates from wealthy families ten years after graduation. Other factors such as college selectivity, field of study, academic performance, and college GPA do not eliminate the earnings disparities related to family background or middle-class background in comparison to higher parental income

[4] Source: U.S. Bureau of Labor Statistics. Occupational Employment and Wage Statistics. https://www.bls.gov/oes/oes_perc.htm.

groups. Even though some equalizing effect was detected, it failed to even up personal income among bachelor's degree recipients from different class backgrounds.

According to Hill & Stafford (1977), these family background factors can be viewed as measures of human capital, separate from education, personal development, parent-child interaction, and job-related training, with the stipulation that parent-child constructive interaction is crucial in developing a child's early development, motivation, and educational ability. Regarding higher education, it is important to mention the works of researchers who support the "equalization hypothesis" with empirical evidence. They believe there is an equalizing nature to a bachelor's degree, and that attaining a bachelor's degree nullifies the effects of socioeconomic background status, meaning that a bachelor's degree has the power to help overcome disadvantaged backgrounds and fulfill the promise of meritocracy (Hout, n.d.,1984, 1988 as cited in Witteveen & Attewell, 2017).

The effect of family background on earnings is complex and involves many mechanisms, and its impact to some degree across multiple countries is evident. With an organized and initiative-taking approach, higher education institutions must collect multiple data points related to family and SES that may impact students' future earnings. Following data collection, creating programs and initiatives that can intervene early in the academic careers of its vulnerable population has the power to change lives and provide equitable opportunities for better futures (Mendolia & Siminski, 2017).

According to Torche (2011), evaluating the notion of meritocracy would mean that all factors that would allow for equal opportunities among bachelor's degree recipients in the labor market from different socioeconomic backgrounds and classes must be specified. These factors include race, parental income, first-generation status, grade point average (GPA), the field of study, and the investment in advanced degrees.

3.1.3.1. Parental Income & Earnings.

There is varying evidence regarding the effect of socioeconomic factors like parental income based on how it is estimated, the validity of its influence, and the avenues through which it works (Kiker & Condon, 1981) on earnings. For example, while Peters (1992) found that parental income has some marginal effect on the earning power of their children, other scholars found that the taxable income of parents had highly significant impacts on the earnings of their sons at age 25 (Corcoran & Datcher, 1981 as cited in Hill & Duncan, 1987; Sewell & Hauser, 1975 as cited in Hill & Duncan, 1987). A key question has and always will be whether the income of a parent or parents influences an offspring's educational attainment and economic mobility through improvements in social status, a better comprehension of the world we live in, an increased cultural competency, and higher earnings in a significant way (Taubman, 1989).

Additionally, there has been a long-standing argument amongst economists that one must expect a positive correlation between parent income and children's earnings. The notion of equal opportunity whereby children from different socioeconomic backgrounds will have similar options regarding their investments in human capital and future earnings may be a myth (Behrman & Taubman, 1990). Research indicates that children from more educated parents are better educated than children from poorly educated parents, even if the children go on to attain similar educational qualifications (Hudson & Sessions, 2011). The variation in pre-college educational attainment potentially explains the disparities in earnings between bachelor's degree recipients of different SES backgrounds, meaning that human capital investments start very early in a child's upbringing and are inherited like other forms of wealth, with impacts that can last a lifetime.

While parental education does not fully account for the intergenerational transfer of SES (Caro et al., 2015), Kiker & Heath (1985) found that family background factors show considerable indirect effects on earnings for both Black and White men and for Black people, parental income specifically has a direct effect on earnings so Black men specifically may lower

their expectations to align with a level of achievement they deem to be socially realistic as indicated by their family's income attainments. On the other hand, White men who face little or no social barriers, and do not see their capabilities as being inhibited can leverage an extensive range of opportunities.

Nevertheless, parental income has an impact on the acquisition of human capital of children. The higher the parental income, the more access a child has to better neighborhoods, better schools, better healthcare, and better nutrition. There is also access to sports and other skill-building activities. Furthermore, parental income has the potential to have effects that are intergenerational as the association between the wealth available to parents and their children's educational and economic outcomes is based on human capital investment. Wealth also provides access to social capital in the form of networks and connections that may provide access to better and higher-paid employment. Besides, less financial resources may mean less time spent in developing human capital in children, increased stress and behavior that although may be beneficial to coping with poverty, impedes proper child development (Shea, 2000).

Looking at socioeconomic factors, Kiker & Condon (1981) found a direct correlation of parental income with earnings. However, the reason for this effect was deemed unknown. Some explanations included potential nepotism and gender-based mirroring where sons act in manners similar to their fathers concerning financial versus non-financial remuneration. When fathers work in high-wage jobs, it is likely their sons will also work in high-wage jobs when human capital factors are controlled for (Altonji & Dunn, 1991).

Literature also reveals that parental income has a significant effect on the economic attainment of children that is somewhat time-bound. Carneiro et al. (2021) found that children who experience families with high incomes in early childhood and low income in middle childhood rather than low incomes in early childhood and high income in middle childhood have better educational and economic outcomes. Hill & Duncan (1987) also concluded that even though family income has a statistically significant impact on the attainment of children, males

had considerably less education and earned less if their mothers worked while they were between the ages of 14 and 16, a finding consistent with issues with sons if their mothers spent a lot of time outside the home. More interestingly, there is evidence of strong connections in the earnings of relatives related by blood or by marriage, with sibling correlations higher for sisters than for brothers. A percent rise in parental income can raise the children's family income by as much as 0.28 to 0.36 for sons, and 0.29 to 0.44 for daughters much of which works through a child's race and education (Altonji & Dunn, 1991).

3.1.3.2. First Generation Status & Earnings.

There is a great benefit to having a college-educated parent as research shows that there isn't an even playing field for first-generation graduates and their peers who have college-graduate parents. Students with college graduates as parents are three times more likely to attain a bachelor's degree than students whose parents did not attend college (Carnevale et al., 2017). Those with parents who have attained a bachelor's degree or higher earn more and achieve greater wealth than their first-generation counterparts whose parents never went to college (Fry, 2021). First-generation students face many challenges regarding what kinds of colleges they can attend, which are often less selective institutions, and their experiences once enrolled. They may have similar credentials and levels of motivation that are on par with their multi-generational college peers, yet they face the risk of being left behind academically, socially, and economically.

Some concerns are around the differences in the acquisition of social and cultural capital by these first-generation students; capital necessary to achieve success in the labor market. The reality is who you are is as important as what you know if it's not more important. However, researchers like Acevedo & Solorzano (2021) through the work of Yosso (2005) challenge the voice of those who are deeply entrenched in deficit frameworks that portray people of color as lacking in the necessary human, social, and cultural capital necessary to succeed. According to

Franklin (2002), cultural capital can be explained as "the sense of group consciousness and collective identity that serves as an economic resource for the financial and material support of business enterprises aimed at the advancement of an entire group" (p.177). This collective identity challenges the notion of just "who you are" and introduces a community paradigm that includes "who is with you."

Hirudayaraj (2011) explains this in terms of hard and soft currencies. Hard currencies refer to educational attainments and work experience. Soft currencies are people skills or what is often referred to as soft skills; areas where first-generation students might be deficient making it hard for them to compete with their multi-generational college peers in the labor market. When it comes to a vocation, first-generation leverage the term "job" or "work" rather than "career" and do not engage in career-related opportunities provided by their institutions thereby creating a deficit in their comprehension of "the world of work they wish to enter and its actual expectations, demands, and what it takes to enter and survive there" (pg. 6). Once again, Yosso (2005) counters this assertion with the framework of community cultural wealth which is rooted in defiance to the view of communities of color as being communities ridden with cultural poverty deficits but instead illustrates these places as being filled with various knowledge, skills, abilities and contacts that may often go unrecognized, unacknowledged and unleveraged.

On a positive note, it is crucial to state that once degree attainment becomes a reality for first-generation students, there is very little statistical difference in early career earnings between them and their multi-generational college peers. However, some years post-graduation, first-generation students are less likely to engage in advanced degrees which has the potential of boosting earnings probably because their average numeracy skills lag behind their peers with college graduate parents, and entry into graduate school is predicated upon numeracy tests like the Graduate Record Examinations (GRE) for graduate school entry (Cataldi et al., 2018; Ford & Umbricht, 2016; Nunez, 1998; Pascarella et al., 2004).

3.1.4. Academic Achievement as a Predictor of Labor Market Success

Many scholars have examined the relationship between academic achievement and labor market returns and found a positive correlation between educational grades and earnings (Adkins, 1975 as cited in Pascarella & Smart, 1990; Baird, 1985; Cohen, 1984; Hoyt, 1965; Phelan and Phelan, 1983 as cited in Pascarella & Smart, 1990; Samson et al., 1984; Solmon, 1981 as cited by Pascarella & Smart, 1990).

Grade point average (GPA) in high school, community college, and college can be important to labor market success because there is the possibility that employers view grades as an indication of a prospective employee's intelligence, motivation, effort, diligence, and ability to rise to required organizational standards. Prospective employers believe that the higher the applicant's GPA, the more productive they will be and the more deserving they are to be slotted into high-paying positions.

Unfortunately, the importance of academic achievements varies depending on an applicant's racial background. Kiker & Heath (1985) revealed that educational attainment is more a determinant of earnings for Black people than it is for Whites, which means that education is utilized as a screening methodology for entrance into higher-paying positions more so for Black people than it is for Whites. This is why it is often easier to find Whites with only a high school diploma in high-paying jobs that Black people with college degrees do not have access to.

3.1.4.1. High School GPA & Earnings.

Higher educational qualifications are linked to higher wages and lower rates of unemployment (Marks & Ainley, 1999). The correlation between GPA and earnings has been investigated by education researchers with suggestions to focus on mathematics and reading skills as a methodology to improve economic mobility (Watts, 2020). Increased numeracy skills have an indirect positive return on investment in the labor market (Dougherty, 2003). Math

courses are deemed as strongly correlated with earnings up to a decade after high school graduation, even after controlling for family background and school characteristics, especially advanced math courses (Duckworth et al., 2012; Goodman, 2012; Murnane et al., 1995; Rose & Betts, 2004).

Therefore, it is indisputable that how a student performs in high school impacts college choice, college admission, and future earnings. There is an expectation that students who do well academically will be the ones most likely to succeed in the labor market. For example, a single-point increase in high school GPA increases the likelihood of college graduation for both men and women, and an increase in high school GPA increases annual salary in adulthood by an estimated 11.85% for men and 13.77% for women (French et al., 2015).

More importantly, achieving a higher high school GPA is not only a gateway to better earnings, it represents a human capital component that opens the doors to higher levels of education, better jobs, and higher earnings (Baird, 1985). High school academic success extends far beyond the corridors of secondary or junior college education as it has the power to predict first-semester college GPA (Warren & Goins, 2019).

Unfortunately, race is correlated with academic factors like high school GPA. Racial segregation in schools helps to facilitate academic disparities because Black and White students whereby Black students are more likely than their White peers to attend schools that are poorly funded and located in impoverished neighborhoods (Bushnell, 2021). Socioeconomic factors such as parent education and parental income are also correlated with race. Parents with higher levels of education influence their children with their parental abilities such that they are inspired to achieve higher levels of education. To that end, parents with more education provide a human capital-infused childhood that enables their children to achieve higher grades in school (Dickson et al., 2016). For example, Muller et al. (2010) found that White and Asian students had parents with more education compared to Black students, resulting in lower high school

GPA achievements for Black students even after adjusting for certain background characteristics.

3.1.4.2. SAT Score & Earnings.

There is the notion that high school grades do a better job at predicting college completion which in turn results in labor market success regarding earnings. The reasoning is that success in college requires cognitive and self-regulatory skills. Self-regulation is better measured by high school grades and possesses the ability to practice delayed gratification, manage emotions, and reinforce endeavors over time to help in the achievement of key goals (Galla et al., 2019). However, high school grades and GPAs come from a variety of high schools that have varying grading standards whereas the scholastic aptitude test, later changed to the Scholastic Assessment Test (SAT) can be expected to have the same meaning for all high schools (Zwick & Green, 2007). These scores not only determine the quality of college a student can attend, but they are also deemed to measure high school academic skills have been correlated by researchers to early career earnings (Chetty et al. as cited in Watts, 2020; Duckworth et al., 2012). Zumbrun (2014) described the SAT test as the Student Affluent Test as students in medium to high-income brackets did better on this test than students from lower-income brackets showing that poor students do not necessarily do well on these tests. Students from low-income backgrounds, who are often ethnic minorities, not only suffer the consequences of lower scores and hardship in terms of paying for college, but they also have to face the repercussions that come from employers' using educational attainment as a guide in making hiring and promotion decisions (Marks & Ainley, 1999).

SAT is positively correlated with SES indicators such as parental income, parent education, and school rank. So, minority students and those from low-income households who are already disadvantaged faced more disadvantage because colleges and universities placed a great emphasis on these scores as admission criteria. Although the SAT has been accused of

perpetuating racial bias, the non-profit administrator of the test, the Educational Testing Services (ETS), and the College Board continue to defend the test, arguing that the achievement differences are simply due to differences in cognitive skills because of varying educational attainments as well as the ingrained inequities in society rather than race. In their opinion, the differences seen in SAT scores are just a reflection of these differences. However, socioeconomic differences are correlated with race (Rattani, 2016). Race will often determine which neighborhood you live in, what schools you attend, the quality of teachers you get, and the high school courses you have access to. Some think doing away with the standardized tests is not the magic bullet that eradicates differences in Black-White educational attainment.

According to Kidder & Rosner (2002) eliminating the use of SAT scores as a gatekeeper into higher education will make no difference when it comes to leveling the academic achievement playing field, quoting the former president of the College Board, Donald Stewart who said:

> It is unfortunate, as the new millennium approaches, that race, ethnic background, or family income can still limit students' educational future. Getting rid of the SAT or any other standard is not going to change that fundamental fact. Instead of smashing the thermometer, why not address the conditions that are causing the fever? (p. 142)

Educational inequality leads to skill attainment inequality, which ultimately causes earnings inequality (Checchi & Van De Werfhorst, 2018). Correlations between labor market outcomes and academic achievement in terms of scores have only been detected in early earnings. How the correlation between scores and earnings manifests over time in students' careers remains undecided. Nevertheless, researchers believing in this correlation perceive that programs that aim at developing math and reading skills could lead to indelible economic achievement and potentially produce economic mobility (Watts, 2020). It is important to note that although scholars agree that high SAT scores are related to occupational status and higher

earnings, it is believed that these scores accomplish this in partnership with many other variables (Baird, 1985; Levin, 2012).

3.2. Post-Matriculation Characteristics

3.2.1. Field of Study & Earnings

Students face two critical decisions as they contemplate the investment in higher education – where to attend and their major of study (Eide et al., 2016). How do students select their field of study? Multiple factors play a role in this decision. Academic achievement, perceptions, family socioeconomics, and preferences all play a part. If the impression is that science, technology, engineering, and math (STEM) majors are difficult, students will gravitate towards majors they believe are less tasking and less risky. What a student expects in terms of future earnings also has an influence on their choice of college major, even though there are variations on this influence depending on the race and gender of the student.

Research shows that there is an earnings gap among fields of study, with STEM and business degrees generating higher earnings (Carnevale et al., 2017; Kim et al., 2015; Thomas, 2000) and the major a student selects is considered the most principal factor in their earnings after controlling for academic attainment and family background characteristics (Carnevale et al., 2017; Thomas, 2000). ChangHwan, Tamborini & Sakamoto (2015) also suggest that any research study into earnings disparities must include the field of study. More specifically, looking at race-based earning disparities demands an exploration of these high-demand, high-paying majors and the representation of Black students in these fields of study as students of color and low socioeconomic backgrounds tend to select the more financially rewarding majors in an attempt to achieve upward economic mobility. But even when many start out as a STEM major, many do not persist and either do not complete, or end up in other fields of study such as education and the humanities (Ma & Liu, 2015; Thomas, 2000). Finding a way to retain Black

students in high-paying majors may aid in narrowing wage disparities that exist between these students and their White counterparts.

Higher education institutions like the UC have a responsibility to provide counsel on the best area of concentration for incoming students based on their interests, personality, skills, values, and test scores – focusing on their unique needs and the obstacles they may face. Investing in programs that give some attention to the challenges Black students face in STEM and helping them build their human and social capital through a CRT lens as they set foot on campus must be a focus of UC campus career advisors (Suran, 2021).

3.2.2. College GPA & Earnings

Elevated high school GPA, SAT scores, and college GPA have been associated with higher returns in the labor market. Tan (2022) found that receiving a high GPA in college could result in as much as $32 or 1.4% higher monthly wage post-graduation. Employers also tend to use grades as an indication of ability and to filter and sort similar students into different salary categories, causing students with similar educational attainments to be paid different salaries. Getting good grades while in college has the same effect on labor market outcomes regardless of college selectivity, race, and field of study with the positive effect of grades on wages twice as strong for Black people than for their White counterparts. Thus, educational achievement is believed to play a much stronger role in early labor market outcomes for some racial groups than it does for others (Pascarella & Smart, 1990).

It is crucial to recognize authors like Bretz (1989) who found college GPA to be a poor predictor of career success because GPA is subjective and situation-specific. It fails to provide a good measure of intelligence. In their research study, Muchinsky & Hoyt (1973) concluded that correlations exist between high school grades and college grades. However, even if valued in some shape or form, these traditional methods of measuring achievement should not be leveraged as a predictor of professional success. In their analysis, Samson et al. (1984) found

academic grades to be of little or no value when predicting career success and satisfaction. Nevertheless, Dye & Reck (1989) gave credit to college GPA as a methodology for use in personnel selection and its ability to function as a predictor for career success. This gives some credence to the work institutions must do to narrow race-based academic achievement gaps with the understanding that getting a high GPA while in college is easier for some than it is for others.

Many undergraduates, especially those from lower socioeconomic backgrounds, must work while attending college. This appears to be a double-edged sword. In his research study, Gleason (1993) compared the grades, probability of dropping out, time to graduation, and performance in the labor market among students who worked while enrolled and those who did not. One of the biggest concerns about students working while enrolled is the belief that study time is compromised, which may result in lower grades, but this research showed that this concern may be exaggerated. Work seemed to have little impact on grades, which may mean that students chose to cut back on leisure activities rather than study time while employed. However, there were some students for whom working became overwhelming and who eventually dropped out. Working students also tend to take longer to graduate. For example, students who work more than twenty hours a week take about a semester longer to graduate than the average student who does not need to work. Working while enrolled in college does provide an easier transition to full-time employment post-graduation, and those who worked during college tend to earn higher wages, work longer hours, and experience consistent employment in the first couple of years after graduation. Students from low-income families are often from minority groups who frequently have to work while in college since student financial aid has struggled to keep pace with students' mounting expenses, especially off-campus housing and food (Gordon, 2018).

In light of these findings, how do educators help Black students gain access to suitable employment that will lead to higher post-graduation earnings while in college? How do they

ensure that adequate financial aid is available to ensure that hours worked are kept within the range that does not jeopardize academic performance? How do educators and counselors guide students in the selection of a field of study in a manner that fuels their interests and holds their passion so that even if they have to work, studying is still maintained as a priority? With the likelihood that undergraduates may work part-time, and as such take longer to graduate, Brugiavini et al. (2020) find that lengthier time-to-degree is strongly negatively correlated with GPA as extra-long academic tenures may lead to a decay in skill and proficiency while on-time graduation increases GPA, and the ability and confidence needed for undergraduates to negotiate salaries on entry into the labor market.

3.2.3. Time to Graduation & Earnings

Taking longer to graduate from college has expensive consequences. Being in college longer translates into paying additional tuition, fees, living expenses, and any costs for books. Staying longer in college not only means elevated costs for students, but it also means higher costs to the State, and taxpayers More importantly, there is a direct loss of relevant work experience, delaying entry into the labor market. And as students remain in college longer than they should, and depending on the severity of the problem, enrollment, and capacity to accommodate new students are impacted. [5]

Sadly, undergraduates are taking much longer than four years to complete their degrees – about 42% (Bloem, 2022). This phenomenon is not unique to America. Scholars in Italy, Denmark, France, Sweden, and Germany have also seen that the average time taken to acquire a degree far exceeds the prescribed number of years (Aina & Casalone, 2011; Aina & Casalone, 2020). To earn a bachelor's degree requires the completion of 120 units, which means a student

[5] Source: The Campaign for College Opportunity. July 2014: The Real Cost of College. Time & Credits to Degree in California. https://collegecampaign.org/publication/july-2014-the-real-cost-of-college-time-and-credits-to-degree-in-california.

must successfully take and pass 15 units every semester. Without a singular focus on the additional expenses for taking longer to complete a 4-year degree, there is a wealth of research around the question as to whether students who take longer to complete are faced with lack-luster employment opportunities or are victims of lower post-graduate earnings than their counterparts who completed their degrees in 4 years (Witteveen & Attewell, 2021).

There are a plethora of reasons why completing a 4-year degree remains challenging for undergraduates: (1) Because of family obligations, and or having to work to supplement college costs, some students attend college part-time and cannot carry a full load of graduation which extends time to degree, (2) With the federal regulation that demands that students must enroll for a minimum of 12 units instead of 15 to qualify for federal financial programs like Pell, taking 12 units consistently over eight semesters does not meet the 120 units graduation requirements. Any delay caused by the 12 units per semester strategy may be mitigated by consistently taking courses in the summer, (3) as many as 40% of entering undergraduates to a 4-year college need to take remedial classes due to math and or writing skill inadequacy. These remedial classes are often not taken into account as part of the 120-unit graduation requirements. Also important is the occasional need for students to stop out of college for one reason or the other. These undergraduates often return to complete their studies, but this is not without the extended time-to-degree, (4) undergraduates transfer from one college to another. Community college students transfer to 4-year colleges with the expectation that only two years will be needed to complete the requirements for a bachelor's degree. These transfers can also act as agents of extenders of time-to-degree, (5) delaying graduation due to labor market conditions post-enrollment and substandard employment opportunities, and (6) entering into college without declaring a major or changing gears from one major to another can also cause excess time-to-degree especially if the initial major is very different from the eventual field of study as many initial courses may not count towards the fulfillment of the new major (Aina & Casalone, 2011; Brugiavini et al., 2020; Witteveen & Attewell, 2021).

Undergraduates who do not graduate on time can earn as much as 8 to 15% less than their peers who graduate on time. It seems there are negative repercussions on earnings when time-to-degree is extended, with higher sanctions on women than on men who take more than ten years to graduate (Witteveen & Attewell, 2021). In Italy, delayed graduation was shown to have a negative and stubborn effect on gaining employment (Aina & Pastore, 2020), and the labor market begins to castigate late graduates as early as two years after the expected time of graduation when students take a minimum of at least 50% longer than the minimum period allotted. This penalization was found to persist and rise over a graduate's life course (Aina & Casalone, n.d.).

While some research indicates that delaying graduation can cause a decreased level of earnings on entry into the labor market, it seems especially so for women (Witteveen & Attewell, 2021) and those in fields such as the humanities, liberal arts, psychology, sociology, political science, business administration, and economics (Aina & Casalone, 2020). This body of research also finds that having relevant work or study abroad experience during one's academic tenure also has the potential to function as a factor that can weaken the negative effect on earnings a few years post-graduation, even when graduation is delayed (Aina et al., 2019). These scholars also see a minimal effect of delayed graduation on the likelihood of gaining employment yet maintain that a lower time-to-degree increases the likelihood of gaining employment and obtaining a higher wage right after graduation (Aina & Casalone (n.d.); Aina & Casalone, 2011; Brugiavini et al., 2020; Witteveen & Attewell, 2021). Other research finds that some employers may not view time-to-degree as an indicator of the quality of an applicant, while others do. If there are a lot of applicants vying for the same job and competition is stiff, time-to-degree may become a criterion for sifting through job applications (Bloem, 2022).

More undergraduates are electing to pursue subsequent degrees post-graduation in order to increase their earnings in the labor market. Graduates with master's degrees or higher

enjoyed median earnings that were 21% higher ($74,000) than the median earnings of those with just a bachelor's degree ($45,000) (National Center for Education Statistics, 2023).

3.2.4. Subsequent Degrees & Earnings

Gaining a college degree is a path to human capital accumulation with an important effect on earnings as the move toward graduate education continues to rise. Graduate programs that require a bachelor's degree as part of the admissions process are one of the fastest-growing segments of higher education in America. The number of graduate degrees issued increased at an annual rate of 2.9% to a cumulative 119% between 1980 and 2010 compared to a 1.9% annual rate increase to a cumulative 78% rise in bachelor's degrees over the same period. Mullen et al. (2003) also agree with the dramatic metamorphosis of higher education concerning the growing importance of postgraduate programs between 1960 and 1997. They also write that the rise in graduate programs far exceeded the rate of growth of undergraduate degrees. In 1960, one in four degrees awarded was a graduate degree but by 1997, one in three degrees were awarded to graduate students. According to Altonji & Zhong (2021):

> The ratio of new master's degrees awarded relative to the number of 24-year olds in the United States has increased from 5.5% in 1985 to 14.7% in 2013. Over the same period, the ratio of new master's degrees to new bachelor's degrees rose from 27% to about 37%. A similar pattern has occurred in other OECD countries. For example, in the United Kingdom, the fraction of 24-year olds with master's degrees rose from about 22% to 27% between 2005 and 2013 (p. 304).

Students who go on to pursue advanced degrees do it for varied reasons. Some have an interest in a specific subject matter and see graduate education as being a pathway to becoming a subject matter expert in that area (Zhang, 2005). Certain high-ranking colleges and programs may also provide increased social status or beneficial social capital. Furthermore, attending graduate school serves as a way to transition to new careers especially when there is a change of

heart regarding one's undergraduate field of study. A graduate degree could also pave the way for preferred occupations such as academia (Stevenson, 2016).

But does attaining higher levels of degrees lead to increases in human capital and greater economic benefits? Multiple scholars believe that is the case. Posselt & Grodsky (2017) consider the non-trivial economic advantage of gaining post-bachelor degree credentials over those with high school diplomas, where college graduates enjoyed an increase of 6% in returns between 2000 and 2013, and those with graduate degrees experienced a 17% increase compared with those a bachelor's degree. In 2012, women between the ages of 40 and 65 who obtained a master's, doctoral or professional degrees earned 25%, 60%, and 108% more respectively than those who ended their higher education institution journey with a bachelor's degree. For men, average salaries were 17%, 30%, and 100% more respectively. Jaeger & Page (1996) view college degree acquisition as an indicator of an individual's productivity and this sign is recognized in labor economics with White men and women who are professional school graduates earning 33% and 63% more respectively than those who completed only a bachelor's degree. White men and women who earn doctorate degrees earn 9% and 11% more, and those with master's degrees earn 6% and 17% more respectively.

From an educational equity perspective, people who can gain graduate and professional degrees are overwhelmingly represented among the wealthiest and better-educated Americans. They achieve higher test scores and likely have degrees from more prestigious universities and colleges (Zhang, 2005). Researchers have yet to consider the role that advanced degrees play in social stratification and how these degrees, and those who have the opportunity to participate, obtain them, and enjoy the benefits further perpetuate racial wealth inequity. Between 1989 and 2010, the number of people with an advanced degree in the top 5% of the American wealth allocation increased from 30% to 45%, with those acquiring a professional or doctoral degree responsible for the trend (Thompson, 2013 as cited in Posselt & Grodsky, 2017), and their share

of the top 1% of the income distribution still high at 62% (Keister, 2014 as cited in Posselt & Grodsky, 2017).

To grasp the transforming nature of inequity in America, it is crucial to understand the path to earning graduate and professional degrees (Posselt & Grodsky, 2017). If advanced degrees are a possible route to increased earnings, higher education institutions must have an increased awareness of the economic benefits of gaining postgraduate degrees, especially with Black students, and support them through the process of application, admission, and enrollment to post-graduate degree attainment. Admission into graduate programs must always be conducted through a CRT and equity lens. With the cry to diversify faculty at UC, taking steps to create pathways to grow our own by helping our Black students gain their bachelor's degree on time and go on to obtain graduate and professional degrees. Graduate degrees can also provide a way for students to set themselves apart from others to facilitate career progression.

3.3. Conclusion

Although racial discrimination is prevalent in every facet of society, including the labor market in the form of income, wages, and career progression, it is publicly rejected by many but privately embraced by a fair multitude. Many intellectually acknowledge the moral issue surrounding treating another race as being inferior. However, moral feelings without research and analysis may rapidly lead to ineffective, impractical, and pointless policies and programs (Arrow, 1998). This is why this kind of research study is vital.

And the unwillingness of labor market theories to account for this principal factor allows the pervasiveness to persist. Lang & Spitzer (2020) cite reasons that buttress the fact that racial discrimination in the labor market is a reality, with Black men in 2020 relative to White men being 28% less likely to be employed and earning 31% less per year. Black women earn less than White women, though the wage gap is only half of that found in males (Daly et al., 2020 as cited in Lang & Spitzer, 2020). Despite the fact that the importance of research and analysis should

not be minimized, continued examination without morality and equity will never bring about the fair and just society we long for. It is time to begin to question and assess these standard theories. Because if we do not, all we do is deny the impact of race on the social mobility and well-being of Black citizens while allowing the status quo to remain unchanged.

The goal of this study is to examine whether two graduates, one Black and the other White of the same gender, after accounting for variations in background characteristics receive different earnings in the labor market (Arrow, 1998) through the lens of HCT, SCT and CRT.

3.4. Research Gaps

A lot of reports and analytics have been produced on UC alumni employment outcomes by field of study and gender. [6], [7], [8] To date, there has been no investigation into disparities in earnings by race. The main questions for this study are to explore the impact of race on the earnings of UC bachelor's degree recipients and examine if Black graduates earn comparable wages with a bachelor's degree as their Whites peers by analyzing the earnings of graduates who remain employed in the State of California after graduation.

With economic theories insufficient and limited in explaining the income differentials based on race, even though race-based discrimination is evident at every turn, I apply CRT alongside HCT as conceptual frameworks that underpin this research to attempt to quantitatively highlight the implications of discrimination in the labor market (Arrow, 1998).

[6] Source: The UC Information Center. UC alumni at work. https://www.universityofcalifornia.edu/about-us/information-center/uc-alumni-work.
[7] Source: The UC Information Center. UC undergraduate alumni outcomes in California. https://www.universityofcalifornia.edu/about-us/information-center/uc-alumni-work.
[8] Source: The UC Information Center. UC longitudinal alumni dashboards. https://www.universityofcalifornia.edu/about-us/information-center/uc-longitudinal-alumni-dashboards.

3.5. Limitations of Available Literature

There is a lack of literature that pushes the development of a specific sociology of anti-Blackness in conjunction with an integration of CRT, HCT, and SCT as an explanation of Black socioeconomic inequality. Economists often ignore the issue of race as a crucial factor when researching labor market economics but economic theories like HCT, taste-based models of discrimination, and statistical models of discrimination fail to deal with the persistent racial disparities found in unemployment and earnings. Consciously or unconsciously, this translates to a flat-out repudiation and denial of the existence of racial discrimination despite strong empirical and historical evidence that racial discrimination is indeed a factor that must be considered when looking at the tenacity of race-based unemployment and pay gaps in the labor market (Wilson & Darity, 2022). According to Clark & Martorell (2014), "What is the best framework for thinking about the relationship between education, productivity and wages? This is one of the oldest questions in economics (p. 308)."

CHAPTER 4 – METHODOLOGY

4.1. Research Design

Using a critical quantitative research approach, this study employs an exploratory and cross-sectional research strategy to assess the relationship between race and earnings via descriptive and inferential statistics. The analysis and exposition in this study delve into race and racism using HCT, CRT, and SCT as theoretical frameworks (Renbarger & Priddie, 2022). While regression analysis does not necessarily yield estimates of causal effects, it allows for the examination of partial correlations between race and earnings while holding constant certain control variables in the regression.

4.2. My Research Worldview

As a data management professional and with my participation in the CANDEL Ed.D. program, my worldview is clear. I can now articulate it and share it with others. With the aid of Creswell & Creswell (2018), the philosophical worldviews that influence my work and research practice are the postpositivism worldview and the transformative worldview. An inquiry into labor market outcomes from both a postpositivist and transformative perspective means understanding a reality that postpositivism in isolation presents laws and theories that do not mesh well with addressing the issues of social justice faced by marginalized groups, and it is only through a transformative lens that a path to change and reform can occur.

It would be easy to rely solely on the positivist worldview that an empiricist perspective of natural sciences can be applied to social science research, but with a self-awareness of my own biases and identity as a Black scholar-practitioner, a postpositivism worldview seems more appropriate because it contends that the real story lies beyond empirics. With a goal to ask poignant questions rather than deliver comprehensive answers regarding the matters that plague marginalized individuals. Postpositivism focuses on how people of color experience power rather than how it is exercised by challenging systemic structures of racism that lead to

social justice, discrimination, and oppression. [9],[10] Even though there is a great degree of autonomy between the research data and me as the researcher, my worldview still influences the manner in which I analyze and interpret findings.

4.3. Site

UC is the world's leading public research university system, with ten campuses, six academic health centers, and three national labs. UC campuses have 160 academic majors and 800 degree programs. Bachelor's degree recipients earn degrees related to Humanities, Life Sciences, Arts, Health Professional and Clinical Sciences, Social Sciences and Psychology, Engineering and Computer Sciences, Physical Sciences and Math, Professional, and Inter-Disciplinary Studies.

Between the years 2005 and 2022, 924,860 bachelor's degrees were awarded at UC (see Appendix C). 289,689 degrees were awarded to students who identified racially as Black and White based on the Integrated Postsecondary Education Data System (IPEDS) categories with 8.07% of the degrees being awarded to Black students and 91.73% to White students (see Appendix D). About 181,375 degrees were awarded to Black and White students who started their academic journey at UC as freshmen and are considered domestic students - 8.62% were Black graduates and 91.38% were White graduates (see Appendix E). As can be seen in Table 1, compared to the population of Black Californians between the ages of 18 and 24, between 0.32% and 0.44% Black domestic freshman entrants earned degrees at UC between 2011 and 2021. Compared to the population of White Californians between the ages of 18 and 24, between 0.64% and 0.76% White domestic freshman entrants earned degrees at UC during the same period. Between 3.04% and 4.27% of Black California high school graduates acquired degrees at

[9] Source: Positivism, Post-Positivism and Interpretivism. https://www.e-ir.info/2021/09/25/positivism-post-positivism-and-interpretivism/.
[10] Source: Make a distinction between 'positivism' and 'post positivism'. https://www.cbpbu.ac.in/userfiles/file/2020/STUDY_MAT/POL_SC/28-05-20/POITIVISM-%20POST%20POSITIVISM-converted.pdf.

UC and between 6.51% and 7.77% of White California high school graduates earned degrees from UC. [11],[12]

Table 1

Black & White California (CA) 18-24 Year Olds

	Black			White						
Year	18-24	HS Graduates	UC Graduates	18-24	HS Graduates	UC Graduates	% (A)	% (B)	% (C)	% (D)
2011	254,693	25,674	1,066	1,274,335	126,743	9,635	0.42%	0.76%	4.15%	7.60%
2012	257,211	25,799	971	1,264,966	123,751	8,559	0.38%	0.68%	3.76%	6.92%
2013	255,355	24,600	856	1,239,729	121,413	7,976	0.34%	0.64%	3.48%	6.57%
2014	250,098	23,649	720	1,208,435	117,490	8,021	0.29%	0.66%	3.04%	6.83%
2015	241,348	23,728	772	1,164,312	113,367	7,649	0.32%	0.66%	3.25%	6.75%
2016	232,075	23,629	753	1,118,507	111,324	7,917	0.32%	0.71%	3.19%	7.11%
2017	224,441	23,191	749	1,083,986	108,399	7,413	0.33%	0.68%	3.23%	6.84%
2018	218,302	22,851	754	1,058391	106,669	6,945	0.35%	0.66%	3.30%	6.51%
2019	210,369	22,312	862	1,026,777	103,110	7,702	0.41%	0.75%	3.86%	7.47%
2020	210,601	21,431	913	1,035,534	99,722	7,753	0.43%	0.75%	4.26%	7.77%
2021	199,423	20,502	875	957,049	101,363	6,845	0.44%	0.72%	4.27%	6.75%

Note. Population of CA White and Black 18-24 year olds who graduate from high school and earn a UC bachelor's degree

- A: Percentage of CA Black 18-24 years olds that are UC bachelor's degree recipients
- B: Percentage of CA White 18-24 years olds that are UC bachelor's degree recipients
- C: Percentage of Black CA high school graduates that are UC bachelor's degree recipients
- D: Percentage of White CA high school graduates that are UC bachelor's degree recipients

[11] Source: The Anne E. Casey Foundation. Young Adult Population Ages 18 to 24 by Race & Ethnicity in California. https://datacenter.aecf.org/data/tables/11207-young-adult-population-ages-18-to-24-by-race-and-ethnicity.

[12] Source: Kids Data. California High School Graduates by Race/Ethnicity. https://www.kidsdata.org/topic/755/graduates-race/table

4.4. Datasets

The data for this study was sourced from merging several large administrative student-level data sets from the UC systemwide office: undergraduate admissions data, student enrollment data, financial aid data, and degree outcomes data. Quarterly earnings data was sought from the Employment Development Department (EDD) by calendar year on UC graduate recipients. The data is limited to bachelor's degree recipients from California public and private high schools and includes variables from undergraduate admissions to registration and graduation. It follows graduates into the labor market and examines earnings at four time points: two, four, six, and ten-years post-graduation using unique individual identifiers as a link across data segments.

Data related to additional degrees achieved through subsequent college enrollments was collected from the National Student Clearinghouse (NSC) to explore whether the attainment of more degrees influences earnings. Earnings data from the Employment Development Department (EDD) leveraged for this study covers the calendar years 2007 – 2019. Even though data is available post-2019, this study stops at this timeline to avoid the potential noise from the COVID-19 years.

A simple sum methodology which adds up all earnings for all four quarters within a calendar year was employed to annualize the quarterly earnings data. Annualized earnings two, four, six, and ten-years post-graduation are examined, and the study sample is restricted to bachelor's degree recipients with at least one-quarter of wage data in a calendar year at each study timeline. It is important to note that since the data is not longitudinal, participants within each annual snapshot may vary. Also of importance to consider is that earnings data is only available if the student remains within the State of California for employment post-graduation and is not a member of the armed forces, is self-employed, a domestic and unpaid family worker, a proprietor, or a railroad worker covered by the railroad unemployment insurance

system. [13] This means that earnings not covered by EDD will be missing leading to an underestimation of earnings and graduates who elect to leave the state of California will not be included in the research samples.

The undergraduate admissions data for this study includes variables such as parental income, first-generation flag, high school GPA, and SAT scores as pre-college academic achievement data for college entrants from California public and private high schools. The registration data captures enrollment characteristics, such as the field of study, which is a key predictor of earnings (Carnevale et al., 2016; Kim et al., 2015). The degree outcomes data provides attributes such as GPA at graduation attained at the end of a bachelor's degree pursuit, which some scholars deem a crucial contributor to labor market outcomes (Gemus, 2010; Jones & Jackson, 1990), and time to graduation in years.

Controlling for bachelor's degree recipients' academic achievement in high school and at UC using key pre-college and post-matriculation characteristics aids in the evaluation of earning outcomes (Backes et al., 2015). In controlling for pre-college and post-matriculation characteristics, the goal is to hold constant the potential influence of these covariates to isolate the relationship between race and earnings without interference with the influence of these pre-college and post-matriculation characteristics.

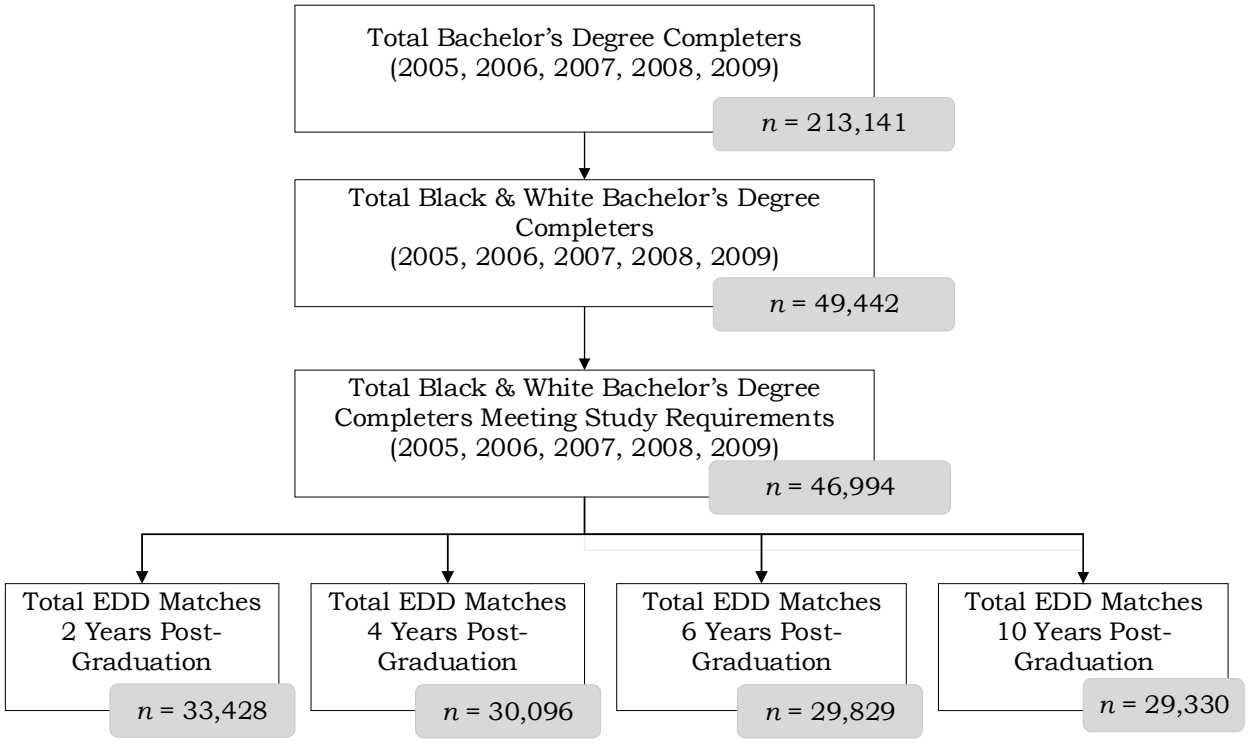
The study sample is drawn from five cohorts of bachelor's degree recipients who graduated in 2005-06, 2006-07, 2007-08, 2008-09, and 2009-10 academic years from the nine UC undergraduate campuses: UC Merced, UC Santa Cruz, UC Riverside, UC San Diego, UC Davis, UC Irvine, UC Santa Barbara, UCLA, and Berkeley. The population of UC bachelor's degree completers for 2005, 2006, 2007, 2008, and 2009 is 213,141 (see Figure 3). The sample is also limited to those graduates who are freshman entrants from California high schools and who identify racially as Black or White. I also limit the sample to those bachelor's degree

[13] Source: Quarterly Census of Employment and Wages (QCEW – About the Data). https://labormarketinfo.edd.ca.gov/LMID/QCEW_About_the_Data.html.

recipients who have non-missing demographic and academic information such as gender, first-generation status, parental income, and academic achievement metrics at the time of admission and graduation. Parental income is imputed for records missing this variable using the mean of positive parent income values by race.

Figure 3

Data Sample Participants Enrollment Process



Note. EDD Match = At least one quarter of positive earning match at each study timeline

Because this research study focuses only on Black and White bachelor's degree recipients who are domestic freshmen from California high schools (public and private) and have all the required demographic variables, the sample of eligible participants from 2005, 2006, 2007, 2008, and 2009 cohorts is reduced to 9,785, 9,938, 9,624, 9,846 and 10,249 respectively – a total of 49,442 (see Figure 3). Based on study requirements, Black and White bachelor's degree recipients in the study sample must also be participating in the California labor market at the

two-year, four-year, six-year, and ten-year research timelines and must have at least one-quarter of post-graduation earnings at each timeline. Out of the 46,994 Black and White bachelor's degree recipients who met the study criteria, 33,428 of the total 2005, 2006, 2007, 2008, and 2009 cohorts were matched to the EDD data at the two-year timeline, 30,096 at the four-year timeline, 29,829 at the six-year timeline and 29,330 at the ten-year timeline (see Figure 3).

4.5. Measures

4.5.1. Dependent Variables

The dependent variable in this study is the measure of labor market outcomes which is annualized earnings in dollars, the most useful measure of the state of the labor market because it reflects both employment status and wage rates (Jaynes & Williams, 1989).

Table 2

Study Variables

Variable Name	Description	Variable Coding	Variable Source
Annual Wages	Earning by calendar year	Continuous	Employment Development Department (EDD)
Field of Study	Major or program of study	Categorical. Nine categorical variables: (1) Arts; (2) Engineering and Computer Science; (3) Health Professional and Clinical Sciences; (4) Humanities; (5) Life Sciences; (6) Physical Sciences and Math; (7) Professional Fields; (8) Social Sciences and Psychology; (9) Multi-Inter Disciplinary Studies. Multi-Inter Disciplinary Studies is the reference level	Enrollment/Registration
First-Generation Flag	First in their family to go to college or not	Categorical/binary. Non-first-generation = 0, first-generation = 1. Non-first-generation is the reference level	Undergraduate Admissions
Gender	Gender. Only male and female.	Categorical/binary. Male is the reference level	Undergraduate Admissions

Variable Name	Description	Variable Coding	Variable Source
GPA at Graduation	GPA at the time of UC graduation	Continuous. Range 0.0 to 4.0	Enrollment & Degree Data
High School GPA	High school leaving grade point average	Continuous. Range 0.0 to 4.0	Undergraduate Admissions
Parental Income	Highest parental income	Categorical. Four categories: less than $50K, $50K – $99,999K, $100K – $149,999K, $150K and above. $150K and above is the reference level	Undergraduate Admissions
Race/Ethnicity	Student racial identity based on Integrated Postsecondary Education System (IPEDS) categories.	Categorical/binary. Black/African American (Black) and White where 0 = White, 1 = Black. White is the reference level	Undergraduate Admissions
SAT Score	Reading and writing scholastic aptitude test results	Continuous. Range – 560 - 1600	Undergraduate Admissions
Subsequent Degree Flag	Graduate has another degree post-UC graduation	Categorical/binary. 0 = has no subsequent degree, 1 = has a subsequent degree. No subsequent degree is the reference level	National Student Clearinghouse (NSC) Data
Time to Graduation	Number of years elapsed between enrollment and graduation	Categorical/binary. 0 = Time to graduation greater than four years, 1 = Time to graduation less than or equal to four years. Time to graduation greater than four years is the reference level	Enrollment/Registration Data

Note. Study variable definitions

4.5.2. Independent/Explanatory Variables

The independent variables consist of two categories of predictors - pre-college and post-matriculation characteristics. The pre-college characteristics include family background traits such as race, parental income, first-generation status, and high school GPA. The post-matriculation characteristics include field of study, college GPA at graduation, and subsequent post-graduate degree flag.

4.6. Data Analysis

The data analysis was conducted using both descriptive and inferential statistics. Descriptive statistics aided in the characterization of the data sample in detail via measures of central tendency and variability. Inferential statistics in the form of linear and multiple regression helped to determine the extent of the relationship between the earnings variable and the multiple independent variables via the exploration of trends and patterns with no intention of proving cause and effect. [14] Six regression models were developed to aid in the analysis of the research questions.

4.6.1. Research Question 1

How do average earnings of Black UC bachelor's degree recipients compare to that of their White counterparts two years, four years, six years, and ten years post-graduation?

4.6.1.1. Sub-Question 1.

What are the raw differences between the average earnings of Black bachelor's degree recipients compared to their White counterparts?

To explore answers to research question 1, sub-question 1, the unadjusted linear regression model followed this form:

$$Y = \beta_0 + \beta_1 X_1 + \varepsilon \text{ where}$$

$$\text{Earnings} = \beta_0 + \beta_1 * \text{Race} + \varepsilon$$

This linear regression equation allowed the estimation of the linear relationship between earnings and race. The coefficient β_1 (race) quantified the magnitude and the direction of the relationship between the dependent variable earnings and the independent variable race. The value of β_1 represents the difference in mean earnings between Black and White bachelor's degree recipients.

[14] Source: Winston-Salem State University. Key Elements of a Research Proposal Quantitative Design. https://www.wssu.edu/about/offices-and-departments/office-of-sponsored-programs/pre-award/_Files/documents/develop-quantitative.pdf.

Hypothesis Test H_0: average earnings of Black graduates = average earnings of White graduates unadjusted; H_1: average earnings of Black graduates ≠ average earnings of White graduates unadjusted

4.6.1.2. Sub-Question 2.

What are differences between the average earnings of Black bachelor's degree recipients compared to their White counterparts while adjusting for pre-college characteristics (parental income, first-generation status, SAT score and high school GPA)?

Regarding research question 1, sub-question 2, the multiple linear regression model employed followed this form:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \ldots \beta_n X_n + \varepsilon$$

This multiple linear regression model explored the differences between the average earnings of Black bachelor's degree recipients compared to their White counterparts while controlling for pre-college characteristics (race, gender, parental income, first-generation indicator, SAT score and high school GPA):

$$\text{Earnings} = \beta_0 + \beta_1 * \text{Race} + \beta_2 * \text{Gender} + \beta_3 * \text{Parent-Income} + \beta_4 * \text{First-Generation-Status} + \beta_5 * \text{SAT-score} + \beta_6 * \text{High-School-GPA} + \varepsilon$$

Hypothesis Test H_0: average earnings of Black graduates = average earnings of White graduates while controlling for precollege characteristics; H_1: average earnings of Black graduates ≠ average earnings of White graduates while controlling for precollege characteristics.

4.6.1.3. Sub-Question 3.

What are differences between the average earnings of Black bachelor's degree recipients compared to their White counterparts while adjusting for pre-college (parental income, first-generation status, SAT score and high school GPA) and post-matriculation characteristics (field of study, college GPA at graduation and subsequent degree attainment)?

For research question 1, sub-question 3, the following multiple regression model was utilized to explore differences between the average earnings of Black bachelor's degree recipients compared to their White counterparts while adjusting for pre-college (race, gender, parental income, first-generation indicator, school API score, SAT score and high school GPA) and post-matriculation characteristics (special program indicator, Pell indicator, field of study, college GPA at graduation, time to graduation and subsequent degree attainment):

$$\text{Earnings} = \beta_0 + \beta_1 * \text{Race} + \beta_2 * \text{Gender} + \beta_3 * \text{Parent-Income} + \beta_4 * \text{First-Generation-Status} + \beta_5 * \text{SAT-score} + \beta_6 * \text{High-School-GPA} + \beta_7 * \text{Arts-F} + \beta_8 * \text{Arts-F} + \beta_9 * \text{Engcs-F} + \beta_{10} * \text{Hlthclinical-F} + \beta_{11} * \text{Humanities-F} + \beta_{12} * \text{Lifesciences-F} + \beta_{13} * \text{Physcmath-F} + \beta_{14} * \text{Socscpsyc-F} + \beta_{15} * \text{Professional-F} + \beta_{16} * \text{College-gpa} + \beta_{17} * \text{Time-to-Graduation} + \beta_{18} * \text{Subsequent-Degree-Flag} + \varepsilon$$

Hypothesis Test H_0: average earnings of Black graduates = average earnings of White graduates while controlling for precollege and post-matriculation characteristics; H_1: average earnings of Black graduates ≠ average earnings of White graduates while controlling for precollege post-matriculation characteristic

4.6.2. Research Question 2

How do the differences in average earnings between Black and White UC bachelor's degree recipients vary across student subgroups?

4.6.2.1. Sub-Question 1.

What are the differences in average earnings between Black and White UC bachelor's degree recipients who are first-generation compared to those who are non-first generation while adjusting for pre-college and post-matriculation characteristics?

To investigate research question 2, sub-question 1, a multiple regression model with interaction while still controlling for pre-college and post-matriculation characteristics was

employed to inquire whether the regression coefficient of race predicting earnings varies across Black and White UC degree recipients who first-generation and those that are not.

In the regression equation for sub-question 1 below, β_1 is the "main effect" for race, β_4 is the "main effect" for first-generation status, and β_{18} for the interaction term, race * first-generation status. This interaction term constitutes the effect of race on earnings when first-generation status changes from yes to no.

If β_{18} shows statistical significance, it means that the relationship between race and earnings varies by whether a graduate is first-generation or not.

$$\text{Earnings} = \beta_0 + \beta_1 * \text{Race} + \beta_2 * \text{Gender} + \beta_3 * \text{Parent-Income} + \beta_4 * \text{First-Generation-Status} + \beta_5 * \text{SAT-score} + \beta_6 * \text{High-School-GPA} + \beta_7 * \text{Arts-F} + \beta_8 * \text{Engcs-F} + \beta_9 * \text{Hlthclinical-F} + \beta_{10} * \text{Humanities-F} + \beta_{11} * \text{Lifesciences-F} + \beta_{12} * \text{Physcmath-F} + \beta_{13} * \text{Socscpsyc-F} + \beta_{14} * \text{Professional-F} + \beta_{15} * \text{College-gpa} + \beta_{16} * \text{Time-to-Graduation} + \beta_{17} * \text{Subsequent-Degree-Flag} + \beta_{18} * \text{Race} * \text{First-Generation-Status} + \varepsilon$$

Hypothesis Test – H_0: $\beta_{18} = 0$ (first-generation gap = non-first-generation gap); H_1: $\beta_{18} \neq 0$ (first-generation gap ≠ non-first-generation gap)

4.6.2.2. Sub-Question 2.

What are the differences in average earnings between Black and White UC bachelor's degree recipients who earned subsequent degree(s) compared to those who did not while adjusting for pre-college and post-matriculation characteristics?

To investigate research question 2, sub-question 2, a multiple regression model with interaction while still adjusting for pre-college and post-matriculation characteristics was employed to inquire whether the regression coefficient of race predicting earnings varies across Black and White UC degree recipients who earned subsequent degrees and those who did not. The β_1 is the "main effect" for race, β_{17} is the "main effect" for subsequent degree flag, and β_{18} for the interaction term, race * subsequent degree flag.

This interaction term constitutes the effect of race on earnings when subsequent degree flag status changes from yes to no. If β_{18} shows statistical significance, it means that the relationship between race and earnings varies by whether a graduate has earned a subsequent degree or not.

$$\text{Earnings} = \beta_0 + \beta_1 * \text{Race} + \beta_2 * \text{Gender} + \beta_3 * \text{Parent-Income} + \beta_4 * \text{First-Generation-Status} + \beta_5 * \text{SAT-score} + \beta_6 * \text{High-School-GPA} + \beta_7 * \text{Arts-F} + \beta_8 * \text{Engcs-F} + \beta_9 * \text{Hlthclinical-F} + \beta_{10} * \text{Humanities-F} + \beta_{11} * \text{Lifesciences-F} + \beta_{12} * \text{Physcmath-F} + \beta_{13} * \text{Socscpsyc-F} + \beta_{14} * \text{Professional-F} + \beta_{15} * \text{College-gpa} + \beta_{16} * \text{Time-to-Graduation} + \beta_{17} * \text{Subsequent-Degree-Flag} + \beta_{18} * \text{Race} * \text{Subsequent-Degree-Flag} + \varepsilon$$

Hypothesis Test – H_0: $\beta_{18} = 0$ (subsequent degree gap = no subsequent degree gap); H_1 : $\beta_{18} \neq 0$ (subsequent degree gap ≠ no subsequent degree gap)

4.6.2.3. Sub-Question 3.

What are the differences in average earnings between Black and White UC bachelor's degree recipients who are males compared to those who are females while adjusting for pre-college and post-matriculation characteristics?

A multiple regression model with interaction was leveraged to explore whether the regression coefficient of race predicting earnings differs across Black and White UC bachelor's degree recipients based on gender. β_1 is the "main effect" for race, β_2 is the "main effect" for gender, and β_{18} for the interaction term race * gender. This interaction term constitutes the effect of race on earnings when gender changes from male to female. If β_{18} shows statistical significance, it means that the relationship between race and earnings varies by gender.

$$\text{Earnings} = \beta_0 + \beta_1 * \text{Race} + \beta_2 * \text{Gender} + \beta_3 * \text{Parent-Income} + \beta_4 * \text{First-Generation-Status} + \beta_5 * \text{SAT-score} + \beta_6 * \text{High-School-GPA} + \beta_7 * \text{Arts-F} + \beta_8 * \text{Engcs-F} + \beta_9 * \text{Hlthclinical-F} + \beta_{10} * \text{Humanities-F} + \beta_{11} * \text{Lifesciences-F} + \beta_{12} * \text{Physcmath-F} + \beta_{13} * \text{Socscpsyc-F} + \beta_{14} * \text{Professional-}$$

$$F + \beta_{15} * \text{College-gpa} + \beta_{16} * \text{Time-to-Graduation} + \beta_{17} * \text{Subsequent-Degree-Flag} + \beta_{18} * \text{Race} * \text{Gender} + \varepsilon$$

Hypothesis Test – H_0: $\beta_{18} = 0$ (average earnings of males = average earnings of females); H_1: $\beta_{18} \neq 0$ (average earnings of males ≠ average earnings of females)

4.7. Positionality & Reflexivity

According to Holmes (2020), positionality delves into a researcher's worldview and the posture they adopt about a research endeavor and its social and political context. As educational researchers, the positionality we bring to our work and individual experiences that shape us influence how we approach our research projects, our choice of processes, and our interpretation of outcomes. Essentially, who we are and where we've been influences our orientations such that we are not separate from the social processes we study. We are and always will be part of the social world we research. Disclosing positionality is ideal regardless of methodology (Jafar, 2018) and is needed to increase research accuracy and to lend greater credibility to research findings (Berger, 2015). Locating my positionality will involve finding myself in three areas: (1) my position about the research topic and how my experiences have the power to influence it, (2) the research participants – acknowledging that extensive introspection and critical analysis will be necessary to explore how I see myself and how others may see me or I assume they see me, and where I locate myself research participants (3) the research context and processes – coming to terms with the fact that my research would be influenced by me and by its context (Holmes, 2020).

Using the reflexivity approach, I can start the process of building and understanding my positionality. As my experiences change and I grow and evolve, my worldview has and will continue to shift in many social and political ways. I appreciate that this reflective process will probably last as long as I live. So, I ask myself the following poignant questions: (1) Who am I? (2) How am I showing up in this research project? (3) What historical and current personal and

professional experiences and beliefs do I bring to the research? (4) What motivates me to delve into this area of research and why? Confronting these questions helps me situate myself as the major research instrument within this research study I conduct. Malterud (2001) outlines positionality succinctly with this quote:

> A researcher's background and position will affect what they choose to investigate, the angle of investigation, the methods judged most adequate for this purpose, the findings considered most appropriate, and the framing and communication of conclusions (pp. 483-484).

I am a fifty-three-year-old single heterosexual, non-disabled Black African female, born in the United Kingdom (UK) and raised in Nigeria, West Africa. I am keenly aware of my privilege as an educated, middle-class person. My father went to college, but my mother didn't because she had to work two jobs to support his education. Consequently, she depended on my father for all her needs. It was something I swore I'd never do. My mother's experience made me fiercely independent. I developed an intense desire to manage my affairs. I am a middle child and learned to enjoy my own company because my two older brothers were ten and five years older than me. I lost my younger brother, my best friend, to Malaria. I still carry that grief with me today. My early childhood in the UK reinforced the knowledge that I was Black. I remember my little White peers asking me if we swung from trees like monkeys in Africa. Life in Nigeria is one I look back on with immense gratitude. It exposed me to my culture and predominantly people who look like me. Experiencing my native home and knowing where I'm from keeps me stable and anchored to what's truly important. My race and ethnicity have influenced my social and political views. It also drives my learning and academic journey. Moving to America exposed me to a different form of racism – racism that is bold and heavily systemic. I remember telling my friends I never felt so Black until I came to America. As a mother of two adult children, I worry about the future they might have and the opportunities that may not be available to them because of the color of their skin.

While pursuing an undergraduate degree in Nigeria, I had struggles that didn't stem from academia but affected it. Everyone looked like me, yet I struggled. While doing my graduate degrees in England, I had fewer problems and began to appreciate that representation does not necessarily eradicate the struggles of the Black population. As an African who is well-versed and aware of the issue of slavery in America and the generational post-traumatic stress it causes, I must admit that I often feel far removed from it even though a vast number of slaves were captured in West Africa and ended up in foreign countries around the world. In my work at UC, I am conscious of the within-group differences between native-born Black staff and foreign-born Black staff. I can extrapolate that the same within-group differences also exist in students. For some reason, I always correct anyone who refers to me as an African American, telling them that is not what I am. My ethnicity as an African is important to me, and I fear losing it or getting lost in a crowd. My unique experiences as a Black African woman mean much more than skin color.

As a technology leader in a diverse community such as UC, I am only one of two Black women in Information Technology. The lack of representation may be due to the assumption and belief that Black people do not do well in STEM programs. These types of race-based conjecture deeply grieves me, mainly because I know this presumption isn't true. My experiences of microaggression in the technology field also further reinforce the feeling I get when I am in a sea of less-qualified White technologists who seem to be saying: "You don't deserve to be here." This is often a source of tension and conflict for me. I feel valued in my role within Institutional Research, and that helps me embrace the notion that the world is not necessarily racist; it's individuals and systems that are. As a researcher and data manager, I believe using data to tell stories must be supported. However, I have experienced scenarios where that is not what occurs, especially when it is at the expense of dealing with issues of racism and inequity. My desire to not be pigeonholed into any stereotype drives me to work harder, often to my detriment. I always say: "You may be smarter than I am, but you will never

outwork me." I am determined to make something of my life and help others do the same, especially within the Black community. This is why my educational research area of interest is on Black students and disadvantaged communities. My life experience motivates me to want to bring Black perspectives to a more prominent place in research. I plan to continue to work on my positionality statement, as developing one requires time, deep thought, contemplation, and reflection. I intend to make reflexivity a practice while conducting research to competently work through dangers – seen, unseen, and unforeseen (Milner, 2007).

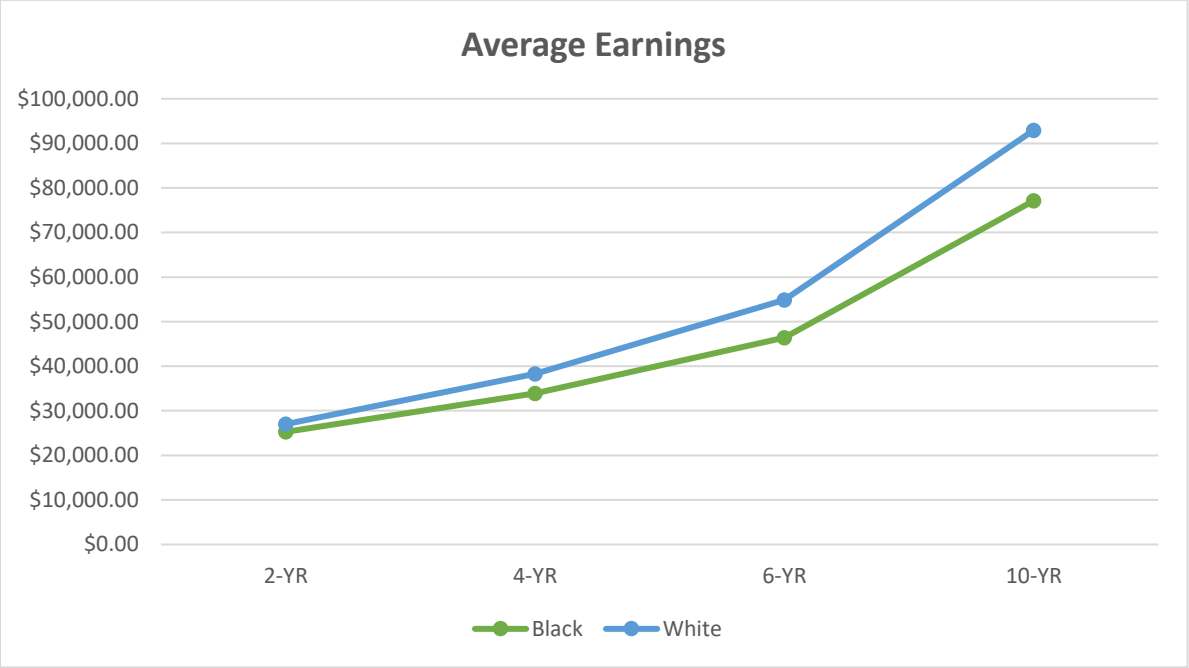
CHAPTER 5 – FINDINGS

5.1. Summary of Raw Average Earning Differences

Using the raw annual wages earned by UC bachelor's degree recipients from cohorts 2005 to 2009 at two years, four years, six years, and ten years post-graduation, there is a consistent and growing wage gap between graduates, with Black graduates at an economic disadvantage compared to their White peers, on average (see Figure 4). The disparity in earnings was similar when results were viewed by gender, with White males earning more than their Black male counterparts, on average. This wage gap continued to widen over time; that is, it is largest at the ten-year post-graduation mark.

Figure 4

Raw Average Earnings – Black & White

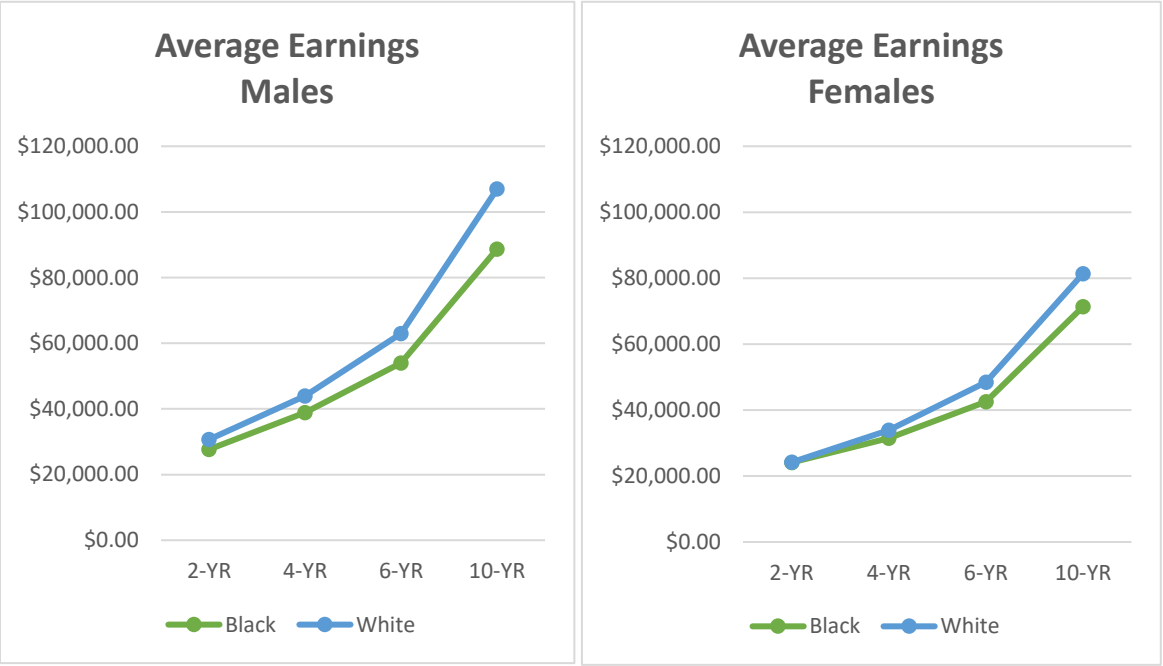


Note. Black-White unadjusted graduate wage disparity at two, four, six and ten-years post-graduation

For females, there was minimal variation between the earnings of White females and their Black peers at the two-year timeline. However, this began to change at the four-year timeline, with the gap increasing at six and ten-years post-graduation (see Figure 5). In all scenarios, White graduates exceeded the earnings of Black graduates – generally and by gender (see Figure 4 and Figure 5).

Figure 5

Raw Average Earnings – Black & White – Males



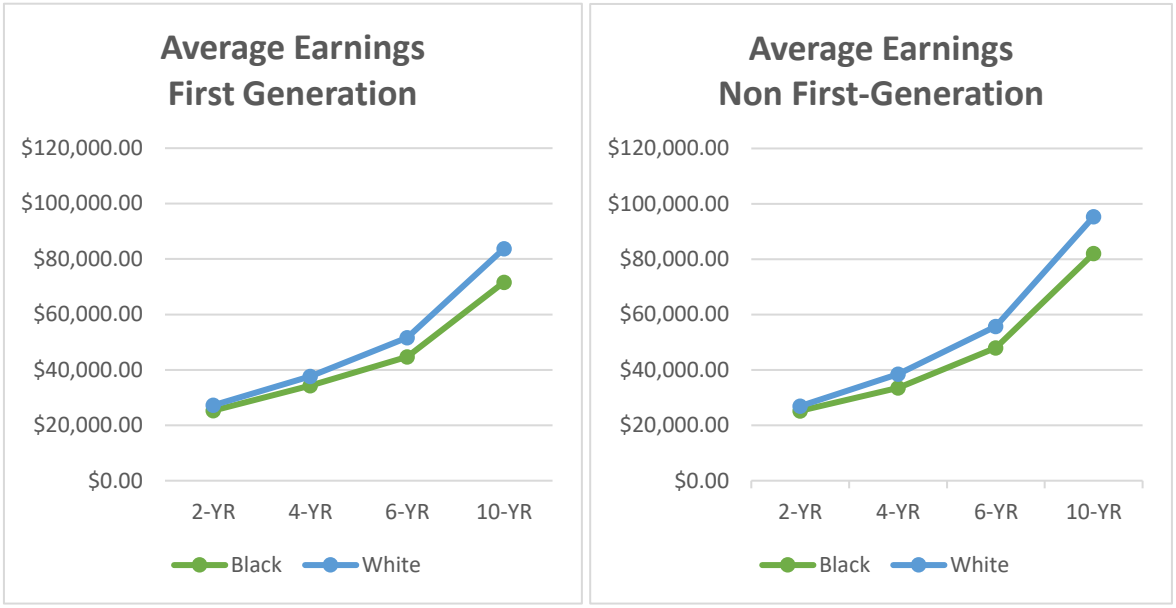
Note. Black-White unadjusted graduate wage disparity for males and females at two, four, six and ten-years post-graduation

Moderate average earning differences were observed between Black and White first-generation graduates, with White first-generation graduates earning more than their Black first-generation peers. Black first-generation and Black non-first-generation had comparable earnings at the two, four, and six years post-graduation. However, the wage gap widened with

non-first-generation graduates earning more than their first-generation counterparts at ten years post-graduation. The same pattern was revealed between White first-generation graduates and their non-first-generation peers (see Figure 6).

Figure 6

Raw Average Earnings – Black & White – First-Generation Status



Note. Black-White unadjusted graduate wage disparity for first-generation and non-first-generation at two, four, six and ten-years post-graduation

Many UC bachelor's degree recipients elected to pursue subsequent degrees. However, acquiring an additional degree did not show an increase in earnings for both Black and White graduates until six and ten-years after the acquisition of a bachelor's degree. Black graduates with subsequent degrees appeared to earn less on average than White graduates without one (see Figure 7).

Figure 7

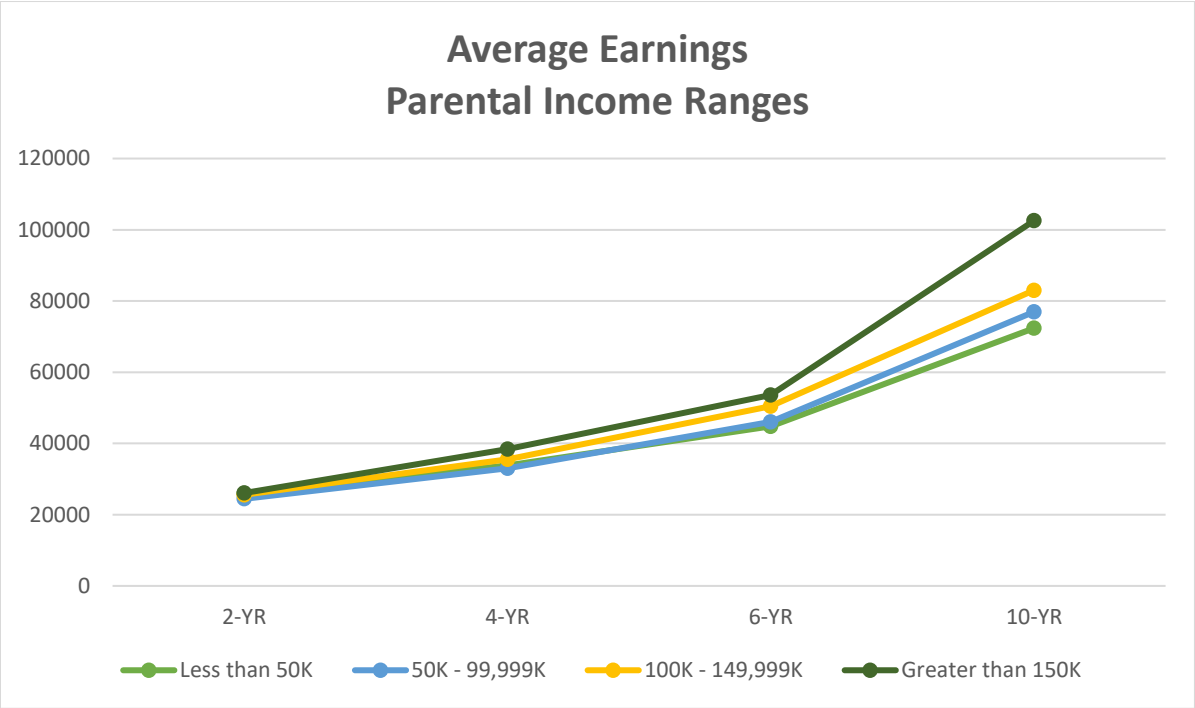
Raw Average Earnings – Black & White – Subsequent Degree Status

Note. Black-White unadjusted graduate wage disparity for subsequent degree acquisition and no subsequent degree at two, four, six and ten-years post-graduation

Raw earnings of Black and White UC's bachelor's degree recipients showed a positive association between parental income and the wages of graduates. As parental income increased, so did the earnings of graduates. Graduates with lower parental income also experienced lower incomes. Graduates with parents who had higher incomes above $150,000 also had the highest wages. The higher the parental income, the higher the graduate earnings (see Figure 8).

Figure 8

Raw Average Earnings – Parental Income



Note. Black-White unadjusted graduate wage disparity by parental income at two, four, six and ten-years post-graduation

5.2. Example Descriptive Statistics – Ten Years Post-Graduation

Ten years post-graduation, 12% more females earned bachelor's degrees at UC than males. Regarding parental income, 16% of this sample had parents who earned less than $50,000, with 43% of Black parents falling into this parental income range compared to 14% of White parents. Exactly 24% of graduate parents earned between $50,000 - $99,999, with 41% of Black parents falling into this income range compared to 23% of White parents. When the income range increases to $100,000 - $149,999, only 11% of Black parents fell within this income range compared to 45% of White parents. For parental income above $150,000, a mere 0.06% of Black parents fell within this range in contrast with 18% of White parents.

Overall, 23% of the sample were first-generation, with the percentage of Black first-generation graduates being more than double that of White first-generation graduates. On average, White graduates earned 5.4% higher high school GPAs and 13.8% higher SAT scores than their Black peers. Fields of study with higher earnings, such as Engineering and Computer Science, Health and Clinical Sciences, Life Sciences, and Physical Sciences and Math, had a low representation of Black graduates compared with White graduates. Overall, these descriptive statistics show that there are important demographic, pre-collegiate, and post-collegiate differences between Black and White students.

Table 3

Descriptive Statistics – 10 Years Post-Graduation

Variable	All	Black	White	Difference	Percentage Difference
Race	1.0	0.08	0.92	24,442	1,050%
Gender - Female	0.56	0.67	0.55	13,098	21.8%
Gender - Male	0.44	0.33	0.46	11,444	33.4%
PI (Less than 50K)	0.16	0.43	0.14	2,728	207.1%
PI (50K – 99,999K)	0.24	0.41	0.23	5,129	78.3%
PI (100K – 149,999K)	0.43	0.11	0.45	11,952	309.1%
PI (Above 150K)	0.17	0.06	0.18	4,633	200%
High School GPA	3.80	3.62	3.82	0.20	5.4%
SAT Score	1227	1080	1240	160	13.8%
First-Generation	0.23	0.48	0.21	4,537	128.6%
Non-First-Generation	0.77	0.52	0.79	19,905	51.9%
Arts	0.07	0.05	0.08	1,925	60.0%
Eng. & Computer Sc.	0.09	0.05	0.09	2,412	80.0%
Health/Clinical Sc.	0.004	0.006	0.004	87	50.0%
Humanities	0.14	0.12	0.14	3,596	16.7%
Life Sciences	0.15	0.12	0.16	3,938	33.3%
Physical Sc./Math	0.04	0.03	0.04	1,039	33.3%
Professional Fields	0.11	0.11	0.11	2,763	0%
Soc. Sc/Psychology	0.33	0.47	0.32	7,514	46.9%
Multi-Disciplinary	0.05	0.05	0.05	1,168	0%
College GPA	3.20	2.94	3.22	0.28	9.1%
T2G <= 4 Years	0.83	0.71	0.84	20,851	18.3%
T2G > 4 Years	0.17	0.29	0.16	3,591	81.3%
Subsequent Degree	0.67	0.74	0.66	15,927	12.1%
No Subsequent Degree	0.33	0.26	0.34	8,515	30.8%

Note. Black-White descriptive statistics ten years post-graduation. PI denotes parental income. T2G denotes time to graduation

Regarding the acquisition of a subsequent degree, 67% of the ten-year timeline sample earned subsequent degrees, with 8% more Black graduates acquiring an additional degree compared to their White peers. 83% of the graduates in this sample graduated on time, with 71% of Blacks graduating in four years or less compared to 84% of White graduates (see Table 3).

5.3. Multiple Regression Results

Six regression models were employed in this research study.

5.3.1. Research Question 1: Sub-Question 1 Results

This regression model provides the unadjusted differences in earnings and shows how Black graduates perform in the labor market in comparison to White graduates. The results show sizeable differences between Black and White bachelor's degree recipients, supporting results from descriptive statistics shown in Figure 4. Across all study timelines, race is a statistically significant predictor of earnings. White graduates earn more than their Black counterparts on average by $1,732.29 at two years, $4,386.02 at four years, $8,472.31 at six years, and $15,818.42 at ten years post-graduation (see Table 4).

Table 4

Raw Average Earning Differences – Unadjusted

Variable	2-Years	4-Years	6-Years	10-Years
Race	-1732.294***	-4386.023***	-8472.314***	-15818.420***
	(-3.93)	(-6.27)	(-6.63)	(-8.68)
White Average Earnings	$27,007.02	$38,297.93	$54,856.71	$92,924.25
Overall Average Earnings	$26,866.27	$37,935.92	$54,154.59	$91,604.14
% Black-White Difference	6.41%	11.45%	15.44%	17.02%
Number of Observations	33,428	30,096	28,829	29,330

Note. T-statistics (absolute value) are shown below each coefficient.

*$p \leq .05$, ** $p \leq .01$, *** $p \leq .001$

There was an indication that the gap in earnings compounded as time passed, roughly doubling at each time point. The percentage difference between Black and White average earnings at the two-year, four-year, six-year, and ten-year endpoints were 6.41%, 11.45%, 15.44%, and 17.02% respectively.

The null hypothesis indicating the average earnings of Black and White graduates are equal can be rejected at each endpoint. Even with a degree from UC, these findings suggest that Black and White graduates are not equally compensated in the labor market. Results are consistent with a tenet of CRT regarding the regularity of racism and the typicality of its occurrence in American society.

5.3.2. Research Question 1: Sub-Question 2 Results

In contrast to the raw unadjusted differences described above in section 5.3.1., the Black-White earnings gaps adjusted for pre-college characteristics reported in Table 5 were small as a percentage of average earnings and not statistically significant at any of the study timelines. Control predictor variables, including gender, parental income (ranges of less than $50K and $50,000 to $99,999), high school GPA, and SAT scores were statistically significant as predictors of earnings across all study timelines. First-generation flag indicated statistical significance at two, four, and ten-years post-graduation but not at the six-year timeline.

The key finding from this regression model on the influence of race on earnings while controlling for these pre-college characteristics suggests that when Black and White pre-college characteristics are similar, the earnings of Black and White graduates are not so far apart. The model provides a glimpse into an explanation for the results observed in section 5.3.1. where the unadjusted results in Table 4 put forth the notion that the acquisition of a UC degree does not eliminate the disadvantages that may confront Black graduates relative to White graduates in the labor market. More specifically, it shows that much of the race gap in earnings is a function of differences along these dimensions (i.e., parental income, pre-collegiate characteristics, e.g.).

Table 5

Regression Results – Pre-College Characteristics Adjustments

Variable	2-Years	4-Years	6-Years	10-Years
Race	510.7876	-444.5542	-253.2743	1081.682
	(1.09)	(-0.59)	(-0.19)	(0.56)
Gender	-6279.015***	-9763.274***	-13565.41***	-23824.08***
	(-25.23)	(-24.18)	(-18.58)	(-23.09)
Parental Income (Less than $50K)	-1275.155**	-2123.321**	-6153.808***	-12865.56***
	(-2.85)	(-2.84)	(-4.70)	(-6.94)
Parental Income ($50K - $99,999K)	-970.3565**	-1374.89*	-4984.17***	-11392.88***
	(-2.49)	(-2.09)	(-4.38)	(-7.08)
Parental Income ($100K - $149,999K)	-344.3426	-290.93	-882.1254	-6717.063***
	(-0.99)	(-0.49)	(-0.87)	(-4.70)
High School GPA	2400.944***	4077.152***	6004.361***	14318.28***
	(6.67)	(6.99)	(-5.68)	(9.56)
SAT Scores	6.470785***	10.78477***	21.66472***	43.31136***
	(6.52)	(6.74)	(7.46)	(10.53)
First-Generation Flag	1604.105***	1613.715***	769.0612	-2942.882*
	(5.19)	(3.25)	(-0.85)	(-2.28)
Number of Observations	33,428	30,096	28,829	29,330

Note: T-statistics (absolute value) are shown below each coefficient.

*$p \leq .05$, ** $p \leq .01$, *** $p \leq .001$

Results presented in Table 5 highlight that the Black disadvantage in the labor market is largely a reflection of differences in pre-college factors related to low SES and academic achievement indicators, suggesting that experienced disparities by race prior to entry into college persist in and through the labor market. The Low SES indicator captures individuals living in poorer neighborhoods, with lower parental income, and enrolled in lower-performing schools with inadequate resources. These students often leave high school with lower GPAs and SAT scores due to worse educational opportunities (see Table 3). Low SES is also correlated with low social capital (Nutakor et al., 2023) with Black graduates often having limited access to social networks and connections required to maximize returns in the labor market, which could be a contributor to the findings shown in Table 4.

These findings further reinforce the assertion that when comparing graduates with similar pre-college characteristics, Black and White graduate earnings are not so different, and the potential lack of social capital affects these graduates similarly. Background attributes may not only have an impact on educational outcomes but also on earnings post-graduation, which can last the course of a student's life.

5.3.3. Research Question 1: Sub-Question 3 Results

Table 6 shows that after adjusting for pre-college and post-matriculation characteristics, race was not a strong predictor of earning differences between Black and White bachelor's degree recipients two, six, and ten-years post-graduation. However, statistical significance was indicated at four years post-graduation. At this timeline, Black graduates were predicted to earn $1,774.05 less than their White peers.

When comparing the regression coefficients in the results from the second regression model, where pre-college characteristics are held constant to the coefficients of the third regression model, where adjustments are made for both pre-college and post-matriculation characteristics, the statistical significance seen at the four-year timeline when adjusting for both pre-college and post- matriculation characteristics was not evident when controlling for pre-college characteristics alone. It is unclear what these small statistically insignificant differences suggest however the coefficients of the third regression model show more consistency with White graduates consistently earning $603.15, $1,774.05, $1,494.05, and $148.59 more than Black graduates two, four, six, and ten-years post-graduation. The key point here is that even though the third regression model resulted in more consistent results, these wage differences are quite small, even at the four-year timeline that showed statistical significance. Similar to controlling only for pre-college characteristics, the slightly lower earnings of Black graduates can be attributed to differences in pre-college characteristics. In essence, the regression model

Table 6

Regression Results – Pre-College & Post-Matriculation Characteristics Adjustments

Variable	2-Years	4-Years	6-Years	10-Years
Race	-603.1537	-1774.054*	-1494.053	-148.5854
	(-1.34)	(-2.44)	(-1.11)	(-0.08)
Gender	-2458.836***	-4630.106***	-8049.615***	-18213.08***
	(-9.88)	(-11.28)	(-10.66)	(-17.07)
Parental Income (Less than $50K)	-1312.508**	-2180.128**	-5831.67***	-11950.46***
	(-3.08)	(-3.02)	(-4.53)	(-6.54)
Parental Income ($50K - $99,999K)	-1286.643***	-1836.04**	-5301.72***	-11541.7***
	(-3.47)	(-2.89)	(-4.73)	(-7.27)
Parental Income ($100K - $149,999K)	-1821.103***	-2756.57***	-3646.095***	-9288.835***
	(-5.03)	(-4.44)	(-3.34)	(-6.02)
High School GPA	1192.471***	1262.03**	1156.913	6592.458***
	(3.32)	(2.14)	(1.06)	(4.27)
SAT Scores	4.498082***	5.656597***	14.2362***	34.3858***
	(4.67)	(3.59)	(4.89)	(8.32)
First-Generation Flag	1373.028***	1597.454***	722.6484	-2937.137*
	(4.67)	(3.34)	(0.81)	(-2.31)
Arts	-4373.63***	-6860.138***	-12492.2***	-25349.94***
	(-6.68)	(-6.40)	(-6.26)	(-8.83)
Engineering & Computer Science	20463.61***	27425.19***	35329.32***	37730.05***
	(31.49)	(25.87)	(17.90)	(13.39)
Health & Clinical Sciences	10248.5***	12029.93***	18266.68**	13960.95
	(5.28)	(3.67)	(3.11)	(1.73)
Humanities	-3226.29***	-4316.446***	-4606.156**	-12789.16***
	(-5.46)	(-4.44)	(-2.55)	(-4.95)
Life Sciences	-1675.32**	-1586.825	-2076.253	-4548.193
	(-2.86)	(-1.62)	(-1.15)	(-1.78)
Physical Sciences & Math	4918.026***	7459.667***	5907.288**	3179.338
	(6.38)	(5.87)	(2.50)	(0.95)
Professional Fields	9773.986***	10472.11***	11837.5***	15777.55***
	(15.97)	(10.44)	(6.37)	(5.91)
Social Sciences & Psychology	828.8368	400.3806	1830.991	-384.6631
	(1.51)	(0.44)	(1.09)	(-0.16)
College GPA	-1510.395***	-567.0114	1859.215**	4708.027***
	(-6.14)	(-1.40)	(2.56)	(4.63)
Time to Graduation	-264.442	1636.378***	5079.701***	10545.28***
	(-0.84)	(3.19)	(5.30)	(7.75)
Subsequent Degree Flag	-2533.9***	-4469.736***	-5354.317***	-4821.64***
	(-8.96)	(-9.69)	(-6.24)	(-3.95)
Number of Observations	33,428	30,096	29,829	29,330

Note. T-statistics (absolute value) are shown below each coefficient.

*$p \leq .05$, ** $p \leq .01$, *** $p \leq .001$

from the second and third regression models, where pre-college alone and both pre-college and post-matriculation characteristics are held constant, explain the results from the first unadjusted regression model and provides the understanding that pre-college and post-

matriculation characteristics are extremely important when it comes to post-graduation outcomes.

Regarding other coefficients, at the two-year, four-year, and ten-year timeline, pre-college characteristics such as gender, parental income for all ranges, and SAT scores showed statistical significance across all study timelines. Post-matriculation characteristics such as time to graduation and the acquisition of a subsequent degree indicated statistically significant relationships to earnings across all study timelines. The Arts, Engineering and Computer Science, Humanities, and Professional fields of study also all showed statistically significant relationships with earnings (see Table 6).

Similar to the results shown in Table 5, controlling for both pre-college and post-matriculation characteristics mitigated the impact of race with an indication of significance at only one out of the four study timelines. This means that when these characteristics are similar, especially pre-college characteristics, Black and White graduates' earnings are not dissimilar. Said differently, the relationship between race and earnings is not statistically significantly different from zero when these adjustments are made. Significant unadjusted wage disparities shown in Table 4 are mainly a representation of variations in college pre-entry characteristics. Students from low socioeconomic backgrounds are often the first in their families to attend college and start college with lower academic achievement measures such as high school GPA and SAT scores (see Table 3).

In alignment with HCT, these variations in pre-college factors function as human capital differences that may contribute to Black-White earning differences. These differences can be attributed to the ubiquity and the normality of racial discrimination in American society as defined in a tenet of CRT where educational disparities result in Black students having fewer resources and lower academic achievement long before college when compared to their White counterparts.

Fields of study and the investment in a subsequent degree also have an impact on earnings where graduates from Engineering and Computer Science earn more money than Social Sciences and Psychology graduates, and those who acquire an additional degree may earn more in the long term. As such, providing the ability for less academically prepared students to increase their social capital and academic efficacy, supporting more Black students in these higher-paying fields, and helping them apply and enroll for graduate school to increase their human capital may help in diminishing earning disparities.

5.3.4. Research Question 2: Sub-Question 1 Results

To explore the differences in earnings between Black and White UC bachelor's degree recipients who are first-generation compared to those who are non-first generation while adjusting for pre-college and post-matriculation characteristics, this regression included a race * first-generation flag interaction. As can be seen by the estimated "main effect" of race in Table 7, Black non-first-generation graduates earned $695.42, $2,712.56, $2,233.98 and $1,107.45 less than their White non-generation peers two, four, six, and ten-years post-graduation respectively. The race * first-generation interaction term was not statistically significant across all study timelines. The sum of the estimated main effect of race and the race * first-generation "interaction effect" shows the magnitude of the Black-White first-generation difference in earnings to be $488.85, $660.27, $592.47 and $1,056.54 at two, four, six and ten-years post-graduation. A comparison of earnings of White first-generation and White non-first-generation based on the "main effect" of the first-generation flag also shows moderate differences with White non-first-generation earning $1,349.68, $1,361.33, $535.35, and $3,189.68 more than their White first-generation counterparts two, four, six and ten-years post-graduation with an indication of statistical significance at two, four and ten-years post-graduation. The sum of the "main effect" of the first-generation flag and race * first-generation flag "interaction effect" shows a similar pattern with Black non-first-generation graduates earning $1,556.25, $3,413.62

Table 7

*Regression Results – Race * First-Generation Interaction Term*

Variable	2-Years	4-Years	6-Years	10-Years
Race	-695.415	-2712.564**	-2233.983	-1107.451
	(-1.18)	(-2.83)	(-1.26)	(-0.44)
Race * First-Generation Flag	206.5652	2052.294	1637.508	2163.991
	(0.24)	(1.50)	(0.64)	(0.60)
Gender	-2459.093***	-4630.478***	-8051.148***	-18216.82***
	(-9.88)	(-11.28)	(-10.66)	(-17.07)
Parental Income (Less than $50K)	-1315.178**	-2200.794**	-5851.137***	-11977.74***
	(-3.08)	(-3.05)	(-4.54)	(-6.55)
Parental Income ($50K - $99,999K)	-1280.973***	-1771.814**	-5253.217***	-11476.61***
	(-3.45)	(-2.79)	(-4.68)	(-7.22)
Parental Income ($100K - $149,999K)	-1821.187***	-2752.8***	-3643.486***	-9284.031***
	(-5.03)	(-4.43)	(-3.33)	(-6.01)
High School GPA	1190.832***	1244.814*	1144.494	6574.228***
	(3.31)	(2.11)	(1.05)	(4.25)
SAT Scores	4.500786	5.684118***	14.2629***	34.41865***
	(4.67)	(3.61)	(4.90)	(8.33)
First-Generation Flag	1349.683***	1361.334**	535.351	-3189.68*
	(4.36)	(2.70)	(0.57)	(-2.38)
Arts	-4374.782***	-6864.459***	-12499.65***	-25347.92***
	(-6.68)	(-6.40)	(-6.27)	(-8.83)
Engineering & Computer Science	20463.12***	27423.17***	35326.37***	37732.72***
	(31.49)	(25.86)	(17.90)	(13.39)
Health & Clinical Sciences	10251.8***	12073.57***	18288.61**	13989.93
	(5.28)	(3.69)	(3.11)	(1.73)
Humanities	-3227.344***	-4323.117***	-4612.701**	-12791.48***
	(-5.46)	(-4.44)	(-2.55)	(-4.95)
Life Sciences	-1675.218***	-1582.778	-2074.522	-4533.985
	(-2.86)	(-1.62)	(-1.15)	(-1.77)
Physical Sciences & Math	4917.358***	7452.041***	5903.271**	3177.611
	(6.38)	(5.87)	(2.50)	(0.95)
Professional Fields	9773.547***	10472.07***	11841.72***	15779.35***
	(15.97)	(10.44)	(6.37)	(5.91)
Social Sciences & Psychology	826.8764	384.4484	1819.836	-392.4827
	(1.51)	(0.43)	(1.09)	(-0.16)
College GPA	-1510.33***	-565.5839	1859.858**	4707.916***
	(-6.14)	(-1.40)	(2.56)	(4.63)
Time to Graduation	-263.4117	1645.507***	5087.125***	10557.96***
	(-0.84)	(3.20)	(5.31)	(7.76)
Subsequent Degree Flag	-2534.091***	-4469.099***	-5353.269***	-4819.355***
	(-8.97)	(-9.69)	(-6.24)	(-3.95)
Race * First-Generation Sig.	0.45	0.53	0.76	0.70
Number of Observations	33,428	29,303	29,829	29,330

Note. T-statistics (absolute value) are shown below each coefficient.

*$p \leq .05$, ** $p \leq .01$, *** $p \leq .001$

and $2,172.86 more than their Black first-generation peers at two, four and six years post-graduation respectively. However, at ten-years post-graduation, Black non-first-generation appeared to earn $1,025.69 less than their Black first-generation counterparts. The test of the hypothesis that the average earnings of Black first-generation and White first-generation graduates were statistically different from zero could not be rejected as evident in the p-value for this hypothesis in Table 7.

Concerning other control predictor variables, similar results were observed as in research question 1 sub-question 3 (section 5.3.3.). At all study timelines, pre-college characteristics such as gender, parental income, and SAT score showed statistical significance across all study timelines. The acquisition of a subsequent degree also indicated a statistically significant relationship to earnings across all study timelines. The Arts, Engineering and Computer Science, Humanities, and Professional fields of study also all showed statistically significant relationships with earnings.

The key finding is that there is no statistically significant difference in earnings between Black and White first-generation students. Regardless of whether they are Black or White, First-generation students face similar and multiple challenges as the first in their families to attend college. These students may not have access to critical career-related information or how to navigate the college-going process as those with college-educated parents. They often have lower financial and social support and may be less prepared academically for college. Access to social capital in the form of mentoring and networking opportunities post-graduation and the job market may also be in short supply which can make it difficult for first-generation college graduates to compete with their non-first-generation peers in the labor market.

5.3.5. Research Question 2: Sub-Question 2 Results

To explore the differences in earnings between Black and White UC bachelor's degree recipients who earned a subsequent degree compared to those who did not while adjusting for

pre-college and post-matriculation characteristics, this regression added a race * subsequent degree flag interaction term. Results in Table 8 show the Black-White gap for those without subsequent degrees was statistically significant at two, four, and six years post-graduation. The estimated main race effect indicates that Black graduates without subsequent degrees earned $1,735.67, $3,935.72, $5,155.09, and $4,338.07 less than their White peers without subsequent degrees at two, four, six, and ten-years post-graduation respectively with the wage gap appearing to compound as you go from two to four and six post-graduation.

The race * subsequent degree flag interaction term was not statistically significant across the study timelines. The sum of the estimated "main effect" of race and the race * subsequent degree "interaction effect" shows the extent of the Black-White gap concerning acquiring a subsequent degree. Black graduates with subsequent degrees earned $277.38, $1,052.71, $276.37, and $1,215.48 less than their White peers at two, four, and ten-years post-graduation respectively. These gaps for graduates are small and not statistically significant. Based on the "main effect" of the subsequent degree flag, a within-race comparison of earnings of White graduates with subsequent degrees and White graduates without subsequent degrees shows that earning an additional degree hurts earnings with those who attended graduate school earning $2,683.53, $4,762.26, $5,837.91 and $5,387.02 less than their White peers who did not. Similarly, Black graduates who earned a subsequent degree based on the sum of the "main effect" of the subsequent degree flag and the race * subsequent degree "interaction effect" earned $1,175.24, $1,879, and $999.19 less money two, four and six years post-graduation. However, at the ten-year timeline, Black graduates with subsequent degrees earned $166.53 on average less than those without subsequent degrees.

Concerning the coefficients of other predictor variables, results were somewhat consistent with findings from prior regression models. The association of earnings with gender, parental income, and SAT scores was statistically significantly different than zero across all study timelines. Earning a subsequent degree and fields of study such as the Arts, Engineering

Table 8

*Regression Results – Race * Subsequent Degree Interaction Term*

Variable	2-Years	4-Years	6-Years	10-Years
Race	-1735.67*	-3935.716**	-5155.09*	-4338.069
	(-2.04)	(-2.86)	(-2.00)	(-1.19)
Race * Subsequent Degree Flag	1508.288	2883.013	4838.716	5553.552
	(1.56)	(1.85)	(1.66)	(1.35)
Gender	-2457.731***	-4627.547***	-8038.855***	-18210.37***
	(-9.88)	(-11.27)	(-10.64)	(-17.07)
Parental Income (Less than $50K)	-1343.684**	-2237.558**	-5927.556***	-12066.59***
	(-3.15)	(-3.10)	(-4.60)	(-6.59)
Parental Income ($50K - $99,999K)	-1246.161***	-1762.916**	5175.607***	-11385.93***
	(-3.35)	(-2.77)	(-4.61)	(-7.16)
Parental Income ($100K - $149,999K)	-1896.21***	-2904.083***	-3888.61***	-9573.146***
	(-5.19)	(-4.64)	(-3.53)	(-6.14)
High School GPA	1189.331***	1259.121*	1144.854	6583.885***
	(3.31)	(2.13)	(1.05)	(4.26)
SAT Scores	4.473497***	5.612454***	14.17692***	34.27282***
	(4.64)	(3.56)	(4.87)	(8.30)
First-Generation Flag	1361.35***	1576.638***	688.5719	-2979.5*
	(4.63)	(3.30)	(0.77)	(-2.34)
Arts	-4372.572***	-6851.741***	-12496.54***	-25331.68***
	(-6.68)	(-6.39)	(-6.26)	(-8.83)
Engineering & Computer Science	20463.05***	27427.16***	35321.65***	37732.09***
	(31.49)	(25.87)	(17.90)	(13.39)
Health & Clinical Sciences	10243.33***	12031.6***	18246.04**	14005.49
	(5.28)	(3.67)	(3.10)	(1.73)
Humanities	-3221.858***	-4301.337***	-4599.685**	-12767.44***
	(-5.45)	(-4.42)	(-2.54)	(-4.94)
Life Sciences	-1671.567**	-1575.958	-2068.065	-4525.498
	(-2.86)	(-1.61)	(-1.14)	(-1.77)
Physical Sciences & Math	4919.224***	7465.326***	5907.557**	3186.96
	(6.38)	(5.88)	(2.50)	(0.96)
Professional Fields	9777.331***	10481.44***	11835.17***	15791.96***
	(15.97)	(10.45)	(6.36)	(5.91)
Social Sciences & Psychology	830.4854	408.4463	1830.565	-364.3283
	(1.52)	(0.45)	(1.09)	(-0.15)
College GPA	-1510.913	-569.8995	1849.132**	4704.755***
	(-6.14)	(-1.41)	(2.54)	(4.62)
Time to Graduation	-268.2655	1629.915**	5057.869***	10525.86***
	(-0.85)	(3.17)	(5.28)	(7.73)
Subsequent Degree Flag	-2683.526***	-4762.259***	-5837.905***	-5387.023***
	(-8.99)	(-9.77)	(-6.44)	(-4.17)
Race * Subsequent Degree Sig.	0.66	0.20	0.84	0.57
Number of Observations	33,428	29,303	29,829	29,330

Note. T-statistics (absolute value) are shown below each coefficient.

*$p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.

and Computer Science, Humanities, and Professional fields also all showed statistically significantly different than zero relationships with earnings.

The key finding here is that both Black and White graduates benefit from acquiring additional education and increasing their stock of human capital. The Black-White gap in earnings for graduates with subsequent degrees is small and not statistically significant. Both Black and White graduates with subsequent degrees earned a little less than their peers without one, which may signify that earning a subsequent degree may equal time out of the labor market, which works to the advantage of those who choose not to pursue graduate school. Early entry into the labor market facilitates the acquisition of marketable skills and competencies that increase their earning potential compared to those who choose more schooling. The test of the hypothesis that the average earnings of Black graduates with subsequent degrees and White graduates with subsequent degrees were statistically different from zero could not be rejected as can be seen in the p-value for this hypothesis.

5.3.6. Research Question 2: Sub-Question 3 Results

To explore the differences in earnings between Black and White UC bachelor's degree recipients who are males compared to females while adjusting for pre-college and post-matriculation characteristics, this regression model included a race * gender flag interaction term. Based on the estimated "main effect" of race in Table 9, statistically significant results were indicated at two and four years post-graduation, with Black male graduates earning $1,896.14 and $2,539.94 less on average than their White peers respectively. Even though no statistical significance was indicated at the six and ten-year timelines, Black male graduates earned $2,563.34 and $5,111.42 less than their White peers respectively. Based on the sum of the estimated "main effect" of race and the "interaction effect" of race * gender, a similar pattern emerged with female graduates where Black female graduates earned predominantly less than their White peers across study timelines - $54.05 less at two years, $1,376.11 less at four years,

$928.40 less at six years and $2,468.47 more at ten years post-graduation. The Black-White earning differences for females were not statistically significant across all study timelines. It is important to note that the Black-White gaps were wider for males than they were for females across all timelines. The race * gender flag interaction term showed statistical significance at two and ten-years post-graduation but no statistical significance at four and six years post-graduation. Based on the estimated "main effect" of gender, the difference in earnings between White males and White females was statistically significant across all study timelines, with White females earning $2,602.54, $4,719.79, $8,173.66, and $18,785.82 less than White males two, four, six and ten-years post-graduation respectively. The sum of the "main effect" of gender and the race * gender "interaction effect" showed that Black males earn $652.31, $3,555.96, $6,538.61, and $11,205.94 more than Black females two, four, six, and ten-years post-graduation respectively.

Control predictor variables that indicated a consistent statistically significant relationship to earnings across all study timelines are gender, parental income, SAT score, earning a subsequent degree, and the Arts, Engineering and Computer Science, Humanities, and Professional fields of study, similar to other study regression models. All these findings also support the reality of the troubling gender-based wage gap where males earn more than females. Even as females continue to outdo males in higher education, it is surprising that males make more money than females. The compounding earnings gap between Black and White males could be attributed to a variety of reasons. One reason could be that even after the Civil Rights Act of 1964 and 1968, the lasting effects of racism continue to affect the rate of economic advancement for Black males. Although this study does not delve into the concept of occupational segregation, it is indeed likely that higher-paying fields of study like Engineering and Computer Science are not selected as an option for Black students.

Table 9

*Regression Results – Race * Gender Interaction Term*

Variable	2-Years	4-Years	6-Years	10-Years
Race	-1896.137**	-2539.942*	-2563.341	-5111.418
	(-2.58)	(-2.15)	(-1.18)	(-1.65)
Race * Gender Flag	1950.23**	1163.826	1635.045	7579.885*
	(2.22)	(0.82)	(0.62)	(2.04)
Gender	-2602.543***	-4719.786***	-8173.655***	-18785.82***
	(-10.12)	(-11.11)	(-10.46)	(-17.03)
Parental Income (Less than $50K)	-1313.419**	-2181.89**	-5835.173***	-11980.3***
	(-3.08)	(-3.03)	(-4.53)	(-6.55)
Parental Income ($50K - $99,999K)	-1279.812***	-1830.715**	-5296.797***	-11516.08***
	(-3.45)	(-2.88)	(-4.73)	(-7.26)
Parental Income ($100K - $149,999K)	-1824.563***	-2757.004***	-3646.982***	-9298.112***
	(-5.04)	(-4.44)	(-3.34)	(-6.02)
High School GPA	1185.791***	1258.453*	1151.071	6564.6***
	(3.30)	(2.13)	(1.06)	(4.25)
SAT Scores	4.50518***	5.6613***	14.24318***	34.41904***
	(4.68)	(3.59)	(4.89)	(8.33)
First-Generation Flag	1358.983***	1591.278***	711.9784	-2990.13*
	(4.62)	(3.33)	(0.80)	(-2.35)
Arts	-4383.408***	-6867.048***	-12498.54***	-25382.9***
	(-6.70)	(-6.40)	(-6.27)	(-8.84)
Engineering & Computer Science	20433.59***	27405.73***	35305.55***	37628.46***
	(31.44)	(25.84)	(17.89)	(13.35)
Health & Clinical Sciences	10260.39***	12043.99***	18290.81**	14082.04
	(5.29)	(3.68)	(3.11)	(1.74)
Humanities	-3239.483***	-4321.971***	-4616.659**	-12832.66***
	(-5.48)	(-4.44)	(-2.55)	(-4.97)
Life Sciences	-1683.466**	-1591.526	-2084.348	-4587.089
	(-2.88)	(-1.63)	(-1.15)	(-1.79)
Physical Sciences & Math	4901.14***	7451.151***	5892.74**	3110.571
	(6.35)	(5.87)	(2.50)	(0.93)
Professional Fields	9759.469***	10465.41***	11831.6***	15731.76***
	(15.95)	(10.44)	(6.36)	(5.89)
Social Sciences & Psychology	811.1026	388.7519	1815.441	-464.7043
	(1.48)	(0.43)	(1.09)	(-0.19)
College GPA	-1504.954***	-563.4092	1864.492**	4738.9***
	(-6.12)	(-1.39)	(2.57)	(4.66)
Time to Graduation	-277.811	1630.484**	5071.784***	10517.78***
	(-0.88)	(3.17)	(5.30)	(7.73)
Subsequent Degree Flag	-2533.822***	-4468.315***	-5350.5***	-4812.146***
	(-8.97)	(-9.69)	(-6.23)	(-3.94)
Race * Gender Interaction Sig.	0.92	0.11	0.57	0.28
Number of Observations	33,428	29,303	29,829	29,330

Note. T-statistics (absolute value) are shown below each coefficient.

*$p \leq .05$, ** $p \leq .01$, *** $p \leq .001$

CHAPTER 6 – DISCUSSION

6.1. Research Study Review

Research findings from the regression model without any controls (see Section 5.3.1.) indicate that race statistically significantly predicted earnings, with the White graduates earning $1,732.29, $4,386.02, $8,472.31 and $15,818.42 more than their Black peers two, four, six and ten-years post-graduation respectively. The race-based income disparities demonstrated in the unadjusted results tend to compound over time, showing Blacks starting with lower pay and never catching up to their White counterparts as they continue to fall behind as time progresses. These results are consistent with data reported by a tenet of CRT that purports that racism in American society, including the labor market, is not only normal but habitual. In an article written by Abdul-Alim (2017) and published in Diverse Issues in Higher Education, the writer points out that among college graduates, the Black-White wage gap was 4% in 1980 among those with a bachelor's degree or higher and 8.8% among those with only a bachelor's degree. However, those gaps quickly widened as time passed, becoming 17.8% and 18% in 2015. Based on my findings and without adjustments, earning gaps also increased as time progressed, with Black graduates never quite catching up to their White counterparts by as much as 17.0%.

Black and White graduates invest similarly in the accretion of human capital. Yet there is some difference in average earnings, suggesting that getting more degrees is not a remedy for eliminating these earning variations as these disparities occur due to inequities that have existed long below college entrance. In essence, Black Americans with the pursuit of degrees may alleviate some of these wage variances, but more human capital via education is not a silver bullet, and the completion of a bachelor's degree or higher will not fully address the Black-White wage gaps (Abdul-Alim, 2017; Tienda & Lii, 1987; Wilson & Rodgers III, 2016).

Human capital differences accrued through higher education alone are not a compelling explanation for these wage disparities because all participants are UC graduates. There must be other factors involved. Notwithstanding, these results suggest some role of human capital

differences in accounting for the raw earnings gap. Skill differences as a form of human capital arising from pre-college factors and post-matriculation decisions may contribute to earnings differences. For example, differences in pre-college measures such as high school GPA and SAT scores may result in Black-White variations in human capital accumulation, and being first-generation may cause a deficit in social capital accretion. Research findings from this study show that Black high school GPAs and SAT scores lag behind those of their White peers on average (see Table 3). Research also shows the link between high school GPA increases and annual salary in adulthood and its ability to function as a gateway to higher earnings (Baird, 1985; French et al., 2015). SAT scores are also believed to signal high school academic skills and are linked to early career earnings (Chetty et al., 2011 as cited in Watts, 2020; Duckworth et al., 2012). In alignment with research results, Zumbrun (2014) also found that students from medium to high-income households did better on the SAT than students from low-income families, often ethnic minorities. These pre-college academic disparities have lasting implications in the labor market.

These variations in high school GPA and test scores can be ascribed to the reality that White undergraduates have better opportunities to live in better-resourced and healthier neighborhoods and attend good preschools, quality elementary, middle, and high schools with quality teachers, and top-notch resources. They may have had the privilege to pick up marketable skills and competencies through summer jobs and programs such as internships and study abroad that help boost their stock of human and social capital that their Black peers may not have exposure to (Coleman, 2003). Exposure to these human and social capital-building opportunities is also driven by the conventional pattern of racism in society as defined by CRT.

For both Black and White graduates, pre-college characteristics show a positive correlation with success in college and beyond. By controlling for pre-college characteristics to eliminate the impact of the differences in background attributes such as pre-college academic grades and socioeconomic indicators, the influence of race on earnings became less significant.

Whether Black or White, graduates with similar pre-college characteristics had similar earnings, implying that the wage disparities have much to do with differences that predate their post-secondary education and entry into and through the labor market.

The roots of the differences in SES that ultimately cause variations in pre-college human capital measures are complex. America's shameful past of slavery, segregation, and marginalization of minority groups has created a system where the quality of education a child receives depends on their family's SES. Not only does racial segregation impact the funding that schools receive, but stubborn racial discrimination affects Black income by limiting the fields of study and the type of occupations Black graduates can ultimately participate in (Higgs, 1997 as cited in Arrow, 1998; Whatley & Wright, 1994 as cited in Arrow, 1998). Civil rights laws and affirmative action policies alone may not be enough to eliminate the economic disadvantage that plagues Black citizens because these laws and policies may curb conspicuous and observable racism. But for transformation to occur, a more comprehensive approach must be implemented to address the deeply rooted systemic issues ingrained in society.

When adjusting for both pre-college and post-matriculation characteristics, the effect of race on earnings diminished as the small Black-White wage gaps that remained post-adjustments were not statistically significant. The gap in earnings by race was also smaller when compared to the unadjusted estimates. However, they were larger in magnitude than when controlling for pre-college characteristics alone. Even when minor differences indicate Black graduates earn less than their White counterparts, plausible explanations could be that because Black graduates are more likely to be enrolled in subsequent degree programs than their White peers, thus their lower earnings can be attributed to their absence from the labor market. Another reason may be the field of study that Black graduates pursued compared to their White counterparts. Disciplines like Engineering and Computer Science generate higher earnings when compared to Arts, Sociology, and Psychology - disciplines where Black graduates show a higher representation (see Table 3). Because of the statistical insignificance of these Black-White

earning differences, there is support for the finding that Black-White wages for similar jobs may not be very different and that any race-based discrimination may simply limit the type of industries and jobs that Black people are allowed to participate in (Higgs, 1997 as cited in Arrow, 1998; Whatley & Wright, 1994 as cited in Arrow, 1998), indicating the influence of social class when it comes to Black accessibility to certain types of roles.

Scholars like Wilson (2019) have argued controversially that social class is a more important predictor of economic outcomes for Black people than race. While Wilson does not deny that racism is still an important facet of American society, he purports that opportunities are now available for Black people to enjoy the same economic advantages experienced by their White counterparts and that the emergence of the Black middle class is a result of the availability of such opportunities. Being a member of the Black middle class has not been viewed as being very helpful to Black citizens because race seems to trump social class as they are still likely to experience racism in interpersonal contact with their White peers and even subordinates, especially in employment settings (Lareau, 2018). Nevertheless, economic factors that stem from past institutional discrimination have created what Wilson (2019) calls the "Black underclass," which continues to persist today.

The findings from this study do lend some support for the "Declining Significance of Race" argument by Wilson (2019) provided adjustments are made for both pre-college and post-matriculation characteristics. However, if we are to fully embrace Wilson's theory, we will need to believe that the results of America's shameful anti-Blackness past have placed Black people in the category of the "social underclass" that ultimately propagates differences in pre-college characteristics which influence wage gap outcomes and that current economic factors that have nothing to do with race have kept them there. Opponents of Wilson's theory believe that race has a lot to do with the plight of Black people in America regardless of the social class they are in, and the race-class interaction shows a degree of significance when viewed across social class

categories (Darity et al., 2018; Fryer et al., 2013; Hamilton et al., 2015; Thomas, 1993; Thomas, 2000).

Accordingly, a higher percentage of Black graduates identified as first-generation, coming from low-income households and having lower high school GPAs and SAT scores than their White peers. Being a member of a lower social class creates a plethora of economic disadvantages. It is vital to recognize that the intersection of class with race is a product of discrimination, where the history of slavery and racial segregation has made some vocations appear out of the reach of Black citizens, causing them to settle for fields of study that command lower pay. When students are less prepared for the rigors of college because of their social class, it causes deficiencies in the foundational skills and knowledge needed to excel in college. Even if society differs on the importance of social class in the everyday lives of Americans and that there is equal opportunity for all in the form of the American dream, it is evident that subscribing to hard work, effort, and talent is not enough to ensure upward economic mobility. There are forms of systemic inequality, such as parental education levels and parent occupations, prestige, and income which shape the outcomes of children and influence their lives well into adulthood (Lareau, 2018). Differences in access to decent quality schools and resources in good neighborhoods due to segregation and discrimination can cause variability in academic achievement before college entry that lingers on in college and can affect individuals' earning potential.

Race interactions with first-generation status, the acquisition of a subsequent degree, and gender also presented some noteworthy findings. Regarding whether a graduate is first-generation or not, it was apparent that after adjusting for pre-college and post-matriculation characteristics, the estimated "main effect" of race declined with no evidence of statistical significance at two, six, and ten-years post-graduation. The race * first-generation "interaction effect" was also not statistically significant, supporting the notion that the gap in earnings by race did not differ by first-generation status.

Concerning the race-subsequent degree flag interaction, the "main effect" of race indicated a statistically significant relationship with earnings two, four, and six years post-graduation but not at the ten-year timeline after controlling for pre-college and post-matriculation characteristics. Though not statistically significant at the ten-year mark, Black graduates with no subsequent degrees consistently earned less than White graduates with no subsequent degrees. This aligns with the overall pattern of White graduates earning more than their Black peers across study findings. The race * subsequent degree "interaction effect" revealed no statistically significant relationship with earnings indicating that the Black-White earnings gap does not differ significantly by whether a subsequent degree was earned.

Regarding the race * gender flag interaction, the "main effect" of race was reduced after controlling for pre-college and post-matriculation characteristics with a statistically significant relationship to earnings at two years and four years post-graduation but not at six and ten-years post-graduation. But even without statistically significant findings, Black males earned considerably less than their White counterparts across all study timelines. The race * gender "interaction effect" was statistically significant at two and ten-years post-graduation but not at four and six years post-graduation. Black females also appeared to earn less than White females at two, four, and six years post-graduation but at the ten-year timeline, Black females appeared to earn more than White females. In alignment with the arduous gender-based wage gap, the estimated "main effect" of the gender coefficient and the sum of the estimated effect of the gender flag and the race * gender interaction term indicated that White males earned more than White females and Black males earned more than Black females. The hope is that the significant educational shift to female advantage in higher education that is evident today will aid in closing these gender wage disparities (Bar-Haim et al., 2018).

Across all regression models, except the model related to unadjusted earnings, the wage differences were generally small and not statistically significant. Pre-college and post-matriculation characteristics, especially background, SES, chosen field of study, and the

acquisition of a subsequent degree seem to explain the majority of the earning Black-White disparities seen in this study.

6.2. Study Limitations

This study has some notable limitations. The methodology employed for annualizing the earnings whereby only a single quarter of earnings is needed to qualify to be part of the study sample may result in earnings that are not a true reflection of what the potential earnings could be if the graduate worked all four quarters within a calendar year. This limitation is even more significant if graduates work in capacities not covered by the EDD data, such as working "under the table" or unable to secure full-time, permanent employment post-graduation or if graduates have left the state of California. In these cases, graduates' earnings will be undercounted, and results may be affected if the likelihood of exclusions differs by race.

A second limitation is a potential issue around an excessive statistical adjustment for covariates correlated with race. Overadjustment is usual in this type of analysis if many of the control variables are themselves impacted by race, which would result in smaller estimated gaps in earnings by race (Thomas & Moye, 2015). For example, in this research study, attributes such as parental income, high school GPA, SAT score, first-generation status, and GPA at graduation are all correlated with race. These variables reflect background and SES, influenced by the historical context of slavery, segregation, and current and historical policies that are discriminatory by nature and subsequently result in academic achievement and socioeconomic disparities. Controlling for pre-college variables means potentially ignoring the influence of these racialized factors in explaining Black-White earnings differences.

A third limitation is the issue of missing demographic data necessary for pre-college characteristics adjustments in the regression model. These missing attributes resulted in further attrition of the sample. In some cases, imputations were applied to mitigate the issue. For example, data in the undergraduate admissions data source related to parental income was

missing for many graduates. An imputation method was applied using the average parental income by race to estimate values for graduate records without this study variable. Insisting on a sample that only includes graduates with parental income causes a melt of the sample size.

Another limitation is that this study is exclusively related to UC bachelor's degree recipients who remain within California. Thus, the findings may not be generalizable to all UC graduates, much less all higher education institutions. Nonetheless, this study follows one of the traditional methodologies of studying labor market discrimination, regression analysis, with earnings as an outcome variable while adjusting for a set of pre-college and post-matriculation characteristics as a way to control for variations in individual and educational characteristics that may affect earnings.

6.3. Options for Future Research

6.3.1. Access to National Earnings Data

Of the UC Black and White bachelor's degree recipients who started at UC as domestic freshmen from California high schools from graduation cohorts 2005, 2006, 2007, 2008, and 2009, matches with the EDD data at the two-year, four-year, six-year, and ten-year timeline were 89%, 80%, 79% and 78% respectively (see Figure 3). While these matches showed that the majority of the UC Black and White graduates stayed in California for work as expected, access to national earnings data or estimated annual earnings for all graduates from data sources like the Bureau of Labor Statistics (BLS) and the U.S. Census Bureau will lead to an increase in matches by capturing those UC graduates that left the state of California.

6.3.2. Rates of Black-White Unemployment

Wilson & Darity (2022) highlight the imbalance of power that stands in the way of progress for Black workers: (1) the 2-to-1 variance in chances of employment (see Appendix H), and (2) the Black-White wage gap (see Appendix G). Research shows that historically Black

college graduates are more than twice as likely to be out of work than their White peers (Desilver, 2013; Meisenheimer, 1990; Pager, 2003; Wilson, 2015). Exploring whether this hypothesis is true for UC Black graduates is of great interest. Expanding this study to not only the earnings of UC graduates but also the percentage of Black graduates in the labor market compared to White graduates to access the rates of employment will help investigate these two main factors that lead to economic inequality.

6.3.3. Longitudinal Study

Employing a longitudinal study with rich longitudinal data where each timeline contains the same UC Black and White graduates will help gain better insight into the career progression of Blacks compared to Whites. With longitudinal UC earnings data, the progress, trends, and patterns of graduate earnings can be followed from the time of graduation to their first employment and throughout their careers. With the impending California Cradle to Career (C2C) data system, it may be useful to follow California's public high school students as they go through the state's K-12 system, into higher education, and through the labor market. It may also be beneficial in evaluating the success of the Local Control Funding Formula (LCFF), an equity-based funding model enacted in 2013-14 and aimed at directing more funding towards high-need schools and districts (Lafortune & Mehlotra, 2021).

6.3.4. The Effect of Institutional Characteristics

Existing research shows that institutional characteristics play a role in influencing the earnings of graduates. For example, educational expenditures per student, student-faculty ratios, enrollment numbers, and fees have proven to explain earning differences (Betts et al., 2013). Including institutional characteristics and data from climate surveys may aid in explaining differences by campus locations should UC decide to perform research to that level of detail. It will be important to explore whether college characteristics influence UC's graduate

outcomes in the form of earnings. For example, research into social-belonging intervention and the effects on Black graduate outcomes show that graduates who experience a keen sense of social belonging while in college experience better career satisfaction and success (Brady et al., 2020). Delving into whether employers pay a premium based on which UC campus a student attends could also be beneficial. Interrogating the rates of Black-White employment by institution could also be of value. Knowing that UC campuses provide opportunities not just for the development of human capital but also for the building of social capital through networks of alumni, internships, and career development services, it may be of value to see if some form of knowledge and expertise sharing across UC locations can be advantageous.

6.3.5. Demand Side Factors – Labor Market Characteristics

In addition to pre-college and post-matriculation characteristics as study covariates, the inclusion of demand-side factors such as applications, interviewing, hiring, salary offering rates, and workplace employee survey data can provide an awareness of social and structural factors that perpetuate racial disparities in earnings. Discrimination in the labor market, office culture, diversity and inclusion practices, implicit bias, differences in access to benefits, personal and career development, training and promotion opportunities, and other systemic factors can influence Black-White earning disparities.

The demand side of the labor market may also provide some insight into the potential of ethnically based occupational and industrial segregation of UC graduates. The ability to establish whether Black UC graduates self-select into lower-paying professions than their White peers could be telling. This type of research will separate what is called the “general pay gap” employed in this study from the “occupational pay gap” with the general pay gap focusing on earning gaps across occupations and the occupational pay gap looking into the average pay gap within occupations as these two metrics tell different stories. The occupational pay gap may show different results (Brynin & Güveli, 2012).

6.3.6. Complimenting Quantitative with Qualitative Research

Research into racism can be delicate and complicated. One of the tenets of CRT is the use of storytelling and counter-storytelling to highlight the voices and experiences of Black UC graduates that have been historically denigrated and push back against the ingrained accounts of the dominant culture orchestrated to sustain supremacy and power. Future research that employs qualitative data to supplement quantitative data through the use of interviews and focus groups can help to add depth and context to quantitative data and unveil how racial discrimination can occur within employer-employee relationships (Marvasti & McKinney, 2007; Pager et al., 2009; Wojnicka & Nowicka, 2023).

6.4. Implications for Policy and Practice

The findings from this exploratory research into Black-White wage disparities of UC bachelor's degree recipients open the door to acknowledging that differences in pre-college characteristics have an important influence on labor market outcomes concerning earnings for Black-White UC degree completers. Understanding the potential pre-college factors that may be influencing earning differences is important for eliminating wage disparities and will require without intention, deliberate action, and ongoing commitment. Therefore, it is critical to highlight some policy and practice implications that are relevant to this study.

As one of the predominant reasons for the observed Black-White wage disparity in this research study is the differences in pre-college characteristics, it is clear that Black graduates are more likely to come from low-income households and to be the first in their families to attend college. Low SES means these students live in poorer neighborhoods and attend lower quality and under-resourced schools, and while in high school have less access to the necessary courses to meet the A – G requirements; a critical pathway to college, making them less academically prepared for college. Any deficiencies in academic skills without intervention at college entry can lead to lower graduation GPAs and lower earning potential. First-generation students also

miss out on the immense benefits of having a college-educated parent and start college with lower levels of social capital that may be augmented as part of the college experience if the higher institutions they attend assist them in prioritizing both social and academic engagement while in college (Pascarella et al., 2004).

Because Black graduates are twice as likely to be from low SES backgrounds as White graduates [15] (see Table 3), they are more likely to have lower high school GPAs and SAT scores which may result in lower college GPAs (Kochhar & Sechopoulos, 2022). Race-based wage variances of UC graduates based on variations in pre-college characteristics call attention to the need to address differences in these measures early within the walls of higher education institutions. If one of the main roles of a higher education institution is to prepare its graduates for the labor market (Betts et al., 2013), UC must provide opportunities for Black graduates to gain all the necessary human and social capital for labor market success. Implications for policy and practice involve not only the corridors of higher education but also the planning and construction of state governmental policies, the decision-making processes of employee-employment lawmakers, the recruitment and hiring processes of corporate organizations, and how key educational practitioners execute their duties.

6.4.1. Closing Black-White Academic Achievement Gaps

The inequities we see in student achievement are a mirror of the inequities that exist in society. To intentionally tackle the academic achievement disparities will require the involvement of TK-12 educators, higher education administrators, and faculty, as well as state, local, and federal governments.

[15] Source: Pew Research Center. Black and Hispanic Americans, those with less education are more likely to fall out of the middle class each year. Movement from middle class each year varies greatly across racial and ethnic groups, education levels | Pew Research Center.

6.4.1.1. Higher Education & K-12 Achievement Gaps.

This research study showed the effect of pre-college characteristics such as high school GPA, SAT score, parental income and first-generation status on Black-White wage disparities, and with the well-documented relationship between academic achievement and earnings (Bishop, 1985; Baird, 1985; French et al., 2015; Galla et al., 2019; Mattern & Cruce, 2021; Rose & Betts, 2004), UC has a responsibility to help eliminate the persistence and continuance of achievement gaps by first investing in K through 12 programs that aid in increasing academic preparedness for college especially in high schools located in low-income neighborhoods.

Investing in institutional research and data science can aid in good data-driven decision-making (DDDM) efforts that will allow higher education institutions to collect and analyze data on incoming students and create the necessary policies and programs to help them succeed in college. With a vast amount of data readily available within and outside institutions that can be blended and merged, performing analysis that can inform decision-making can help in creating standards that ultimately drive the necessary accountability for improving student achievement (Ikemoto & Marsh, 2007).

By paying keen attention to achievement disparities of incoming students in areas such as high school math course taking, UC can help increase the enrollment, persistence, and graduation of low-income and first-generation students in college. As these students transition into college, administrators must acknowledge the potential of lower academic preparation and create measures to help mitigate this. This is especially important at predominantly white institutions (PWI) like UC. For example, creating summer bridge programs that allow participation opportunities for interested Black students could increase their academic self-efficacy and academic success (human capital), sense of belonging, social skills, and ability to build meaningful relationships and connections (Strayhorn, 2011).

By creating summer bridge programs that can improve deficiencies in academic competencies at college entry, students have the opportunity to earn higher GPAs while in

college. Even though this study did not show a significant correlation between GPA and earnings, there is considerable research on the relationship between grades or degree class and income (Astin, 1977 as cited in Donhardt, 2004; Blaug, 1991 as cited in Donhardt, 2004; Cohen, 1984 as cited in Donhardt, 2004; Feng & Graetz, 2017; Jencks, 1979 as cited in Donhardt, 2004). It is documented that employers often leverage GPA as a signal of productivity and occupational potential (Gemus, 2010; Muchinsky & Hoyt, 1973) so higher education institutions must find effective and sustainable ways to aid students, especially those from low-income and minoritized backgrounds, in improving and sustaining good academic skills that will serve them over life's course.

6.4.1.2. K-12 & Addressing Achievement Gaps.

According to Colgren & Sappington (2015), academic equity is not a reality in America's public education and the problem can be attributed to disparities across racial and SES backgrounds with obvious gaps in academic achievement between Black and White students which despite the amount of resources dedicated to it, continue to persist (Gershenson et al., 2022). And even though lower academic achievements occur in students from low-income backgrounds regardless of race, one of the challenges of American education is the gaps seen in academic achievement and attainment based on race where Black and Hispanic students have lower test scores compared to their White and Asian counterparts (Hart & Lindsay, 2024). These gaps go on to have lasting effects when these students enter the labor market and call for K-12 school administrators and teachers to pay attention to the educational needs and support of minority students. With the implementation of LCFF, high-need school districts now receive more funding that can aid in reducing race-based achievement gaps. There is evidence that this new funding formula is actually working with improved test scores, especially for 11th graders, demonstrating that as time progresses, how the state's funding formula for K-12 education is

managed will be instrumental in dealing with educational achievement and attainment gaps (Lafortune et al., 2023).

There are multiple implications regarding student academic achievement for the K-12 segment. One implication is a focus on teacher development that includes the integration of culture with an emphasis on culturally responsive pedagogy. This can be instrumental in improving the academic achievement of Black students. In research performed by Gershenson et al. (2022), it is evident that K-12 teacher diversification can play a role in enabling the integration of culture with education via the use of culturally relevant pedagogies, with demonstrated evidence of the positive effects that Black teachers can have on Black students. The authors assert that:

> "Black students randomly assigned to at least one Black teacher in K-3 are 9 percentage points (13%) more likely to graduate high school. They are 6 percentage points (19%) more likely to enroll in college than their same-school, same-cohort Black peers who are not assigned a Black teacher" (pp. 1-2).

It is also important to ensure that necessary courses, and quality faculty to teach them are available at all K-12 schools to all students regardless of geography would ensure that disparities in academic achievement based on race are abolished (Cooper, 2007), and would likely improve the academic performance of all students and reduce achievement gaps. K-12 teachers must receive adequate ongoing training on how to integrate equity into their practice despite institutional and societal structures and barriers. This is one of the most important duties of all educators – to understand the ubiquitousness of inequality and to hold an equity-minded view rather than a deficit-minded one (Blackwell & Smiley, 2010).

Local state and federal governments must actively participate in any efforts to improve teacher education. According to Blackwell & Smiley, 2010, we must develop new ways of thinking about teacher preparation because a redesign of how teachers are educated and

prepared for the classroom can greatly improve the quality of teachers who have the necessary skills and knowledge to increase student achievement.

A second implication that can be considered as a low-hanging fruit is the topic of class size. Because research shows that the number of students in a classroom has the power to influence learning, educators must have a heightened sense of awareness of how the class size affects how well students engage both academically and socially, although it has not been easy to precisely establish the effects of class size on student achievement. Nevertheless, the class size has been set to 15, 17 or 20 depending on the state. When class sizes are too large, teachers may not be able to provide the necessary support to individual students who need it. As this impacts the effectiveness of teachers and student learning, school and district leadership must understand that class size matters if student achievement is to be improved.

State and local governments can also influence class size by defining and creating statewide policies around class size by grade, special needs, and special circumstances in a way that would facilitate focused attention where it is needed to help those who have been historically left behind. Providing necessary funding to maintain the defined class sizes is also crucial so that new classrooms can be created, and new teachers hired as needed (Ehrenberg et al., 2001).

Another implication is around the power of data and data-driven decision-making. K-12 school leaders and teachers have a part to play in the DDDM process. Creating systems that facilitate the proper and secure collection and storage of data of relevant information about students, teachers, parents, courses and grades is necessary to help school administrators and teachers understand and track how well students are doing and where gaps in learning might exist. Without high-quality data, it will be impossible for school leaders and teachers to provide effective teaching and leadership and almost impossible to improve student learning and achievement (Lai & Schildkamp, 2013).

For example, California has just recently launched the Cradle to Career system intended to do just that. This statewide longitudinal system is being constructed to provide tools to help students reach their academic goals and to provide information on the progress of students from grades K through 20 as well as their job market outcomes. Researchers will also have access to this data system to create data tables for analysis or to request direct access to data.

A fourth and necessary implication has to do with the availability and use of technology. With technology advancements, K-12 administrators in partnership with the state, private, and non-profit organizations, must ensure that all students have access to the necessary tools and technology that can aid in their success. Lessons from the pandemic have not been forgotten where low-income students did not have access to personal computers and the internet that was necessary for uninterrupted learning. Engaging actively with parents and the community will help provide the required data to know where support is needed to ensure that learning continues beyond the four walls of the school.

6.4.2. Higher Education & Post-Matriculation Implications

UC and other higher education institutions must understand the relationship between human capital, critical race, and social capital development. Having an awareness of how these theories interconnect allows for the acknowledgment of the disadvantages faced by students from low socioeconomic backgrounds as they set foot on campus. Viewing these students and the issues they must confront through an equity lens can have a powerful early effect in mitigating potential earning disparities between Black and White graduates.

UC and higher education institutions can help students from low-income backgrounds, specifically Black students in the following ways to increase their stock of human and social capital while promoting equity and reducing race-based academic disparities.

6.4.2.1. Access to Internships.

College internships can improve academic outcomes, professional outcomes, and economic benefits for low-income and first-generation students. However, access to these lucrative internships might not be available to students in an equitable fashion due to obstacles ranging from financial to geographical constraints (Tu, 2022; Wolfgram et al., 2021). Margaryan et al. (2022) found in their study that participation in student internships can have as much as a six percent increase in earnings in the short and long term. Their results also showed that those who completed an internship before they graduated faced a lower risk of unemployment in their early careers. Because of benefits such as these, making internships available to low-income and Black students through an equity lens rather than a frame of equality will go a long way to advance both academic and economic equity.

Ensuring that experiential learning programs include the intentional recruitment of Black students and students from low socioeconomic backgrounds allows for opportunities to build human and social capital, as well as career networking that will go on to serve participants postgraduation in the labor market.

6.4.2.2. Access to Study Abroad Programs.

Scholars like Netz and Cordua (2021) found that the opportunity to study abroad has moderate positive effects on income. However, research demonstrates the selection effects that often drive participation. Students from higher socioeconomic backgrounds and with higher academic achievements are more likely to apply and be selected for these programs than their low socioeconomic background peers. When low-income and first-generation students are not sought out and provided the support necessary to partake and benefit from these programs, they lose out on the fact that employers value graduates with these types of experiences (Giorgio, 2022).

Coincidentally, the ability to study abroad has a recognizable impact on the employment of graduates from disadvantaged backgrounds. This is important for education policy as the option to study abroad increases employment opportunities for graduates (Di Petro, 2015). Any policy should not just emphasize the need to have these programs but must insist on an equitable implementation of such programs.

6.4.2.3. Access to High-Paying Fields of Study.

Based on findings from this research study, it is evident that some fields of study generate income than others, and Black students are underrepresentation in economically lucrative fields like Science, Technology, Engineering, and Math (STEM), Health and Clinical Sciences, and professional programs that pay more. For example, the Information Technology (IT) field is one of the best-paid industries in the country, and one in ten Computer Science degrees are awarded to Black graduates in the country. Yet Black IT workers make up only 2.6 of every 100 IT workers in California's Silicon Valley (Porter, 2021). These fields of study also have low unemployment rates. Providing equitable access and making the curriculum of these programs culturally relatable will encourage Black students to apply and persist in these programs until graduation. Focusing on policy around academic preparation through summer bridge programs may aid in persistence and success in college, especially in these STEM programs. Diversifying STEM faculty by hiring more Black professors or growing their Black graduate students to become faculty will promote the concept of mirroring, where students perform better when they see faculty that look like them. Research has also proven that Black faculty can relate better with Black students (Agrawal et al., 2016).

6.4.2.4. Address Campus Climate Issues – Belonging Certainty.

Experiencing a sense of belonging is crucial to Black and low-income students. Without it, these students can feel a great deal of anxiety and uncertainty, and these feelings compound

to result in worse outcomes that can last their entire life course. A low sense of belonging means these students never take advantage of counseling and academic support services or seek out mentorship opportunities that can aid in the growth and maintenance of social capital that can serve them in the labor market. They miss out on resources that can help in counter-storytelling around ingrained negative stereotypes and a chronicle of Black disadvantage while reinforcing the feelings of imposter syndrome. UC and other higher education institutions must acknowledge that not all students from low socioeconomic backgrounds are academically unprepared for college. Sometimes campus climate can promote a low sense of belonging that ensures these students do not flourish and do well academically, especially in demanding programs like STEM (Brady et al., 2020).

College administrators must pay acute attention to the results of campus climate surveys to ensure that the academic atmosphere is conducive to the social and academic development of students.

6.4.2.5. Advancing Curriculum with Self-Advocacy Skills.

For curricula to be culturally relevant to Black students, it must include training on self-advocacy. The ability to communicate their wants and needs and to make the necessary decisions to support their desires is crucial to labor market success. Organizing and ensuring participation in workshops that allow these students to practice and strengthen their self-advocacy and negotiation skills will help as they navigate the labor market (Daly-Cano et al., 2015). This is especially important in addressing the pay gap between men and women. Organizations rarely advertise that pay is negotiable, and without self-advocacy skills, women are unlikely to negotiate equitable wages and advancement compared to men (McCabe, 2022).

6.5. Potential Domain Transformations

The outcome of this research study could potentially impact multiple domains within the K-12 and higher education segments, the community, local, state, and federal governments as well as non-profit and private organizations. Within all sectors, educators, policymakers, and executive leadership will be at the forefront of this transformational change on how to train and develop students from pre-kindergarten through graduate school, how we recruit, hire, train, and develop K-12 teachers and administrators as well as higher education leadership, staff, and faculty. Specifically, within higher education, college curriculum development, student affairs, and student support services will need to experience some degree of transformation.

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APPENDIX

Appendix A

Scope of Research

#	Scope Description
1	UC data and only on domestic bachelor's degree recipients who enrolled as freshman, from California high schools and remained and worked in the State of California. International students are excluded from this research study.
2	Study participants must have at least one quarter of earnings in the calendar years applicable to research timelines.
3	UC Black graduates are those who self-identify as African American, African, Caribbean, or Other Black and whose origins are situated within the African global diaspora. The term Black and African American are both used to refer to this group.
4	UC White graduates are those who self-identify as White/Caucasian. This group is based on the Southwest Asian and North African (SWANA) racial classification and includes the Afghan, Other White, White/North Africa, White/Middle Eastern, White/Caucasian, Other North African, Tunisian, Sudanese, Somali, Moroccan, Mauritian, Libyan, Egyptian, Djiboutian, Berber, Algerian, Other Southwest Asian, Yemeni, Turkish, Syrian, Saudi Arabian, Qatari, Palestinian, Omani, Lebanese, Kuwaiti, Kurdish, Jordanian, Israeli, Iraqi, Iranian, Georgian, Emerati, Circassian, Bahraini, Azerbaijani, Assyrian/Chaldean, and Armenian.
5	A UC bachelor's degree is postsecondary education that provides students with a broad selection of scholastic, professional, and civic opportunities. Most students take this degree right after graduating from high school, while others attend community college for the first two years or take an associate degree first. [16] At UC, a bachelor's degree includes B.S. [Bachelor of Science], B.M. [Bachelor of Music], A.B. [Bachelor of Arts], B.ARCH. [Bachelor of Architecture], and B.L.A. [Bachelor of Landscape Architecture] (Bouchrika, 2023).
6	Excluded from the study are international students, "Non-immigrant" visitors who come to the United States temporarily to take classes or take online courses virtually from anywhere in the world (UC Berkeley). [17]
7	Domestic high school entrants are restricted to California public and private high school graduates who start at UC as freshman.

[16] Source: Research.com (2023). What is a Bachelor's Degree? Definition, Requirements & Job Opportunities. https://research.com/degrees/what-is-a-bachelors-degree.

[17] Source: UC Berkeley Summer Sessions. How to Determine if You Are an International Student. How to Determine if You Are an International Student | Berkeley Summer Sessions

Appendix B

Acronyms, Terms & Operational Construct Definitions

#	Acronym/Term	Description
1	Class	Refers to the grouping of people based on similar social factors such as wealth, income, education, and occupational status; factors which affect how much power and prestige a person has. [18]
2	College GPA	GPA is an average of all the grade points earned over the course of a student's program. This number indicates how well a student or high a student has scored in their courses on average. [19]
3	CRT	Critical Race Theory
4	Domestic	Classification for students who are United States citizen, Permanent resident, Refugee, Amnesty recipient as defined by INS, Approved Petitioner for immigrant visa, Political/Religious asylee as defined by INS, or unknown visa status/undocumented
5	EDD	EDD stands for Employment Development Department. [20] The California Employment Development Department (EDD) offers a wide variety of services to millions of Californians under the Employment Services, Unemployment Insurance, State Disability Insurance, Workforce Development, and Labor Market Information programs (EDD.ca.gov). [21]
6	Earnings	Earnings includes only wages, salaries, and income from employment for individual workers. [22]
7	Economic Mobility Equalizer	Refers to the ability for the acquisition of a university degree to potentially increase economic mobility and advance equality for both Black and White racial groups.
8	Female Gender	The female gender includes those who identify as female and trans-female.

[18] Source: Howard Community College. Introduction to Sociology. Understanding and changing the Social World. Social Class in the United States. https://pressbooks.howardcc.edu/soci101/chapter/8-3-social-class-in-the-united-states/.

[19] Source: The College for International Studies (2021). GPA meaning and how to calculate it. https://www.cis-spain.com/en/gpa-meaning-and-how-to-calculate-it/.

[20] Source: The Employment Development Department. About the EDD. About the EDD (ca.gov).

[21] Source: Fact Sheet. Employment Development Department. https://edd.ca.gov/siteassets/files/pdf_pub_ctr/de8714a.pdf.

[22] Source: The United States Census Bureau. Understanding the Relationship Between Individual Earnings and Household Income. https://www.census.gov/newsroom/blogs/random-samplings/2017/11/earnings-income.html.

#	Acronym/Term	Description
9	First-Generation	First-generation students are categorized as those who are the first in their family to attend college. [23]
10	HCT	Human Capital Theory
11	High School GPA	The GPA represents the average number of grade points a student earns for each graded high school course. Grade points are points per course credit assigned to a passing grade, indicating the numerical value of the grade. Dividing a student's total grade points earned by the total course credits attempted determines a student's GPA (NCES 2004). [24]
12	International Students	"Non-immigrant" visitors who come to the United States temporarily to take classes or take online courses virtually from anywhere in the world (UC Berkeley). [25]
13	IRAP	UCOP's Institutional Research and Academic Planning unit supports the systemwide office and campuses by providing evidence-based analyses and reports that inform and shape strategic planning, institutional policy creation and revision, and decision support (Institutional Research and Academic Planning). [26]
14	Labor Market	The supply of and demand for labor in which employees provide the supply and employers provide the demand. [27] This study focuses on the California labor market and graduates who remain in the state.
15	Male Gender	The male gender includes those who identify as male and trans-male.
16	LCFF	Local Control Funding Formula – legislation that changed how local educational agencies in the state are funded, how they are measured for results, and support and services they receive to allow for student success. [28]
17	Parental Income	Applicant parent income provided on UC college application. Four levels are defined for this study (see Table 2).

[23] Source: Center for first-generation student success (2017). An initiative of NASPA and the Suder Foundation. Defining First-Generation. https://firstgen.naspa.org/blog/defining-first-generation.
[24] Source: NCES (2004). Grade Point Average. The High School Transcript Study: A Decade of Change in Curricula and Achievement, 1990-200 (ed.gov).
[25] Source: UC Berkeley Summer Sessions. How to Determine if You Are an International Student. How to Determine if You Are an International Student | Berkeley Summer Sessions
[26] Source: The University of California Office of the President. Institutional Research and Academic Planning. https://www.ucop.edu/institutional-research-academic-planning/index.html.
[27] Source: Labor market Explained: Theories and Who Is Included. https://www.investopedia.com/terms/l/labor-market.asp.
[28] Source: California Department of Education. Local Control Funding Formula. https://www.cde.ca.gov/fg/aa/lc/.

#	Acronym/Term	Description
18	Post-Matriculation Characteristics	This category of variables is made up of field of study, college GPA at graduation and subsequent degree attainment.
19	Pre-College Characteristics	This category of variables is made up of parental income, first-generation status and high school GPA.
20	Psychological Capital	Refers to a set of resources a person can use to help improve their performance on the job and their success. It includes four different resources – self-efficacy, optimism, hope, and resilience. [29]
21	PWI	College or university where 50% or more of the student and faculty are White. [30]
22	Race/Ethnicity	A socially created and poorly defined categorization of people into groups on basis of real or perceived physical characteristics (Open Education Sociology Dictionary). [31]
23	STEM	Refers to science, technology, engineering and math fields of study.
24	Subsequent Degree	Additional degrees earned by undergraduate alumni.
25	SWANA	SWANA means Southwest Asian and North African. The term is used to describe the region commonly referred to as the Middle East (UC Santa Cruz). [32]
26	UC	The UC is the world's leading public research university system. With 10 campuses, 6 academic health centers, 3 national labs. UC campuses have 160 academic majors and 800 degree programs (UC). [33]
27	UC Broad Discipline	This is a classification of UC student majors into broad disciplines based on the Classification of Instructional Program (CIP) codes.
28	UCOP	The UC Office of the President is the UC systemwide office that supports all 10 UC campuses, five medical centers, and three affiliated national laboratories.

[29] Source: Workr Beeing. What is Psychological Capital? https://workrbeeing.com/2018/12/10/psychological-capital/.
[30] Source: The College Reporter. Black History Month VS Predominantly White Institutions – The Battle for Inclusion on a Foundation of Exclusion. https://www.the-college-reporter.com/black-history-month-vs-predominantly-white-institutions-the-battle-for-inclusion-on-a-foundation-of-exclusion/2023/02/.
[31] Source: Open Education Sociology Dictionary. race definition | Open Education Sociology Dictionary.
[32] Source: Asian American/Pacific islander Resource Center. What is SWANA? https://aapirc.ucsc.edu/swana/what-is-swana.html.
[33] Source: University of California. Campuses & Locations. https://www.universityofcalifornia.edu/campuses-locations.

#	Acronym/Term	Description
29	Wealth	Evaluated based on the value of the assets owned by a person or community minus debts and liabilities. [34]
30	Weighted GPA	Weighted GPA considers the difficulty across courses and awards bonus points to grades received in honors and advanced courses. [35]

[34] Source: Investopedia. Understanding Wealth: How is it defined and measured? https://www.investopedia.com/terms/w/wealth.asp.
[35] Source: GPA Calculator. What is weighted GPA? https://gpacalculator.net/how-to-calculate-gpa/weighted-gpa/.

Appendix C

Total UC Bachelor's Degree Awarded (2005 – 2022)

Academic Year	Bachelor's Degree Count
2005	41,501
2006	41,502
2007	42,350
2008	42,742
2009	45,046
2010	47,064
2011	48,989
2012	48,999
2013	48,130
2014	49,264
2015	50,710
2016	53,728
2017	55,359
2018	57,128
2019	62,671
2020	65,141
2021	62,465
2022	62,071
Total	924,860

Note. Sourced from the University of California IRAP Data Warehouse

Appendix D

UC Bachelor's Degree Count – Black and White Graduates (2005 – 2022)

		Black		White	
Timeline	Total	*N*	% of Total	*N*	% of Total
2005	16,273	1,189	7.31%	15,084	92.39%
2006	16,337	1,203	7.36%	15,134	92.64%
2007	16,382	1,151	7.03%	15,231	92.97%
2008	16,488	1,250	7.58%	15,238	92.42%
2009	17,017	1,291	7.59%	15,726	92.41%
2010	17,320	1,365	7.88%	15,955	92.12%
2011	17,724	1,505	8.49%	16,219	91.51%
2012	17,276	1,422	8.23%	15,854	91.77%
2013	15,904	1,247	7.84%	14,657	92.16%
2014	15,453	1,085	7.02%	14,368	92.98%
2015	15,063	1,191	7.91%	13,872	92.09%
2016	15,617	1,204	7.71%	14,413	92.29%
2017	15,245	1,231	8.07%	14,014	91.93%
2018	15,070	1,321	8.77%	13,749	91.23%
2019	16,130	1,415	8.77%	14,715	91.23%
2020	16,377	1,539	9.40%	14,838	90.60%
2021	14,970	1,473	9.84%	13,497	90.16%
2022	15,043	1,302	8.66%	13,741	91.34%
Total	289,689	23,384	8.07%	266,305	91.93%

Note. Sourced from the University of California IRAP Data Warehouse

Appendix E

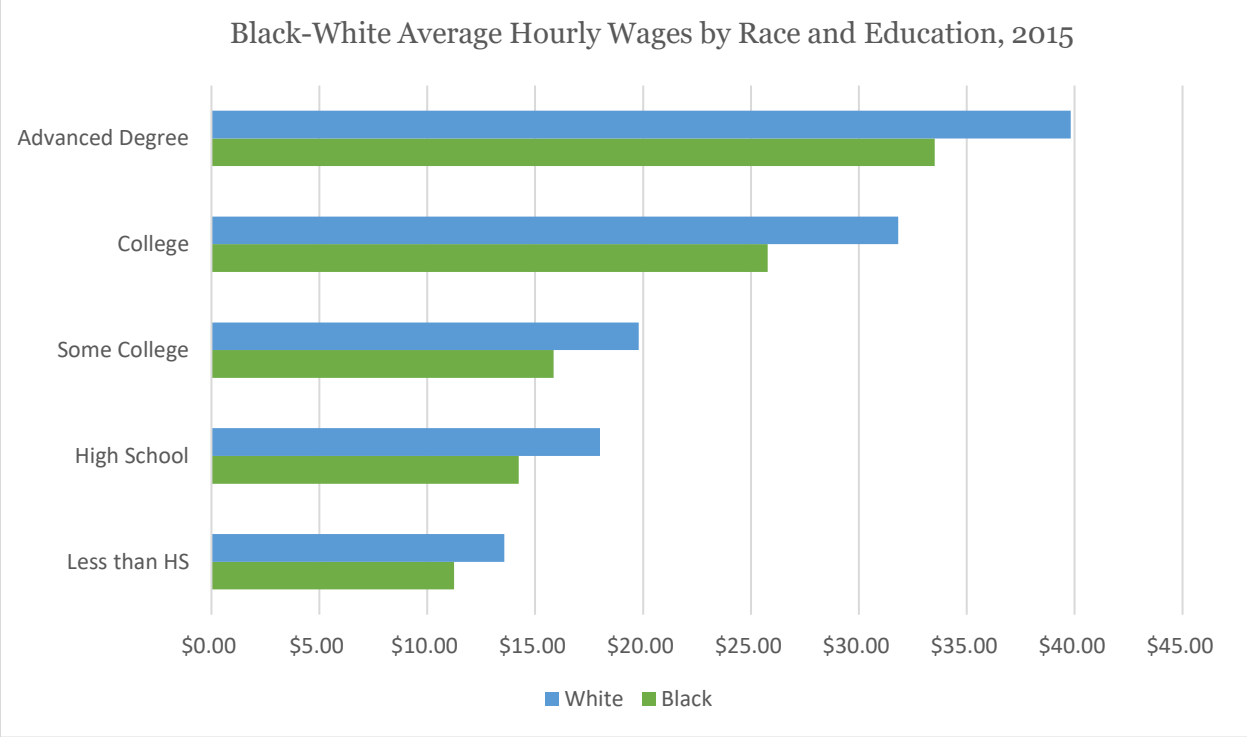
UC Bachelor's Degree Count – Black and White Graduates, Freshman (California Public & Private High Schools) & Domestic Only (2005 – 2022)

		Black		White	
Timeline	Total	*N*	% of Total	*N*	% of Total
2005	10,564	789	7.47%	9,775	92.53%
2006	10,590	832	7.86%	9,758	92.14%
2007	10,319	762	7.38%	9,557	92.62%
2008	10,442	817	7.82%	9,625	92.18%
2009	10,909	822	7.54%	10,087	92.46%
2010	11,047	906	8.20%	10,141	91.80%
2011	11,450	1,111	9.70%	10,339	90.30%
2012	10,886	1,034	9.50%	9,852	90.50%
2013	9,821	895	9.11%	8,926	90.89%
2014	9,628	759	7.88%	8,869	92.12%
2015	9,398	821	8.74%	8,577	91.26%
2016	9,876	793	8.03%	9,083	91.97%
2017	9,478	812	8.57%	8,666	91.43%
2018	9,072	821	9.05%	8,251	90.95%
2019	9,892	917	9.27%	8,975	90.73%
2020	9,957	978	9.82%	8,979	90.18%
2021	9,108	942	10.34%	8,166	89.66%
2022	8,938	822	9.20%	8,116	90.80%
Total	181,375	15,633	8.62%	165742	91.38%

Note. Sourced from the University of California IRAP Data Warehouse

Appendix F

African Americans Earn Less at Every Education Level

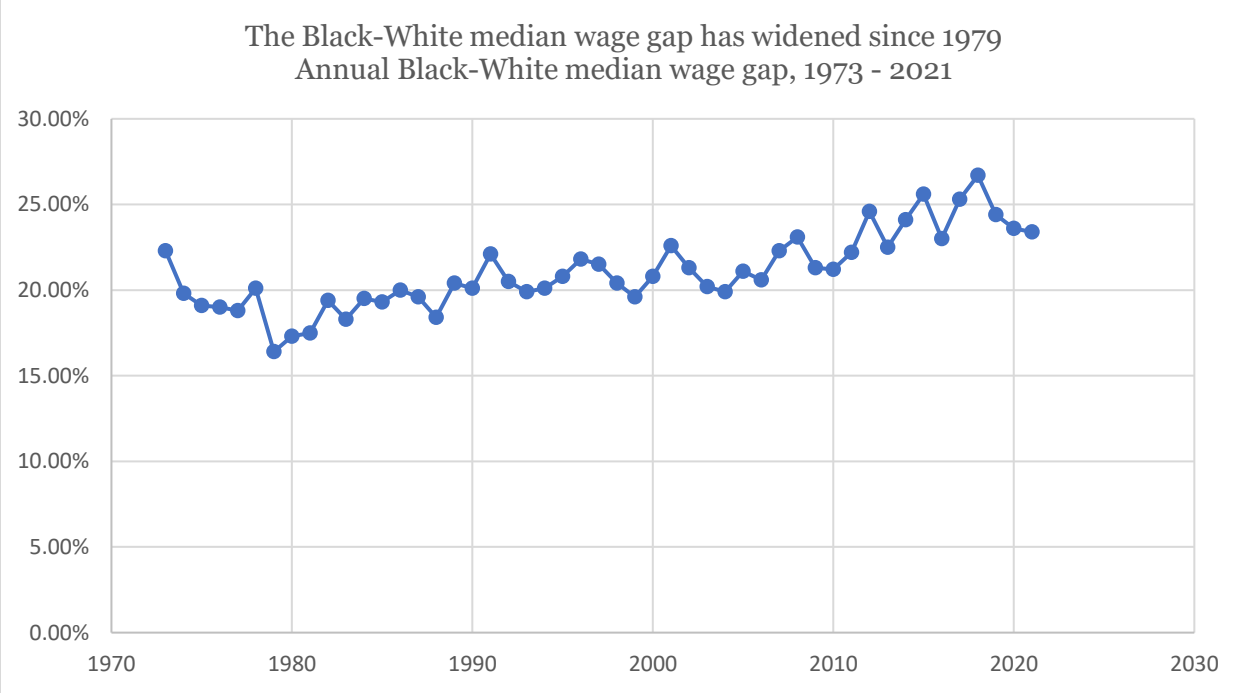


Note. From the Economic Policy Institute, State of Working America Data Library, "Wages by education," 2016

African Americans are paid less than Whites at every education level, by V. Wilson, 2016 (https://www.epi.org/publication/african-americans-are-paid-less-than-whites-at-every-education-level/).

Appendix G

The Black-White Median Wage Gap

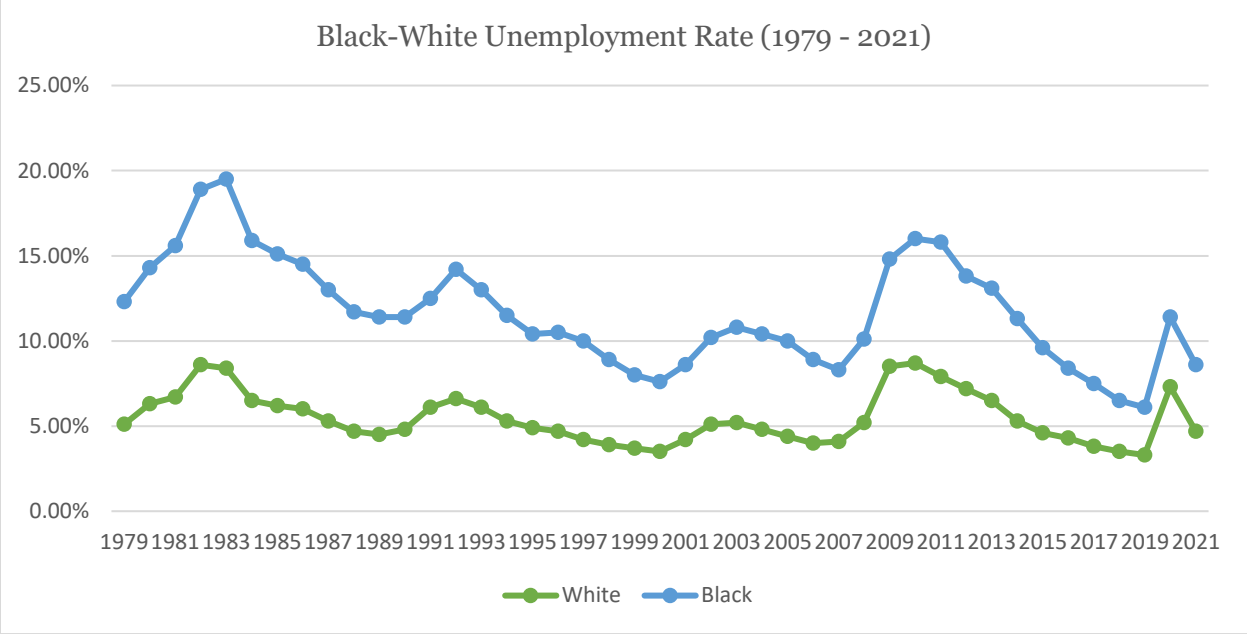


Note. Chasing the dream of equity. How policy has shaped racial economic disparities, by A. A. Maye, 2023 (https://www.epi.org/publication/chasing-the-dream-of-equity/).

Wages are adjusted into 2021 dollars by the CPI-U-RS. The regression-based gap is based on average wages and controls for gender, race and ethnicity, education, age, and geographic division. The log of the hourly wage is the dependent variable.

Appendix H

Black unemployment is consistently higher than unemployment of Whites



Note. Adapted from Economic Policy Institute. Black unemployment is consistently higher than unemployment of Whites. Annual unemployment rate by race and ethnicity, 1979–2021. Chasing the dream of equity. How policy has shaped racial economic disparities, by A. A. Maye, 2023 (https://www.epi.org/publication/chasing-the-dream-of-equity/).