

University of Vermont

UVM ScholarWorks

Graduate College Dissertations and Theses

Dissertations and Theses

2021

The Role Of Higher Education In Intergenerational Mobility

Amanda Davis Simpfenderfer
University of Vermont

Follow this and additional works at: <https://scholarworks.uvm.edu/graddis>



Part of the [Ecology and Evolutionary Biology Commons](#), and the [Higher Education Commons](#)

Recommended Citation

Simpfenderfer, Amanda Davis, "The Role Of Higher Education In Intergenerational Mobility" (2021).
Graduate College Dissertations and Theses. 1427.
<https://scholarworks.uvm.edu/graddis/1427>

This Dissertation is brought to you for free and open access by the Dissertations and Theses at UVM ScholarWorks. It has been accepted for inclusion in Graduate College Dissertations and Theses by an authorized administrator of UVM ScholarWorks. For more information, please contact scholarworks@uvm.edu.

THE ROLE OF HIGHER EDUCATION IN INTERGENERATIONAL MOBILITY

A Dissertation Presented

by

Amanda Davis Simpfenderfer

to

The Faculty of the Graduate College

of

The University of Vermont

In Partial Fulfillment of the Requirements
for the Degree of Doctor of Philosophy
Specializing in Educational Leadership and Policy Studies

August, 2021

Defense Date: May 18, 2021
Dissertation Examination Committee:

Jason C. Garvey Ph.D., Advisor
Janis Fook, Ph.D., Chairperson
Scott L Thomas, Ph.D.
Tracy Arámbula Ballysingh, Ph.D.
Cynthia J. Forehand, Ph.D., Dean of the Graduate College

ABSTRACT

Within the US, higher education is viewed as a stepping stone to economic and social mobility, where the promise of improved socioeconomic outcomes continues to draw many students to enroll despite the increasing cost of attendance (National Center for Education Statistics, 2019). The implicit (and sometimes even explicit) promise is that a post-secondary degree is a pathway to upward mobility for all individuals. Yet, higher education is not a monolith, nor are the students attending a homogenous population. Students experience differential outcomes based on their demographics (Baum et al., 2013), as well as institutional type (Thompson, 2019). The purpose of this study is to further illuminate the ways higher education institutions might influence students' post-graduation outcome, specifically intergenerational mobility.

The current study examines the impact of higher education at both the institutional level and the individual level. This study uses data from the Baccalaureate and Beyond 08/12 national study, the Integrated Postsecondary Education Data System, and Opportunity Insights. Multilevel structural equation modeling and latent class analysis were used to examine the influence of institutional quality, peer environment, and compositional racial diversity on intergenerational mobility rates and graduates socioeconomic outcomes.

At the institutional level the findings reveal that the measures of institutional quality and peer environment were associated with lower levels of intergenerational mobility, while higher percentages of faculty and staff of color were associated with higher levels. At the individual level graduates grouped into meaningful classes based on socioeconomic indicators. These groupings were influenced by institutional quality one year after graduation but were only influenced by the institutions' intergenerational mobility rate both one and four years after graduation. Explanations for the results are offered as well as implications for policy and practice to consider how higher education can provide greater opportunity for mobility.

DEDICATION

To Colin and Emmett

May you always chase your dreams

ACKNOWLEDGEMENTS

Many people will tell you what a lonely endeavor working on a dissertation can be. While my name is listed as the sole author on this project and I have spent many hours alone writing, rewriting, and writing some more, to me this project feels like the work of a community I am deeply grateful for. First and foremost, I must thank my advisor Jay Garvey who has not just been a source of support and guidance, but a constant cheerleader. There are many points during this process where my belief in myself wavered, but Jay's never did. He was always there with words of encouragement, support, and advice. I am grateful to have found not just a phenomenal advisor to help me through this process but also someone I consider a dear friend.

Thank you to Scott Thomas for challenging me to use methods that felt way beyond my capacity, but provided support and guidance as I navigated the analytical and technical challenges in this endeavor. I am also extremely grateful to my other committee members Tracy Ballysingh and Jan Fook for their great perspectives, time and expertise.

I am also extremely grateful to Katie Stango, who had probably read more of this dissertation in its various iterations than anyone else. She was my thought partner during my course work and provided valuable feedback throughout the writing process.

I am grateful to the University of Vermont for the institutional support for me to obtain this degree. I feel lucky to have found both an educational and professional home within the College of Education and Social Services. I am deeply grateful for the support of all my colleagues within CESS, but especially my supervisor Katie Shepherd who has been tremendously supportive of me as I completed this dissertation.

Statistician Kristopher Preacher and Alexander Yin provided me with additional advice and guidance through my statistical analysis. Thank you for your time and expertise.

I could also not have completed this endeavor without the love and support of my friends and family. I am grateful to my parents, who taught me the importance of education and that I can do anything I can set my mind to. My parents also provided help with childcare, which allowed me the time and space I needed to take classes and write.

To Colin and Emmett, thank you for continuing to nap throughout my entire course of study and dissertation (Colin somewhat begrudgingly the last few months). While I know you have not understood what I have been working on, I am grateful you were a part of this process and for understanding when mommy had to spend time away from you to take classes or work on this dissertation.

Lastly, but most importantly, I need to thank my partner Blake for supporting me through this process. I could never have finished this without your love and support. I'm not sure you completely understood what you were getting yourself into when we agreed I would start a Ph.D. program with a one-year-old and then later two kids, but your support for me has been enduring. Words will never express how much that has meant to me. I love you.

TABLE OF CONTENTS

DEDICATION.....	ii
ACKNOWLEDGEMENTS.....	iii
LIST OF TABLES.....	ix
LIST OF FIGURES.....	x
CHAPTER 1: INTRODUCTION.....	1
1.1. Current Societal Landscape.....	2
1.2. Conceptual Framework.....	7
1.3. Purpose of the Study.....	9
1.4. Research Questions.....	10
1.5. Significance.....	12
CHAPTER 2: REVIEW OF LITERATURE.....	13
2.1. What is Intergenerational Mobility?.....	14
2.1.1. Socioeconomic Status Defined.....	14
2.1.2. Intergenerational Mobility Defined.....	16
2.1.3. Exploring Intergenerational Mobility.....	18
2.1.4. Theoretical Frameworks of Intergenerational Mobility.....	18
2.1.5. Sociological Approach.....	20
2.1.6. Economic Approach.....	23
2.1.7. Operationalizing Higher Education in Intergenerational Mobility.....	25
2.1.8. Limitations in Intergenerational Mobility Research on Higher Education.....	32
2.2. Institutional Selectivity.....	36

2.2.1. Selectivity Defined	37
2.2.2. Exploring Research on Selectivity.....	40
2.2.3. Operationalizing Selectivity	45
2.3. Institutional Quality	51
2.3.1. Academic Quality	52
2.3.2. Peer Environment	58
2.3.3. Institutional Prestige	61
2.3.4. Labor Market Transitions	64
2.4. Understanding Intergenerational Mobility through Higher Education Research ...	69
2.4.1. Student Persistence Theories	70
2.4.2. Student Engagement Theories	74
2.4.3. Ecological Systems Theories	77
2.5. Reconceptualizing the Role of Higher Education in	81
Intergenerational Mobility Research	81
2.5.1. An Integrative Model of Higher Education and Intergenerational Mobility	82
CHAPTER 3: METHODS.....	85
3.1. Secondary Data	87
3.1.1. Baccalaureate and Beyond Sample Overview	88
3.1.2. Integrated Postsecondary Education Data System (IPEDS).....	92
3.1.3. Opportunity Insights Data.....	93
3.1.4. Study Sample	94
3.2. Study Design.....	96
3.2.1. Institutional Characteristics and Intergenerational Mobility Rates	97

3.2.2. Institutional Quality Influence on Student Socioeconomic Outcomes.....	107
3.2.3. Influence of Race.....	113
CHAPTER 4: RESULTS.....	114
4.1. The Role of Higher Education in Intergenerational Mobility: An Exploration Using Multilevel Structural Equation Modeling.....	114
4.1.1. Abstract.....	114
4.1.2. Introduction.....	115
4.1.3. Language Clarification.....	116
4.1.4. Review of Literature.....	117
4.1.5. Conceptual Framework.....	127
4.1.6. Methods.....	129
4.1.7. Data Analysis.....	135
4.1.8. Results.....	140
4.1.9. Discussion.....	148
4.1.10. Implications.....	154
4.1.11. Conclusion.....	159
4.1.12. References.....	161
4.1.13. Appendix A.....	181
4.1.14. Appendix B.....	181
4.1.15. Appendix C.....	185
4.1.16. Appendix D.....	190
4.2. Title: Pathways of Mobility: Examining the Role of Higher Education Institutions in Student’s Post-Graduation Socioeconomic Outcomes.....	191
4.2.2. Language Clarification.....	193
4.2.3. Review of Literature.....	193

4.2.4. Conceptual Framework.....	202
4.2.5. Methods	204
4.2.6. Data Analysis.....	208
4.2.7. Results	213
4.2.8. Discussion.....	222
4.2.9. Implications	229
4.2.10. Conclusion	232
4.2.11. References.....	234
4.2.12. Appendix A.....	252
4.2.13. Appendix B.....	254
4.2.14. Appendix C.....	258
4.2.15. Appendix D.....	259
CHAPTER 5: IMPLICATIONS	261
5.1. Discussion of results	262
5.2. Implications	270
5.3. Limitations	273
5.4. Directions for Future Research.....	275
5.5. Conclusion	277
COMPREHENSIVE BIBLIOGRAPHY	278

LIST OF TABLES

Table 1 NPSAS:08 sampled and eligible institutions and enrollment list participation rates, by institution characteristics: 2007-08	88
Table 2 NPSAS:08 sampled and eligible students and response rates, by institution characteristics: 2007-08	90
Table 3 Description of Variables from Baccalaureate and Beyond 08/12.....	91
Table 4 Description of Variables from IPEDS	93
Table 5 Description of Variables from Opportunity Insights Data.....	94
Table 6 Institutional Quality Variables.....	100
Table 7 Peer Environment Variables	101
Table 8 Institutional quality variables.....	102
Table 9 Peer Environment Continuous Variables.....	103
Table 10 Peer Environment Categorical variables.....	103
Table 11 Socioeconomic variables	110

LIST OF FIGURES

Figure 1 Integrative Model of Higher Education and Intergenerational Mobility.....	8
Figure 2. Intersection of research on intergenerational mobility and higher education outcomes	35
Figure 3 Integrative Model of Higher Education and Intergenerational Mobility.....	83
Figure 4 Integrative Model of Higher Education and Intergenerational Mobility.....	97
Figure 5 Hypothesized Structural Model	107

CHAPTER 1: INTRODUCTION

Within the United States, higher education is viewed as a steppingstone to economic and social mobility, where the promise of improved socioeconomic outcomes continues to draw many students to enroll despite the increasing cost of attendance (National Center for Education Statistics, 2019). The implicit (and sometimes even explicit) promise is that a post-secondary degree is a pathway to upward mobility for all individuals. The perception of higher education as an equalizer across socioeconomic backgrounds was first presented by Hout in his 1988 study; findings indicated that socioeconomic origin had no significant influence on occupational status for individuals with a bachelor's degree. Since this foundational study, additional researchers have confirmed Hout's finding using later cohorts in the US (Fox et al., 2016; Hauser & Logan, 1992; Pfeffer & Hertel, 2015; Torche, 2011). However, each of these studies treats attending higher education as a monolithic experience, with little exploration of the institution's or student's experiences within them. However, higher education institutions are diverse, as are the student attending; students experience differential outcomes, such as graduation and earnings, based on their demographics (Baum et al., 2013; Bowen et al., 2009; Creusere et al., 2019), as well as institutional type (Giani, 2016; Heil et al., 2014; Monsen, 2018; Thompson, 2019). Meaning, even for those who achieve a bachelor's degree, the promise of upward mobility is sometimes left unfulfilled.

Research on the role of higher education in improving socioeconomic outcomes has historically been an area of investigation for sociologists and economists through the analysis of intergenerational mobility. In this area of inquiry, researchers have traditionally analyzed the role of higher education in the persistence of socioeconomic

status between parents and adult children but left the institutional factors that facilitate the disruption of socioeconomic status unexplored. When researchers examine variances across institutions, there is a focus on surface-level institutional characteristics; institutional selectivity is especially prominent as a means of institutional differentiation. The frequent usage of selectivity is problematic because it masks institutional and student factors that could account for the differences in outcomes such as student pre-entry attributes (Heil et al., 2014), major choice (Eide et al., 2010), peer influence (Winston & Zimmerman, 2003), and institutional resources (Brown et al., 2018). To further elaborate on these problems, the following section will illustrate why the lack of examination into the process by which higher education disrupts socioeconomic status and overreliance on selectivity is problematic. The following sections will define the concept of intergenerational mobility, explaining why this area of research is vital in the current societal landscape, provide a conceptual framework to guide the analysis, summarize the purpose of this study and guiding research questions, and highlight the significance of this study.

1.1. Current Societal Landscape

To establish the rationale for the expansion of research on intergenerational mobility, the following section highlights the convergence of factors making the attainment of a bachelor's degree increasingly crucial for individuals and society. To begin, between the 2006-07 and 2016-17 academic years, the cost of undergraduate tuition, fees, room, and board at public institutions increased by 31%, with costs at private institutions increasing by 24% (The Pell Institute [Pell Institute] Indicators of Higher Education Equity, 2019). As the cost of higher education continues to grow,

available state and federal aid has failed to keep up, increasing the net cost of attendance for students and their families (Mitchell et al., 2019). This increase is especially harmful to students from the bottom income quintile for whom net cost in 2012 was 84% of their family's income, compared to just 15% of students from the top quintile (Pell Institute). The growing amount that students and their families must finance on their own has made paying for a college degree challenging, if not prohibitive, especially for individuals from lower socioeconomic backgrounds (Mitchell et al., 2019). Additionally, Black and Latinx/Hispanic students, who are disproportionately represented in lower socioeconomic classes, experience additional hardship accessing higher education due to the intersectionality of race and class (Elliot & Friedline, 2013). These challenges will only increase as states, institutions, and individuals face the long-term economic impact of COVID-19 crisis in coming years (Huelsman, 2020).

The challenges associated with paying for higher education have led many students and their families to question whether the benefits of higher education are worth the cost. However, numerous studies using economic data continue to show a wage premium associated with bachelor's degree attainment (Carnevale et al., 2011; Oreopoulos & Petronijevic, 2013; Tamborini et al., 2015). While there is some evidence to suggest this wage premium may have flattened in recent years, a bachelor's degree remains a good investment in future earnings; on average, individuals with a college degree can still expect to out-earn those with only a high school diploma (Ashworth & Ransom, 2019; Benson et al., 2017). Not obtaining a bachelor's degree may be the most detrimental to the socioeconomic prospects of those from the lowest income quintiles. Almost half (45%) of individuals raised in the lowest income quintile will remain there

without a bachelor's degree, compared with 52% of individuals from the middle-income bracket who will remain in their income bracket of birth or improve the economic standing (Roth, 2019).

The growing importance of a bachelor's degree is due, in part, to the shifting nature of the U.S. economy. Once, high-paying jobs in the manufacturing sector allowed for the advancement of an individual's economic and social status beyond their parents' status with only a high school diploma. However, jobs in the manufacturing sector have declined in recent decades (Hernandez, 2018). Recent economic data indicate that 18 out of the 30 fastest growing occupations now require more than a high school diploma (Khine, 2019). Many occupations are now inaccessible without a college degree (Baum et al., 2013). Additionally, those without a college degree have experienced the most significant economic losses in both the 2008 recession (Hoynes et al., 2012) and in the current economic crisis (Kochhar, 2020).

Despite the evidence indicating a bachelor's degree can lead to positive socioeconomic outcomes, these outcomes are not uniform across students or institutions. Individuals from lower socioeconomic backgrounds continue to be disadvantaged by the current education system; inequities in the K-12 system (Garcia & Weiss, 2017), overreliance on standardized test scores (Buchmann et al., 2010), admissions practices that privilege White middle/upper-class experiences (Bastedo & Bowman, 2017; Dixon-Roman et al., 2013), and unwelcoming campus climates (Stuber, 2012) are just examples of the systemic barriers experienced by students from underrepresented economic and racial backgrounds. These barriers continue to disadvantage students from lower socioeconomic backgrounds – even those who desire to attend higher education are less

likely to enroll, persist, and graduate than their middle- and upper-income peers (Giani, 2015; Pell Institute, 2019). The disadvantages related to access, attainment, and outcomes are even starker for students from lower socioeconomic backgrounds who come from minoritized¹ populations, such as Black, Latinx, and Indigenous students, who are less likely to enroll in and complete a bachelor's degree than their White counterparts from similar socioeconomic backgrounds (Pell Institute; Ma & Savas, 2016).

From a societal standpoint, a more thorough understanding of higher education's role in intergenerational mobility is critical due to the relationship between socioeconomic mobility and the persistence of inequality. In recent decades, economic inequality in the US has increased to levels not seen since right before the Great Depression (Saez, 2019), where today the top one percent of income earners have average incomes more than 40 times that of those in the bottom 90% (Saez). A 2015 study by Jerrim and Macmillan found that in countries where there were high levels of inequality, there were also low levels of mobility, meaning it is harder for individuals from the bottom of the economic ladder to move upwards. High levels of economic inequality are linked to economic instability, financial crisis, debt, and inflation, as well as hampered growth (Berg & Ostry, 2011; Kumhof & Ranci re, 2010).

Currently, where individuals are born in the income distribution is one of the most significant determinants of where they end up, especially at the lowest end of the income distribution. Almost 50% of individuals born into the lowest income quintile will remain

¹ I choose to use "minoritized" (Gillborn, 2010) throughout this dissertation in recognition the role of social institutions, such as higher education, in subordinating individuals through social construction of minority status. In addition, this term recognizes that individuals do not inhabit a minority status in all areas of their lives but in particular environments that uphold the power dynamics of Whiteness in the US.

there, but almost a quarter (23%) of individuals born into the upper-income quintile will remain there *without* a college degree (Roth, 2016). In a more equitable society, individuals would move more freely both up and down the economic ladder, with the circumstance of their birth being less of a determinant of their future socioeconomic outcomes. Despite the current socioeconomic stratification within the US, higher education is still viewed as one of the few mechanisms through which individuals can access higher levels of socioeconomic status in the US (Roth).

However, some scholars have suggested that higher education maintains or even exacerbates inequality (Hearn & Rosinger, 2014; Marina & Holmes, 2009; Mettler, 2014) since high-income groups tend to benefit more from attending higher education (Pfeffer & Hertel, 2015). The maintenance of inequality is especially salient when examining highly selective institutions where only 3.8% of students come from the bottom 20% of the income distribution, compared to 77% of students from the top 1%. However, these highly selective institutions provide the highest levels of upward mobility for students from lower-income quintiles (Chetty et al., 2017c). Despite the expansion of access to higher education, strong associations between parents' and students' socioeconomic status have persisted as any gains in access have been counteracted by growing educational inequality and the rising educational returns (Bloome et al., 2018).

The complicated relationship between social inequality and higher education articulated above reinforces the importance of better understanding the role of higher education in intergenerational mobility. If higher education institutions generate different outcomes for students because they provide better educational experiences and graduates are better qualified for the labor force, it is essential to understand how those experiences

differ so they might be replicated more broadly across institutions. However, if higher education is merely a sorting mechanism through which most students are just replicating their existing privilege, where the institution serves as another status signal, policy measures may be necessary to adjust for this if education is to be an equalizing force rather than a barrier to opportunity.

1.2. Conceptual Framework

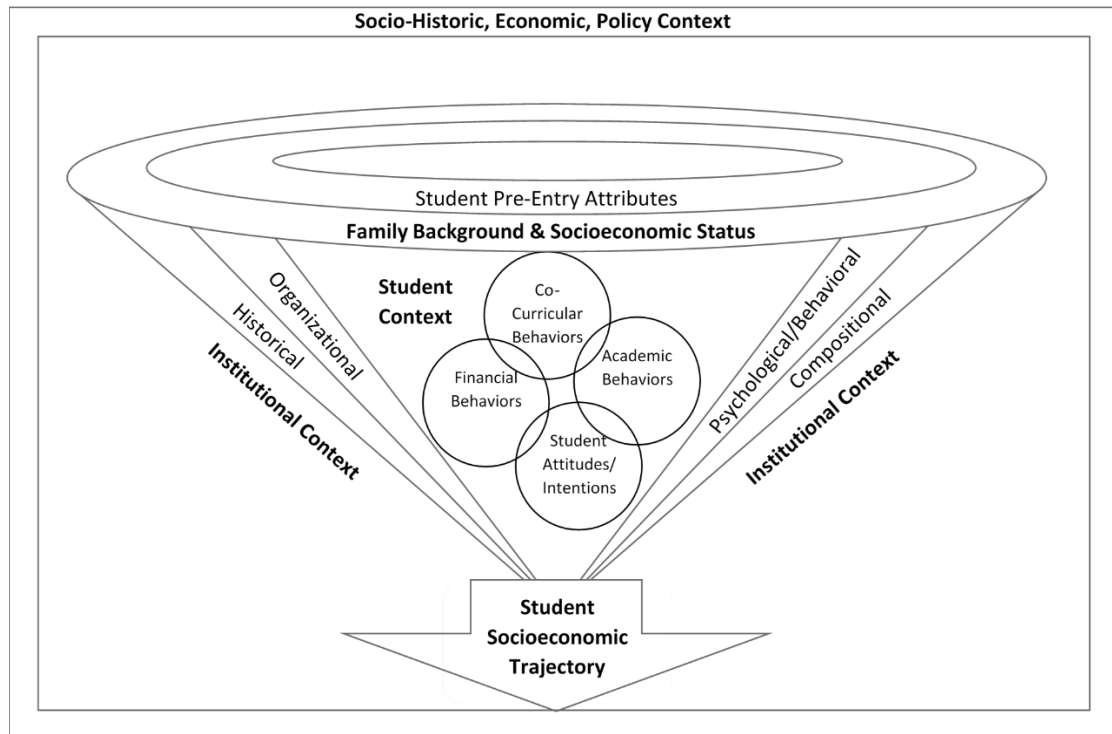
Current research on intergenerational mobility primarily focuses on inputs and outputs of higher education through the lens of what Berger and Milem (2000) term structural-descriptive features. These features include selectivity but also size, control (private versus public), location, etc., or student demographics. However, below these surface-level elements, there are more complex factors such as student demographics, students' behaviors, and experiences, as well as organizational and environmental elements of the institution itself. Students experience different economic outcomes based on individual characteristics, the type of institution they attend, the major they choose, and the opportunities they engage in while enrolled (Altonji et al., 2012; Benson et al., 2017; Hilmer & Hilmer, 2012; Hu & Wolniak, 2013; Melguizio & Wolniak, 2012; Wolniak & Engberg, 2019).

From a theoretical perspective, a more integrative approach across disciplines would aid in better understanding the role of higher education in disrupting socioeconomic status. I propose the model presented in Figure 1 to provide an integrative approach between research on higher education outcomes and intergenerational mobility. This holistic model offers a visual of how student and institutional characteristics interact, as well as how that interaction influences the pathways students take following

graduation. This framework incorporates elements of student persistence, student development, and ecological systems research to illustrate the complex relationship between intergenerational mobility and higher education.

Figure 1

Integrative Model of Higher Education and Intergenerational Mobility



In this model, students enter higher education through the context of their family’s socioeconomic status, which has a direct impact on student’s pre-entry attributes such as academic preparation, test scores, goals, institution selection, etc. (Crosnoe & Muller, 2014; Dixon-Roman et al., 2013). Upon entry into the institutional context, students do not merely detach from their family background or pre-entry characteristics. However, as they become more connected with their academic community, these influences and characteristics may become less significant. The institutional context includes elements from both Hurtado and colleagues’ (2012) multicontextual model for

diverse learning environments (MMDLE) model and Berger and Milem's (2000) conceptual model for researching organizational impact on student outcomes. These models help define the institutional context, not just in terms of structural-demographic features, but as a multidimensional environment made up of institutional-level (historical legacy, organizational structure, and compositional diversity) and individual-level (psychological perceptions and behavioral experiences) dimensions.

Additionally, the institutional context in this model interacts with the student and family context to shape students' experience within higher education. The student context pulls from student persistence and student engagement theories to conceptualize the complex nature of student's experiences within higher education. Student's Academic, Financial, and Co-curricular behaviors, as well as their attitudes and intentions, interweave to impact their pathway through the institution and to their socioeconomic status following graduation. Finally, all these elements are situated within the socio-historic, economic, and policy context that influences all aspects of this model. This model highlights that students do not merely pass through institutions on their way to higher-socioeconomic status but are fundamentally altered by their interactions within institutions. This relationship between students and institutions then impacts their post-graduation outcomes, including socioeconomic status. The review of literature in the following chapter will provide a more in-depth overview of the model conceptualization.

1.3. Purpose of the Study

The purpose of this study is to explore the relationship between student and institutional factors within U.S. higher education and an institution's ability to provide upward intergenerational mobility, specifically focusing on students who attained their

first bachelor's degrees from a four-year institution in the 2007/2008 academic year. Through this study I expanded on the traditional methods of studying intergenerational mobility, where the student and institutional variables examined are limited and studied individually – utilizing multilevel structural equation modeling and latent class analysis to explore the following research questions.

1.4. Research Questions

In this study, I sought to take a multidimensional approach by interrogating socioeconomic status and intergenerational mobility from both an institutional and individual perspective. The questions guiding this study are:

1. To what extent do institutional factors associated with institutional quality mediated through the peer environment account for variances in intergenerational mobility rates across institutions?
2. To what extent do college graduates cluster into meaningful groups based on socioeconomic indicators?
3. To what extent do measures of institutional quality, peer environment, and intergenerational mobility rates predict the probability of college graduates' socioeconomic grouping?
4. How do the above results differ when accounting for the institution's compositional racial diversity of faculty and staff?

This study will utilize multiple methods to operationalize the framework and sequentially address each research question. I examined the first question in this study using multilevel structural equation modeling to analyze the influence of institutional quality on institutional intergenerational mobility rates. To answer my second research

question, I employed latent class analysis to understand an individual's socioeconomic trajectories after graduating with a bachelor's degree, with and without covariates. Finally, additional institution's percentages of faculty and staff of color, as measures of compositional racial diversity, were added to each model to examine how results differ when accounting for these factors.

It bears noting that socioeconomic status is an intersectional phenomenon; both race, ethnicity, and gender intersect with social and economic factors to produce different outcomes across these identities (Chetty et al., 2018; Crenshaw, 1989, 1991; Harris & Patton, 2018). Since individuals from minoritized populations are disproportionately represented in lower-income tiers, some researchers suggest that focusing primarily on socioeconomic status will improve outcomes for all individuals, including those from minoritized populations. Critics of this approach argue that class-based approaches to inequality in the US are not sufficient as race/ethnicity is a significant factor in educational experiences and outcomes (Ladson-Billings & Tate, 2006). This critique is supported by recent research by Akee et al. (2018) that found that socioeconomic class alone cannot explain away differences in outcomes across racial backgrounds. Despite the intersection of race/ethnicity in intergenerational mobility, for this study, I choose to primarily focus on socioeconomic status, including race/ethnicity, only in the fourth research question. This decision is not undertaken lightly or without regard to the importance of understanding the role of race/ethnicity in intergenerational mobility, but because my study seeks to build off of and expand prior research on intergenerational mobility, which is primarily focused on socioeconomic status. By providing a better framework for understanding the role of higher education in intergenerational mobility,

future research can further explore this relationship across race/ethnicity and other demographics.

1.5. Significance

This study sought to expand the current understanding of higher education as a driver of socioeconomic mobility from both a theoretical and methodological perspective. This study takes an interdisciplinary approach from a theoretical perspective, combining frameworks and theories from economics, sociology, and higher education research. Through this interdisciplinary approach, this research can inform both researchers, policymakers, and higher education leaders in understanding how institutions impact students' socioeconomic mobility.

From a methodological perspective, this study employs more complex statistical procedures than are commonly utilized in intergenerational mobility research, which relies heavily on regression analysis and log-linear models. By using multilevel structural equation modeling and latent class analysis, my study provides a more in-depth analysis of students within institutional contexts. Additionally, my study examines how institutional contexts influence socioeconomic trajectories following graduation. By understanding differences within and between institutions, as well as following graduation, a more robust understanding of the role of higher education in intergenerational mobility is provided.

CHAPTER 2: REVIEW OF LITERATURE

Through the four sections in this chapter, I will lay out a pathway to examine the role of higher education in intergenerational mobility. To begin this journey, I first explore the foundational and current research on intergenerational mobility, defining key concepts, as well as overviewing the theoretical frameworks and approaches from different disciplines. Following this examination, I provide an overview and examples of how higher education is operationalized in studies of intergenerational mobility, concluding with the current limitations of this area of research.

Building off of these limitations, in the second section of this review of literature, I articulate the rationale for using institutional selectivity as an entry point into broadening our understanding of the role of higher education in intergenerational mobility. This section begins by defining institutional selectivity and grounding the conversation around selectivity in its historical context. Following this contextualization, I provide an overview and examples of how researchers currently operationalize selectivity and the mixed findings across student outcomes such as earnings and graduation rates. Finally, I conclude this section with the problematic nature of conflating selectivity with quality.

In the third section of this review of literature, I look at how institutional environmental factors, rather than selectivity, might account for differences in student outcomes. These alternative environmental factors present potential mechanisms for differentiating institutions and understanding the role of higher education in intergenerational mobility. This section examines how institutions might influence

student outcomes through different factors related to the academic environment, peer environment, institutional prestige, and the transition into the labor market.

In the final section, I extend the previous section's examination of factors related to the institutional environment that influence students' outcomes and provide a new conceptual framework to examine the role of higher education in intergenerational mobility. Utilizing student persistence, student engagement, and ecological systems theories, I present an integrative model for conceptualizing the role of higher education in intergenerational mobility through an interdisciplinary lens that I will utilize in conceptualizing this research study.

2.1. What is Intergenerational Mobility?

Intergenerational mobility is an area of research that has been the focus of sociologists and economists for decades. To understand the compatibility between intergenerational mobility research and research focused on higher education outcomes, a firm understanding of how intergenerational mobility is understood and explored is essential. To begin, I provide definitions of both socioeconomic status and intergenerational mobility to ensure clarity to the terminology that I will utilize throughout this review of literature. The subsequent sections will provide an overview of intergenerational mobility research, including theoretical frameworks, how the role of higher education is examined from both a sociological and economic perspective, and the methodologies utilized in this examination, as well as their limitations.

2.1.1. Socioeconomic Status Defined

Intergenerational mobility is challenging to study due to the complexity of defining socioeconomic status; this complexity also makes it challenging to determine the

best methods of analyzing movement in status. The American Psychological Association defines socioeconomic status as follows:

Socioeconomic status (SES) encompasses not just income but also educational attainment, financial security, and subjective perceptions of social class.

Socioeconomic status can encompass quality of life attributes as well as the opportunities and privileges afforded to people in society. (n.d., para. 1)

An alternative definition offered by Mueller and Parcel (1981) defined socioeconomic status in a relational manner, stating socioeconomic status "...describes a social system (usually society or community) in which individuals, families, or groups are ranked on certain hierarchies or dimensions according to their access to or control over some combination of valued commodities such as wealth, power, and social status (p. 14)."

Researchers studying intergenerational mobility seek to quantify the concept of socioeconomic status by utilizing a single measure of socioeconomic status, such as class status, occupational status, income, earnings, or wealth. Each of these methods conceptualizes and analyzes intergenerational mobility differently, capturing unique aspects of this phenomenon. However, socioeconomic status is more than just one measure, and across decades of research, disagreement exists on how to best capture an individual's or family's socioeconomic status (Erikson & Goldthorpe, 1992; Goldberger, 1989; Hauser & Warren, 1997; Mayer & Lopoo, 2004; Sørensen, 1994; Zimmerman, 1992). For this paper I will utilize the term socioeconomic status to refer to the spectrum of influences on an individual's or family's status, as captured in the definitions above.

2.1.2. Intergenerational Mobility Defined

Upward intergenerational mobility is commonly understood as children obtaining higher socioeconomic status than their parents (Chetty et al., 2014). Socioeconomic status is measured by examining the association between parents' and children's status, with measurement methods varying across disciplines. A stronger association between a parent and child's status indicates persistence in the transmission of socioeconomic status and less mobility, whereas a weaker association indicates less persistence and higher mobility (Fox et al., 2016). In other words, a child who retains their socioeconomic status of birth is considered to have a strong association with their parent's status. In contrast, the association has been found by researchers to weaken or even disappear for children who achieve higher levels of socioeconomic status than their parents.

Research on intergenerational mobility takes a normative approach to explore what is a very complex and intersectional phenomenon. In defining parents and adult children, researchers have historically focused on the persistence of socioeconomic status between fathers and sons due to the complicated relationship between women and workforce participation (Beller, 2009; Pfeffer, 2014; Torche, 2011). Focusing on the transmission of socioeconomic status between fathers and sons not only ignores the roles of mothers and daughters, but a recent study by Beller found that models that included mothers were more accurate than those including fathers alone. Intergenerational mobility research also focuses primarily on aggregate populations, rarely examining the influences of race/ethnicity within or between groups (Akee et al., 2017). The omission of race/ethnicity persists in research despite the demonstrated racial inequalities in both income and wealth within the US (McIntosh et al., 2020). The failure to explore race not

only ignores the experiences of many minoritized populations, overlooking successes and concerns at the extreme ends of these populations (Akee et al.). Instead, minoritized populations are treated by researchers as homogenous groups, despite significant within-group differences. The lack of an intersectional approach to this area of research not only erases the lived experiences of many individuals but also limits a complete understanding of the disruption of socioeconomic status.

In addition to the lack of examination of racial and gender influences on intergenerational mobility, this body of research operates almost exclusively within a neoliberal, capitalist framework. Through the frameworks of neoliberalism and capitalism, the normative purpose of education is to create self-enterprising individuals focused on improving their economic returns and contributions (Giroux, 2002). The examination of intergenerational mobility is firmly rooted in this paradigm; researchers operate under the assumption that the primary purpose of education is to improve an individual's socioeconomic status in relation to their parents. Operating under this assumption ignores the many additional benefits associated with education, such as moral development and cognitive and intellectual development (Mayhew et al., 2016). Empirical research diving into what motivates individuals to pursue higher education from the college choice literature is mixed. In some studies, students indicate their purpose for enrolling in college is *to be successful* or *get a good job* (Cox, 2016; Eagan et al., 2015; Rampell, 2015), but without any explanation of what being successful or having a good job means. Researchers focused on the college choice process for students from minoritized backgrounds, find more complex reasons for attending college, such as the ability to provide for one's family (Griffin et al., 2012), ability to contribute back to

their community (Waterman et al., 2018), as well as living up to familial expectations (Kim & Gasman, 2011).

2.1.3. Exploring Intergenerational Mobility

Since Hout's (1988) foundational study demonstrating the disappearance of association between socioeconomic origin and occupational status for individuals with bachelor's degrees, both economists and sociologists have continued to reproduce this finding (Chetty et al., 2017a; Fox et al., 2016; Gregg et al., 2017; Monsen, 2018). However, as Torche (2011) highlights, the actual mechanisms through which intergenerational association weakens among bachelor's degree holders lack a firm theoretical grounding. In addition to a lack of theoretical grounding, the methods used to examine how education impacts intergenerational mobility differ between economics and sociology, as do the measures and means of analysis. The following section will demonstrate how the methodological choices of economics and sociologists impact our understanding of the role of higher education in intergenerational mobility. Additionally, examples of recent studies that have explored the role of higher education in intergenerational mobility will be presented, followed by an overview of limitations of the area of research, especially in capturing the complexities of higher education.

2.1.4. Theoretical Frameworks of Intergenerational Mobility

To aid in the conceptualization of intergenerational mobility, particularly concerning education, researchers tend to utilize either human capital theory or signaling/screening as a theoretical framework for their studies. Human capital theory proposes that an individual's skills and knowledge are advanced by obtaining higher levels of education, which are then rewarded in the labor market by higher wages. Studies

using human capital theory operate under the assumption that education helps to develop productive skills valued in the labor market, inferring causality between higher education and economic outcomes (Becker, 1964; Mincer, 1974). Human capital theory reinforces the idea of a meritocratic society, as individuals who invest more in their skills and knowledge through education have earned a higher economic return in the labor market. In contrast, those who are unable to achieve success in terms of labor market outcomes have failed to invest in themselves – placing the burden of success or failure squarely on individuals rather than systems of inequality. Human capital theory fails to account for prior inequalities and institutional stratification, reifying the power and privilege in those who have succeeded by attributing their success to their individual characteristics and behaviors rather than social advantages.

Human capital theory also provides a rationale for why parents, especially middle and high-income parents, invest so much in their children, as the more skills an individual acquires, the higher their labor market value becomes (Fox et al., 2016; Jerrim & Macmillan, 2015). The same attributes deemed highly desirable by the labor market are also valued by higher education admissions standards, such as extracurricular activities (Snellman et al., 2015), enhanced academic preparation through AP courses (Crook & Evans, 2014), and an independent sense of self (Stephens et al., 2019). The acquisition of these skills creates a smoother path through higher education and into the labor market for students whose parents invest in their skills from childhood (Lareau, 2011).

In comparison to human capital theory, signaling/screening theories suggest that education serves as a sorting mechanism for individuals, where a degree signals to employers the innate abilities individuals possess for the labor market (Oreopoulos &

Petronijevic, 2013; Pfeffer & Hertel, 2015; Spence, 1974). Signaling/screening theory positions schools as mechanisms for maintaining class structures since career or socioeconomic outcomes are associated with students' backgrounds and inherited characteristics rather than the development of desirable skills. Through this perspective, students who are admitted to higher education are more naturally qualified than those who are not; the attainment of a degree validates and highlights these inherent qualifications to the labor market (Arrow, 1973). An alternative interpretation presented by Naidoo (2004) is that higher education is a sorting mechanism based on social and cultural capital in the guise of merit-based criteria. Naidoo's research suggests the returns associated with college are neither the result of innate nor acquired skills, but merely having the expected social and cultural capital valued both in higher education and the labor market, reinforcing inequality and power in society through the stratification of opportunity.

2.1.5. Sociological Approach

In examining mobility from a sociological perspective, researchers operationalize mobility by studying the association between parents' and adult children's social class or occupational status, where higher association indicates less mobility (Torche, 2015).

What follows is an overview of how occupational and class status are defined and how they are used by researchers in examining intergenerational mobility.

Occupational Status

Analysis of occupational status looks at occupations grouped into categories to form a hierarchy, where status is correlated with other social and economic variables (Hauser, 2010). Researchers measure occupational status by creating a weighted average

of the mean level of earnings and education of detailed occupations. Regression analysis is a standard method used in analyses, where the child's occupational outcome is regressed on the parent's occupational status with the regression coefficient capturing the persistence of socioeconomic status. In regression analysis, education is operationalized as a mediating variable in examining the persistence of socioeconomic status and cubic-formulation of age controls for life-cycle variations.

In modeling life courses, such as adult children's education, cognitive ability, or spousal influence, researchers have employed structural equation modeling in their analyses. Additionally, previous studies have used path analysis to model an individual's life courses, such as occupational status in first and second jobs (Fox et al., 2016). As a measure of socioeconomic status, occupation is considered to provide better insight into long-term economic standing as occupation is less volatile than other measures, such as income, across a lifetime (Goldberger, 1989; Hauser & Warren, 1997; Torche, 2011). However, Mazumder and Acosta (2015) suggest occupational status may be less consistent today than in the past due to individuals switching occupations more frequently than in previous generations. Historically, education is viewed as the primary avenue for mobility in occupational research (Fox et al., 2016; Torche, 2015), making the level of educational attainment a common unit of analysis in this area of study.

Social Class Status

In contrast, social class research creates groups based on occupational assets, such as property or authority in the workplace that impact parts of an individual's life, such as income, health, and wealth (Grusky & Weeden, 2006). Social class mobility is less hierarchical than occupational status and is less focused on upward or downward

movement than other measures; instead, social class analysis seeks to examine barriers to mobility connected to the ownership of different assets (Torche, 2015). Most social class research uses the classification devised by Erikson et al. (1979), which created classes based on different types of employment relations. These classes were defined by attributes including employer/employees, self-employed, skill level, authority in the workplace (supervisor/non-supervisor), and sector (urban/agricultural and manual/non-manual). Analysis of class mobility uses tables to cross-classify parents and adult children's classes, examining movement between class origin and destination. Social class measures were more widely used in research in the 1970s to 1990s but persisted as a measure of mobility because they capture a more comprehensive range of economic conditions, making them a more holistic measure of status (Pfeffer & Hertel, 2015).

Sociologists studying class across levels of schooling typically use the log-multiplicative layer effect model, more commonly known as the uniform-difference model (Erikson & Goldthorpe, 1992; Xie, 1992) to create a three-way table of the class of origin by class of destination and by education. This method allows researchers to capture the variations in strengths of association, utilizing the coefficient for the lowest level of schooling as a reference category. Odds ratios are also used to measure relative mobility through the creation of mobility tables, where unity reflects relative equality of opportunity (Goldthorpe, 2000). These tables allow researchers to express the chances of individuals remaining in their class or origin rather than changing class relative to the possibility of someone from a different class entering that class. For example, this method measures the chances an individual born into the professional class will remain in

that class rather than moving to the farmer class, relative to someone born into the farmer class becomes a member of the professional class.

Relative social class mobility can also be analyzed using log-linear models. Using these models, researchers study the association between an individual's origin and destination through a small number of parameters that are a function of the odds ratios and account for the main barriers to mobility (Hout, 1983; Hauser, 1978). Since log-linear models treat class as an ordinal variable, this method can provide a flexible tool since it is not restricted by linearity. To further explore assumptions regarding the role of education in mobility, researchers have utilized decomposition analysis to explore both direct and indirect effects that were previously not feasible in non-linear probability models (Karlson et al., 2012).

2.1.6. Economic Approach

Research by economists on intergenerational mobility captures socioeconomic status primarily through individual and family earnings or income. Researchers utilize the regression coefficient to analyze elasticity, attempting to approximate the average percent of change in adult children's earnings associated with a one percent change in their parent's earnings (Chetty et al., 2017c; Torche, 2015). Earnings for parents are typically averaged over several years to reduce measurement bias (Mazumder, 2005). Adult children's incomes are primarily captured at the age of 40, which is considered by economists to be the age at which lifetime earnings peak, to account for fluctuations in earnings across an individual's lifetime (Baker & Solon, 2003; Haider & Solon, 2006; Torche).

In conducting the actual analysis, the most commonly used methods are Ordinary Least Squares (OLS) regression analysis, rank-rank slope analysis, and linear regression of the log-transformation of parents' and children's earnings. A typical model employed by economists is presented below, where Y is income (adjusted for age and measurement error), and β is the elasticity of children's income with respect to their parents' income (Bloome, 2015):

$$\ln Y_i^{child} = \alpha + \beta \ln Y_i^{parent} + \varepsilon_i$$

Most researchers choose to examine either absolute or relative mobility. Absolute mobility examines the persistence of socioeconomic status within the context of economic and demographic factors and changes, while relative mobility examines persistence, excluding structural changes (Chetty et al., 2017c). In other words, absolute mobility looks at whether children are better off than their parents within the context of evolving technology, occupational shifts, and demographic changes. In contrast, relative mobility looks at where parents and children are along the spectrum of socioeconomic status (i.e., top or bottom quintile) and asks if children have a higher status than their parents *relative* to other individuals (Reeves, 2017). The difference between these two measures can be illustrated through a simple example, using income as a metric. Consider that at the age of 35, an individual's parent was earning \$40,000 a year in 1980, and that individual, now at the age of 35 in 2019, is earning \$60,000 adjusted for inflation. In terms of absolute mobility, we could say this individual has achieved upward intergenerational mobility. Comparatively, say that the \$40,000 earned by the parent in 1980 placed them in the 30th percentile on the income distribution, but the \$60,000 earned in 2019 places the individual in the 20th percentile. In this instance, the

individual's income would then represent downward mobility compared to others in society, meaning this individual is comparatively less well off than their parents (Reeves).

2.1.7. Operationalizing Higher Education in Intergenerational Mobility

In studying intergenerational mobility, researchers have expanded on the methodologies above to include educational factors as mediating variables in their analysis, as well as using multiple measures of socioeconomic status. A 2011 study by Torche sought to examine how different levels of higher education (bachelor's vs. advanced degree) might impact the persistence of socioeconomic status across generations. Torche examined multiple measures of socioeconomic status including class status, occupational status, earnings, and income mobility to allow for comparison of results across measures. To examine class status, the log-multiplicative layer effect model or uniform difference model was utilized to create a three-way table of class origin, class destination, and education. The coefficient for the lowest level of schooling was normalized and used as a reference category. To study occupational status, earnings, and income mobility, OLS and cubic formulation of age were employed to control for lifecycle effects. The below model identifies individuals with variable i , educational levels were identified by j ($J = 1 \dots, 5$), y is the socioeconomic outcome of interest, x identifies parental socioeconomic predictors, the A adjusts for age, and ε accounts for random errors.

$$y_{ij} = \beta_{0j} + \beta_{1j} + x_{ij} + A_{2j} + x_{ij} + A_{3j}^2 + x_{ij} + A_{4j}^3 + \varepsilon_{ij}$$

The analysis in the study produced an interesting U-shaped pattern of mobility association when examining occupational status, earnings, and income mobility. This

pattern indicated that the strongest association between parents' and children's status was between those without a college degree and those with an advanced degree; for those with a bachelor's degree, the association almost wholly disappeared. A 2019 study by Karlson was unable to reproduce the association between parents and adult children with advanced degree holders. However, Oh and Kim (2020) found that the reemergence of the intergenerational association was due to three educational sorting mechanisms advantaging students from higher socioeconomic backgrounds. The three mechanisms were (1) students obtained financially rewarding but also expensive advanced degrees, (2) students attended selective institutions and pursued lucrative graduate degrees in law and medicine, and (3) finished their degrees at an earlier age allowing more years of income growth.

Additional studies have also sought to take into account institutional characteristics when exploring the influence of higher education on intergenerational mobility. For example, a 2019 study by Thompson utilized rank-rank ordinary least squares regression to estimate the intergenerational association of socioeconomic status from non-selective, less-selective, and selective four-year colleges. Selectivity was defined using Barron Admissions Competitiveness Index with selectivity then compressed into the three levels of non-selective, less selective, and selective. Thompson also explored multiple measures of socioeconomic status, including occupation, education, labor market wages, total family income, and family net worth, to draw a comparison across measures. While this study was primarily descriptive, it still utilized rank-rank ordinary least squares regression to explore the difference in percentile rank between parents and children. The below baseline model explores SES as the mean of the

socioeconomic measure of interest, PS_i is the socioeconomic measure of interest for the respondent's parents, A_i is the median age at which SES is measured for the respondent, and PA_i is the age at which SES is measured for the parent.

$$SES_i = \beta_0 + \beta_1 PS_i + \beta_2 A_i + \beta_3 A_i^2 + \beta_4 PA_i + \beta_5 PA_i^2 + PS_i(\beta_6 A_i + \beta_7 A_i^2 + \beta_8 PA_i + \beta_9 PA_i^2) + \varepsilon_i$$

In expanding this model, Thompson (2019) included additional institutional as well as student characteristic variables. In this subsequent model, the vector E_i represents the education of respondent i , which was operationalized in the initial model as equal to one for those who obtained at least a bachelor's degree and zero otherwise. This vector was then expanded into a final model to analyze different levels of institutional selectivity (non-selective, less-selective, selective). Vector X is utilized in the equation to adjust for respondents' sex, race, and score on the Armed Forces Qualification Test to determine if the parent-child association persisted when controlling for demographic factors and academic ability.

$$SES_i = \beta_0 + \beta_1 PS_i + \beta_2 A_i + \beta_3 A_i^2 + \beta_4 PA_i + \beta_5 PA_i^2 + PS_i(\beta_6 A_i + \beta_7 A_i^2 + \beta_8 PA_i + \beta_9 PA_i^2) + E_i(\beta_{10} + \beta_{11} PS_i + \beta_{12} A_i + \beta_{13} A_i^2 + \beta_{14} PA_i + \beta_{15} PA_i^2) + \beta_{16} A_i * PS_1 + \beta_{17} A_i^2 * PS_1 + \beta_{18} PA_i * PS_1 + \beta_{19} PA_i^2 * PS_1 + \beta_{20} X_i + \varepsilon_i$$

Similarly, a recent study by Monsen (2018) also explored the impact of institutional type on the probability of individuals born into the first income quintile moving to the fifth quintile. In estimating this probability, Monsen began by creating a transition table where she compared the probability statistics across various types of

institutions. She then utilized multiple OLS regression models to determine the probability of moving from the first to the fifth income quintile. To control for the inevitable selection bias created by highly selective institutions recruiting students with higher GPAs, leadership experiences, and writing skills, this study sought to compare students with similar levels of human capital by examining institutions in the same selectivity tier. The baseline model from this study is provided below, where $P(1 \text{ to } 5)$ represents the probability of an individual transitioning from quintile one to five, and $HS \text{ Private}$ is used as a dummy variable with a value of one if a highly selective institution was attended:

$$P(1 \text{ to } 5) = \alpha_0 + \beta_1(HS \text{ Private})$$

Monsen then expanded on this baseline model to include different levels of institutional type and selectivity.

$$\begin{aligned} P(1 \text{ to } 5) = & \alpha_0 + \beta_1(HS \text{ Private}) + \beta_2(HS \text{ Public}) + \beta_3(HS \text{ Other Elite}) \\ & + \beta_4(Ivy) + \beta_5(S \text{ Private}) + \beta_6(S \text{ Public}) + \beta_7(NS \text{ Public}) \\ & + \beta_8(NS \text{ Private}) + \beta_9(FYFP) \end{aligned}$$

In this version of the model, institutions were broken down by selectivity (highly selective (HS), selective (S), non-selective (NS), Ivy, and for-profit (FYFP)), as well as institutional control (private versus public). In the final model, Monsen expanded her analysis to include additional institutional characteristics such as the percentage of students from various races, the percentage of students studying specific majors, as well as the region where the institution was located.

$$\begin{aligned}
P(1 \text{ to } 5) = & \alpha_0 + \beta_1(\text{HS Private}) + \beta_2(\text{HS Public}) + \beta_3(\text{HS Other Elite}) + \beta_4(\text{Ivy}) \\
& + \beta_5(\text{S Private}) + \beta_6(\text{S Public}) + \beta_7(\text{NS Public}) + \beta_8(\text{NS Private}) \\
& + \beta_9(\text{FYFP}) + \beta_{10}(\text{Arts\&Hum}) + \beta_{11}(\text{Business}) + \beta_{12}(\text{Health}) \\
& + \beta_{13}(\text{Multidiscipline}) + \beta_{14}(\text{Pub\&Soc}) + \beta_{15}(\text{STEM}) + \beta_{16}(\text{SocialSci}) \\
& + \beta_{17}(\text{Trade}) + \beta_{18}(\text{Asian}) + \beta_{19}(\text{Black}) + \beta_{20}(\text{Hispanic}) \\
& + \beta_{21}(\text{International}) + \beta_{22}(\text{Northeast}) + \beta_{23}(\text{Midwest}) + \beta_{24}(\text{West})
\end{aligned}$$

In both of these studies, Monsen (2018) and Thompson (2019) found that students attending more selective institutions were more likely to move into higher socioeconomic categories. Although Thompson discovered inequalities within a given occupation, indicating that while occupational destination was independent of occupational origin for individuals with a bachelor's degree, there were significant differences in wages and family income based on the selectivity of the institution attended. In other words, individuals who fall into similar occupational categories (e.g., investment banking) can still have different socioeconomic standing based on the selectivity of institutions (e.g., Ivy Leagues versus public state institutions) attended.

The Mobility Report Card study, conducted by Chetty et al. (2017a), provided the most robust analysis of the role of higher education in intergenerational mobility thus far. The researchers began by exploring the income diversity within the college-going population as a whole by defining entropy with the following model, where p is the fraction of college attendees from the bottom of the income distribution.

$$E = p \log_2 \frac{1}{p} + (1 - p) \log_2 \frac{1}{1 - p}$$

The researchers then expanded on this model to examine the income diversity within each institution, letting $j = 1 \dots, H$ index colleges in the US and p_j denotes the share of students from the bottom quintile at college j .

$$E_j = p_j \log_2 \frac{1}{p_j} + (1 - p_j) \log_2 \frac{1}{1 - p_j}$$

Finally, the researchers defined the degree of parental income segregation across colleges as:

$$H = \sum_j \left[\frac{N_j}{N} \times \frac{E - E_j}{E} \right]$$

where $\frac{N_j}{N}$ is the fraction of students who attend college j , and H is used to measure the extent to which parental income distribution at an individual institution diverges from the distribution of students attending college in general.

Once Chetty and colleagues (2017a) created the baseline measures, they utilized OLS regression to estimate the distribution of a child's earnings by college, as well as estimate how a one percentage point increase in parent rank would impact the child's mean rank. The researchers then utilized these measures to develop mobility report scores for individual institutions, factoring in both institutional access and the above calculations of institutional mobility distribution. Using the institutional scores, Chetty and colleagues were able to use a single score to compare institutions based on mobility rates. This comparison indicated that mobility rates varied substantially across institutional types, especially when considering institutional selectivity. These scorecards highlighted that the most selective schools provided high levels of mobility but low levels of access, while the inverse was true of open-access institutions. However, some institutions such as SUNY Stony Brook were able to provide both moderate rates of success and access for

low-income students, giving them the highest mobility scores. Overall, colleges with the highest mobility scores were mid-tier public colleges that provided higher levels of access combined with moderate levels of success.

Chetty and colleagues (2017a) sought to further understand the connection between institutional differences and intergenerational mobility by creating multivariate regression models to examine the relationship between institutional mobility scores and college characteristics. These characteristics were selected using the covariate selection approach to determine which variables to include in the regression models; characteristics that explained the most variation in outcomes based on R-squared or lowest mean-squared error were retained. Institutions were also partitioned into groups to acknowledge that the characteristics that were the best predictors of outcomes would vary across institutional types. In other words, characteristics impacting outcomes at an elite institution would be different from those impacting outcomes at a community college. In expanding this work, de Alva (2019) utilized the methods from the work of Chetty and colleagues to calculate an adjusted mobility rate of low-income students (bottom two quintiles) who rose to the top two income quintiles, based on institutional selectivity. The findings from this study indicated that the 10 schools with the highest levels of mobility have comparatively lower percentages of first-generation students, students receiving Pell Grants, and Black students.

While these studies are just a small snapshot of the research on the role of higher education in intergenerational mobility, they help to illuminate some of the consistent findings in this area of research. One of these consistencies across four decades of research, from both economics and sociology, is that on average, the impact of parents'

status almost disappears for those who obtain a bachelor's degree (Haskins, 2008; Hout, 1984, 1988; Thompson, 2019; Torche, 2015). However, as these studies and others demonstrate, when we move beyond averages and disaggregate based on student and institutional characteristics, differences and disagreements begin to emerge. As highlighted in the studies above, institutional selectivity has been a particular area of interest for researchers, with findings consistently demonstrating that mobility outcomes differ across levels of institutional selectivity (Alva, 2019; Carneval & Van Der Werf, 2017; Chetty et al., 2017a; Monsen, 2018; Thompson, 2019). However, all of these studies have limitations that hinder their ability to fully capture and examine the role of higher education in intergenerational mobility, which I will turn to next.

2.1.8. Limitations in Intergenerational Mobility Research on Higher Education

The examination of the role of higher education in intergenerational mobility has several limitations, including a lack of examination of the connection between socioeconomic status and other identities such as gender or race/ethnicity, the timing of analysis, overreliance on selectivity in analysis, and the homogenization of higher education. These limitations make it challenging to conceptualize how socioeconomic status is disrupted across generations. This section will explore each limitation in turn.

As mentioned previously, historically, research on intergenerational economic mobility has only looked at the transmission of socioeconomic status from father to son, excluding mothers and daughters from the analysis due to the challenges associated with their inclusion (Beller, 2009; Fox et al., 2016; Gregg et al., 2017; Pfeffer, 2014; Torche, 2011). The exclusion of mothers and daughters most likely distorts the results for this research, as Bailey and Dynarski (2011) found that increases in educational inequality

have been driven mainly by women. This trend is especially true for women with high-income parents who attend and graduate from college at higher rates than men (Fry, 2019). With more women graduating from higher education institutions, but only men analyzed in mobility research, the impact of higher education on mobility is not fully understood, especially as women's labor participation continues to increase (Gregg et al.). Beller found that empirical models that accounted for mothers, either individually or looked at the family unit as a whole, were more accurate than those only utilizing fathers.

There are also gender dynamics related to assortative mating, where individuals from similar educational status' are more likely to marry, increasing their socioeconomic status (Beller, 2009; Lawrence & Breen, 2016; Torche, 2011, 2015). Assortative mating can exacerbate inequality since individuals from similar socioeconomic backgrounds become more likely to marry, limiting mobility through marriage. Assortative mating is a challenging dynamic to account for methodologically since class-based marriage patterns indicate this phenomenon is not random. In other words, the measurement error associated with father-son transmission is likely not random due to the relationship between the mother's and father's socioeconomic status associated with assortative mating (Beller). It also bears noting that research on the gender dynamics in intergenerational mobility operates under both cisnormative and heteronormative assumptions, ignoring individuals outside of traditional gender binaries and heteronormative relationships, which is an additional limitation of this research.

Considerations of race/ethnicity are also limited in research on intergenerational mobility, despite persistent differences in social and economic outcomes across racial and ethnic groups (Akee et al., 2017). The exclusion of race/ethnicity from the research is

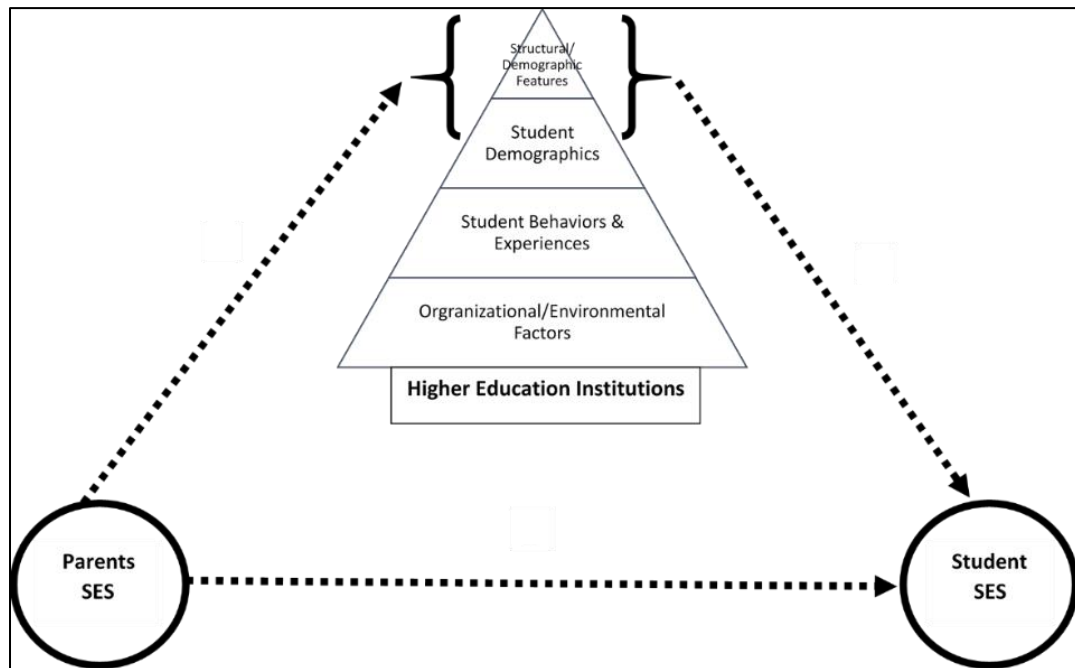
primarily due to small sample sizes for minoritized groups in many of the commonly used data sets, leading researchers to aggregate racial groups or focus only on White, Black, and Latinx populations (Bloome, 2014; Bloome & Western, 2011). The lack of consideration both within and across racial and ethnic groups obscures socioeconomic differences as well as differential outcomes from attending higher education (Noel, 2018). Furthermore, race, class, and gender do not exist as distinct experiences; these identities are interrelated and cannot be parsed out and studied in isolation (Lundy-Wagner, 2012). Disregarding the inter-related nature of race/ethnicity, gender, and socioeconomic status ignores the realities of the student demographics of today's student populations.

Research on intergenerational mobility also tends to over-rely on institutional selectivity when seeking to disaggregate the impact of higher education. Many studies have found that more selective institutions provide higher levels of mobility for those from lower socioeconomic backgrounds. However, selectivity is a broad term that is often conflated by researchers with institutional quality. Barron's Admissions Competitiveness Index, which is commonly used in such analysis, uses a proprietary formula to calculate selectivity. Barron's likely factors in college admissions standards, application numbers, and student pre-entry characteristics (National Center for Educational Statistics, 2014). However, many factors could account for the correlations between institutional selectivity and mobility not considered in the Index. Utilizing selectivity alone as a means of differentiating institutions overlooks some of the ways in which institutions might manifest advantages.

Building off of the limitations presented in the previous paragraph, the final limitation of research on intergenerational mobility is the primary focus on inputs and outputs of higher education through the lens of what Berger and Milem (2000) term structural-descriptive features. These features include selectivity but also size, control (private versus public), location, etc., or student demographics. Even Chetty and colleagues' (2017a) study that included a more robust set of institutional variables than is typical was predominantly focused on structural-descriptive level variables. Figure 2 illustrates this focus, highlighting how the structural-descriptive variables of higher education are merely the tip of what differentiates institutions.

Figure 2.

The intersection of Research on Intergenerational Mobility and Higher Education Outcomes



Below these surface-level elements, there are more complex factors such as students' demographics, students' behaviors and experiences, as well as organizational

and environmental elements of the institution itself. These factors are influential on students' outcomes but omitted in most research on intergenerational mobility. Higher education institutions are complex organizations that cannot be understood through surface-level features or broad measures of selectivity alone. Likewise, students attending institutions, even from similar social classes, bring diverse characteristics and experiences to campus beyond simple demographics. The following sections will explore the usage of selectivity as an institutional characteristic and how research on higher education can enhance our understanding of intergenerational mobility.

2.2. Institutional Selectivity

The previous sections outlined how previous research has examined intergenerational mobility and the limitations of that research in understanding the role of higher education. To gain a better understanding of the role of higher education in intergenerational mobility, researchers must broaden their understanding of how this relationship is studied through a more interdisciplinary approach. As highlighted in the limitations, selectivity is frequently used in research on intergenerational mobility as a way to differentiate institutions. Prior research indicates that selectivity matters when it comes to enhancing intergenerational mobility, as well as related outcomes such as graduation rates, earnings, and career trajectories – until student and institutional characteristics are considered. For this reason, gaining a better understanding of selectivity and how it influences student outcomes becomes an entry point to expanding research on intergenerational mobility. The following section will further define the concept of selectivity through its historical context, examining existing research on the relationship between selectivity and student outcomes, as well as methodological

approaches to analysis, and finally exploring different institutional and student factors selectivity could be capturing such as academic environment, peer environment, institutional prestige.

2.2.1. Selectivity Defined

Readers of research on institutional selectivity may assume that it accounts for a variety of institutional factors; yet, selectivity is a relatively simple measure, typically only factoring in an institution's admissions criteria. Barron's Admissions Competitiveness Index is frequently utilized in selectivity analysis, combining institution admissions rates, average standardized test scores, and students' high school GPA and class rank for the incoming first-year students to assign institutions to one of six hierarchical categories of selectivity. Another measure sometimes used is the Carnegie Classification (2018) of institutions, which divides institutions into "inclusive," "moderately selective," and "highly selective," categories that correspond to 25th percentile test scores of students who are accepted. Additionally, some datasets from the National Center for Educational Statistics (2012) have constructed a proprietary selectivity variable, consisting of the following measures: whether the institution was open admission, the number of applicants, the number of students admitted, the 25th and 75th percentiles of SAT and ACT scores, and whether or not test scores were required. Although how selectivity is currently measured may appear straightforward, conversations around selectivity must be situated with the historical context of higher education to understand the exclusionary nature of this measure.

Historical Roots of Selectivity

Higher education systems have historically been elite; from the inception of Harvard College in 1636, higher education has ratified and legitimized the positions of the social elite through limiting access to institutions based on race, gender, religion, and socioeconomic status (Noftsinger & Newbold, 2007; Taylor & Cantwell, 2019). Throughout the history of American higher education, institutions have created barriers through which to maintain access to the privileged few. These barriers have run the gamut from early entrance examinations used to prevent admission for working-class and immigrant students – a practice that is echoed today through the continued reliance on SAT/ACT score (Dixon-Roman et al., 2013) – to outright discrimination against women, Black, Latinx, and Indigenous students (Noftsinger & Newbold). While explicit discrimination based on race is now illegal, implicit barriers built upon centuries of systemic inequality exist through current admissions standards that continue to disadvantage students from minoritized populations such as Black and Latinx students (Posselt et al., 2012).

Even as legislative and judicial action has sought to expand access to higher education, that expansion created a hierarchy of institutions that was “unequal by design” (Taylor & Cantwell, 2019, Chapter 1, Section 1, para. 1). As higher education expanded, institutions differentiated themselves both by what they do and what resources they have to do it. This differentiation generated not just a hierarchy of institutions but vast differences within categories of that hierarchy. Within private institutions, the most selective Ivy League institutions were formed through the accumulation of status and power through centuries of enrollment preferences and wealth accumulation. These

institutions are demarcated by their vast resources, high admissions standards, high per-students spending, and prestigious alumni (Taylor & Cantwell). However, at the other end of the continuum are the vast majority of small private institutions that rely heavily on tuition revenues to survive and provide far less in terms of resources to students. Likewise, public institutions were designed to be hierarchical (Taylor & Cantwell). This hierarchy is exemplified in state systems, which include a handful of relatively prestigious research-focused institutions with selective admission criteria. At the same time, the majority of students attend less selective or open-access institutions with fewer resources. The stratification on institutions inherent in this hierarchical design means that attending higher education is intentionally unequal, challenging the notion that college in and of itself is an equalizing experience.

Students now have more access to higher education. Nevertheless, inequality is still maintained through the ability to secure a seat at a prestigious institution and the enhanced opportunities afforded to students at such institutions (Bloome et al., 2018; Taylor & Cantwell, 2019). The design of institutional stratification is exemplified through differences in financial resources (from both public and private sources) (State Higher Education Executive Officers Association [SHEEO], 2018), admissions criteria (Possel et al., 2018), student outcomes (Carnevale & Strohl, 2013; Pell Institute, 2018; Witteveen & Attewell, 2017), and faculty composition (Kezar et al., 2014). The following section will delve more deeply into what institutional selectivity measures and how those measures might impact student outcomes.

2.2.2. Exploring Research on Selectivity

Previous research on intergenerational mobility has consistently found that students who attended more selective institutions were more likely to transition to higher levels of socioeconomic status than those who attended less selective institutions (Chetty et al., 2017c; Monsen, 2018; Thompson, 2019). However, when researchers have delved further into the relationship between selectivity and student outcomes, the results become more complicated. As noted by Cohodes and Goodman (2012), it is difficult to establish the causal effect of college selectivity on student outcomes since research exploring the effect of selectivity on student outcomes produces results that are often contradictory (Heil et al., 2014).

In general, more selective institutions produce higher graduation rates than those ranked as less selective (Bowen et al., 2009; Carnevale & Van Der Werf, 2017). However, a 2014 study by Heil et al. demonstrated that the effect of institutional selectivity diminished when controlling for a robust set of student characteristics (gender, high school GPA, socioeconomic background, race, etc.) and decreased even further when the researchers added institutional variables. In other words, when looking at students with similar characteristics and controlling for differences in institutional factors, the impact of institutional selectivity alone was not as impactful as it is commonly portrayed in the research. The results from this study suggest the relationship between higher levels of selectivity and student outcomes may be due to selective institutions admitting students who are already more likely to persist and graduate rather than any actual advantages conferred by the institutions themselves.

Student post-graduate earnings is another outcome that has received attention from researchers, especially when looking at the relationship between a student's socioeconomic status and institutional selectivity. On average, graduates from more selective institutions can expect a higher return on their college degree than students attending lower selectivity institutions (Benson et al., 2017; Chetty et al., 2017a; Hoekstra, 2009). In examining initial earnings, Giani (2016) found a complicated relationship between institutional selectivity and socioeconomic status. For students who attended a more selective institution, there was almost no difference in earnings related to socioeconomic backgrounds. However, for those students attending a moderately selective institution, students from higher socioeconomic backgrounds out-earned those from lower socioeconomic backgrounds. Finally, students from lower socioeconomic backgrounds were at the most significant disadvantage when attending non-selective institutions. The findings from Giani's study reinforce that for students from lower socioeconomic backgrounds, attending a non-selective institution – where this population is already concentrated – is likely to compound disadvantage rather than mediate it. Research also indicates that the wage premium significantly increases over time, rather than narrowing as students gain more experience in the workforce (Thomas & Zhang, 2005). One notable finding by Andrews et al. (2016) is that the benefit of attending a high-quality institution appears to have a more significant impact on the earnings of students from lower socioeconomic backgrounds. However, the impact of institutional selectivity on earnings has been shown in other studies to vary across majors (Eide et al., 2016; Thomas & Zhang).

Further studies examining the impact of students' major choice on post-graduation occupations and earnings have suggested that choice of major may be more influential than selectivity (Arcidiacono, 2004; Eide et al., 2016; Ma & Savas, 2014; Thomas & Zhang, 2005). Selectivity mattered the most for business majors and the least for engineering and science majors. These findings suggest that for majors in which the specific skills acquired are a core aspect of the education, such as in engineering or science fields, selectivity becomes less critical. In contrast, for majors where social networks and connections carry more value, such as business, there may be a benefit to attending a more selective school that boasts more robust social networks (Eide et al.; Rivera, 2015). However, students' gender complicates the influence of major. A study by Ma and Savas found that women experienced fewer gains in earnings compared to men when attending equally selective institutions. However, men and women did experience similar earnings gains when working in the same well-paying fields, such as business, engineering, and math.

Additionally, working in a lucrative field was shown to mediate both the disadvantages of social class and attending a less selective institution for women, but not men (Ma & Savas, 2014). Many studies have focused primarily on students' initial earnings, but some studies examining long-term earnings have found that the benefits of attending a selective institution on earnings may compound over time (Hoekstra, 2009; Thomas & Zhang, 2005). Even when accounting for attendance at elite graduate schools, *undergraduate* institutional selectivity still affected earnings (Hersch, 2014).

Student and institutional characteristics further complicate the relationship between institutional selectivity and student outcomes. A study by Hoekstra (2009)

sought to overcome the selectivity bias associated with attending more selective institutions by comparing students who were barely admitted and barely rejected from a state flagship institution. The results of this study indicates a larger earnings premium is associated with student high school GPA rather than attendance at a flagship institution, reinforcing that selectivity is more a measure of students' pre-entry characteristics and advantages than institutional differences. In a study by Dale and Kruger (2011), the cost of tuition was more predictive of earnings than institutional selectivity. This study highlights that the impact of selectivity on earnings differs based on selectivity tier and student's backgrounds, indicating that selectivity alone does not consistently explain student earnings. If selectivity alone explained outcomes, we would expect consistent results regardless of a student's SES. Further confounding the impact of selectivity, both gender and race are also influential factors in students' earnings, even amongst students attending institutions within the same selectivity tier (Manzoni & Steib, 2019; Thomas & Zhang, 2005).

Looking beyond higher education, some researchers have suggested the labor force confers earnings advantages and not institutions themselves, focusing on the transition into the labor force for students. In the study by Giani (2016), mentioned above, the results also indicated that students' transition to the workforce might be more influential on earnings than an institution's level of selectivity. This notion is supported by the qualitative research of Rivera (2015), who examined how students from selective institutions transition into careers of finance, law, and consulting at elite firms. In this study, Rivera discovered that while institutional selectivity assisted students in gaining interviews with elite firms, students' backgrounds and experiences continued to put them

at a disadvantage in obtaining employment. These findings highlighted the importance of commonalities between students and interviewers in influencing their ability to secure positions in elite firms. Students who had common interests with their interviewer, especially those related to leisure activities, travel, and social circles, were more likely to progress in the interview process and secure a job at elite firms. However, an intriguing finding from Liu et al. (2010) found that when controlling for earnings, graduates from more selective institutions were less satisfied with their jobs. Suggesting that while attending a selective institution might enhance earnings, it does not necessarily improve satisfaction with that job.

The impact of selectivity on the transition into the labor market is further complicated by race. Black candidates from elite institutions received comparable responses to job applications as their White counterparts from less selective institutions and experienced a “double penalty;” when employers did respond to their applications, it was for jobs with lower starting salaries and lower occupational prestige compared to White peers (Gaddis, 2015). Likewise, Witteveen and Attwell (2016) found that even amongst graduates with similar majors, GPAs, and who attended institutions of comparable selectivity, earnings differed based on family backgrounds. The researcher’s hypothesized occupational niches caused these inequalities. Individuals from higher socioeconomic backgrounds secured higher-paying jobs within occupational fields, compared to individuals from lower socioeconomic backgrounds, despite equal qualifications. These findings suggest that social and cultural capital associated with individuals’ backgrounds continues to influence outcomes, even after attending equally selective institutions. Additionally, alumni networks associated with more selective

institutions may assist in students' transition into the labor market (Rivera, 2011; Tholen et al., 2013), although the influence of these networks may vary across major (Eide et al., 2010).

2.2.3. Operationalizing Selectivity

A major challenge in studying selectivity is disentangling the actual effect of institutional selectivity from the student characteristics. There are many multicollinearities between student characteristics and institutional selectivity, making it an endogenous variable where student outcomes could be attributed more to students' background characteristics and ability rather than institutional characteristics. The following studies provide examples of ways in which researchers, specifically examining the impact of selectivity, have sought to disentangle these phenomena.

One approach taken by Karlson (2019) sought to explore the equalizing effect of higher education to test the hypothesis that the social mobility experienced by college graduates is the result of the group's selectivity (i.e., selectivity bias) and not a random process. The author instead proposed institutions select students based on characteristics that are often unobservable such as cognitive ability, personality traits, or educational aspirations (Karlson). To examine the influence of these unobservable characteristics, Karlson started with a simulation study to illustrate how selective attrition, defined as inherent differences between students attending different types of institutions, can lead to a downward bias in the influence of attending higher education. In other words, the impact of more selective institutions is more a result of the type of students attending than the result of any specific institutional factors. The author treated social origin as an exogenous covariate in measuring mobility, applying a date-generating sample selection

and outcomes models to account for the influence of selective attrition on student mobility outcomes. To further investigate if selective attrition can explain the impact of higher education on social mobility, the sample of college degree holders was reweighted by the inverse probability of being a college degree holder utilizing observable pre-entry characteristics such as cognitive ability, personality traits, and beliefs about the future. The results indicated that it was not selective attrition that accounted for differences in outcomes, indicating that higher education can provide an equalizing effect.

In a 2016 study by Shamsuddin, the author utilized an education production function to isolate the effect of college selectivity on the probability of completing a college degree. Using the below formula where for each individual I , A is student achievement, P is a vector of peer effect, S is a vector of school inputs, F is a vector of family and background characteristics, and I is a vector of individual abilities (Hanushek, 1979).

$$A_i = f(P_i, S_i, F_i, I_i)$$

Shamsuddin used the distance between where the student lived in high school and the nearest state flagship or other selective public institution as an instrument for attendance, assuming that student ability did not systematically vary by distance to the nearest selective public university. The other fundamental assumption in this study is that students on the margin of attending a selective institution are more likely to attend a nearby school due to increased awareness of the institution.

Selectivity was measured using the average SAT or ACT scores of top-quartile public universities; the researchers used Ordinary Least Squared regression to create a two-stage model to determine the impact of college selectivity on the probability of

completing a degree. In the first stage model, for each individual i , SAT is the average SAT score (or equivalent ACT) of students admitted to the college attended, D is the distance to the nearest selective public institution from a student's county of residence, A is ability (high school GPA and score on Armed Services Vocational Aptitude Battery), X is a vector of family background and student demographics, and ε_i is random error.

$$SAT_i = \alpha_0 + \alpha_1 D_i + \alpha_2 A_i + \alpha_3 X_i + \varepsilon_i$$

A second stage model was then used to predict selectivity from the above model to determine the influence of institutional selectivity, denoted by \widehat{SAT} below, on the probability that a student will complete the degree (Shamsuddin, 2016). For each individual i , y^{BA} equals 1 if the individual completed their degree or higher by the age of between 26 and 30 years old, and v is the random error term

$$\Pr(y_i^{BA} = 1) = \beta_0 + \beta_1 \widehat{SAT}_i + \beta_2 A_i + \beta_3 X_i + v_i$$

Both models were rerun using the distance from a respondent's home to the nearest selective public institution as the instrumental variable. Results indicated their increased probability of graduating from attending a more selective institution.

Another study examining the influence of selectivity on graduation by Heil and colleagues (2014) used multilevel logistic regression and propensity score matching to control for selection bias. Multilevel logistic regression was utilized to account for the violation of independent observations when examining students attending the same institution. Additionally, propensity score matching allowed for the variable of interest, selectivity, to be considered a "treatment" as, on average, students attending a selective institution (treated) differ in significant ways from those who do not (untreated) on many covariates and background variables. In other words, the correlation between selectivity

and observed and unobserved personal characteristics can lead to selection bias. Propensity score matching allowed for selection biased to be lessened by matching individuals based on observed background characteristics to minimize the differences in observed variables. When controlling for these background characteristics, the influence of selectivity was one-third of the influence in the model without student characteristics.

In examining the impact of selectivity on earnings, Dale and Kruger (2011) attempted to explore the unobservable characteristics that lead students to apply to and then attend a selective college. Similar to Heil et al. (2014), the researchers acknowledged that these unobservable characteristics were likely to be positively correlated with the selectivity of the institution. The study utilized the below equation for their analysis where Q is a measure of the selectivity of the college student i attended, X_1 and X_2 are two sets of characteristics that affect earnings, and ε_i is an idiosyncratic error term that is uncorrelated with the explanatory variables. β_1 represents the monetary payoff to attending a more selective college.

$$\ln W_i = \beta_0 + \beta_1 Q_i + \beta_2 X_{1i} + \beta_3 X_{2i} + \varepsilon_i$$

X_1 includes variables that are observable to researchers, such as grades and SAT scores, while X_2 includes variables that are not observable, such as student motivation and creativity. Dale and Kruger suggested that previous studies have omitted the unobservable characteristics, denoted by X_2 . This omission potentially upwardly biases the results since students with higher values of X_2 are more likely to apply to and be admitted to selective schools, and that the labor market rewards these characteristics.

The authors utilized a “self-revelation model” (Dale & Kruger, 2002) that assumes that students demonstrated their potential ability, motivation, and ambition

through the choice of schools they applied to and that students with these characteristics had greater earnings potential. In other words, students with higher earnings potential are more likely to apply to more selective institutions, which reveals their unobservable ability. The average SAT scores of the school's students applied to were used to capture these unobservable characteristics. However, the authors did not account for the influence of social or cultural capital that might also influence college application behavior (Nora, 2004).

Like the research on intergenerational mobility, these examples of studies on selectivity concentrate on student characteristics more than institutional characteristics. Controlling for the influence of student characteristics is important to minimize selection bias and attempt to separate the influence of student's pre-entry attributes from institutional influence. However, there is still a need to consider what institutional characteristics might account for the impact of selectivity. The next section will explore selectivity from an institutional perspective as a means of exploring how selectivity influences student outcomes.

Limitations in Institutional Selectivity Research

The research and methodologies presented above demonstrate the mixed conclusions found from examining the impact of institutional selectivity. Nevertheless, it remains a common variable in the examination of higher education outcomes and intergenerational mobility. One possible reason for the mixed results from research on selectivity could be that selectivity is a flawed measure by which to examine institutions. Since selectivity primarily captures students' pre-entry attributes and admissions standards, it does not actually measure institutional characteristics. As Ehrlich (2006)

points out, "...no one would choose a hospital based on the health of the patients coming into the hospital, and no one should choose a college based primarily on the grades and test score of incoming students" (p. 1). Additionally, many of the metrics used in admissions criteria such as the SAT and ACT are found across studies to be more related to socioeconomic backgrounds than students' actual academic ability or their capacity to succeed within higher education (Chetty & Hendren, 2018; Dixon-Román et al., 2013; Fryer & Levitt, 2013; Reardon et al., 2019).

A potential explanation for the continued prevalence of selectivity in differentiating institutions is that selectivity is often conflated with the quality of the educational experience and the value add of attending such an institution. This conflation is due, in part, to the demand associated with more selective institutions (Reback & Alter, 2014). As well as the inherent advantage available for institutions with higher demand to select students who are already likely to graduate, maintaining or exceeding their socioeconomic background, regardless of the institution attended. The assumption of the connection between demand and quality is flawed in two respects. First, institutional demand does not mean the institution or the educational experience is high quality (Bowman & Bastedo, 2009; Judson & Taylor, 2014), merely that a high number of students want to attend.

Institutions regularly generate demand through factors unassociated with educational quality, such as state of the art residence halls or recreation centers (Jacob et al., 2013), prominent athletics programs (Pope & Pope, 2014), or name recognition (Pampaloni, 2010). Second, basing the assessment of quality purely on demand also assumes students prioritize institutional selectivity in their college decision-making

process. However, research shows how students choose which college to attend is situated within the context of their lives; student's family background and socioeconomic status all influence this decision-making process (Perna & Thomas, 2006). Many students and families have to weigh the cost of college against the prestige or selectivity of the institution, with research showing differences in this decision-making across racial and socioeconomic backgrounds (Griffin et al., 2012; Hernandez, 2015; Kim & Gasman, 2011). If institutional quality, measured by the value of the educational experience or ability to enhance students' knowledge and skills, is what researchers are seeking to assess, then selectivity may not be the best variable to use. Other metrics might be of greater value in determining the role of higher education in intergenerational mobility. The following section will outline institutional factors that measures of selectivity may be attempting to capture.

2.3. Institutional Quality

This section builds off the previous one that outlined the mixed conclusions found from examining the impact of institutional selectivity as well as the proposition that selectivity is a flawed measure to use when differentiating or comparing institutions or student outcomes. Selectivity may be masking other institutional or student factors that, while associated with the selectivity of institutions, are driving student outcomes. The following section seeks to explore institutional factors commonly associated with quality that might account for differences in selectivity, including academic quality, peer environment, and institutional prestige.

2.3.1. Academic Quality

Measuring the academic quality of an institution is a complex and often elusive measure since teaching and learning are themselves complex relational processes not easily evaluated. Publications that specialize in educational rankings, such as U.S. News and World Report, have sought to measure and rank institutions based on their quality; they primarily focus on measure or reputation and input, rather than actual teaching or learning within the institution (Thacker, 2008). Academic quality has been a concern in recent decades as higher education has come under more criticism from politicians and taxpayers through demands for more accountability from institutions (Reauthorizing the Higher Education Act, 2016). Academic quality can be viewed from three perspectives: student learning, faculty and teaching quality, and institutional resources and supports.

Student learning is inherently difficult to measure, primarily because there is no agreement on what students *should* be learning. Institutions also have different goals for students' learning based on their mission. For example, liberal arts institutions "...promote integration of learning across the curriculum and co-curriculum, and between academic and experiential learning, in order to develop specific learning outcomes that are essential for work, citizenship, and life" (Association of American Colleges & Universities, n. d., "What is Liberal Education" section), while land grant institutions may focus more on practical educational experiences and service to their local communities (Gavazzi & Gee, 2018). Due to the widespread nature of research on student learning, it is beyond the scope of this study to provide a comprehensive treatment of the literature. However, extensive research has demonstrated the skills and knowledge, cognitive and intellectual, and psychosocial learning that occurs during a

student's participation in higher education (Mayhew et al., 2016). Nevertheless, creating metrics that allow for comparative analysis across institutions is a challenging endeavor despite the increasing demand for such a measure from taxpayers and policymakers (Kelchen, 2018). Influences on student learning based on institutional selectivity are mixed, with studies on skills and knowledge development showing no difference based on institutional selectivity (Mayhew et al.), while other studies suggest selective institutions produce more significant cognitive gains for students (Arum & Roksa, 2010; Kugelmass & Ready, 2010), although the effect was small.

Other measures of academic quality are faculty and teaching quality, which like student learning, is challenging to assess. Researchers have demonstrated that active learning techniques (Braxton et al., 2000; Braxton et al., 2008), instructional clarity and preparation (Pascarella et al., 2008), as well as alignment between course outcomes and assessment tasks (Wang et al., 2013) contribute to student learning and achievement of course outcomes. The body of research focused on *high impact practices* also highlights some of the methods through which students actively engage with both curricular and co-curricular learning and are considered significant factors in determining the academic quality of an institution (Kilgo et al., 2015; Kuh, 2008). Most institutions also attempt to assess instructional quality by soliciting student feedback through course evaluations. However, the value of course evaluations in assessing faculty's teaching ability is contested in the research, as they can measure student satisfaction more than the actual quality of the course content or instruction (Clayson & Haley, 2015; Judson & Taylor, 2014). Ewing (2012) suggested that students' assessment of faculty was associated with students' anticipated grades more so than the actual quality of instruction. Additionally,

faculty of color and women faculty members may be disadvantaged in the course evaluations process (Huston, 2006; Rivera & Tilcsik, 2019; Smith & Hawkins, 2011).

Reappointment, promotion, and tenure (RPT) guidelines are another way to examine how institutions assess faculty quality. However, these guidelines vary based on institutional mission and type (Harley et al., 2010). For example, research and elite private institutions place a higher priority on research and scholarship in these processes, while small private or regional state schools may emphasize teaching more heavily (Clay, 2018). RPT processes measure research and scholarship through the number of scholarly publications and journal impact factors (McKiernan et al., 2019). In recent decades, many institutions have placed a greater emphasis on research and scholarship in RPT at the expense of teaching and services in an attempt to enhance institutional reputation (Green, 2008; Schimanski & Alperin, 2018).

Another way to view academic quality is how institutions prioritize resources. As institutions have experienced cuts in state and federal funding in recent decades (Mitchell et al., 2018), administrators have had to make decisions regarding how to allocate limited financial resources. Academic quality and institutional resource allocation are linked; decisions related to the number of courses offered, size of courses, and availability of academic support services all occur within the context of an institution's financial resources. The results of these decisions not only impact students' learning but students' ability to complete their degrees (Bound et al., 2010; Bound & Turner, 2007). Decreasing rates of state funding are associated with declining spending on academic spending within institutions (Deming & Walters, 2017). Simultaneously, sectors of higher education that have experienced cuts in state funding have also seen declining rates of

completion; students from lower socioeconomic backgrounds have been the most impacted by declining completion rates, irrespective of their academic preparation (Bound et al., 2010).

Examining how institutions distribute financial resources, as well as what areas receive reductions during budget cuts, provides evidence to institutional priorities. For example, Taylor and Cantwell (2019) found that elite private and public research institutions allocated a majority of their expenditures to research activities, while less selective state colleges and private institutions allocate a majority of their expenditures to activities directly or indirectly related to the instructing students. These findings are interesting when taken in combination with Chetty and colleagues' (2017a) findings that mid-tier institutions, not research-focused or elite private institutions, provided the highest levels of mobility for students, suggesting that by focusing their resources on instructional activities, institutions may have a more significant impact on students' access to socioeconomic mobility.

Institutions have also demonstrated their priorities through the shifting nature of faculty composition and the differences in composition across institutional types. Non-tenure track faculty often referred to as contingent faculty, are increasing across higher education (McNaughtan et al., 2018). While contingent faculty bring valuable experiences and perspectives to the classroom (Grieve, 2000), this shift in faculty composition is primarily due to the cost-saving associated with employing contingent faculty compared to tenured or tenure-track faculty (Hurlburt & McGarrah, 2016). Institutions differ in their faculty composition, with the least selective institutions employing the highest numbers of contingent faculty (Hurlburt & McGarrah). Research

around the impact of increases in contingent faculty on students has been somewhat mixed. Some studies have indicated that contingent faculty do not perform at the same level as their tenure and tenure-track colleagues, making the increase in contingent faculty especially concerning (Bowden & Gonzalez, 2012; Umbach, 2007), while others find no difference (Michel et al., 2018). Additionally, some studies have demonstrated an association between higher levels of contingent faculty and lower graduation rates (Ehrenberg & Zhang, 2005; Jacoby, 2006). In a critique of these studies, Johnson (2011) suggested that student characteristics associated with institutions with higher percentages of contingent faculty could account for the differences in outcomes.

Finally, as highlighted by Hurtado and colleagues' (2012) multi-contextual model for diverse learning environment, the compositional diversity of an institution is an additional measure of the quality of the campus environment. As mentioned previously, higher education has historically excluded individuals based on race, ethnicity, and gender. While both student and faculty racial diversity has improved over time, campuses are still disproportionately White (Smith et al., 2012). Additionally, faculty racial diversity has improved at a much slower rate than student diversity, particularly in tenured positions, leaving a gap between the diversity of students and faculty (Finkelstein et al., 2016).

Engagement with diverse environments and cross-racial interactions has shown to be beneficial for post-college outcomes for students across racial backgrounds (Denson & Chang, 2009), and institutions with more faculty of color resulted in more frequent interactions across race (Park et al., 2013). Engagement with diversity can allow for students to challenge stereotypes, beliefs, and worldviews (Crisp & Turner, 2011) and

potentially weaken the “cycle of segregation” within society (Saenz, 2010). Institutions with more faculty of color also have higher graduation rates across all racial groups, but especially for students from minoritized racial groups (Stout et al., 2018). However, it should be noted that proximity does not necessarily lead to interactions (Berry, 2008), and a positive racial climate, as well as numeric diversity, is required for beneficial cross-racial interactions (Jayakumar, 2008). For students from minoritized populations, having faculty who share their identities is beneficial as they do not feel like the sole representative of the race in the classroom or other campus settings (Marx & Goff, 2005).

Despite the benefits of a diverse faculty, institutions continue to struggle to recruit but, most importantly, retain faculty of color. Institutions blame the pipeline of availability for the lack of faculty of color within higher education. However, the “leaks” in the pipeline are predominantly due to hostile climate, bias, and discrimination resulting in few Ph.D. recipients going into academic professions or progressing through the ranks (Carey et al., 2018). Faculty experience tokenization, isolation exclusion, marginalization, as well as both invisibility and hyper-visibility on campus (Brayboy et al., 2012; Cooke, 2014; Martinez et al., 2018). Hyper-visibility and tokenism especially manifest around the expectations of extra service work, where faculty from minoritized groups are expected to be very active in service work as a representation of “diverse” viewpoints. Service work is weighted less in RPT processes taking faculty away from more highly valued research work, making it more difficult for faculty to move up the tenure ranks.

2.3.2. Peer Environment

Since selectivity is based primarily on admissions criteria, it says more about the pre-entry qualities and experiences of students, such as academic preparation, motivation, and socioeconomic background, than what institutions contribute to a student's academic or personal development (Kuh & Pascarella, 2004). However, research on the impact of peers, also known as peer effect, suggests the influence of peer academic ability and other peer characteristics, such as family income, social capital, and leadership ability, on individual student's academic performance (Carrell et al., 2008; Winston & Zimmerman, 2003). Research on peer effects suggests that these factors have a positive impact on an individual's academic achievement (Carrell et al.; Ficano, 2010; Winston & Zimmerman, 2003; Zimmerman, 2006). Since high achieving students (defined by SAT scores and high school GPA), as well as students with more social capital, tend to be concentrated in more selective institutions (Buchmann et al., 2010; Rivera, 2015), it is essential to consider peer characteristics as a mechanism through which selective institutions influence intergenerational mobility.

In first examining the complicated nature of peer effects, Goethals and colleagues (1999) examined the assumption that students learn better in the presence of more able students. Under this assumption, students are considered both an indicator of quality education as well as a contributor. Operating under this assumption justifies the emphasis placed on high admissions standards by institutions; by admitting the most academically qualified students possible, institutions seek to enhance the academic achievement of all students. As Winston and Zimmerman (2003) articulated, institutions are "bidding for peer quality inputs" (p. 10), through their recruitment process, with wealthier, prestigious

institutions having more success. These processes lead to the non-random formation of peer groups and the inequitable allocation of resources across institutions, making examining the direct influence of peers difficult (de Roux & Riehl, 2019; Stinebricker & Stinebricker, 2006). Students who attend the most selective colleges typically experience peers with higher academic preparation and high levels of resource allocation (de Roux & Riehl).

In examining peer effect, researchers measure peer academic *quality* using SAT or ACT scores, with student GPA as the outcome measure. As noted, previously SAT and ACT scores are problematic measures of student abilities since they are heavily influenced by a student's socioeconomic background (Buchmann et al., 2010; Dixon-Roman et al., 2013), making any conclusions drawn from their usage questionable. There is also an inherent selectivity bias since students choose to be around others who are more similar to them. To overcome this bias, roommate matches within residence halls are typically analyzed, as they can be randomly assigned. The research around the effect of peers hypothesizes the influence of peers from two directions. The first is that academically stronger peers will positively influence others' academic efforts and performance. The second is that weak peers might also bring down the academic efforts and performance of stronger peers. In their initial study, Winston and Zimmerman (2003) found evidence of both directions of influence. However, it was students whose academic ability was in the middle of the distribution for the institution that were the most susceptible to peer influence. However, Stinebricker and Stinebricker (2006) found limited evidence that observable roommate characteristics influenced first-year grade performance.

It should also be noted that researchers conducted the initial studies on peer effects at small, selective institutions (Williams College and Dartmouth College), so the generalizability is limited for more diverse institutional settings (Goethels et al., 1999; Winston & Zimmerman, 2003). More recent research has found that students are not equally influenced by all peers and that friends and classmates may be more influential than roommates (Lin, 2010; Luppino & Sander, 2015; Ost, 2010). In a study specifically looking at peer effects within science majors in the University of California system, Luppino and Sanders sought to evaluate the effect of congruency between individuals' academic ability and the academic ability of the students majoring in science as a whole (commonly referred to as mismatch theory). Findings from this study indicated that students attending institutions with stronger peers in science were less likely to graduate with a science degree. Conversely, students attending an institution with strong peers in the non-sciences were more likely to graduate with a science degree. These findings indicated the presence of contextual institutional factors that may influence student outcomes in addition to the direct influence of peers. Additionally, Ost examined the influence of peers in individual science courses, finding that students were more likely to persist in life science courses when their peers were also likely to persist and that students with the least academic preparation were influenced the most by more academically prepared students. Ost's study also indicated that there were differences in the effect of peers by gender, a finding that is consistent with other studies (Ficano, 2012; Ost; Stinebricker & Stinebricker, 2006); although there is disagreement across these studies over which genders are more influential, with the influence perhaps being impacted by the students' major.

2.3.3. Institutional Prestige

The third institutional element that could contribute to the connection between selectivity and student outcomes is institutional prestige. As discussed previously, selectivity is based primarily on admissions criteria, while prestige is associated with the image and reputation associated with an institution. Prestige is measured mainly through rankings created by organizations such as U.S. News and World Report (USNWR), Princeton Review, and the Time Higher Education (THE). Institutional prestige is closely tied with selectivity, as the most selective institutions also tend to be the most highly ranked. However, prestige is necessary to interrogate because, while in the minds of the public, prestige indicates quality (Kuh & Pascarella, 2004); yet, institutional rankings may not be the measures of quality they purport to be. Many of the criteria used in generating rankings may unduly benefit those institutions already viewed as highly prestigious.

A significant issue with using institutional rankings as an assessment of quality is very few of these organizations utilize metrics that measure the value added by institutions (Dill & Soo, 2005). Instead, they focus on easily accessible measures, most of which are provided by institutions. Measures used to construct institutional rankings include academic reputation, student selectivity (number of students admitted versus the number who applied), faculty resources, graduation and retention rates, financial resources, etc. (Ehrenberg, 2002). However, several studies have demonstrated that institutional rankings can be predicted based on SAT/ACT scores alone (Kuh & Pascarella, 2004; Webster, 2001). This result is not surprising, as improving an institution's ranking increases not only the number of students applying but also the

academic quality of students applying (O'Meara, 2007; Meredith, 2004). Differences between institutions also tend to be statistically insignificant, with no objective way to determine if the metrics are accurate or meaningful (Hazelkorn, 2015). The weight given to the assessment of reputation by peer institutions and guidance counselors is especially troubling due to the lack of transparency in their calculation or who is providing the assessment. Rankings also become a "self-fulfilling metric" as institutions that are already well known will continue to be highly ranked due to their preexisting name recognition (Hazelkorn, p. 7).

Students and families often prioritize selectivity in the college choice process relying heavily on institutional rankings as a means of assessing institutions (Alter & Reback, 2014); creating a cycle where selective institutions attract more students, and enhancing selectivity through increased demand (Bowman & Bastedo, 2009; Griffith & Rask, 2007). While utilizing factors included in rankings – such as quality of the campus resources and incoming students – is worth considering when choosing an institution, these should not be the only measures utilized. Additionally, many institutions seek to bolster their prestige in an attempt to improve their rankings by participating in prestige seeking behaviors, such as increasing admissions standards, investing in fancy amenities, and recruiting highly sought-after faculty (Brealt & Callejo Perez, 2012; Jacob et al., 2013; Meara, 2007). Collegiate athletics is another area that institutions can direct resources towards in an attempt to increase the demand and prestige of their institutions (Weaver, 2010). However, some of these prestige-seeking behaviors may compromise academic quality by diverting resources towards activities intended to enhance perceptions of the institution and away from activities that support student learning

(Brealt & Callejo Perez; Pérez-Peña & Slotnik, 2012). In recent decades, prestige seeking behaviors by institutions attempting to move up the rankings hierarchy have been the most detrimental to students from lower socioeconomic backgrounds as institutions have shifted from need-based to merit-based aid (O'Meara, 2007). The shift in aid is the result of institutions attempting to draw in high achieving (at least on standardized tests) and wealthier students who can boost the institution's rankings, in addition to their bottom line (Burd, 2013).

While prestige, like selectivity, may not account for institutional quality, it may influence outcomes through one of two avenues. The first is that due to the demand created through name recognition and prestige-seeking activities, these institutions can admit students who are more likely to succeed in higher education due to their academic preparation and existing social and cultural advantages. In other words, by enhancing the level of prestige, institutions can be more selective in whom they admit and select students who would succeed both within higher education and after graduation, irrespective of the institution attended. The second influence may be the halo effect generated by the institution's reputation (Rivera, 2011). The most prestigious institutions boast a robust and well-connected network of alumni (Martin, 2013). These alumni not only contribute financially to the institution by increasing available resources but also provide connections to internships and employment opportunities for students as they transition into the workforce (Armstrong & Hamilton, 2013; Arum & Roksa, 2014). Additionally, many employers select the schools they recruit from based on the institution's reputation, giving students attending those institutions a distinct advantage in the job market, especially in elite, well-paying industries (Rivera, 2016).

2.3.4. Labor Market Transitions

Students who transition from college into the labor market is another area in which institutions may influence students' socioeconomic outcomes, with students, institutions, and employers all playing a role in the process. Researchers outside of the US have investigated students' transition into the labor market, including the role of students, institutions, and employers in the process (Asonitou, 2015; Bridgestock & Cunningham, 2014; Clarke, 2017; Tholen et al., 2013). However, this is an area of inquiry that has received less attention within the US due to the challenge of tracking students past graduation. Central to this transitional process is the question of whether or not employers place a higher value on individuals who earn a degree from more selective institutions, and if so, why?

At its essence, this question returns us to the human capital and signaling/screening theories used regularly in intergenerational mobility research. Through a human capital lens, employers would value degrees from more selective institutions because they believe that those institutions provide enhanced learning opportunities and graduates possess higher levels of skill and knowledge than those who attended less selective institutions. This was the meritocratic premise presented by Hout's (1988) study on intergenerational mobility that suggested that social and cultural capital were not a factor in hiring decisions and that the skills and qualifications of applicants were what mattered. From Hout's perspective, individuals graduating from more selective institutions experience more significant socioeconomic gains because they are better qualified for those roles.

On the other hand, signaling/screening theory would suggest that a degree from a more selective institution would *signal* individual characteristics employers find valuable when hiring, such as intrinsic motivation. In contrast to Hout (1988), Boudon (1974) and Mare (1980) both proposed that at each level of education, students experience transition points. Through each transition point, students who pass through become more similar in terms of ability, motivations, and occupational aspirations. In other words, students who successfully navigate all of the educational transition points to receive a degree from a highly selective institution are the most motivated and able. However, both human capital and signaling/screening theories operate under the assumption that it is primarily skills and abilities that account for selection into the labor market, mainly disagreeing on if those skills are inherent or produced through education. Both theories overlook the role of social and cultural capital in navigating these transition points, which influence all levels of the education system, from K-12 (Lareau, 2003), the transition from high school to college (Holland, 2019), college experiences (Armstrong & Hamilton, 2013; Stuber, 2012), and the transition into the labor market (Armstrong & Hamilton; Rivera, 2011). Specifically, Rivera disputed the idea that the labor market selects purely based on skills and ability, either inherent or generated through education, but that cultural matching between employers and candidates.

Considering the role of social and cultural capital in the transition into the labor market provides additional insights into how students, as well as their backgrounds and resources, interact with institutions and employers to place them on a pathway to intergenerational mobility. Central to the role of social and cultural capital in the transition into the labor market is the idea of employability and what skills, abilities, or

qualities are most valued in the labor market. In exploring what makes graduates employable and how institutions facilitate that employability, Holmes (2013) presented three perspectives through which to examine the relationship: graduate employability as possession; graduate employability as social positioning; and graduate employability as processual. Graduate employability as possession suggests that employability is based on individuals acquiring specific skills, similar to a human capital viewpoint. Through this perspective, institutions are responsible for ensuring students possess those skills that are either necessary or desirable by the labor market. Examples of these within the current higher education landscape include the National Association for Colleges and Employers (NACE) Competencies (n.d.), High-Impact practices (Kuh, 2008), as well as standards laid out by various accreditation bodies.

In their recent book *Paying for the Party*, Armstrong and Hamilton (2013) term the cultivation of such skills and experiences during higher education as the “professional pathway” through which students intentionally engage in activities and experiences meant to enhance their employability and smooth the transition from college to the workforce (p. 18). Such experiences include organizational leadership experience, internship experiences (often unpaid), and leveraging of academic experiences (Armstrong & Hamilton). Within institutions, many of these “professional pathways” have limited slots for students due to resource limitations, meaning if students do not step onto them early and remain on them, they may struggle to regain their progression along the pathway. Students who come to campus with already polished professional skills and an understanding of the steps required to progress along the pathway are at a distinct advantage. It should come as no surprise that parents play an essential role in helping

students to navigate and maintain progress on such pathways. Students from middle and upper-middle-class backgrounds have greater access to this type of parental support (Chase, 2020). However, even for these students, their backgrounds are not always a guarantee they will be able to successfully navigate the transitions from college into the workforce (Armstrong & Hamilton).

The second perspective presented by Holmes (2013) is graduate employability as social positioning. This perspective harkens back to the work of Bourdieu and Passeron (1997), who theorized that education privileges those who possess dominant class cultural capital and who understand the “rules of the game” necessary to succeed in the transition from higher education into the workforce. Institutions of higher education serve as a mediator between students’ backgrounds and the workforce, reinforcing existing patterns of advantage and disadvantage (Holmes). Employers utilize the hierarchy of institutions in creating their recruiting list, knowing those institutions at the top of the hierarchy will not only provide students with capabilities for the work but who are also acceptable in terms of social and cultural capital. Students attending institutions further down the institutional hierarchy may not be considered for such employment opportunities since elite firms can fill all of their recruiting needs from institutions on their *lists* (Rivera, 2016). This notion that employers select individuals not based on merit but on social and cultural capital match is supported by Rivera’s (2011; 2016) research showing how the alignment between recruiter and candidate backgrounds gives an advantage to individuals with more similar class backgrounds. This is in contrast to Hout’s perspective that individual’s skills and abilities are what matter most in securing employment (2008).

The final perspective presented by Holmes (2013) is graduate employability as processual, where higher education is viewed as only one stage in students' post-graduate trajectories and is influenced not just by social background but contextual factors outside of the individual students' control. Employability as processual acknowledges that post-graduate trajectories are diverse and influenced by gender (Patterson et al., 2017), race (Alon & Haberfeld, 2007; Gaddis, 2015; Lang & Manove, 2011), as well as class (Armstrong & Hamilton, 2013; Rivera, 2011). Parental support also plays a vital role in post-graduate trajectories. Students who have support, especially financial support from their parents, can take advantage of experiences such as unpaid internships or move to major (expensive) cities in order to pursue career opportunities (Armstrong & Hamilton). Additionally, students who graduate with higher levels of debt due to their parents not having the financial resources to pay for college are more constrained in their post-graduate employment choices due to the need to repay their loans (Gervais & Ziebarth, 2017; Velez, 2018). Institutions also differ in their ability to provide supports and resources to students in their transition into the workforce. More selective institutions may offer internship and job placement programs, as well as access to networks that can smooth the transition from college into the workforce (Armstrong & Hamilton; Mullen, 2010; Rivera, 2016).

It is worth noting that there may be considerable overlap between academic quality, peer environment, prestige, and labor market trajectories. As noted previously, more prestigious institutions can be more selective in their admissions because of the increased demand generated by being highly ranked. In theory, the ability to be more selective would improve the academic *strength* of students admitted (as measured by

SAT/ACT and high school GPA). However, there is evidence to suggest a student's ability to pay may be a factor in the selection process rather than merit alone (Lieber, 2019). With prestige also come more resources, allowing institutions to hire more tenure-track faculty, offer more courses and sections, provide more academic support resources, and focus more acutely on the central mission of student learning (O'Meara, 2007). Additionally, these institutions can provide more resources and support to students as they navigate the transition into the workforce, as well as leverage their substantial networks in the process.

The interrelated nature of academic quality, peer environment, prestige, and transition into the labor market leave researchers attempting to understand the role of higher education on intergenerational with an inherent challenge. How can research seeking to understand the influence of selectivity disentangle aspects of higher education such as academic and peer environment from the influence of institutional reputation generated through prestige or the influence of that reputation on labor market selection? To address this question, the following section will examine how the research and frameworks from student persistence, student engagement, and higher education ecological models help to develop a conceptual framework to understand the role of higher education in intergenerational mobility.

2.4. Understanding Intergenerational Mobility through Higher Education Research

This section builds from the previous one, drawing on literature from research on higher education outcomes and student development theory to construct a conceptual framework to utilize in the examination of the role of higher education in intergenerational mobility. Research on how higher education impacts students is an

extensive, interdisciplinary area that investigates the numerous beneficial outcomes students receive from attending college (Mayhew et al., 2016). This area of research empirically explores the complex interaction between institutions and students, providing evidence that institutional factors and student characteristics interact to produce differential outcomes. To expand the scholarly understanding of the role of higher education in intergenerational mobility, this complex interaction requires consideration; attending higher education can no longer be treated as a dichotomous experience where all students who obtain a bachelor's degree are assumed to have similar outcomes. What follows are examples of research highlighting how the interactions between students and institutions impact outcomes through theories and research focused on student persistence, student engagement, and ecological systems.

2.4.1. Student Persistence Theories

Student persistence, which is defined by the National Student Clearinghouse Research Center (2015) as “continued enrollment (or degree completion) at any institution,” is a critical component to consider in understanding intergenerational mobility, as students who do not complete their degree benefit far less from their college experience than those who graduate (Giani et al., 2019). Students who do not persist to graduation may find themselves in a more challenging economic situation, with the burden of repaying student loans, but without the access to high-paying employment opportunities that require a degree (Hillman, 2014). Tinto's (1993) institutional departure model has served as a foundational theory for understanding a student's decision to remain in or depart from higher education. The model focuses on the importance of students integrating into both the academic and social aspects of the college community

and adopting the values, norms, and behaviors of that community. The institutional departure model seeks to demonstrate how students' interactions with the institution impact their eventual decision to retain or drop out; the model takes into consideration students' pre-entry attributes, intentions, external communities, and institutional experiences on this decision.

However, Tinto's (1993) model presents a normative focus on traditional students at residential institutions and lacks consideration of students from minoritized backgrounds. In seeking to expand on the institutional departure model, Bean and Metzner (1985) focused on non-traditional students to develop their conceptual model of nontraditional undergraduate student attrition. The researchers defined nontraditional students as "students who have a lessened intensity and duration of their interaction with the primary agents of socialization (faculty, peers) at institutions they attend" (Bean & Metzner, p. 488). Unlike Tinto's model, the conceptual model of attrition incorporated external environmental factors, finding that strong environmental supports compensated for weak academic support, as well as low levels of academic success. These findings were further confirmed by Cabrera et al. (1992), who examined the convergence of Tinto's and Bean and Metzner's model, concluding persistence was affected by a successful match between students and institutions, and that external factors including parental approval had a strong indirect influence on that match.

Additionally, several scholars have criticized Tinto's (1993) model for the failure to recognize cultural variables that might influence persistence (Guiffrida, 2006; Hurtado & Carter, 1997; Nora, 2002; Tierney, 1992). As Guiffrida points out, Tinto's model is inapplicable to students from minoritized backgrounds because it describes the

developmental process within predominantly White culture. The core of the model encourages detachment from cultural traditions and supportive relationships, which may be significant in the success of students from minoritized backgrounds (Guiffrida; Yosso, 2005). In proposing a more culturally relevant model, Guiffrida suggests editing the model to focus on connection instead of integration, as connection recognizes students' relationship to the institution without requiring students to break ties to their former community. Additionally, to make the model more culturally sensitive, a student's cultural connections and motivational orientation should be considered, as well as the influence on individualist and collectivist cultural norms on those orientations (Guiffrida; Kuh & Love, 2000).

In examining factors that influence persistence, student completion is impacted by the intersectionality of various combinations of socio-demographic, academic achievement, familial, experiential, and institutional characteristics (Oseguera, 2005). For example, student academic performance, typically measured by student GPA, is an area that has received significant study and is one of the strongest predictors of persistence (Pascarella & Terenzini, 2005). However, delving deeper into activities that impacted GPA, Schudde (2013) found significant differences across socioeconomic status. Engagement with faculty members was found to be related to higher GPAs for students from high-income families in their first year but was related to lower GPAs for students from low-income families. Likewise, low-income students did not receive a boost from participating in study groups, joining a student club, or meeting with an advisor, all of which had the opposite effect on high-income students. This study suggests it is high-income students who reap the academic performance rewards of utilizing traditional

institutional resources, not necessarily low-income students. Socioeconomic status can also impact the academic choices available to students, such as the number of credits taken per year; students who take full credit loads are more likely to persist to graduation (Pfeffer & Goldrick-Rab, 2011). The study by Pfeffer and Goldrick-Rab again found significant differences between socioeconomic classes. Students from higher socioeconomic backgrounds were more likely to persist to graduation, even when taking lower credit loads than their low-income counterparts. In other words, not taking a full credit load was more detrimental to students' likelihood of persisting for students from lower socioeconomic backgrounds.

Faculty and peer relationships have also stood out as having a significant role in student persistence through their role in facilitating connections to the academic environment (Hong et al., 2011; Schreiner et al., 2011). Faculty mentorship is especially crucial for students from minoritized backgrounds (Brooms & Davis, 2017; Crisp & Cruz, 2009; Newman, 2011; Patton & Harper, 2004). Students' connection to institutions is facilitated through institutions manifesting a sense of concern for the growth and development of their students through the actions of faculty, staff, and administrators (Braxton et al., 2004). Quality interactions between students and faculty can increase students' confidence in the institution (Bean & Eaton, 2000), and in turn, students' self-confidence that they can succeed in the environment (Braxton et al.). However, some research suggests that students who are the first in their family to attend college or come from lower socioeconomic backgrounds may be less likely to seek out these beneficial relationships (Kuh & Hu, 2001), which may be due to a lack of supportiveness from the institution (Schademan & Thompson, 2015). Like faculty, peers contribute to the social

system of institutions and can influence the degree to which students feel a fit between themselves and the institution (Wolniak et al., 2012).

2.4.2. Student Engagement Theories

Student engagement theories broadly refer to “students’ exposure to and participation in a constellation of effective educational practices at colleges and universities” (McCormick et al., 2013, p. 47). Student engagement theories emerged in the 1990s through the work of George Kuh and the National Survey of Student Involvement, which sought to provide a new way of conceptualizing and assessing educational quality (Kuh, 2001, 2009). Kuh’s work built on the foundation of work by Alexander Astin (1999) in his original work student involvement model, defining involvement as “the amount of physical and psychological energy that the student devotes to the academic experience” (p. 518). This theory proposes that the amount a student is involved in college is positively related to student outcomes such as learning and personal development, which are, in turn, related to persistence and graduation (Milem & Berger, 1997). Astin (1984) suggests that the “effectiveness of any educational policy or practice is directly related to the capacity of that policy or practice to increase student involvement” (p. 519), or as Kuh and colleagues (2007) stated:

Student engagement represents two critical features. The first is the amount of time and effort students put into their studies and other educationally purposeful activities...the second component of student engagement is how the institution deploys its resources and organizes the curriculum, other learning opportunities, and support services to induce students to participate in activities that lead to the

experiences and desired outcomes such as persistence, satisfaction, learning and graduation. (p. 44)

This definition places the responsibility not just on students to engage, but on institutions to intentionally provide opportunities for and engage students in educationally purposeful activities. As Quaye and Harper (2014) emphasize, it is especially critical for institutions to foster conditions for students to engage in college in different ways than when they served a more homogenous population; institutions cannot just provide opportunities for students and assume they will engage and interact with diverse peers. Instead, institutions must be intentional and thoughtful in creating a customized educational experience that acknowledges the diverse backgrounds and experience of the current populations and connect them with campus (Quaye & Harper). Supporting this emphasis, Hall et al. (2011) found that engaging with diverse peers is a learned behavior shaped by pre-college experiences; meaning that students, especially White students who have less engagement with diverse peers before college, may need institutions to provide intentional opportunities to learn how to engage with students from more diverse backgrounds, especially in the first year.

There exists extensive research demonstrating the benefits of student engagement, including cognitive gains, inter- and intra-personal development, academic achievement, persistence, and future civic engagement (Mayhew et al., 2016). Specifically examining the influence of engagement on post-graduation outcomes such as earnings, studies have indicated a general positive influence from being engaged. However, there are differences in post-graduate earnings based on student-level factors, including gender, race/ethnicity, and students' choice of major (Hu & Wolniak, 2013; Wolniak & Engberg,

2019). High-impact practices, defined as “teaching and learning practices that have been widely tested and are beneficial for college students from many backgrounds” (Kuh, 2008, p. 21), were found to differ in their impact on initial earnings based on major choice (Wolniak & Engberg). From these findings, the researchers suggested it is the alignment between students’ major, high impact practice, and career interests that lead to positive earnings, rather than the high-impact practice or major alone. In a meta-analysis of research on the relationship between social class and social integration, a form of campus engagement, Rubin (2012) found that across 35 studies, students from working-class backgrounds were less likely to participate in formal or informal campus activities and overall felt less integrated into their institution.

In examining the role of faculty on student’s engagement in introductory STEM courses, Gasiewski and colleagues (2011) found that students were more engaged in the course experience when the instructor demonstrated an openness to questions and openly articulated their role in students’ success. More engaged students were also more likely to seek out help in the course and access additional support resources. A study by Schudde (2013) also found engagement with faculty members to be related to higher GPAs for students from high-income families in their first year. However, engagement was related to lower GPAs for students from low-income families. Likewise, low-income students did not receive a boost from participating in study groups, joining a student club, or meeting with an advisor, all of which had the opposite effect on high-income students. This study suggests it is high-income students who reap the academic performance rewards of utilizing institutional resources, not necessarily low-income students. The

disparate impact of engagement between high and low-income students may be due to the mismatch between the cultural norms of college and student's expectations.

2.4.3. Ecological Systems Theories

Ecological systems theories (EST) further our understanding of students' experiences within higher education institutions presented by student persistence and engagement theories by emphasizing the complex educational ecosystem that influences students' experiences and outcomes. The foundational EST comes from Bronfenbrenner (1994), exploring the interaction between students and context and how that interaction shapes their experience. The theory highlights the interconnection and active engagement between humans and their environments. More recent scholarship has suggested that EST models are a more comprehensive way to conceptualize and understand students' experiences (Renn, 2003). These models serve an essential role in shifting the focus of research on student outcomes from focusing on students and their behaviors to the behaviors of institutions. The shift to focusing on institutions is important, as focusing solely on the behaviors of students when examining higher education outcomes can perpetuate a deficit perspective. Instead of examining student outcomes through a lens of what students are or are not doing that might impact persistence, graduation, or post-graduation outcomes, EST models examine the context and environment students experience and the responsibility of institutions in creating environments in which all students can thrive.

Focusing on how organizational elements of higher education impact students, Berger and Milem (2000) utilized organizational theory to create a multidimensional model of organizational behavior to understand how students' interaction with campus

environments impacted their behavior. In creating the model, the researchers looked beyond structural-demographic features (size, control, selectivity, Carnegie type, location, etc.) of institutions and considered organizational behavior categories (bureaucratic, collegial, political, symbolic, and systemic) to examine how institutions interact with student characteristics to impact outcomes (Berger & Milem, 2000). The shift away from structural-demographic features emphasized the effects of institutions on student outcomes are more a function of what they do and how they do it than what they are (i.e., public vs. private). The model included student peer group characteristics and student experiences, including both behaviors and perceptions, as mediating factors between institutional characteristics and student outcomes.

In using the model to examine student persistence, Berger (2000) noted that organizations that were perceived by students to fall into the collegial, symbolic, or systemic categories of behavior appeared to enhance students' persistence. However, the mechanisms through which persistence was enhanced differed between the categories. For instance, collegial institutions created a sense of fairness and inclusion in the decision process through communication and encouraging participation in the process. In contrast, symbolic institutions focused on history and tradition as a way to nurture a sense of shared meaning and culture, which led to students feeling more integrated within the institutional environment. Institutions that fit the systemic profile tended to align their resources to support student success, integrating different levels of the organization, also leveraging external constituencies to assist in the placement of students into prestigious graduate schools and employment opportunities (Berger). Conversely, organizations that tended to be more political or bureaucratic either had adverse or mixed effects on student

outcomes. Berger and Milem (2000) also noted that institutions with relatively stable and strong organizational cultures tend to attract a more homogenous student body, which in turn reinforces the institutional culture and character. This type of homogenous environment (most likely dominated by White middle/upper-class students) may feel alienating for students from lower socioeconomic backgrounds, making their adjustment to campus more challenging.

To examine the interaction between institutions and students from diverse backgrounds, Hurtado and colleagues (2012) created the multi-contextual model for diverse learning environments (MMDLE) as a conceptual framework used to understand the impact of campus climate on the learning and development of students (Hurtado et al.). The model centers the multiple social identities of students and the dynamics of how those identities interact with both curricular and co-curricular experiences, influencing students' perceptions of the overall campus climate. MMDLE conceptualizes campus climate as a multidimensional concept made up of institutional-level (historical legacy, organizational structure, and compositional diversity) and individual-level (psychological perceptions and behavioral experiences) dimensions. Hurtado and colleagues' MMDLE was initially intended to measure campus climate as it relates to race, explicitly naming the "pervasive, systemic, and ordinary nature of racism" still inherent within higher education institutions (p. 60). The model uses power and privilege to examine how different dimensions of the institution are influenced by and contribute to the campus climate. However, it is a lens that could be adapted to understand the experiences of other students from underserved populations within institutions of higher education. With higher education institutions enrolling an ever more diverse student population (The Pell

Institute, 2019), Hurtado and colleagues' model provides a lens through which to understand how students from diverse backgrounds experience institutions.

While there are limited studies that have utilized Hurtado and colleagues' (2012) model for understanding student outcomes (Crisp et al., 2015), there are some studies that suggest the importance of this model for this area of research. In one study, positive perceptions of campus climate (as welcoming, friendly, respectful) increased students' commitment to the institution and increased the likelihood that students would return for their second year (Johnson et al., 2014). Museus et al. (2008) also found that institutional racial climates were directly related to students' degree completion. Additionally, in a systematic review of factors related to outcomes for Latinx undergraduate students, Crisp and colleagues (2015) stressed the interconnected nature of students and institutions throughout the process and the importance of connecting the MMDLE with persistence and other academic outcomes. Similarly, Arana et al. (2011) found that student context (family and first-generation status) and institutional context (hurdles and barriers experienced) influenced students' persistence and that the interaction between student and institutional context was also crucial in the process.

Finally, the conceptual model of student success created by Perna and Thomas (2006) combines research across the disciplines of education, psychology, sociology, and economics to theorize mechanisms through which students achieve success within higher education. The model highlights the multiple levels of context that shape student success, including the student's internal context, family context, school context, and social, economic, and policy context. While there is overlap between the elements of this model and those included in the other frameworks presented, the layer of social, economic, and

policy context is unique and essential to understanding student success. Including the social, economic, and policy context acknowledges that while these factors may appear external to higher education, they can have drastic impacts on student's ability to succeed. State and federal policies impact higher education funding, financial aid, Pell Grants, TRIO programs, and work-study, all of which have a direct impact on students from lower socioeconomic backgrounds (Mitchell et al., 2017; Mitchell et al., 2019). The ability of students to finance their education and the amount of debt necessary to complete a degree is especially important; without this financial support, many students from lower socioeconomic backgrounds would be unable to complete college (Goldrick-Rab et al., 2016).

Each of these theoretical frameworks provides essential elements related to students' ability to succeed in higher education to include in studies of intergenerational mobility. By utilizing both student and institutional elements from these theories, researchers can explore, at a deeper level, how attending higher education might impact students' ability to achieve upward intergenerational mobility. To clarify how these models might be integrated to study intergenerational mobility, the next section will propose a new theoretical model to guide this study.

2.5. Reconceptualizing the Role of Higher Education in Intergenerational Mobility Research

To truly understand the role of higher education in disrupting the persistence of socioeconomic status, we need different theoretical models and methodological approaches to build a more complete picture of how higher education influences mobility. As Torche (2011) articulated, "In spite of the empirical relevance, the

mechanisms leading to a weak intergenerational association among college graduates have been scarcely explored and theorized” (p. 798). Many students and their families choose to take on debt to pursue higher education, with the belief that obtaining a bachelor’s degree will provide higher levels of socioeconomic status. However, as the research above highlights, this is a more complicated outcome than is typically presented by institutions and policymakers. Students experience different economic outcomes based on individual characteristics, the type of institution they attend, the major they choose, and the opportunities they engage in while enrolled (Altonji et al., 2012; Benson et al., 2017; Hilmer & Hilmer, 2012; Hu & Wolniak, 2013; Melguizio & Wolniak, 2012; Wolniak & Engberg, 2019).

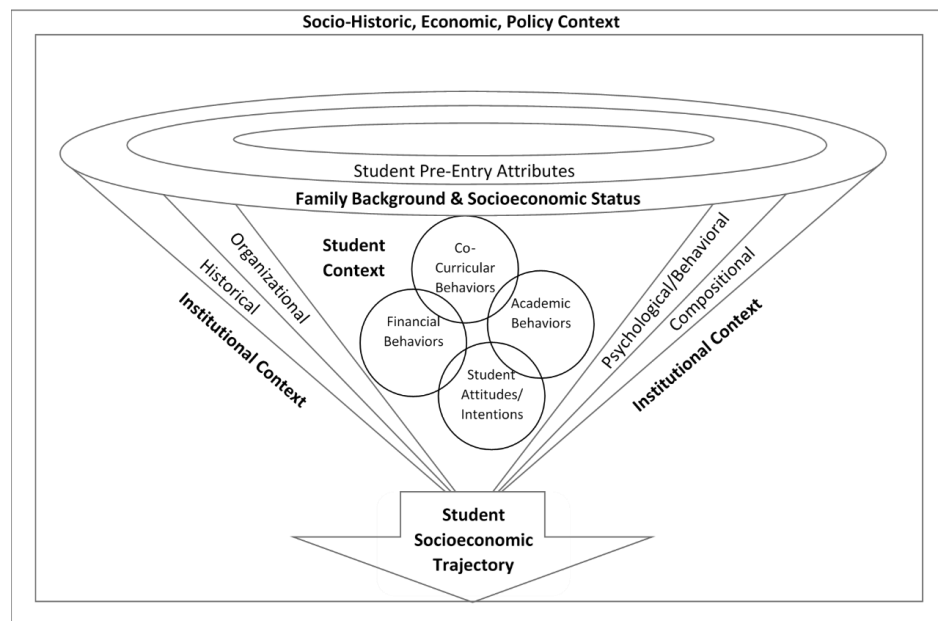
2.5.1. An Integrative Model of Higher Education and Intergenerational Mobility

This review of literature has given an overview of the existing research and frameworks used to examine intergenerational mobility, explored the potential explanations for the role of institutional selectivity in intergenerational mobility, and articulated how research from student persistence, student engagement, and higher education ecological models could be utilized to understand the role of higher education in intergenerational mobility. From a theoretical perspective, a more integrative approach across disciplines is needed to achieve a better understanding of the role of higher education in disrupting socioeconomic status. For this purpose, the model below (Figure 3) will serve as a conceptual framework for this study as a way to integrate research on higher education outcomes with that on intergenerational mobility. This holistic model provides a visual of how student and institutional characteristics interact, as well as how that interaction influences the pathways students take following graduation –

incorporating elements from the theories and research above to illustrate the complicated relationship between intergenerational mobility and higher education.

Figure 3

Integrative Model of Higher Education and Intergenerational Mobility



In this model, students enter higher education through the context of their family's socioeconomic status, which has a direct impact on students' pre-entry attributes such as academic preparation, test scores, goals, institution selection, etc. (Crosnoe & Muller, 2014; Dixon-Roman et al., 2013). Upon entry into the institutional context, students do not merely detach from their family background or their pre-entry characteristics. However, as students become more connected with their academic community, these influences and characteristics may lessen. The institutional context includes elements from both Hurtado and colleagues MMDLE model (2012) and Berger and Milem's (2000) conceptual model for researching the organizational impact on

student outcomes. These models help to define the institutional context, not just in terms of structural-demographic features, but as a multidimensional environment made up of institutional-level (historical legacy, organizational structure, and compositional diversity) and individual-level (psychological perceptions and behavioral experiences) dimensions.

Additionally, the institutional context in this model interacts with the student and family context to shape students' experience within higher education. The student context pulls from Tinto (1993), Astin (1999), and Perna and Thomas (2006) to conceptualize the complex nature of a student's experiences within higher education. Students' academic, financial, and co-curricular behaviors, as well as their attitudes and intentions, interweave to impact their pathway through the institution and to their socioeconomic status following graduation. Finally, all of these elements are situated within the socio-historic, economic, and policy context that influences all aspects of this model. This model serves to highlight that students do not merely pass through institutions on their way to higher-socioeconomic status but are fundamentally altered by their interactions within institutions. This relationship between students and institutions then impacts their post-graduation outcomes, including socioeconomic status.

CHAPTER 3: METHODS

In the introduction of this study, I outlined the importance of understanding the role of higher education in intergenerational mobility, followed by the review of literature, which overviewed the gaps in current research and proposed how a more interdisciplinary approach to close these gaps. However, limitations in currently available data inhibit the analysis of institutional characteristics and longitudinal student outcomes that could facilitate the study of the relationship between institutions and intergenerational mobility. Chetty and colleague's (2017a) study is one of the few studies that has attempted this level of analysis. However, in conducting the study, the researchers operated under a federal contract allowing them access to federal tax records connected to parent's and children's 1040 and W-2 forms, as well as 1098T forms to conduct their analysis. This type of longitudinal individual and family level data is not currently available to all researchers, making expanding on their work difficult. More accessible federal datasets, such as the Baccalaureate and Beyond Longitudinal Study (NCES, 2012), capture some elements of the interaction between students and institutions but currently only have student data available four years after graduation. The lack of more long-term measurement of individuals' post-graduation trajectories makes analysis of the role of higher education in intergenerational mobility difficult. As stated in the review of literature, measuring socioeconomic status at only one point in time or too early in an individual's life can lead to life-cycle bias, making any conclusions drawn from the research inaccurate.

Due to the data limitations detailed above, this study did not attempt to measure intergenerational mobility directly; instead, I sought to further this area of inquiry while

working within current data constraints. The primary objective of this study was twofold. First, to begin to expand on the work of Chetty and colleagues (2017a) by exploring what institutional factors, specifically related to institutional quality, might impact the institutional intergenerational mobility rates captured in the study. The second purpose was to expand on previous research on educational labor market outcomes, to investigate the impact of institutions on post-graduation socioeconomic trajectories as a proxy for intergenerational mobility. The questions and hypotheses that guided this analysis include:

Research Questions:

1. To what extent do institutional factors associated with institutional quality mediated through the peer environment account for variances in intergenerational mobility rates across institutions?
2. To what extent do college graduates cluster into meaningful groups based on socioeconomic indicators?
3. To what extent do measures of institutional quality, peer environment, and intergenerational mobility rates predict the probability of college graduates' socioeconomic grouping?
4. How do the above results differ when accounting for the institution's compositional racial diversity of faculty and staff?

Hypotheses

1. I hypothesize that institutional factors associated with institutional quality mediated through the peer environment account for variance in intergenerational mobility rates across institutions.

2. I hypothesize that college graduates will cluster into meaningful groups based on socioeconomic indicators.
3. I hypothesize measures of institutional quality, peer environment, and intergenerational mobility rates will significantly predict the probability of college graduates' socioeconomic grouping.
4. I hypothesize that there will be a significant difference in results when accounting for the institution's compositional racial diversity of faculty and staff?

Utilizing secondary data from the third cohort of the NCES Baccalaureate and Beyond Longitudinal Study, The Integrated Postsecondary Education Data System (IPEDS), and Opportunity Insights (2017), this study employed multilevel structural equation modeling and latent class analysis techniques to analyze the research questions presented above. What follows is an overview of the sample used in the study, as well as a summary and explanation of the methods used. In addition, the steps used in each analysis to answer the above research questions are detailed, including how measures were operationalized and controlled for within the analysis.

3.1. Secondary Data

Data for this research study was drawn from three data sources: the third cohort of the NCES Baccalaureate and Beyond Longitudinal Study (B&B:08/12); The Integrated Postsecondary Education Data System (IPEDS, 2008); and Opportunity Insights (Chetty et al., 2017b) publicly available data. Each of these datasets utilizes the institution's Office of Postsecondary Education Identification (OPEID) code, allowing for institutional variables to be matched across datasets. The following sections provide more

details on each of these datasets, including sampling techniques, descriptive statistics, and rationale for selection.

3.1.1. Baccalaureate and Beyond Sample Overview

For this study, I utilized data from the third cohort from the B&B:08/12 dataset using a restricted data license obtained from NCES. Institutions included in this dataset were first selected from the 2008 National Postsecondary Aid Study (NPSAS:08), resulting in a sample of 1940 eligible institutions, of which 1,730 provided enrollment lists. A breakdown of sampled and eligible institutions and enrollment list participation rates is included below in Table 1.

Table 1

NPSAS:08 sampled and eligible institutions and enrollment list participation rates, by institution characteristics: 2007-08

Institution characteristics	Sampled institutions	Eligible institutions	Institutions providing lists		
			Number	Unweighted percent	Weighted percent
All institutions	1,960	1,940	1,730	89.0	90.1
Institution level					
Less-than-2-year	130	120	100	82.6	83.2
2-year	570	560	510	89.7	90.7
4-year non-doctoral	700	700	630	89.7	91.9
4-year doctoral	560	560	500	88.8	88.6
Institution control					
Public	960	960	880	91.9	91.2
Private non-profit	650	640	560	87.4	86.7
For-profit	350	340	290	83.6	88.2
Institution type					
Public					
Less-than-2-year	20	20	20	90.9	93.2
2-year	450	450	410	91.7	91.2

4-year non- doctoral	200	200	190	94.4	95.4
4-year doctoral	290	290	260	90.7	89.2
Private nonprofit					
Less-than-4-year	20	20	20	84.2	84.7
4-year non- doctoral	370	370	320	88.2	87.9
4-year doctoral	260	260	230	86.5	85.9
For-profit					
Less-than-2-year	100	90	70	80.4	81.0
2-year or more	260	250	210	84.8	90.2

Note. Reproduced from “NPSAS:08 sampled and eligible institutions and enrollment list participation rates, by institution characteristics: 2007-08,” by Cominole, M., Shepherd, B., and Siegel, P. (2015). 2008/12 Baccalaureate and Beyond Longitudinal Study (B&B:08/12) Data File Documentation (NCES 2015-141). U.S. Department of Education. Washington, DC: National Center for Education Statistics. <http://nces.ed.gov/pubsearch>.

From this institutional sample, students were sampled by stratified systematic sampling with predetermined sampling rates by student stratum. The B&B:08/12 dataset includes students who completed the requirements for a bachelor’s degree between July 1, 2007, and June 30, 2008, at any Title IV eligible postsecondary institution in the US and Puerto Rico (NCES, 2012). The study consisted of follow-up interviews with participants in both 2009 and 2012 and contains variables related to student characteristics, family background characteristics, financial information for both students and parents, as well as postgraduate outcomes and institutional factors. NPSAS:08 oversampled potential bachelor’s degree recipients to ensure a sufficient number of students were available to be included in B&B:08/12. Within this larger sample, researchers under-sampled business majors and oversampled STEM and education majors, National Science and Mathematics Access to Retain Talent (SMART) Grant recipients, and Academic Competitiveness Grant (ACG) recipients (NCES, 2012). Finally, sample members were confirmed as having completed a bachelor’s degree during the 2007/2008 academic year

in the first interview, resulting in a sample of 17,160 students. A breakdown of both eligible and participating students can be found in Table 2.

Table 2

NPSAS:08 sampled and eligible students and response rates, by institution characteristics: 2007-08

Institution characteristics	Sampled institutions	Eligible institutions	Study respondents	
			Unweighted percent	Weighted percent
All students	137,800	132,800	96.2	95.7
Institution level				
Less-than-2-year	8,820	7,950	95.0	96.7
2-year	43,460	40,770	93.3	92.5
4-year non-doctoral-granting	37,930	37,140	97.8	97.6
4-year doctorate granting	47,590	46,940	97.6	97.6
Institution control				
Public	87,470	84,240	95.3	94.9
Private non-profit	32,760	31,950	97.7	97.3
For-profit	17,570	16,610	97.6	98.5
Institution type				
Public				
Less-than-2-year	1,730	1,480	90.0	88.9
2-year	39,340	37,010	92.8	92.2
4-year non-doctoral	16,120	15,850	98.0	98.1
4-year doctoral	30,280	29,910	97.3	97.4
Private nonprofit				
Less-than-4-year	2,080	1,790	97.0	97.7
4-year non-doctoral	14,200	13,930	97.3	96.8
4-year doctorate granting	16,480	16,230	98.0	97.8
For-profit				
Less-than-2-year	6,610	6,050	96.1	97.6
2-year or more	10,960	10,560	98.5	98.7

Note. Reproduced from "NPSAS:08 sampled and eligible institutions and enrollment list participation rates, by institution characteristics: 2007-08" (Cominole, M., Shepherd, B., & Siegel, P. (2015)). 2008/12 Baccalaureate and Beyond Longitudinal Study (B&B:08/12) Data File Documentation (NCES 2015-141). U.S. Department of Education. Washington, DC: National Center for Education Statistics. <http://nces.ed.gov/pubsearch>.

Data were collected using a single web-based instrument to conduct both self- and interviewer-administered interviews, utilizing a responsive design data collection technique to reduce bias due to non-response. Following the initial interview, students were matched with other data from the Central Processing System (CPS), National Student Loan Data System (NSLDS), and the National Student Clearinghouse (NSC) to combine data from the interviews with student records from these data systems. Data analysts at NCES imputed missing data for derived variables using mass imputation procedures (Krotki et al., 2005) and the weighted sequential hot-deck method (Cox 1980; Iannacchione, 1982). Variables utilized from B&B:08/12 are detailed in Table 3 below.

Table 3

Description of Variables from Baccalaureate and Beyond 08/12

Variable Name	Description
Academic probation	Student was placed on academic probation at least once
Annual salary	Annual salary or non-annual wage converted into annual salary
Credits earned vs. attempted	Average number of credits earned versus attempted by the student
Dean's list	Student was on the Dean's list
Employer benefits	Employer provides any kind of benefits
GPA	Student's overall GPA at graduation in 2008
Homeownership	Student owns a home
Hours Studying	Average number of hours student spent on schoolwork each week
Incomplete grades	Students received at least one incomplete grade
Job satisfaction	Are students satisfied with their employment
Number of jobs	Number of jobs student was working after graduation
Repeated a course	Student repeated at least one course
Stopped out	Student stopped out at least once
Unemployment	Percent of time unemployed between bachelor's degree award and interview (09 or 12)

SOURCE: U.S. Department of Education, National Center for Education Statistics, 2008/12 Baccalaureate and Beyond Longitudinal Study (B&B:08/12).

3.1.2. Integrated Postsecondary Education Data System (IPEDS)

IPEDS is a universe survey from the NCES core postsecondary education data collection program. Data for IPEDS is collected from every college, university, and technical/vocational institution that is eligible for Title IV funding (student financial aid) and is required by the federal government. The requirement to provide data to IPEDS means that this dataset includes information from almost all institutions of higher education within the US. Institutional information collected through IPEDS includes institutional characteristics, admissions, enrollment, graduation, financial, as well as human resource data.

Data is self-reported on an annual basis by institutions through an online data portal, then reviewed and validated by NCES data scientists. Data collection occurs in waves throughout the academic year and varies based on institutions' enrollment cycle and academic calendar (e.g., semester, quarter, other). Due to the amount of data collected through IPEDS, data is first publicly released as provisional data nine months after data collection closes. Provisional data has undergone all quality control procedures, including validation, but institutions can still make changes. Final IPEDS data is available approximately nine months after institutions have revised their data for the following year. For this study, the below institutional variables will be drawn from the 2007/2008 IPEDS data (NCES, 2008). The 2008 IPEDS data corresponds with the year that students included in the B&B:08/12 graduated from their respective institutions, making it the most relevant data collection for those students. The variables that will be utilized from or created from IPEDS variables are detailed in Table 4 below.

Table 4*Description of Variables from IPEDS*

Variable Name	Description
Admit rate	Percent of applicants admitted
Average faculty salary	Reported average faculty salary across all classifications
Endowment	Institutional endowment
Faculty tenure ratio	Ratio of the combination of tenured and tenured track faculty compared to the number of non-tenure-track
Graduation Rates	Percent of student graduating within 6 years
Median SAT	Median SAT Score
Academic expenditures	Percent of expenditures allocated to instructional and student support services
Research expenditures	Percent of expenditures allocated to support research activities
Retention rate	Percent of students retained between first and second year
Student to faculty ratio	Full-time equivalent (FTE) students divided by Full-time equivalent (FTE) faculty
Yield Rate	Percent of admitted students who enroll

SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), Fall 2008.

3.1.3. Opportunity Insights Data

Opportunity Insights is a nonprofit research project based out of Harvard University and directed by Raj Chetty, John Friedman, and Nathaniel Hendren. The purpose of the organization is to use big data to improve upward mobility and create policy change. In 2017, the research team created mobility rates for all institutions within the US, operating under a federal grant that facilitated access to individual tax information. To construct the universe of individuals in the sample, researchers began with the Death Master produced by the Social Security Administration, which includes information on birth and gender for all individuals in the US with a Social Security Number (SSN) or Individual Taxpayer Identification Number (ITIN).

To define the sample of students, Chetty and colleagues began from a set of individuals born in the 1980-1991 cohorts. The Internal Revenue Service (IRS) databank was used for measures of parent and child income, college attendance, and all other variables. Parents were defined as the person(s) who claimed the child as a dependent on a 1040 tax form in the year the child was 17 and was not limited to biological parents. If children were not considered dependents at the age of 17, the researchers traced back tax records until a parent was identified. Parents with negative family income were discarded from the sample. To define college attendance, 1098-T records, and National Student Loan Data System (NSLDS) Pell grant recipient records for the 1999-2013 calendar years were used. The resulting sample consisted of 30 million college students. For a more detailed description of sample construction and analysis, see Chetty et al. (2017a). Variables utilized from the Opportunity Insights dataset are detailed in Table 5 below.

Table 5

Description of Variables from Opportunity Insights Data

Variable Name	Description
Intergenerational Mobility Rate	Percentage of students who move from the bottom to the top income quintile for each institution
Median Parent Income	Median income of parents of students at specific institution

3.1.4. Study Sample

To explore the research questions presented above, I limited the sample for both institutions and students based on the following criteria. First, I limited the sample of institutions from the B&B:08/12 for this study to four-year, degree-granting institutions that graduated students in the 2007/2008 school year. I chose to omit two-year colleges and vocational schools, not because they do not contribute to intergenerational mobility

but because of the complexity of accounting for different institutional types within the model. However, two-year institutions and other forms of higher education do warrant additional study.

I used only institutions that exist in B&B:08/12, with supplemental institutional information drawn from IPEDS and Opportunity Insights. To best estimate institutional characteristics that coincided with students from B&B:08/12, I drew data from IPEDS 2007/2008 academic year, which is the year B&B:08/12 students graduated. The Opportunity Insight team examined data college students from 1999–2013, with a single mobility rate score constructed for institutions based on student access and success across that time period (Chetty et al., 2017a). While this data does not connect to a specific graduation year like B&B:08/12 or IPEDS, it does encompass the mobility rate of institutions both before and concurrent with when B&B:08/12 students would have attended the institution. In considering students to include in the study, the sample was limited to those who had not previously received a bachelor's degree before their 2007/2008 graduation, since previously holding a degree could distort the post-graduation socioeconomic trajectory. The above selection criteria resulted in a final sample of $n = 10220$.

3.1.5. Weighting

Since the B&B:08/12 under-sampled business majors and oversampled STEM and education majors, National Science and Mathematics Access to Retain Talent (SMART) Grant recipients, and Academic Competitiveness Grant (ACG) recipients (NCES, 2012), appropriate weights were utilized. Without appropriate weights, the sample would be biased in favor of institutions and individuals who were oversampled

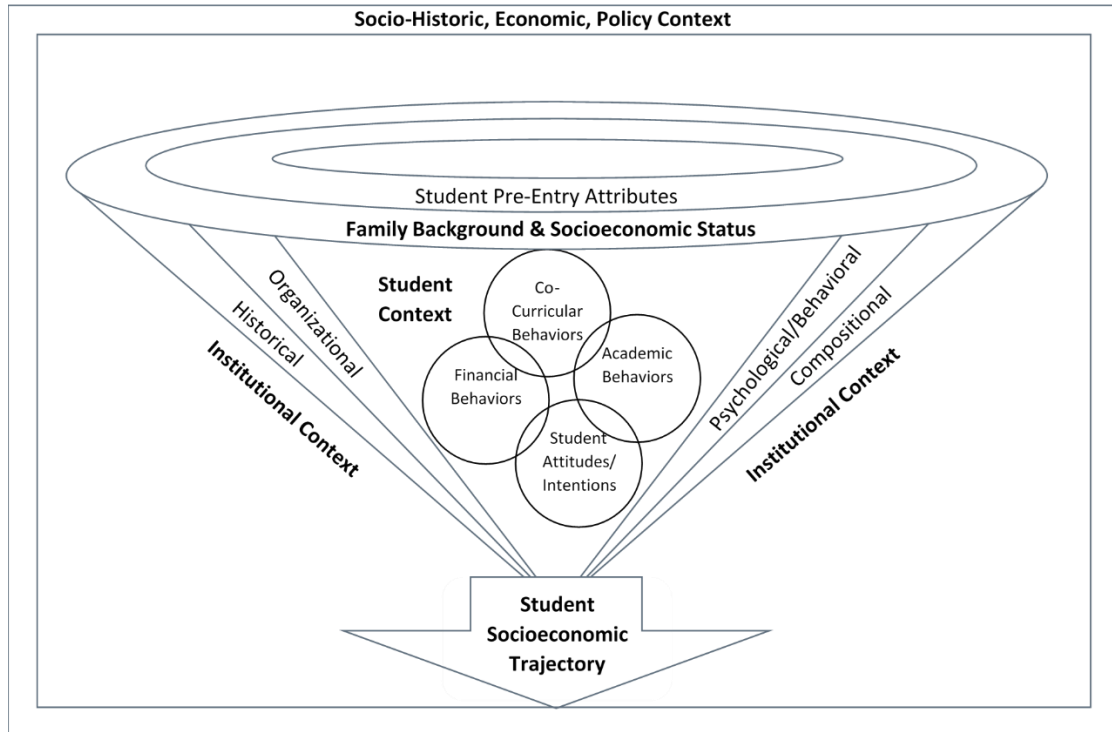
for these characteristics. Sample weights were added to deemphasize the disproportionate contribution of these individuals and institutions in order to be representative of the target population. Weights were added into the MPlus software as part of the analysis.

3.2. Study Design

This study utilized multiple methods to operationalize the conceptual framework (provided again in Figure 4) and sequentially address each research question. The first question in this study was examined using multilevel structural equation modeling to analyze the influence of institutional quality on institutional intergenerational mobility rates. To answer the second and third research question, latent class modeling was employed to understand how individuals grouped together based on socioeconomic indicators after graduating with a bachelor's degree. Latent transition analysis modeling will then be utilized to examine how an individual's socioeconomic status changed over time to answer the fourth research question. Finally, additional race/ethnicity variables were added to each model to examine how results differ when accounting for these factors. The following sections will give an overview of each of these approaches used to answer the respective research questions.

Figure 4

Integrative Model of Higher Education and Intergenerational Mobility



3.2.1. Institutional Characteristics and Intergenerational Mobility Rates

To answer the first research question, the analysis built upon the work of Chetty and colleagues (2017a) that created mobility scorecards for institutions of higher education. In this study, mobility rates were calculated as a product of the fraction of students who come from the bottom income quintile and the fraction of those students who end up in the top income quintile. This study provided the first, and to my knowledge only, comparison of institutions' ability to provide both access and mobility.

In the first phase of this study, I used the mobility rate calculated by Chetty and colleagues as the outcome variable of analysis and utilized multilevel structural equation modeling (MSEM) to examine the relationship between institutional quality, peer

environment, and intergenerational mobility, mediated by peer environment. Structural equation modeling (SEM) allows for the simultaneous estimation of multiple relationships between variables to create latent variables. Latent variables are variables that cannot be directly observed and are measured by observable indicators that capture the latent construct based on existing theory (Silva et al., 2020).

Additionally, multilevel modeling (MLM) is preferable for this type of analysis since it accounts for the nested relationship of individuals within institutions (Silva et al., 2020). Traditional regression analysis assumes that observations are independent of each other and that responses are not correlated. Analyzing institutional outcomes without accounting for the interrelatedness of students within institutions would violate the assumption of independence and produce incorrect standard errors, inflating Type I error. MLM also allows analysis to account for ecological fallacy by simultaneously estimating institutional and selectivity-level effects (Raudenbush & Bryk, 2002).

For the reasons stated above, multilevel modeling is a more appropriate analysis technique since this method explicitly estimates and models the degree to which observations are related within the same cluster (institution), eliminating the issues associated with both independence and selection bias. Expanding on traditional multilevel modeling, multilevel structural equation modeling (MSEM) allows for the examination of direct, mediating, and reciprocal relationships among variables of interest (Thomas & Heck, forthcoming). Combining SEM and MLM, multilevel structural equation modeling (MSEM) allows for the definition of latent factors through observed indicators and testing of defined constructs to explain outcomes through construct validation. Like traditional multilevel modeling, MSEM also allows for the examination

of information contained within institutions to explain both the between- and within-cluster variability on the outcome of intergenerational mobility.

Drawing from the integrated model of higher education and intergenerational mobility model (Figure 4), the peer environment draws from student academic behaviors situated within the student context, which are situated within the context of the institution. This relationship indicates an indirect mediation relationship between institutional quality and the institution's intergenerational mobility rate through that peer environment. This association creates a top-down and bottom-up hierarchical relationship that structure can only be analyzed through MSEM (Preacher et al., 2010). The hypothesis for this analysis is that institutional factors related to institutional quality and student behaviors related to peer environment influence the overall intergenerational mobility rate for the institution and that the influence of these factors varies across institutions. Based on this hypothesis, there are theoretical expectations on both levels of analysis, making MSEM an appropriate method to address this question.

Variables were selected to specifically examine factors that could account for differences in student outcomes associated with institutional selectivity, identified in the review of the literature. In selecting variables to operationalize the model, two categories of variables are focused on: institutional quality and peer environment. Institutional quality was selected because the quality of the institutional environment should impact student outcomes (Becker, 1964). Students attending higher quality institutions, therefore, should see greater returns on their education either due to the superior skills and knowledge acquired from that institution or the institution's reputation. The measures of institutional quality also operationalize the organizational, compositional, historical,

and behavioral elements of the conceptual framework presented above. These elements create the institutional context and shape the environment in which students learn and develop. Table 6 details the variables selected, the elements of the conceptual framework they speak to, and the range of values for each value.

Table 6

Institutional Quality Variables

Variable Name	Conceptual Framework Operationalization	Values
Admit Rate	Organizational & Historical	8-100%
Average faculty salary	Organizational & Behavioral	\$74,230 – \$257,110
Endowment	Organizational & Historical	\$0-34,912,700,000
Faculty tenure ratio	Compositional & Behavioral	2.1 – 100%
Graduation Rate	Organizational & Historical	4 - 97.6%
Median SAT	Organizational & Historical	750-1495
Academic expenditures	Organizational & Behavioral	16 – 88%
Median Parent Income	Historical & Compositional	\$28,200 – 2,169,000
Research Expenditures	Organizational & Behavioral	0 – 63%
Retention Rate	Organizational & Behavioral	28-99%
Student to faculty ratio	Organizational & Behavioral	3-168
Yield Rate	Organizational & Historical	11-100%

SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), Fall 2008.

Peer environment was selected based on the existing literature indicating peers influence students’ learning and that peers confer additional academic and social benefits that result in improved socioeconomic outcomes. Table 7 includes the variables selected, the elements of the conceptual framework they speak to, and the range of values for each value. Theoretically, at the individual student level, students learning in an environment with higher quality peers would enhance their skills and abilities (both academic and cultural) through the interaction (Winston & Zimmerman, 2003). However, I am also

looking at individual student academic behaviors, as environmental factors at the institution level, in contrast to previous research on peer effects.

Table 7

Peer Environment Variables

Variable Name	Conceptual Framework	
	Operationalization	Values
Stopped Out*	Academic Behaviors	0 = Stopped out 1 = Did not stopped out
Academic Probation*	Academic Behaviors	0 = Was placed on academic probation 1 = Was not placed on academic probation
Dean's List	Academic Behaviors	0 = Was not placed on the Dean's list 1 = Was placed on the Dean's list
Incomplete Grades	Academic Behaviors	0 = Did not receive an incomplete grade 1 = Receive an incomplete grade
Repeated a Course	Academic Behaviors	0 = Repeated a course 1 = Did not repeat a course
Student GPA	Academic Behaviors	1.0-4.0
Credits earned vs. Attempted	Academic Behaviors	0-3.0
Hours Studying	Academic Behaviors	0-60

**variables were recoded from the original B&B coding so that 1 indicates a desirable behavior and 0 indicated an undesirable behavior.*

SOURCE: U.S. Department of Education, National Center for Education Statistics, 2008/12 Baccalaureate and Beyond Longitudinal Study(B&B:08/12).

Considering these variables as both a measure of individual student behavior and the institutional environment allowed analysis of how supportive the academic environment was for students. In other words, instead of viewing a student being placed on academic probation only as a student-level behavior, with the implication that the student was academically struggling. I have shifted the focus to the institutional level, examining it as a measure of how supportive institutions are of students. By looking at the number of students placed on academic probation within an institutional context, we can view high percentages of students being placed on probation as an indication that

those institutions are not providing enough academic supports for students to allow them to be successful. Furthermore, this operationalization better captures the interrelated nature of students and institutions, where the individual student behaviors make up the overall institutional environment, as outlined in the conceptual framework.

Within this study, both academic quality and peer environment were considered latent variables as there is no single observable variable that captures these phenomena, making SEM an appropriate technique for this analysis.

Preliminary Analysis

Before beginning the analysis of the data, descriptive analyses of all variables were run to explore the overall data structure and determine if any assumptions were violated that needed to be adjusted for in the analysis. Both unweighted and weighted descriptive statistics are provided in Table 8 and Table 9; percentages for dichotomous variables are provided in Table 10.

Table 8

Institutional quality variables

Variable Name (code)	Conceptual Framework	Unweighted		Weighted	
		Mean	Std. Error	Mean	Std. Error
Academic expenditures (INST4)	Organizational & Behavioral	6.002	1.954	5.856	1.848
Admit Rate (INST10)	Organizational & Historical	63.662	319.853	62.391	348.100
Average faculty salary (INST1)	Organizational & Behavioral	7.423	2.571	7.589	2.588
Endowment (INST9)	Organizational & Historical	0.061	0.052	0.066	0.054
Faculty tenure ratio (INST5)	Compositional & Behavioral	0.551	0.028	0.551	0.027

Graduation Rate (INST2)	Organizational & Historical	0.605	0.028	0.609	0.029
Median SAT (INST12)	Organizational & Historical	11.215	1.421	11.249	1.532
Median Parent Income (INST3)	Historical & Compositional	9.868	7.242	10.063	8.006
Research Expenditures (INST8)	Organizational & Behavioral	0.804	0.956	0.866	0.915
Retention Rate (INST7)	Organizational & Behavioral	8.000	1.038	8.070	1.008
Student to faculty ratio (INST6)	Organizational & Behavioral	1.714	0.234	1.730	0.227
Yield Rate (INST11)	Organizational & Historical	3.968	2.358	3.997	2.237

SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), Fall 2008. U.S. Department of Education, National Center for Education Statistics, 2008/12 Baccalaureate and Beyond Longitudinal Study(B&B:08/12).

Table 9

Peer Environment Continuous Variables

Variable Name	Conceptual Framework Operationalization	Unweighted		Weighted	
		Mean	Std. Error	Mean	Std. Error
Credits earned vs. attempted (PEER7)	Academic Behaviors	0.998	0.026	0.992	0.029
GPA (PEER6)	Academic Behaviors	3.327	0.005	3.316	0.005
Hours Studying (PEER8)	Academic Behaviors	16.197	105.592	15.169	99.547

SOURCE: U.S. Department of Education, National Center for Education Statistics, 2008/12 Baccalaureate and Beyond Longitudinal Study(B&B:08/12).

Table 10

Peer Environment Categorical variables

Variable Name	Conceptual Framework Operationalization	Unweighted		Weighted	
		% Yes (n)	% No (n)	% Yes (n)	% No (n)
Stopped out (PEER1)	Academic Behaviors	17% (1630)	88% (8590)	15% (1537.85)	85% (8679.16)

Academic probation (PEER2)	Academic Behaviors	8% (750)	97% (9470)	7% (757.09)	93% (9459.91)
Dean’s list (PEER3)	Academic Behaviors	73% (7150)	31% (3070)	70% (6583.51)	30% (3103.91)
Incomplete grade (PEER4)	Academic Behaviors	9% (900)	95% (9310)	9% (914.93)	91% (9302.07)
Repeated a course (PEER5)	Academic Behaviors	79% (7700)	26% (2520)	76% (7717.20)	24% (2499.80)

SOURCE: U.S. Department of Education, National Center for Education Statistics, 2008/12 Baccalaureate and Beyond Longitudinal Study(B&B:08/12).

Multilevel Structural Equation Model Measures

In creating the MSEM, the conceptual model in Figure 4 served as the theoretical foundation driving the model construction, as MSEM, like structural equation models, should be theoretically driven (Silva et al., 2020). The variables listed above in Tables 8-10 outline the measures taken from IPEDS and B&B:08/12 that are hypothesized to capture institutions’ academic and peer environment. The first stage in the analysis utilized confirmatory factor analysis as a test of the reliability and goodness-of-fit of the observed variables as measures of academic and peer quality.

Model Estimation

For the model estimation, I used a 2-1-2 mediation model since students (level-1) are nested within institutions, and both academic quality and intergenerational mobility are institutional (level 2). In estimating the MSEM with latent variables, I created a variance-covariance matrix, which was then broken out into within and between-level components so that $\sum \mathbf{T} = \sum \mathbf{W} + \sum \mathbf{B}$. The number of entries in each covariance matrix $\sum \mathbf{W}$ and $\sum \mathbf{B}$ were used to calculate the number of parameters that were estimated using

$\frac{P_w(P_w+1)}{2} + \frac{P_B(P_B+1)}{2} + \mathbf{p}$, where P_w is the total number of variables used to estimate a

within level variance and P_B is the number of variables used to estimate the between-level variance, and the last p is the total number of variables in the model. The below equations detail the measurement model (Equation 1), the level-1 structural model (Equation 2), and the level-2 structural model (Preacher et al., 2010).

$$Y_{ij} = \begin{bmatrix} X_j \\ M_{ij} \\ Y_j \end{bmatrix} = \Lambda \eta_{ij} = \begin{bmatrix} 0 & 1 & 0 & 0 \\ 1 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix} \begin{bmatrix} \eta_{M_{ij}} \\ \eta_{X_j} \\ \eta_{M_j} \\ \eta_{Y_j} \end{bmatrix} \quad (1)$$

$$\eta_{ij} = \begin{bmatrix} \eta_{M_{ij}} \\ \frac{\eta_{X_j}}{\eta_{M_j}} \\ \eta_{M_j} \\ \eta_{Y_j} \end{bmatrix} = \begin{bmatrix} 0 \\ \alpha_{\eta X_j} \\ \alpha_{\eta M_j} \\ \alpha_{\eta Y_j} \end{bmatrix} + \begin{bmatrix} \zeta_{M_{ij}} \\ \bar{0} \\ 0 \\ 0 \end{bmatrix} \quad (2)$$

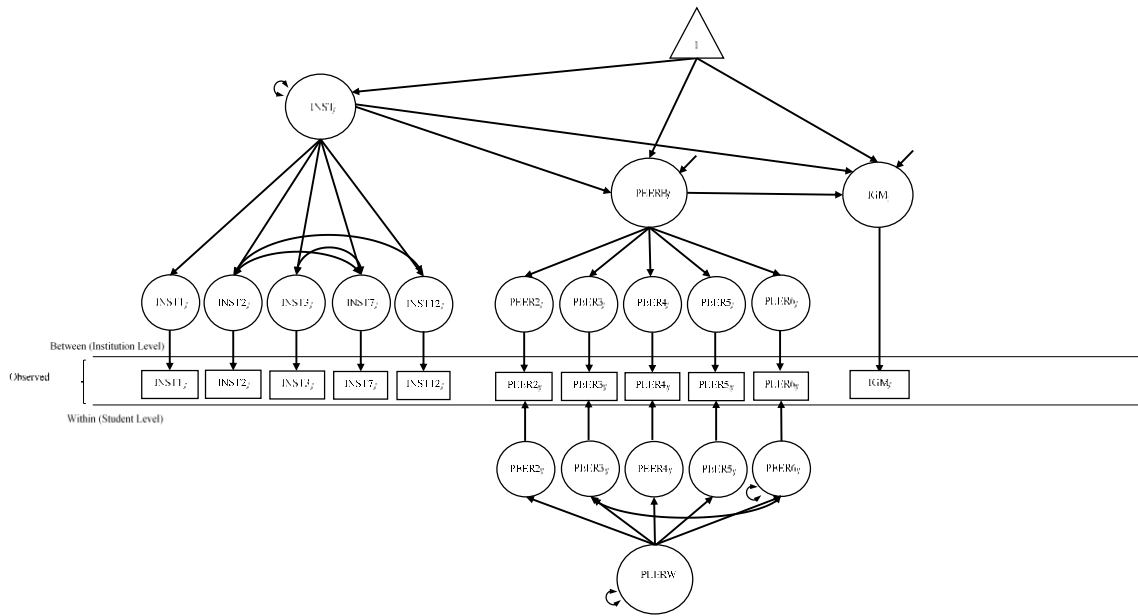
$$\eta_j = \begin{bmatrix} \alpha_{\eta X_j} \\ \alpha_{\eta M_j} \\ \alpha_{\eta Y_j} \end{bmatrix} = \begin{bmatrix} \mu_{\alpha \eta X_j} \\ \mu_{\alpha \eta M_j} \\ \mu_{\alpha \eta Y_j} \end{bmatrix} + \begin{bmatrix} 0 & 0 & 0 \\ \beta_{MX} & 0 & 0 \\ \beta_{YX} & \beta_{YM} & 0 \end{bmatrix} \begin{bmatrix} \alpha_{\eta X_j} \\ \alpha_{\eta M_j} \\ \alpha_{\eta Y_j} \end{bmatrix} + \begin{bmatrix} \zeta_{\alpha \eta X_j} \\ \zeta_{\alpha \eta M_j} \\ \zeta_{\alpha \eta Y_j} \end{bmatrix} \quad (3)$$

In the level-2 structural model η_j is an $(s \times 1)$ vector of level-2 random coefficients, μ is an $(s \times 1)$ vector of means of level-2 random coefficients, β is a matrix of level-2 regression slopes, α contains the slopes for the level-2 covariates, and ζ is a vector of level-2 error terms. The partitions in the above equations separate the within (above and before the partitions) and between (below and after the partition) elements of the model (Preacher et al., 2010). The variable $\eta_{M_{ij}}$ is a latent student-level variable of peer environment that varies within institutions, η_{Y_j} is a latent variable for academic quality that varies across institutions, η_{X_j} and η_{M_j} are variables that vary at the institutional level. The between indirect effect is made up of the elements of β , which

contain the path coefficients and the total between the indirect effect of X_j on Y_j via M_{ij} are created by extracting the 3 X 3 between the submatrix β (Preacher et al., 2010). The path diagram can be found below in Figure 5.

Figure 5

Hypothesized Structural Model



To directly compare the size of the coefficients between the two levels of the model, cross-level measurement invariance must be assumed (Marsh et al., 2009), and equality constraints on factor loadings were used to allow the latent variables on both levels to have the same metric. Using the same metric, the sizes of the relationship between them were summed. It is possible to test whether the relationship between academic quality, peer quality, and institutional intergenerational mobility rate is mostly within an institution or between institutions by directly comparing their variance. In other words, this allows for the total variance to be split between the within and between latent

measures to compare regression coefficients across levels to test whether the effects are mainly within institutions or contextual.

3.2.2. Institutional Quality Influence on Student Socioeconomic Outcomes

To address the second and third research questions presented in this study, I explored institutions' influence on individuals' socioeconomic status following graduating with a bachelor's degree. To expand the conceptualization of socioeconomic status, I chose to use multiple measures rather than a single measure such as occupation, income, class status, or wealth. Utilizing multi-dimensional socioeconomic status measures is more common in health outcomes research, especially in developing countries, where measures such as income are hard to come by for large populations (Duncan et al., 1972). Other studies have utilized the tripartite nature of socioeconomic status defined by Duncan and colleagues to incorporate parental income, education, and occupation as the main indicators of socioeconomic status (Gottfried, 1985; Hauser, 1997), with some using home resources in the analysis (Sartipi et al., 2016). While this method of defining socioeconomic status is less common in intergenerational mobility research, one study by Torche and Spilerman (2009) utilized this method in operationalize family wealth in a study conducted on the influence of Mexican family's wealth on their adult children's outcomes.

To examine socioeconomic status following graduation, I utilized latent class analysis (LCA) modeling to determine if graduates cluster into distinct groups based on socioeconomic indicators. LCA is an appropriate technique for this analysis because it is based on the ability to divide individuals into unobserved (latent) subgroups or classes based on selected observed variables (Oberski et al., 2015). Each individual is assumed to

belong to one and only one class, and individuals within a class are similar but differ across classes. LCA is preferable to simple cluster analysis because the probability modeling that underlies LCA allows formal statistical analysis for determining the number of clusters (Magidson & Vermunt, 2002). LCA is similar to factor analysis in that it seeks to identify unobserved constructs based on observed variable responses. However, LCA's underlying construct is a categorical variable, while factor analysis produces a continuous variable. This type of modeling lends itself well to the examination of socioeconomic status as it allows for a more multidimensional examination of factors that contribute to socioeconomic well-being in comparison to unidimensional measures such as income or occupation. Additionally, factor analysis is a variable-centered approach, while LCA is a person-centered approach (Laursen & Hoff, 2006). LCA also allows for the inclusion of covariates that predict class membership.

To examine the fourth and fifth research questions, I expanded on the results of the latent class analysis to conduct latent transition analysis (LTA). LTA is a mixture model that allows the studying of change in latent class membership over time (Graham et al., 1991; Lanza et al., 2003). In LTA, the measurement model consists of the results of the latent class analysis, which are determined over different points in time. While LCA assumes that classes represent a stable set of characteristics, LTA assumes that individuals may change class membership over time. LTA uses the latent classes to construct a structural model that is used to examine the probability of transitioning from latent class membership across the different points in time. Like LCA, LTA also allows for the inclusion of covariates to determine if the probabilities vary as a function of those covariates (Muthen & Asparouhov, 2011). The probability of transitioning from a class m

at time t from class k at $(t - 1)$ is described by the multinomial logistic regression of c_t on $c_{(t-1)}$ (Nylund et al., 2007):

$$\tau_{c_t|c_{(t-1)}} = P(c_t = m | c_{(t-1)} = k) = \frac{\exp(\alpha_m + \sum_{k=1}^{(C-1)} \beta_{mk} d_k)}{1 + \sum_{c_t=1}^{C-1} \exp(\alpha_{c_t} + \sum_{k=1}^{(C-1)} \beta_{c_t k} d_k)}$$

Like LCA, LTA is an appropriate technique for modeling changes in socioeconomic status because it operates under the assumption that individual social status is unobservable and seeks to classify individual's status based on "posterior probabilities of belonging to each class rather than setting thresholds (Bavaro & Tullio, 2019, p. 3).

Socioeconomic Variable Selection

The first step in examining the socioeconomic trajectories for individuals graduating with a bachelor's degree was selecting the socioeconomic variables for both LCA and LTA. All variables were collected from B&B:08/12 in both the 2009 and 2012 follow-up studies. The below variables were selected from the dataset as measures that relate to an individual's socioeconomic well-being, recognizing the socioeconomic well-being is more than one single measure, such as income (American Psychological Association, 2015). The selected variables are detailed below with their associated values.

The categorical values' scaling was adjusted so that a lower score on the socioeconomic index indicates a lower level of socioeconomic well-being and vice versa. I converted values from the B&B:08/12 dataset that were continuous (loan repayment, salary, and unemployment) into categorical values, so they were compatible with latent class. I ordered all variables so that the lower values are associated with lower levels of socioeconomic well-being are provided in Table 11 to enhance interpretability.

The data were examined using descriptive statistics to identify any outliers or miscoded variables in the dataset. Additionally, the data were examined for patterns of missing data that might influence the interpretation of the analysis. Individuals who completed the 2009, but not the 2012 wave, were removed from the analysis. Individuals who were currently enrolled in a school in 2012 were also removed from the final sample, resulting in n=7250.

Preliminary Analysis

The first step in this process was restructuring the data from wide to long format, so there was one record for each individual with the multiple measures of socioeconomic associated with that individual record. The preliminary data screening also included an examination of the distribution of scores for each variable, including mean, median, variance, skewness, kurtosis, minimum, maximum, range, and the number of observations for each variable. In addition, correlations/covariance and frequency tables were used to examine patterns and non-linear relations that might exist. Table 11 provides descriptive statistics of the variables.

Table 11

Socioeconomic variables

Variable name (Code)	Unweighted		Weighted	
	n	%	n	%
2009 Loan Repayment (SES091)				
1=0%	3100	43%	3507.99	48%
2=0-2%	970	13%	818.03	11%
3=2-9%	950	13%	887.61	12%
4=9%+	1090	15%	1009.42	14%
5=Skipped	1160	16%	1030.96	14%

2012 Loan Repayment (SES121)					
1=0%	1780	25%	1557.56	21%	
2=0-4%	1630	22%	1429.68	20%	
3=2-12%	1010	14%	966.04	13%	
4=12%+	2830	39%	3300.72	46%	
2009 Own a Home (SES092)					
1=Don't own a home	6150	85%	6113.51	84%	
2=Own a home	1110	15%	1140.49	16%	
2012 Own a Home (SES122)					
1=Don't own a home	4970	69%	5045.17	70%	
2=Own a home	2280	31%	2208.83	30%	
2009 Annual salary (SES093)					
1=\$0-10000	1820	25%	1638.94	23%	
2=\$10000-26000	1860	26%	1841.87	25%	
3=\$26000-39500	1760	24%	1866.51	26%	
4=\$39500-250000	1810	25%	1906.69	26%	
2012 Annual salary (SES123)					
1=\$0-22880	1810	25%	1734.29	24%	
2=\$22880-37000	2750	38%	2805.10	39%	
3=\$37000-53040	910	13%	939.33	13%	
4=\$53040-470000	1780	24%	5684.17	78%	
2009 Employer benefits (SES094)					
0=Skipped	1370	19%	1270.16	18%	
1=No benefits	1580	22%	1475.30	20%	
2=Benefits	4300	59%	4508.54	62%	
2012 Employer benefits (SES124)					
0=Skipped	640	9%	664.50	9%	
1=No benefits	930	13%	905.33	12%	
2=Benefits	5690	78%	5684.17	78%	
2009 Percent of time unemployed (SES095)					
1 = 2%+	1180	16%	1257.61	17%	
2 = 1-2%	2060	28%	2039.20	28%	
3 = 0 – 1%	4010	55%	3957.19	55%	
2012 Percent of time unemployed (SES125)					
1=2%+	1740	24%	1668.13	23%	
2=1-2%	1550	21%	1344.48	19%	
3=0 – 1%	3970	55%	4241.39	58%	

2009 Job satisfaction (SES096)				
0=Skipped	1250	17%	1138.47	16%
1=Not satisfied	1550	21%	1612.01	22%
2=Satisfied	4450	61%	4508.54	62%
2012 Job Satisfaction (SES126)				
1=Not satisfied	2060	30%	2089.07	30%
2=Satisfied	4810	70%	4814.15	70%
2009 Number of jobs (SES097)				
1=1 job	1250	17%	1138.47	16%
2=2 jobs	5010	69%	5141.06	71%
3=3 jobs	840	12%	826.68	11%
4=4+ jobs	150	2%	147.79	2%
2012 Number of jobs (SES127)				
1=1 job	1190	16%	1093.36	15%
2=2 jobs	5610	77%	5728.35	79%
3=3 jobs	420	6%	389.96	5%
4=4+ jobs	40	1%	42.33	1%

SOURCE: U.S. Department of Education, National Center for Education Statistics, 2008/12 Baccalaureate and Beyond Longitudinal Study(B&B:08/12).

Since missing data related to the variables in the socioeconomic index have already been addressed in the previous section, only those variables that served as a covariate in the analysis were further examined for patterns of missingness. FIML was used to address missing or incomplete data.

Latent Class Analysis Modeling

To determine the appropriate number of classes in both 2009 and 2012, LCA was run using Mplus 8.3 for different numbers of classes. The first step was to create unconditional probabilities for class membership for an individual's socioeconomic status in 2009 and 2012. The unconditional probability indicates the proportion of the population expected to belong to a latent class, where a large conditional item-response probability suggests that members in the latent class align with that subgroup on that category (Wang

& Wang, 2020). I began with two classes and then increased the number of classes until fit indices, including AIC, BIC, ABIC, Lo-Mendell-Rubin likelihood ratio (LMR LR) and adjusted Lo-Mendell-Rubin likelihood ratio (ALMR LR) (Wang & Wang). Once the appropriate number of classes for each time period were determined, the probabilities of belonging to each class based on socioeconomic variables were utilized to interpret the categories and provide a general description for each class. Finally, the institutions' intergenerational mobility rate and score of institutional quality, generated from the MSEM in the first phase of analysis, were added as covariates to determine if they significantly impacted the probability of class membership.

3.2.3. Influence of Race

The fourth and final question in this study reexamined the findings from the initial analysis in this study by adding variables associated with individuals' race/ethnicity. For both the MSEM and LCA model's race was taken from the IPEDS 2008 data and included at the institutional level, representing the percent of faculty who identified as faculty of color at each institution. These variables were added as covariates to the respective models.

CHAPTER 4: RESULTS

JOURNAL ARTICLE 1

The results of this dissertation study will be divided into two papers that will be submitted for publication. The papers will focus on how institutions influence intergenerational mobility at the institutional level and socioeconomic outcomes at the individual level.

4.1. The Role of Higher Education in Intergenerational Mobility: An Exploration Using Multilevel Structural Equation Modeling

This paper examines how factors of institutional quality, peer environment, and compositional racial diversity are associated with institutional intergenerational mobility rates. The findings present new insights into how these institutional factors are related to institutions' ability to support upward mobility for students from lower socioeconomic backgrounds.

4.1.1. Abstract

Using national datasets, I examined the role of higher education in intergenerational mobility. Multilevel structure equation modeling was employed to examine how institutional quality, peer environment, and compositional racial diversity explain differences in institutional intergenerational mobility rates. The findings reveal that the measures of institutional quality and peer environment were associated with lower levels of intergenerational mobility, while higher percentages of faculty and staff of color were associated with higher levels. These findings demonstrate the importance of examining institutional factors in relation to intergenerational mobility.

Keywords: Intergenerational Mobility, Student Outcomes, Socioeconomic Status

4.1.2. Introduction

Education is the great equalizer, a promise made by Horace Mann in 1848 that has continued to echo throughout the education and political systems in the decades since. Higher education, especially, has been considered a mechanism for those from lower socioeconomic origins to move up the proverbial ladder since a study by Hout (1988) found that the association between an individual's occupational status and socioeconomic origin disappeared for those who obtained a bachelor's degree. However, despite continued findings of the average economic benefits associated with obtaining a bachelor's degree (Carnevale et al., 2011; Haskins, 2008; Oreopoulos & Petronijevic, 2013; Tamborini et al., 2015), there continue to be vast differences in graduation rates and post-graduation earnings based on student demographics (Baum et al., 2013; Bowen et al., 2009; Creusere et al., 2019), as well as the institutional type (Giani, 2016; Heil et al., 2014; Monsen, 2018; Thompson, 2019).

Although access to higher education has increased in recent decades, this expanded access has not led to equal access to opportunities (Bloome et al., 2018). Not all seats in higher education are of equal value, nor are they equally accessible (Taylor & Cantwell, 2019). Additionally, while, on average, higher education is now more racially and socioeconomically diverse, many of the most selective institutions have continued to primarily serve high-income white students (Bastedo & Jacquette, 2011; The Pell Institute, 2019). The perpetuation of inequitable access and outcomes have led some scholars to suggest that higher education serves to reinforce or exacerbate inequality (Mettler, 2014). High-income students continue to experience the most significant benefits from obtaining a bachelor's degree (Pfeffer & Hertel, 2015).

The contradiction between higher education as both a mechanism for upward mobility while remaining inequitable in terms of both access and outcomes indicates the need for further interrogation of higher education's role in disrupting an individual's socioeconomic origin. Both sociologists and economists have examined this question through the lens of intergenerational mobility, which is conceptualized by researchers as adult children achieving higher social or economic status in comparison to their parent(s) (Chetty et al., 2014). Yet most of this research has considered limited institutional factors, such as selectivity level (de Alva, 2019; Carneval & Van Der Werf, 2017; Chetty et al., 2017a; Monsen, 2018; Thompson, 2019). Primarily using selectivity as a means of differentiating institutions obscures the vast diversity both within and between institutions and leaves the mechanisms through which institutions contribute to upward mobility unexamined.

The purpose of this study is to illuminate the ways higher education institutions might influence students' intergenerational mobility. The intended audiences for this study are campus leaders, such as presidents, provosts, and admissions directors, as well as policymakers and legislators. Although I anticipate stakeholders across campuses may gain meaningful insights from this manuscript, I am specifically directing this conversation towards those who decide who has access to higher education, how resources are allocated, and what institutional priorities should be.

4.1.3. Language Clarification

Socioeconomic status is a central concept in the study of intergenerational mobility. Yet socioeconomic status is a complex phenomenon, resulting in disagreement

regarding its conceptualization and its measurement. The American Psychological Association defines socioeconomic status as follows:

Socioeconomic status (SES) encompasses not just income but also educational attainment, financial security, and subjective perceptions of social class.

Socioeconomic status can encompass quality of life attributes as well as the opportunities and privileges afforded to people in society. (n.d., para. 1)

Alternatively, Mueller and Parcel (1981) focus on the relational aspects of the concept, stating socioeconomic status "...describes social systems (usually society or community) in which individuals, families, or groups are ranked on certain hierarchies or dimensions according to their access to or control over some combination of valued commodities such as wealth, power, and social status" (p. 14). For the purpose of this study, I utilize the term socioeconomic status to refer to the spectrum of influences on an individual or family's position, as captured in the definitions above.

4.1.4. Review of Literature

The following literature review will first provide an overview of current research around intergenerational mobility and how researchers currently conceptualize the role of higher education. Then I will examine institutional selectivity and quality as they relate to student outcomes as a bridge between higher education and intergenerational mobility research. This literature review intends to ground this study in existing research around intergenerational mobility while highlighting the current shortcomings related to higher education's role, providing a rationale for this study's necessity.

Intergenerational Mobility

The study of intergenerational mobility originated in the fields of sociology and economics. Researchers studying intergenerational mobility seek to quantify the concept of socioeconomic status by utilizing a single measure of socioeconomic status such as class status, occupational status, income, earnings, or wealth. Intergenerational mobility researchers are concerned with the association between parent(s) and their adult children's socioeconomic status (Chetty et al., 2014). A stronger association between a parent and an adult child's status indicates persistence in the transmission of socioeconomic status and less mobility than weaker associations, indicating less persistence and higher mobility (Fox et al., 2016). In other words, a child who retains their socioeconomic status of birth is considered to have a stronger association with their parent's status. In contrast, the association is said to weaken or even disappear for children who achieve higher socioeconomic status levels than their parents. Although it is possible for adult children to experience both upward and downward mobility, upward mobility receives more attention from researchers. Adult children's ability to achieve more significant socioeconomic outcomes than their parents is a core tenet of American meritocracy (Brookings Institute, 2016; Liu, 2011).

From a theoretical perspective, researchers view the role of higher education in intergenerational mobility through the frameworks of either human capital or signaling screening theory. Human capital theory suggests that education helps individuals develop skills and knowledge valued in the labor market, creating a causal relationship between education and economic outcomes (Becker, 1964; Mincer, 1974). Conversely, signaling/screening theory proposes that education serves as a sorting mechanism through

which individuals who are inherently more skilled or possess expected levels of cultural or social capital achieve higher levels of education. Education credentials, such as a college degree, then provide a signal to employers of these innate skills (Naidoo, 2004; Oreopoulos & Petronijevic, 2013; Pfeffer & Hertel, 2015; Spence, 1974).

Studies examining the role of higher education in intergenerational mobility consistently find a reduced association between parent's and adult children's socioeconomic status (Fox et al., 2016; Hauser & Logan, 1992; Pfeffer & Hertel, 2015; Torche, 2011). However, studies including institutional factors have discovered more nuanced outcomes. For example, several studies have found differences in mobility based on how selective the institution is, with more selective institutions providing higher mobility levels (Chetty et al., 2017a; Monsen, 2018; Thompson, 2019). Though, Chetty and colleagues found that when combining the institutional mobility level with access to the institution for students from lower socioeconomic backgrounds, mid-tier public institutions had the most significant impact. Additionally, a recent Brookings Institute report (Reber & Sinclair, 2020) found similar results when researchers examined middle-class mobility, again finding that mobility varied across institution types; public four-year institutions provided greater rates of mobility due to the ability to provide greater levels of access.

It bears highlighting that considerations of race/ethnicity are limited in intergenerational mobility research, despite persistent differences in social and economic outcomes across racial and ethnic groups (Akee et al., 2017). The research's exclusion of race/ethnicity is primarily due to small sample sizes found in many commonly used data sets (Bloome & Western, 2011; Bloome, 2015). The lack of consideration of

race/ethnicity potentially obscures socioeconomic outcomes from attending higher education (Noel, 2018). Additionally, race, class, and gender do not exist as distinct experiences; these identities are interrelated and cannot be parsed out and studied in isolation (Lundy-Wagner, 2012). Disregarding the inter-related nature of race/ethnicity, gender, and socioeconomic status ignores the realities of today's student populations' demographics.

Selectivity

Conversations around selectivity must first be situated within the historical context of higher education in order to understand this legacy of exclusion and discrimination captured by selectivity. From the inception of Harvard College in 1636, higher education has ratified and legitimized the social elite's positions. Institutions have limited access based on race, gender, religion, and socioeconomic status (Noftsinger & Newbold, 2007; Taylor & Cantwell, 2019), creating barriers that have maintained access for the privileged few. These barriers have included early entrance examinations used to prevent admission for working-class and immigrant students – a practice that is echoed today through the continued reliance on SAT/ACT score (Dixon-Roman et al., 2013) – to outright discrimination against women, Black, Latinx, and Indigenous students (Noftsinger & Newbold). While explicit discrimination is now illegal, implicit barriers exist that continue to disadvantage students from minoritized populations such as Black and Latinx students (Posselt et al., 2012).

Even as legislative and judicial action has sought to expand access to higher education, that expansion created a hierarchy of institutions that was “unequal by design” (Taylor & Cantwell, 2019, Chapter 1, Section 1, para. 1, 2019). As higher education

expanded, institutions differentiated themselves both by what they do and what resources they have to do it. This differentiation has created a hierarchy of institutions and vast differences within that hierarchy regarding resource allocation (Taylor & Cantwell). Students now have more access to higher education. Yet, inequality is maintained through individuals' ability to secure a seat at a selective institution and the enhanced opportunities afforded to students at such institutions (Bloome et al., 2018; Taylor & Cantwell).

The influence of selectivity on student outcomes, including socioeconomic status, is complicated. Many researchers have consistently found that students who attend more selective institutions were more likely to experience better socioeconomic outcomes than those who attended less selective institutions (Chetty et al., 2017c; Monsen, 2018; Thompson, 2019). However, as Cohodes and Goodman (2012) noted, it is difficult to establish the causal effect of college selectivity on student outcomes such as graduation rates and earnings due to contradictory results from researchers studying selectivity. For example, although more selective institutions, in general, produce higher graduation rates than less selective institutions (Bowen et al., 2009; Carnevale et al., 2011), a 2014 study by Heil and colleagues demonstrated that the effect of institutional selectivity diminished when controlling for a robust set of student characteristics and decreased even further when researchers added institutional variables. Several studies have also indicated that the association between selectivity and earnings may not be as straightforward as it initially appears. Student's socioeconomic backgrounds (Giani, 2016), major choice (Eide et al., 2016), as well as gender and race (Ma & Savaz, 2014; Manzoni & Streib, 2019), have all been linked to differential earnings outcomes within selectivity levels.

Furthermore, some studies have also found that students' high school GPA (Hoekstra, 2009) and tuition cost (Dale & Krueger, 2011) were more predictive of earnings than selectivity.

The mixed results of selectivity may be partially attributed to the fact that selectivity primarily captures students' pre-entry attributes and admissions standards; it does not actually measure institutional characteristics (Carnegie Classification, 2018; National Center for Educational Statistics [NCES], 2014). Yet, research continues to use selectivity as a metric for differentiating institutions. Furthermore, many of the metrics used in admissions criteria such as the SAT and ACT are more related to socioeconomic backgrounds than a student's academic ability or their capacity to succeed within higher education (Chetty & Hendren, 2018; Dixon-Román et al., 2013; Fryer & Levitt, 2013; Heckman & Krueger, 2005; Reardon et al., 2019). A potential explanation for the continued prevalence of selectivity in differentiating institutions is that selectivity is often conflated with quality. This conflation is due, in part, to the demand associated with more selective institutions and the inherent advantage available for institutions with a higher demand to select students who are already likely to graduate, as well as to maintain or exceed their socioeconomic background, regardless of the institution attended (Reback & Alter, 2014). If institutional quality is what researchers seek to assess when using selectivity as a variable, other metrics might be of greater value in determining the role of higher education in intergenerational mobility. The following section will outline elements of institutional quality that measures of selectivity may be attempting to capture.

Institutional Quality

Selectivity may be masking other institutional or student factors that, while associated with selective institutions, are driving student outcomes. To begin exploring what institutional factors might account for differences in selectivity, the following sections will examine the research on academic quality, peer environment, and institutional prestige.

Academic Quality. Measuring an institution's academic quality is a complex and often elusive measure; teaching and learning are complex relational processes not easily evaluated. Academic quality can be viewed from various perspectives: faculty and teaching quality; institutional resources and supports; and inclusive campus environments. Results on the influence of institutional selectivity on student learning are mixed, with studies on skills and knowledge development showing no difference based on institutional selectivity (Mayhew et al., 2016), while other studies suggest selective institutions produce more significant cognitive gains for students (Arum & Roksa, 2010; Kugelmass & Ready, 2010), although the effect was small.

One measure of academic quality is faculty and teaching quality, where researchers have found that active learning techniques (Braxton et al., 2000; Braxton et al., 2008), instructional clarity and preparation (Pascarella et al., 2008), alignment between course outcomes, and assessment tasks (Wang et al., 2013), as well as the integration of high impact practices (Kilgo et al., 2015; Kuh, 2008), can enhance the academic learning experience. Course evaluations and reappointment, promotion, and tenure (RPT) processes seek to measure faculty effectiveness in the classroom. However, course evaluations have been called into question regarding their ability to effectively

measure instructional quality (Clayson & Haley, 2015; Ewing, 2012; Judson & Taylor, 2014), and RPT processes vary significantly across institutions (Harley et al., 2010), making both ineffective methods of comparison.

Academic quality and institutional resource allocation are also linked. Decisions related to the number of courses offered, size of courses, and the availability of academic support services all occur within the context of an institution's financial resources and provide insight into institutional priorities (Taylor & Cantwell, 2019). The results of these decisions impact students' learning and ability to complete their degrees (Bound & Turner, 2007; Bound et al., 2010). Additionally, cost savings can be seen in the growing number of non-tenure-track, contingent faculty teaching in higher education. Institutions differ in their faculty composition, with the least selective institutions employing the highest numbers of contingent faculty (Hurlburt & McGarrah, 2016). Studies exploring the impact of the growth in contingent faculty have suggested differences in performance (Bowden & Gonzalez, 2012; Umbach, 2007) and lower graduation rates at institutions (Jacoby, 2006; Zhang et al., 2015). Although Johnson (2011) suggested student characteristics associated with institutions with higher percentages of contingent faculty could account for the differences in outcomes.

Finally, engagement with diverse environments and cross-racial interactions has shown to be beneficial for post-college outcomes for students across racial backgrounds (Denson & Chang, 2009), and institutions with more faculty of color resulted in more frequent interactions across race (Park et al., 2013). Engagement with diversity can allow for students to challenge stereotypes, beliefs, and worldviews (Crisp & Turner, 2011) and potentially weaken the "cycle of segregation" within society (Sáenz, 2010). Institutions

with more faculty of color also have higher graduation rates across all racial groups, but especially for students from minoritized racial groups (Stout et al., 2018). However, it should be noted that proximity does not necessarily lead to interactions (Berry, 2008), and a positive racial climate, as well as numeric diversity, is required for beneficial cross-racial interactions (Jayakumar, 2008). For students from minoritized populations, having faculty who share their identities is valuable as they do not feel like the sole representative of the race in the classroom or other campus settings (Marx & Goff, 2005).

Peer Environment. Research on peer quality, also known as peer effect, suggests the influence of peer academic ability and other peer characteristics, such as family income, social capital, and leadership ability, on individual student's academic performance (Carrell et al., 2008; Winston & Zimmerman, 2003). Research on peer effects suggests that these factors positively impact an individual's academic achievement (Carrell et al.; Ficano, 2010; Winston & Zimmerman; Zimmerman, 2006). Since high achieving students (defined by SAT scores and high school GPAs), as well as students with more social capital, tend to be concentrated in more selective institutions (Buchmann et al., 2010; Rivera, 2015), it is reasonable to consider peer characteristics as a mechanism through which selective institution influence intergenerational mobility.

The research around the effect of peers hypothesizes the influence of peers from two directions. Academically strong peers will either positively influence their peers' academic efforts, and performance or weak peers will bring down stronger peers' educational efforts and performance. In their initial study, Winston and Zimmerman (2003) found evidence of both directions of influence, but students whose academic ability was in the middle of the institution's distribution were the most susceptible to peer

influence. More recent research has found that all peers do not equally influence other students and that friends and classmates may be more influential than roommates (Lin, 2010; Luppino & Sander, 2015; Ost, 2010). Additional studies have found a difference in peers' effect by gender and major choice (Ficano, 2010; Ost; Stinebricker & Stinebricker, 2006).

Institutional Prestige. The third institutional element that could contribute to the connection between selectivity and student outcomes is institutional prestige. As discussed previously, selectivity is based primarily on admissions criteria. In comparison, prestige is associated with an institution's image and reputation. Prestige is measured mainly through rankings created by organizations such as U.S. News and World Report (USNWR), Princeton Review, and the Time Higher Education (THE). A significant issue with using institutional rankings as an assessment of quality is very few of these organizations utilize metrics that measure the value added by institutions (Dill & Soo, 2005; Kuh & Pascarella, 2004). Differences between institutions also tend to be statistically insignificant, with no objective way to determine if the metrics are accurate or meaningful (Hazelkorn, 2015).

Students and families often prioritize selectivity in the college choice process relying heavily on institutional rankings as a means of assessing institutions (Reback & Alter, 2014), creating a cycle where selective institutions attract more students, enhancing selectivity through increased demand (Bastedo & Bowman, 2009; Griffith & Rask, 2007). Additionally, many institutions seeking to bolster their prestige attempting to improve their rankings through participating in prestige-seeking behaviors, such as increasing admissions standards, investing in fancy amenities, and recruiting highly

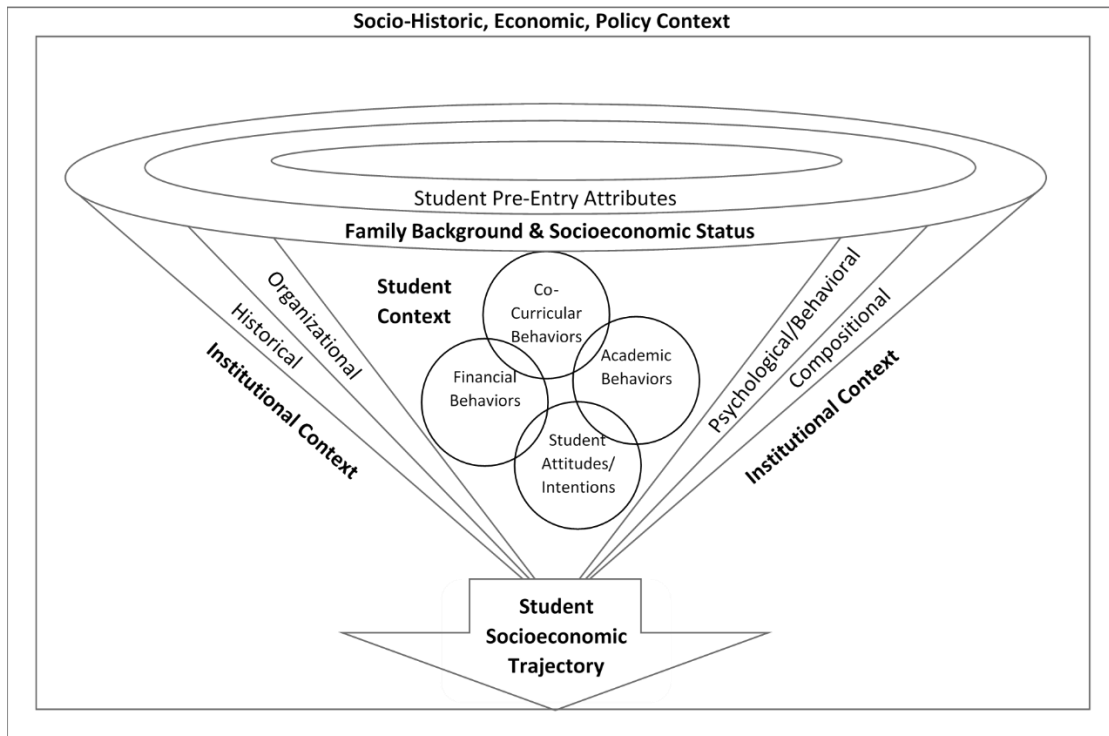
sought-after faculty (Breault & Callejo Perez, 2012; Jacob et al., 2013; O'Meara, 2007). Yet, some of these prestige-seeking behaviors may compromise academic quality by diverting resources towards activities intended to enhance perceptions of the institution and away from activities that support student learning (Breault & Callejo Perez; Pérez-Peña & Slotnik, 2012).

4.1.5. Conceptual Framework

The above literature review has given an overview of the existing research and frameworks used to examine intergenerational mobility, explored the concept of selectivity and its relationship to intergenerational mobility, and different institutional features that might account for differences across institutional selectivity levels. To take a more interdisciplinary approach to understand higher education's role in disrupting socioeconomic status, the integrative model of higher education and intergenerational mobility (Figure 1) will serve as a conceptual framework for this study (Simpfenderfer, forthcoming). Drawing from student persistence, student engagement, and ecological systems theories, this holistic model conceptualizes how student and institutional characteristics interact to influence students' mobility pathways.

Figure 1

Integrative model of intergenerational mobility and higher education



The model defines the institutional context, not just in terms of structural-demographic features, but as a multidimensional environment made up of institutional-level (historical legacy, organizational structure, and compositional diversity) and individual-level (psychological perceptions and behavioral experiences) dimensions (Hurtado et al., 2021). Additionally, the institutional context in this model interacts with the student and family context to shape students' experience within higher education. The student context pulls from Tinto (1993), Astin (1999), and Perna and Thomas (2006) to conceptualize the complex nature of students' experiences within higher education. Student's Academic, Financial, and Co-curricular behaviors, as well as their attitudes and intentions, interweave to impact their pathway through the institution and to their socioeconomic status following graduation. The conceptual framework acknowledges

that students do not merely pass through higher education but are shaped by institutions' organizational context.

4.1.6. Methods

The integrative model of higher education and intergenerational mobility and literature review demonstrates the complexity of understanding higher education's role in intergenerational mobility. To begin to unpack this complexity, my study expands on Chetty and colleague's (2017a) work on institutional intergenerational mobility rates. Utilizing complex institutional factors such as quality, peer environment, and compositional racial diversity, I examine how these factors impact intergenerational mobility rates. The questions guiding this analysis include:

1. To what extent do institutional factors associated with institutional quality mediated through the peer environment account for variances in intergenerational mobility rates across institutions?
2. How do the above results differ when accounting for the institution's compositional racial diversity of faculty and staff?

Positionality

As a researcher, it is important that I acknowledge my own identity and continually reflect on how that identity and my experiences shape and impact my research, including the topics I am drawn to, the choices I make, and how I interpret information. I am a White, straight, cisgender woman who grew up in an upper-middle-class environment. I spent most of my life around people who looked like me, and my values and beliefs were shaped by the conservative mentality of "pulling yourself up by your bootstraps." It was not until I attended college that I began to recognize that my

experience was not the experience of all students. While my family experienced financial hardships at the time I was applying to and attending college, I now recognize the privilege afforded to me from my upper-middle-class background. The access to education I took for granted is not universal, and many individuals experience barriers to education due to social and economic forces beyond their control. The inequities within higher education drive me to interrogate how access to and success within higher education differs amongst and across different groups and explore how access to higher education shapes post-graduation opportunities.

Data Sources and Sample

Data for this research study came from three data sources including the third cohort of the NCES Baccalaureate and Beyond Longitudinal Study (B&B:08/12), The Integrated Postsecondary Education Data System (IPEDS, 2008), and Opportunity Insights (Chetty et al., 2017b) publicly available data. In creating the sample for this study, I selected only four-year, degree-granting institutions that graduated students in the 2007/2008 school year and were present in the B&B:08/12 study. Based on those institutions, I drew supplemental institutional information from IPEDS and Opportunity Insights. To best estimate institutional characteristics that coincided with students from B&B:08/12, data drawn from IPEDS was limited to the 2007/2008 academic year, which is the year B&B:08/12 students graduated. The Opportunity Insight team examined data college students from 1999-2013, with a single mobility rate score constructed for institutions based on student access and success across that period (Chetty et al., 2017c). While this data does not connect to a specific graduation year like B&B:08/12 or IPEDS, it does encompass the mobility rate of institutions both prior to and concurrent with when

B&B:08/12 students would have attended the institution. In selecting students to include in the study, I limited the sample to those who had not previously received a bachelor's degree before their 2007/2008 graduation since previously holding a degree could distort the post-graduation socioeconomic trajectory. The above selection criteria result in a final sample of $n = 10220$. Descriptive statistics of both students and institutions are provided in Appendix A.

Measures

For this study, I selected variables to operationalize the integrative model of higher education and intergenerational mobility. Specifically, examining factors that could account for differences in institutional intergenerational mobility rates associated with institutional selectivity, I identified in the literature review. The outcome variable for this analysis is the mobility rate calculated by Chetty and colleagues (2017c). In selecting variables to operationalize the model, two categories of variables are focused on institutional quality and peer environment. I chose institutional quality because theoretically, the quality of the institutional environment should impact student outcomes (Becker, 1964). Therefore, students attending higher quality institutions should see greater returns on their education either due to the superior skills and knowledge acquired from that institution or the institution's reputation. The institutional quality measures also operationalize the organizational, compositional, historical, and behavioral elements of the conceptual framework presented above. These elements create the institutional context and shape the environment in which students learn and develop. Table 1 details the variables selected the elements of the conceptual framework they speak to, and the range of values for each value.

Table 1*Institutional Quality Variables*

Variable Name (code)	Conceptual Framework	Unweighted		Weighted	
		Mean	Std. Error	Mean	Std. Error
Academic expenditures (INST4)	Organizational & Behavioral	6.002	1.954	5.856	1.848
Admit Rate (INST10)	Organizational & Historical	63.662	319.853	62.391	348.100
Average faculty salary (INST1)	Organizational & Behavioral	7.423	2.571	7.589	2.588
Endowment (INST9)	Organizational & Historical	0.061	0.052	0.066	0.054
Faculty tenure ratio (INST5)	Compositional & Behavioral	0.551	0.028	0.551	0.027
Graduation Rate (INST2)	Organizational & Historical	0.605	0.028	0.609	0.029
Median SAT (INST12)	Organizational & Historical	11.215	1.421	11.249	1.532
Median Parent Income (INST3)	Historical & Compositional	9.868	7.242	10.063	8.006
Research Expenditures (INST8)	Organizational & Behavioral	0.804	0.956	0.866	0.915
Retention Rate (INST7)	Organizational & Behavioral	8.000	1.038	8.070	1.008
Student to faculty ratio (INST6)	Organizational & Behavioral	1.714	0.234	1.730	0.227
Yield Rate (INST11)	Organizational & Historical	3.968	2.358	3.997	2.237

Note. Values were divided by constants to reduce the variance to a manageable scale for statistical analysis.
 SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), Fall 2008.

I selected peer environment based on the existing literature indicating that students' learning is influenced by peers and that peers confer additional academic and social benefits that result in improved socioeconomic outcomes. Table 2 and Table 3 include variables selected, the elements of the conceptual framework they speak to, and the range of values for each value. For the dichotomous peer variables, measures were recoded so that one signified a desirable behavior (e.g., not being on academic probation) and zero signified a non-desirable behavior (e.g., stopping out). Theoretically, at the individual student level, students learning in an environment with higher quality peers would enhance their skills and abilities (both academic and cultural) through the interaction (Winston & Zimmerman, 2003). However, I am also choosing to look at these student academic behaviors as environmental factors at the institution level, in contrast to previous research on peer effects.

This shift in considering these variables as both a measure of individual student behavior and institutional environment allows analysis of how supportive the academic environment is for students. In other words, instead of viewing a student being placed on academic probation only as student behavior, with the implication that the student was academically struggling, I am conceptualizing it as a measure of how supportive the academic environment is. By looking at the number of students placed on academic probation within an institutional context, we can view an institution with more students placed on academic probation as an indication that those institutions are not providing enough academic support for students to be successful.

Table 2*Peer Environment Continuous Variables*

Variable Name	Conceptual Framework	Unweighted		Weighted	
		Mean	Std.	Mean	Std.
		Error		Error	
Credits earned vs. attempted (PEER7)	Academic Behaviors	0.998	0.026	0.992	0.029
GPA (PEER6)	Academic Behaviors	3.327	0.005	3.316	0.005
Hours Studying (PEER8)	Academic Behaviors	16.197	105.592	15.169	99.547

SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), Fall 2008.

Table 3*Peer Environment Categorical variable percentages*

Variable Name	Conceptual Framework	Unweighted		Weighted	
		% Yes	% No	% Yes	% No
		(n)	(n)	(n)	(n)
Stopped out (PEER1)	Academic Behaviors	17%	88%	15%	85%
		(1630)	(8590)	(1537.85)	(8679.16)
Academic probation (PEER2)	Academic Behaviors	8%	97%	7%	93%
		(750)	(9470)	(757.09)	(9459.91)
Dean's list (PEER3)	Academic Behaviors	73%	31%	70%	30%
		(7150)	(3070)	(6583.51)	(3103.91)
Incomplete grade (PEER4)	Academic Behaviors	9%	95%	9%	91%
		(900)	(9310)	(914.93)	(9302.07)
Repeated a course (PEER5)	Academic Behaviors	79%	26%	76%	24%
		(7700)	(2520)	(7717.20)	(2499.80)

SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), Fall 2008.

Within this study, both academic and peer environments are considered latent variables. There is no single observable variable that captures these phenomena, making structural equation modeling an appropriate technique for this analysis.

To answer the second research question, I drew faculty of color and staff of color variables from IPEDS. The variables represent the percent of faculty or staff at an institution who identify as being folx of color. Descriptive statistics for the variables are included in Table 4 below.

Table 4

Faculty and staff of color variables

		Unweighted		Weighted	
Variable Name (code)	Conceptual Framework	Mean	Std.	Mean	Std.
	Operationalization	Error		Error	
Faculty of color (FOC)	Compositional & Behavioral	0.153	0.011	0.160	0.181
Staff of color (SOC)	Compositional & Behavioral	0.170	0.020	0.011	0.020

SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), Fall 2008.

4.1.7. Data Analysis

In this study, I used multilevel structural equation modeling (MSEM) to examine the relationship between institutional academic quality and intergenerational mobility, mediated by the peer environment. I selected this methodology because structural equation modeling (SEM) allows for the simultaneous estimation of multiple relationships between variables to create latent variables. Latent variables cannot be directly observed and are instead measured by observable indicators that capture the latent construct based on existing theory. MSEM also allows for the nested structure of individuals (students) within organizations (higher education institutions) to be accounted

for (Silva et al., 2020). Because of the ability to account for the nested relationship, MSEM is preferable to traditional regression analysis, which assumes that observations are independent of each other and responses are not correlated. MSEM allows for analysis to account for ecological fallacy by simultaneously estimating institutional and selectivity-level effects (Raudenbush & Bryk, 2002).

The data analysis was conducted in three phases using Mplus version 8.3, utilizing robust maximum likelihood estimation, which is recommended for categorical variables that are not normally distributed (Brown, 2006). Before beginning model estimation, I examined correlations between variables to check for multicollinearity (Appendix B). Institution graduation rate, retention rate, and median SAT scores exceeded 0.7. I chose to keep all variables in the model as they capture different aspects of the institution that are important to the analysis. Additionally, since individuals are nested within institutions, I checked the interclass correlations of the variables to verify that multilevel modeling was an appropriate technique. All the individual-level variable ICC's indicated that multilevel modeling was appropriate for this data, ranging from 0.05 to 0.28 (Thomas et al., 2005).

In the first phase, I examined the institutional variables using exploratory factor analysis to determine if the variables grouped into meaningful constructs. The analysis indicated that there were two distinct groups, which I termed institutional quality and institutional resources. However, when run separately, the factor loadings for institutional resources were not high enough to warrant inclusion in the overall model. Only the variables associated with institutional quality were included in the second phase of the analysis. EFA factor loadings can be found in Appendix C.

Next, I analyzed the latent variables for institutional quality and peer environment using CFA to determine goodness-of-fit for the model. Descriptive statistics for these variables were previously provided in Tables 1-3. Finally, in the third phase, I estimated the structural model using a 2-1-2 mediation model since students (level-1) are nested within institutions, and both academic quality and intergenerational mobility are institutional (level 2). MSEM, like structural equation models, should be theoretically driven (Silva et al., 2020). In creating the MSEM model, the integrative model of intergenerational mobility and higher education (Figure 1) serves as the theoretical foundation driving the model construction. The conceptual model hypothesizes that the peer environment, defined by students' academic behaviors, is situated within the institutions' context. This relationship indicates an indirect mediation relationship between academic quality and the institution's intergenerational mobility rate through the peer environment, creating a top-down and bottom-up relationship that's hierarchical structure can only be analyzed through MSEM (Preacher et al., 2010).

In estimating the MSEM with latent variables, the first step was to analyze the covariance matrix, broken into within and between-level components, so that $\sum T = \sum W + \sum B$. The number of entries in each covariance matrix $\sum W$ and $\sum B$ (provided in Appendix B) were used to calculate the number of parameters that can be estimated using $\frac{P_w(P_w+1)}{2} + \frac{P_B(P_B+1)}{2} + p$, where P_w is the total number of variables used to estimate a within level variance ($P_w = 7$) and P_B is the number of variables used to estimate the between-level variance ($P_B = 13$), and the last p is the total number of variables in the model ($p = 20$). Based on the above calculation, the number of parameters that can be estimated for the hypothesized model is 139. Since the number of

parameters that can be estimated is greater than the 37 parameters specified in the hypothesized, indicating that the model is underspecified, which is desirable for MSEM (Thomas & Heck, 2015). The below equations detail the measurement model (Equation 1), level-1 structural model (Equation 2), and level-2 structural model (Equation 3) (Preacher et al., 2010).

$$Y_{ij} = \begin{bmatrix} X_j \\ M_{ij} \\ Y_j \end{bmatrix} = \Lambda \eta_{ij} = \begin{bmatrix} 0 & 1 & 0 & 0 \\ 1 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix} \begin{bmatrix} \eta_{M_{ij}} \\ \eta_{X_j} \\ \eta_{M_j} \\ \eta_{Y_j} \end{bmatrix} \quad (1)$$

$$\eta_{ij} = \begin{bmatrix} \eta_{M_{ij}} \\ \eta_{X_j} \\ \eta_{M_j} \\ \eta_{Y_j} \end{bmatrix} = \begin{bmatrix} 0 \\ \alpha_{\eta X_j} \\ \alpha_{\eta M_j} \\ \alpha_{\eta Y_j} \end{bmatrix} + \begin{bmatrix} \zeta_{M_{ij}} \\ \bar{0} \\ 0 \\ 0 \end{bmatrix} \quad (2)$$

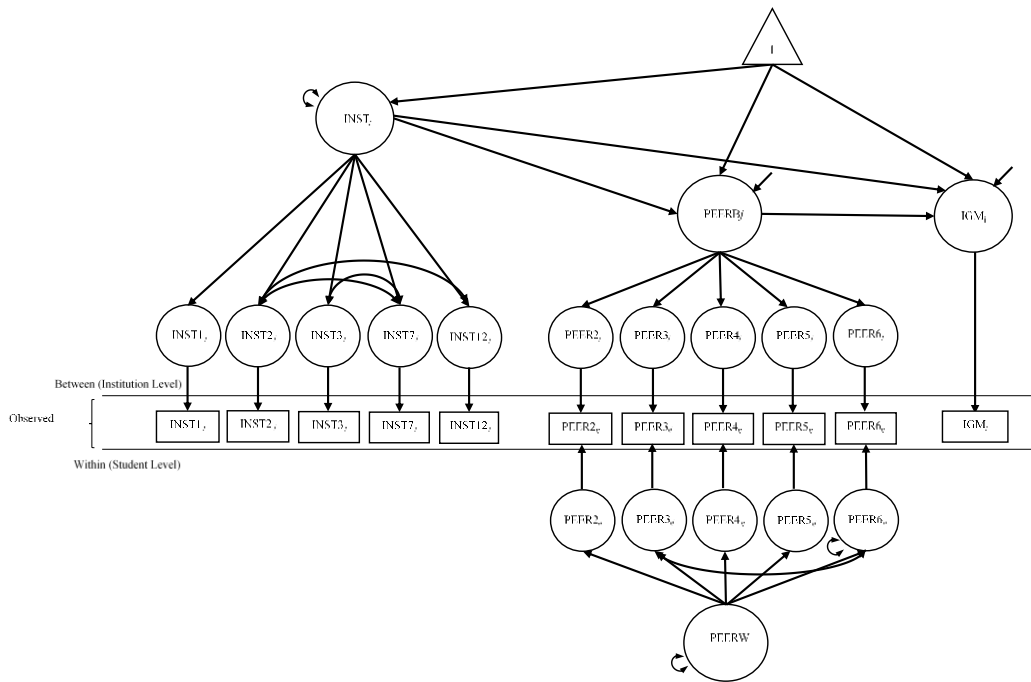
$$\eta_j = \begin{bmatrix} \alpha_{\eta X_j} \\ \alpha_{\eta M_j} \\ \alpha_{\eta Y_j} \end{bmatrix} = \begin{bmatrix} \mu_{\alpha \eta X_j} \\ \mu_{\alpha \eta M_j} \\ \mu_{\alpha \eta Y_j} \end{bmatrix} + \begin{bmatrix} 0 & 0 & 0 \\ \beta_{MX} & 0 & 0 \\ \beta_{YX} & \beta_{YM} & 0 \end{bmatrix} \begin{bmatrix} \alpha_{\eta X_j} \\ \alpha_{\eta M_j} \\ \alpha_{\eta Y_j} \end{bmatrix} + \begin{bmatrix} \zeta_{\alpha \eta X_j} \\ \zeta_{\alpha \eta M_j} \\ \zeta_{\alpha \eta Y_j} \end{bmatrix} \quad (3)$$

In the level-2 structural model η_j is an $(s \times 1)$ vector of level-2 random coefficients, μ is a $(s \times 1)$ vector of means of level-2 random coefficients, β is a matrix of level-2 regression slopes, α contains the slopes for the level-2 covariates, and ζ is a vector of level-2 error terms. The partitions in the above equations separate the within (above and before the partitions) and between (below and after the partitions) elements of the model (Preacher et al., 2010). The variable $\eta_{M_{ij}}$ is a latent student-level variable of peer quality that varies within institutions, η_{Y_j} is a latent variable for academic quality that varies across institutions, η_{X_j} and η_{M_j} are variables that vary at the institutional level. The between indirect effect consists of elements of β , which contains the path coefficients and the total between the indirect effect of X_j on Y_j via M_{ij} is created by extracting the 3 X 3 between

the submatrix β (Preacher et al.). The hypothesize path diagram can be found below in Figure 2.

Figure 2

Hypothesized Structural Model



Limitations

The ability to examine intergenerational mobility is limited by the lack of available datasets where individuals are tracked through higher education and into their post-graduation careers. While in this study, I attempt to examine the influence of higher education on intergenerational mobility, I could not directly measure individual intergenerational mobility due to these data limitations. The second challenge of the available datasets is the inability to take an in-depth look at the student experiences that might influence intergenerational mobility. While the B&B:08/12 does ask some questions about students’ experiences, it does not delve into the relational aspects of higher education or environmental factors that surveys such as the National Survey of

Student Engagement (NSSE) contain. The lack of student-level data makes it difficult to measure more subtle elements of students' experience, such as engagement with faculty or involvement with a student organization that might provide additional insight into how higher education influences intergenerational mobility. Finally, this sample in this study only included students who graduate from a four-year institution, meaning that it may not provide an accurate picture of the institutional environment since students who did not complete their degree were not included in the peer-level environment.

4.1.8. Results

The following section provides the results of each stage of my analysis used to answer my research questions. I have divided the results into sections that outline my analysis's progressive steps to highlight how each stage built upon the previous one.

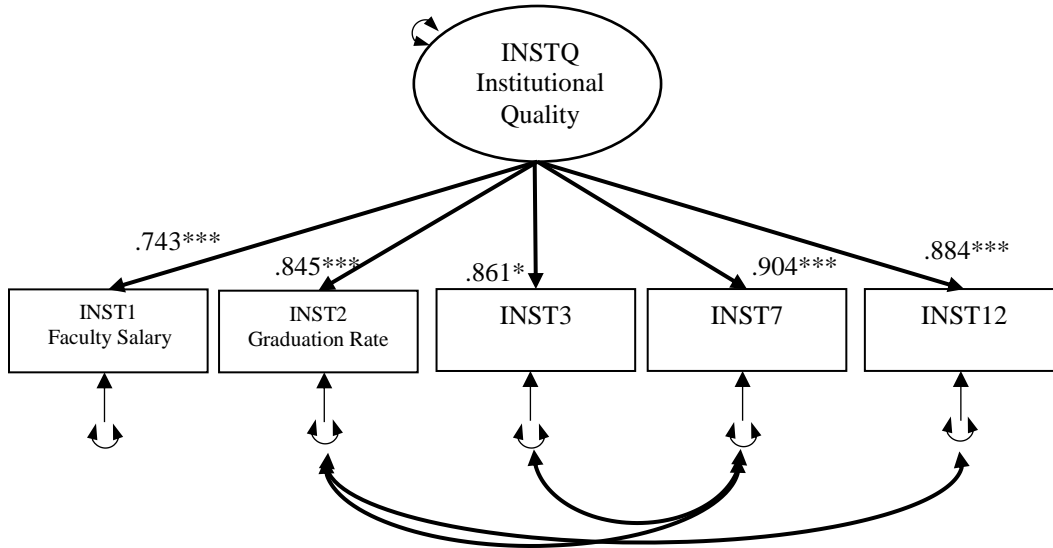
Institutional Quality CFA

Initial confirmatory factor analysis on the institutional quality latent variable (INSTQ) demonstrated a goodness-of-fit ($\chi^2 = 14.02$; $df = 2$; $p < 0.000$; RMSEA = 0.024; CFI = 0.989; TLI = 0.946; SRMR = 0.018). For this latent factor, I specified a covariance between graduation rates and median institutional SAT scores (INST2 with INST12), median parent income and retention rates (INST3 with INST7), and retention and graduation rates (INST2 with INST7), due to existing literature indicating a strong relationship between these factors (Siedman, 2012). All factor loadings were significant and indicated a substantively meaningful relationship to the latent construct with factor

loadings between 0.74 and 0.9. The full CFA model with loadings is provided below in Figure 3, with significant pathways illustrated by solid lines.

Figure 3

Institutional Quality CFA Factor Loadings



Note. *p<.05. **p<.01. ***p<.001

Peer Environment CFA

I also conducted confirmatory factor analysis for the peer environment latent variable (PEERE). The initial fit indices indicated a good fit ($\chi^2 = 805.090$; $df = 20$; $p < 0.000$; RMSEA = 0.062; CFI = 0.917; TLI = 0.884; SRMR = 0.080). However, students stopping out (PEER1=0.195), and hours spent studying (PEER8=-0.082) had low factor loadings, indicating they did not adequately reflect the latent factor. The model was first rerun dropping PEER8 (Model 2) and then PEER1 (Model 3) to examine the impact on the fit indices and factor loadings. Table 5 includes fit indices for these two models as well as for the original model (Model 1). After dropping students stopping out and hours spent studying, the ratio of credit hours (PEER7) also dropped below the

acceptable threshold for factor loadings (Brown, 2015) and (0.092) was removed from the final model. Finally, GPA and students making the Dean’s list were allowed to covary since students must reach a certain GPA to make the Dean’s list at most institutions (“Dean’s list,” 2020). The fit indices for the final model ($\chi^2 = 11.010$; $df = 4$; $p < 0.027$; RMSEA = 0.013; CFI = 0.997; TLI = 0.993; SRMR = 0.019) indicate a good fit and all factor loadings were significant and ranged from 0.44 to 0.83.

Table 5

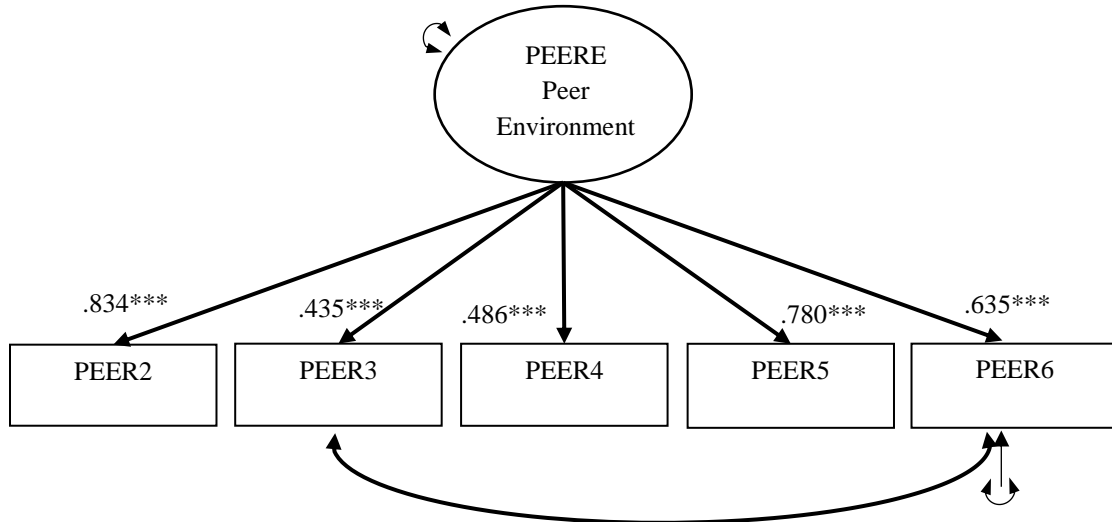
Fit Indices Comparison Across Models

	χ^2	RMSEA	CFI	TLI	SRMR
Model 1	805.090	0.062	0.917	0.884	0.080
Model 2	816.664	0.075	0.915	0.872	0.089
Model 3	798.014	0.093	0.915	0.858	0.097

The final model, with significant pathways illustrated with solid lines, is provided in Figure 4. It bears remembering that as a latent construct, the peer environment factor captures the strength of the peer environment, as measured by the selected variables. Institutions with higher factor scores are associated with fewer students on academic probation, repeating courses, or receiving incomplete grades and with more students making the dean’s list and having a higher GPA.

Figure 4

Peer environment CFA



Note. *p<.05. **p<.01. ***p<.001

Full Multi-level Structural Model

The second stage of my analysis examined the relationship between institutional quality and the institution’s intergenerational mobility rate mediated through the peer environment. Since maximum likelihood estimation was used in the analysis, overall fit indices are not provided in Mplus. For this reason, I ran the model as a multilevel model and as a single level model in order to compare fit indices. Table 6 below includes the comparative fit indices across the two models. These indices confirm that the multi-level model provides a significantly better fit than the single level model.

Table 6

Single Versus Multi-Level Fit Indices

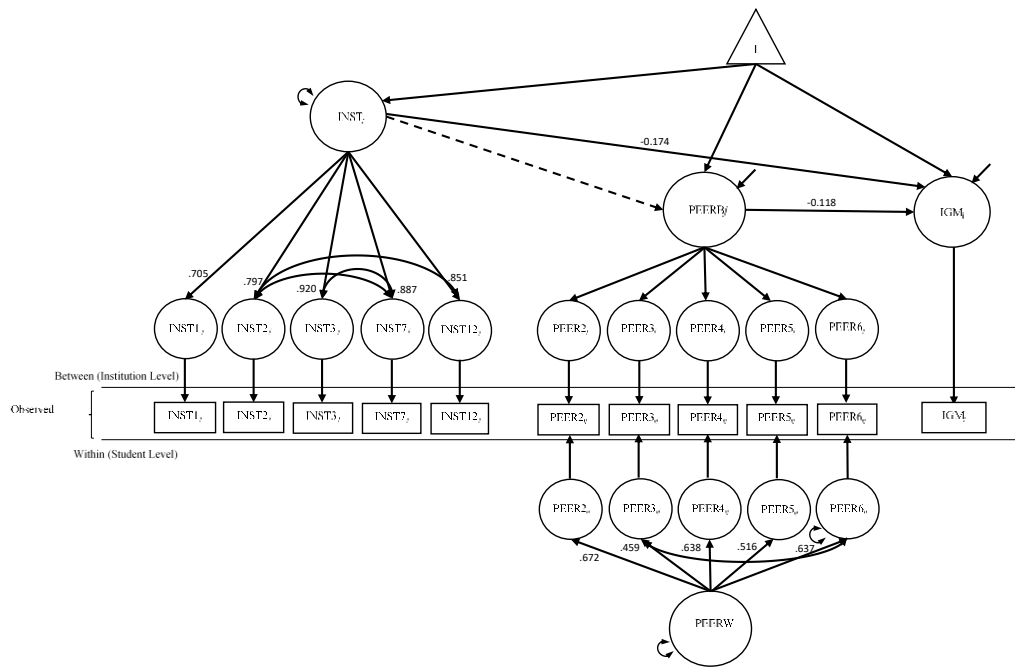
	Loglikelihood	AIC	BIC	ABIC
Multi-level Model	-19754.203	39582.405	39849.987	39732.406
Single-level model	-81650.587	163373.175	163633.520	163519.117

The factor loadings remained significant, ranging from 0.46 to 0.67 for peer environment and from 0.71 to 0.92 for institutional quality. In looking at the overall relationship, there was not a significant relationship between peer environment and institutional quality, meaning that institutional quality was not associated with the overall strength of the peer environment of the institution. However, the peer environment did have a significant negative relationship (-0.118) with the institution's intergenerational mobility rate. Institutional quality also had a significantly negative (-0.174) impact on the institution's intergenerational mobility rate. Additionally, the indirect relationship between institutional quality and intergenerational mobility, mediated by the peer environment produced, was not significant. The final model with significant pathways illustrated with solid lines is provided in Figure 5.

Put in the context of the integrative model of higher education and intergenerational mobility, these results show that the measures of institutional quality and peer environment included in the model are both associated with a lower intergenerational mobility rate for the institution. In other words, institutions with higher levels of institutional quality and a stronger peer environment, as measured by the variables in this model, actually had lower intergenerational mobility scores. These results further highlight the complicated relationship between institutions, students, and intergenerational mobility.

Figure 5

Final Structural Model

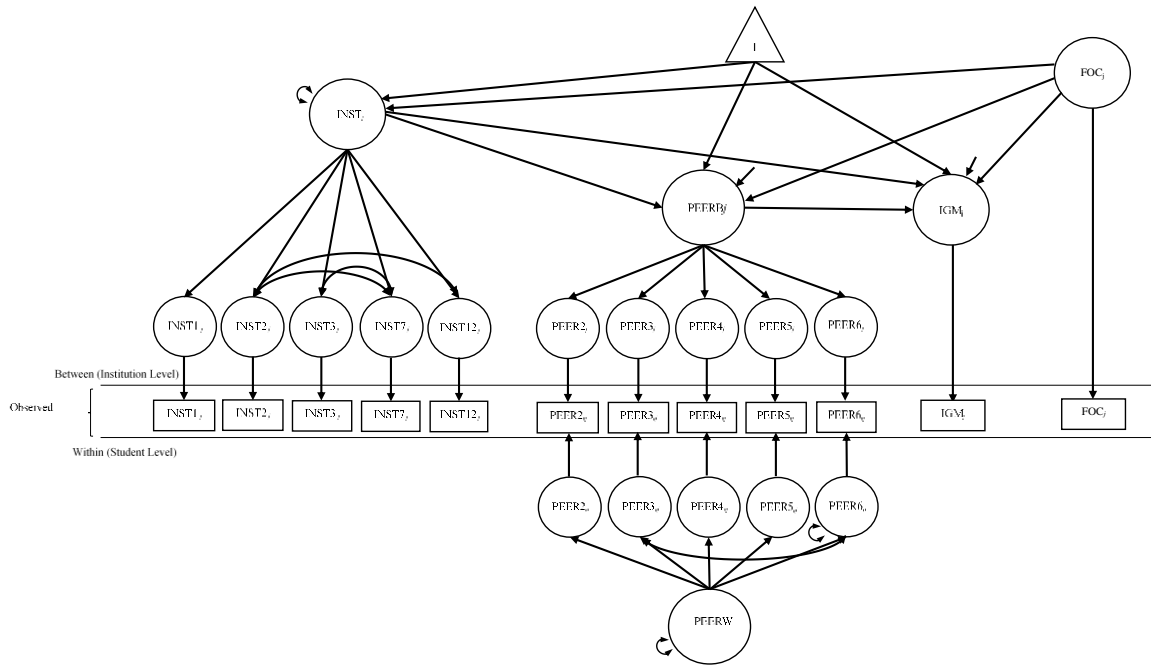


Full Multi-level Structural Model with Compositional Racial Diversity

To answer my second research question, the percentage of faculty of color and staff of color employed at the institution were included as covariates in the overall structural model (Figure 6).

Figure 6

Hypothesize Structural Model With Faculty of Color



Since there was high correlation between percent of faculty of color and staff of color, the model was run separately with each variable for comparison. I chose to include faculty of color and staff of color because of the different ways in which faculty and staff interact with students within higher education institutions. The fit indices provided below in Table 7 below show a slightly improved fit over the original model.

Table 7

Comparison of Baseline Model with Faculty of Color and Staff of Color Models

	Loglikelihood	AIC	BIC	ABIC
Baseline model	-19754.203	39582.405	39849.987	39732.406
FOC	-19671.014	39422.028	39711.305	39584.191
SOC	-19617.534	39315.068	39604.345	39477.231

The addition of these variables did not significantly change the factor loading of the individual variables on either institutional quality or peer environment.

Faculty of Color Model. For the faculty of color model, there was a significantly negative relationship between the institution's percentage of faculty of color, the institutional quality (-0.107), and the peer environment (-0.140). However, there was a significantly positive relationship (0.372) between the percentage of faculty and color and the intergenerational mobility rate. Meaning that institutions with a higher percentage of faculty of color also had higher intergenerational mobility rates. Additionally, the relationship between the peer environment and the intergenerational mobility rate was no longer significant in the FOC model. In other words, when taking into consideration the compositional racial diversity of the institution's faculty, the strength of the peer environment is no longer associated with lower levels of intergenerational mobility. Additionally, the non-significant relationship between the peer environment and institutional quality remained for this model, as did the significant negative relationship between institutional quality and intergenerational mobility (-0.142).

Staff of Color Model. Similar to the faculty of color model, the staff of color model indicated a significantly negative relationship between the institution's percentage of staff of color, the institutional quality (-0.143), and the peer environment (-0.186). Similar to the faculty of color model, there was also a significant positive relationship (0.469) between the percentage of staff of color and the institutions' intergenerational mobility rate. It bears highlighting that the estimated variance accounted for was greater for the staff of color model than the faculty of color model, suggesting staff of color had a higher association with intergenerational mobility rates than faculty of color. Similar to

the faculty of color model, the relationship between the peer environment and intergenerational mobility rate were no longer significant. Additionally, the non-significant relationship between the peer environment and institutional quality remained for this model, as did the significant negative relationship between institutional quality and intergenerational mobility (-0.118). Table 8 below provides a comparison of the relationships across models. The full structural models with significant pathways are provided in Appendix C.

Table 8

Comparison of FOC, SOC, and Baseline Models

	Baseline Model	FOC	SOC
PEERE & INSTQ	0.142	0.129	0.120
PEERE & IGMR	-0.117**	-0.065	-0.031
INSTQ & IGMR	-0.175***	-0.142***	-0.118**
FOC & IGMR		0.372***	
FOC & PEERE		-0.140**	
FOC & INSTQ		-0.107*	
SOC & IGMR			0.469***
SOC & PEERE			-0.186***
SOC & INSTQ			-0.143**

The faculty and staff of color variables' influence demonstrate the importance of an institution's compositional racial diversity regarding intergenerational mobility rates.

4.1.9. Discussion

In this study, I explored how institutional factors of quality, peer environment, and compositional racial diversity might influence institutions' intergenerational mobility

rates. While research from sociologists and economists has consistently demonstrated that attending higher education reduces the association between students' and parent's socioeconomic status (Fox et al., 2016; Hauser & Logan, 1992; Pfeffer & Hertel, 2015; Torche, 2011), there is less focus on which institutional factors disrupt socioeconomic status across generations. The results demonstrate the complex nature of higher education with institutional and student factors intersecting to influence student outcomes. The discussion section that follows places my findings in the context of both existing research and the integrative model of higher education and intergenerational mobility.

My results reinforce the importance of combining research on higher education outcomes with that on intergenerational mobility. Although, on average, individuals who obtain a bachelor's degree experience upward intergenerational mobility (Fox et al., 2016; Hauser & Logan, 1992; Pfeffer & Hertel, 2015; Torche, 2011), my study demonstrates how institutional factors may influence mobility positively or negatively. One of the key findings was that both institutional quality and peer environment were associated with lower intergenerational mobility rates for institutions. To better understand this result, it is worth delving into the individual variables that make up these latent factors. The individual items associated with the institutional quality factor, such as graduation rates and retention rates, are markers consistently used to measure institutions' effectiveness (Millea et al., 2018). However, the negative relationship between institutional quality and intergenerational mobility suggests graduating students from higher education may not be sufficient to disrupt socioeconomic status. The higher median pay of faculty may indicate that campus administrators choose to invest their resources to recruit faculty who can enhance institutional prestige but require higher

salaries to attract and retain (Freeman & DiRamio, 2016; Melguizo & Strober, 2007). With limited budgets, this could require administrators to divert resources away from other essential resources such as teaching and student support services to fund the hiring of more prominent, research-focused faculty (Kim, 2018).

Finally, both median parent income and SAT scores may indicate institutional prestige rather than quality. As evident in the recent Varsity Blue scandal, wealthy parents are willing to pay for what they deem to be better schools for their children (Medina et al., 2019). However, this choice may be based more on reputation and prestige than the actual quality of the experience within the institution (Reback & Alter, 2014). Since higher median SAT scores and higher parent incomes are correlated in my model and in previous research (Perry, 2019), the overall success measures of students graduating from these institutions may be due, primarily, to selection bias (Dixon-Roman et al., 2013). In other words, admissions officers at institutions with prestigious reputations can self-select for students who are more likely to succeed within and after college, regardless of the institution they attend, inflating their success outcomes. Placed in the context of the integrative model of higher education and intergenerational mobility, my results illustrate how the organizational and behavioral context of higher education may influence intergenerational mobility. Institutional leaders who prioritize reputation and engage in prestige-seeking behaviors may direct resources and attention towards institutional goals that create a context that hinders access and success for students from lower socioeconomic backgrounds (Brealt & Callejo Perez, 2012; Pérez-Peña & Slotnik, 2012). The recent COVID-19 pandemic has further increased cuts to higher education,

making accessing and succeeding within higher education even more difficult for students from lower socioeconomic backgrounds (Jackson & Saenz, 2021)

The individual variables in the peer environment factor, such as being placed on academic probation, receiving an incomplete grade, or repeating a course, often indicate that students struggle academically. Likewise, making the dean's list or having a higher GPA are considered positive behaviors associated with academic success. The negative relationship between the peer environment and the institutions' intergenerational mobility rate indicates that institutions with stronger students academically have lower intergenerational mobility rates. These results are contrary to what one might expect based on previous peer effect research showing that students benefit from academically stronger peers (Carrell et al., 2008; Winston & Zimmerman, 2003). Conversely, my study results indicate that institutions do not need to have an academic environment where students avoid negative behaviors and exhibit positive behaviors to promote intergenerational mobility. In the context of the integrative model of higher education and intergenerational mobility, these results suggest that the institutional context may matter more than the individual student behaviors – these institutions enhance student mobility, even if students struggle academically. Based on existing research (Andrews et al., 2016; Jehangir et al., 2015), it is reasonable to conclude that institutions with higher intergenerational mobility rates provide better support for students who might experience academic challenges, such as removing psychological barriers (Jury et al., 2017) or academic coaching (Capstick et al., 2019). These supportive environments then allow students to graduate and achieve higher socioeconomic outcomes.

Additionally, the faculty of color and staff of color variables were the only items in the model that were associated with higher rates of intergenerational mobility for institutions. Not only were these measures significant, but they also accounted for a considerable amount of the variance in intergenerational mobility rates (46.9% for staff and 37.2% for faculty). These results reinforce the importance of compositional diversity within institutions, especially for improving outcomes for students who have historically been minoritized by higher education institutions (Stout et al., 2018). It is also worth highlighting that staff of color had a stronger association with intergenerational mobility than faculty, indicating that it is not just curricular but co-curricular experiences that matter. Furthermore, the inclusion of these variables generated a non-significant relationship between the peer environment and intergenerational mobility, indicating that institutions with higher percentages of faculty and staff of color may produce better outcomes for students regardless of individual students' academic behaviors (Denson & Chang, 2009). Examining these results through the conceptual model reinforces the importance of the institutional context, specifically compositional racial diversity, and how students are supported within that context. Finally, it bears reinforcing that compositional diversity alone does not improve student outcomes, and numeric racial diversity tells us very little about the overall campus environment. However, these results, taken in combination with previous research on campus climate (Arana et al., 2011; Hurtado et al., 2012; Johnson et al., 2014), suggests that institutions with more racially diverse populations may provide a more supportive environment for students from minoritized populations who disproportionately come from lower socioeconomic backgrounds (Elliot & Friedline, 2013).

Finally, it is important to place these results in the context of the previous findings by Chetty and colleagues (2017), who produced the intergenerational mobility rate used in this study. The results of this earlier work identified that mid-tier public colleges such as Cal State University – LA, Pace University, and SUNY – Stony Brook had the highest intergenerational mobility rates. The results of my study align well with the findings from Chetty and colleagues’ study. These institutions and others like them are not considered prestigious. They are unlikely to have high demand from students from upper-income brackets who have access to resources to perform well on SATs, allowing them access to more selective institutions (Dixon-Roman et al., 2013). Many of the institutions at the top of the mobility rates list were also open access, meaning they accepted a much broader range of students – on average, less selective and open-access institutions have lower graduation and retention rates (The Pell Institute, 2019). The open-access policy is also likely to draw students with varying levels of academic preparation – again aligning with the negative relationship between the peer environment and intergenerational mobility rates. Finally, many of the institutions with the highest intergenerational mobility rates are located in more racially diverse areas of the country, which would lend itself to a more racially diverse population of students, faculty, and staff (Franklin, 2012). As demonstrated through this discussion, my results have important implications for higher education administrators. To examine these implications, the following section will delve into the provided recommendations for how these results can be used to fulfill higher education’s promise of socioeconomic mobility.

4.1.10. Implications

Understanding the factors that influence intergenerational mobility is essential for institutional decision-makers as they determine their institutions' priorities and goals in the coming years. Based on this study's results, I make recommendations for the ways presidents, provosts, and admissions directors can determine their institution's role in providing pathways to socioeconomic mobility for students from lower socioeconomic backgrounds. Additionally, I offer recommendations to policymakers and legislators, as well as suggestions for future research.

At the institutional level, the relationship between institutional quality and peer environment warrants consideration of institutional priorities. As state appropriations have decreased (Mitchell et al., 2019), institutions have found themselves in an arms race for students. This arms race has resulted in prestige-seeking behaviors that compromise academic quality by diverting resources towards activities intended to enhance prospective students' perceptions of the institution and away from activities that support student learning (Brealt & Callejo Perez, 2012; Pérez-Peña & Slotnik, 2012). These behaviors are designed to attract students with higher test scores, who are disproportionately from higher socioeconomic backgrounds (Buchmann et al., 2010), that can bolster the institution's reputation in rankings such as U.S. News and World Report (Kim, 2018). This trend is evident, even in the institutions with the highest intergenerational mobility rates. Recent trends show decreasing levels of access at these institutions for students from lower socioeconomic backgrounds (Chetty et al., 2017a). However, my findings suggest that these factors are negatively associated with intergenerational mobility, indicating that if campus leaders truly want their institutions

to be a mechanism for mobility, they will need to reevaluate their priorities. Continuing to compete for the shrinking pool of high school students (WICHE, 2020) with top test scores and GPAs may continue to disenfranchise students from lower socioeconomic backgrounds and perpetuate economic inequality.

Institutional decision-makers should also broaden what it means for students to be academically prepared for college. As my results demonstrate, a strong peer environment is related to lower intergenerational mobility rates, meaning it is not a requisite for students to engage in positive academic behaviors for the institution to promote mobility. If this is the case, presidents, provosts, and admissions directors could choose to broaden access to students they might have otherwise excluded due to their academic preparation. However, institutional decision-makers will need to prioritize providing academic environments and supports that allow all students to move through higher education successfully. Although academic behaviors such as being placed on academic probation, repeating a course, or receiving an incomplete may not be detrimental to students' long-term socioeconomic outcomes, they can provide students difficulties in the short term. For students from lower-socioeconomic backgrounds, lengthening the time it takes to graduate (Sneyers, 2018) due to repeating a course or potentially losing financial aid because they are on probation may significantly impact their ability to graduate (Goldrick-Rab et al., 2016). Institutions should prioritize supports for students with a wide range of academic preparation to ensure that students are able not just to make it to graduation but can make it to graduation without undue financial burden.

Institutional decision-makers should also continue to promote racial diversity amongst faculty and staff. While both student and faculty racial diversity has improved

over time, campuses are still disproportionately White (Smith et al., 2012). Additionally, faculty racial diversity has improved at a much slower rate than student diversity, particularly in tenured positions, leaving a gap between the diversity of students and faculty (Finkelstein et al., 2016). Faculty and staff of color are also disproportionately represented in lower levels of the organizational hierarchy, with the upper administration being predominantly White and male (Whitford, 2020). If institutional racial diversity contributes to an institutional environment that facilitates intergenerational mobility, as my results suggest, this should continue to be a high priority for campus decision-makers. Furthermore, it is not enough to merely recruit faculty and staff of color if institutional leaders cannot create supportive environments to retain them. Despite the benefits of a diverse faculty, institutions continue to struggle to recruit, but most importantly retain, faculty of color. While institutions still blame the pipeline of availability for lack of faculty of color within higher education, the “leaks” in the pipeline are predominantly due to hostile climate, bias, and discrimination resulting in few Ph.D. recipients pursuing academic professions or progressing through the ranks (Carey et al., 2018). Faculty experience tokenization, isolation exclusion, marginalization, as well as both invisibility and hyper-visibility on campus (Cooke, 2014; Martinez et al., 2018). Presidents and Provosts must make creating campus environments and organizational structures that are supportive of faculty and staff a top priority. A recent example of such a policy is IUPUI’s new RPT processes that reward faculty for engaging in teaching, research, and service that center diversity, equity, and inclusion work (Flaherty, 2021).

From a policy perspective, institutions providing both access and success should be rewarded for their contribution to society as they provide a mechanism for students

from lower socioeconomic backgrounds to move up the proverbial ladder. Currently, funding is disproportionately allocated across public higher education. State flagship and research institutions receive more funding than mid-tier public institutions that serve a more diverse student population (Taylor & Cantwell, 2019). Many of these institutions struggle to support a student population with a wider range of academic preparation due to financial constraints (Dougherty & Reddy, 2013; Dougherty et al., 2016). Provided with adequate resources, these institutions might be able to provide even greater rates of intergenerational mobility and reverse the current trend of reducing access. Institutions that promote greater intergenerational mobility deserve incentives in the form of additional state and federal financial support tied to providing access and support to greater numbers of students.

Legislators could also support the creation of more sophisticated datasets to analyze the interactions between students and institutions in a longitudinal manner. These datasets would require student-level data that include student experiences within higher education and long-term socioeconomic outcomes, as well as the ability to tie that student-level data to specific institutions to allow for comparison and analysis of best practices. Currently, there is legislation in front of Congress called the College Transparency Act of 2019 that could allow for better analysis. This legislation would allow for the collection of student-level data, which has previously been prohibited under the Higher Education Opportunity Act (2008), and facilitate the evaluation of student enrollment patterns, progression, completion, and post-collegiate outcomes, in addition to higher education costs and financial aid. However, additional data on students' interactions with higher education, such as what is collected through NSSE, FSSE, and

Diverse Learning Environments surveys, could enhance researchers' ability to examine the relationship between students and institutions.

Additionally, for selective and highly selective institutions, administrators need to determine if their institutions want to be mechanisms for intergenerational mobility or just serve to reinforce existing inequalities. Many of the institutions that have the greatest rates of student mobility (e.g., George Mason University, University of Michigan, U.C. Davis) have the lowest levels of access (less than 10%) (Chetty et al., 2017a). In other words, if students from lower socioeconomic backgrounds are able to gain access to these institutions, they are likely to achieve higher socioeconomic outcomes than their parents. The low levels of access at these institutions have remained low over the past decades (Chetty et al., 2017a), despite evidence that these colleges can afford to enroll more students from low-income backgrounds (Carnevale & Van Der Werf, 2017). Additionally, there are significant numbers of high school graduates from lower-socioeconomic backgrounds who have the academic preparation for more selective colleges but do not enroll in a four-year institution or enroll at a less selective institution (Carneval & Rose, 2013). Institutions could also broaden access to less academically prepared students from lower socioeconomic backgrounds in the same way they do for children of alumni or athletes (Arcidiacono et al., 2020).

Regarding avenues for future research, further scholarship should seek to expand on this study to delve further into institutional factors that are related to intergenerational mobility. While this study expanded this work, the variables included in the model are still just surface-level measures of complex organizations. The student-level variables included in the model are limited measures of students' experiences within higher

education. Therefore, including variables related to student involvement, campus climate, student-faculty engagement, etc., could provide additional insights into how students' experiences within higher education might influence intergenerational mobility.

Qualitative and mixed methods research methods could also be combined with this area of research to examine what elements of students' interactions with higher education environments were beneficial for individuals who achieve intergenerational mobility.

Future research should also consider the role of community colleges in intergenerational mobility, as well as transfer pathways into four-year institutions.

Additionally, in expanding this research, true measures of individual student intergenerational mobility would be beneficial to understand how institutions influence individual student trajectories, rather than just the institutions' intergenerational mobility rate. This would allow researchers to explore the influence of students' major, gender, and post-graduation decisions such as marriage or graduate school on intergenerational mobility. Finally, the ability to track students' socioeconomic status longitudinally, rather than at just one point in time, might provide a more robust understanding complexity of post-graduation outcomes and the long-term influence of higher education.

4.1.11. Conclusion

This study addressed the gap in research exploring the factors within higher education that influence the intergenerational mobility of students. My findings provide new insights into how institutional factors such as quality, peer environment, and compositional racial diversity are related to institutions' ability to support upward mobility for students from lower socioeconomic backgrounds. Examining these factors

revealed that institutions seeking to boost their reputations through prestige-seeking behaviors might limit intergenerational mobility rather than promote it.

4.1.12. References

- Akee, R., Jones, M. R., & Porter, S. R. (2017). Race matters: Income shares, income inequality, and income mobility for all U.S. races. *NBER Working Paper: 23733*.
<https://doi.org/10.3386/w23733>
- American Psychological Association. (n.d.). *Education & socioeconomic status*. Retrieved from the American Psychological Association website:
<https://www.apa.org/pi/ses/resources/publications/factsheet-education.pdf>
- Andrews, R. J., Imberman, S. A., & Lovenheim, M. F. (2016). Recruiting and supporting low-income, high-achieving students at flagship universities. *NBER Working Paper (22260)*. <http://www.nber.org/papers/w22260>
- Arana, R., Casteneda-Sound, C., Blanchard, S., & Aguilar, T. E. (2011). Indicators of persistence for Hispanic undergraduate achievement: Toward an ecological model. *Journal of Hispanic Higher Education, 10*(3), 237-251.
<https://doi.org/10.1177/1538192711405058>
- Arcidiacono, P., Kinsler, J., & Ransom, T. (2020). Legacy and athlete preferences at Harvard. *NBER Working Paper (26316)*. <https://doi.org/10.3386/w26316>
- Arum, R., & Roksa, J. (2010). *Academically adrift: Limited learning on college campuses*. The University of Chicago Press.
- Astin, A. W. (1999). Student involvement: A developmental theory for higher education. *Journal of College Student Development, 40*(5), 518-529.

- Bastedo, M. N., & Bowman, N. A. (2017). Improving admission of low-SES students at selective colleges: Results from an experimental simulation. *Educational Researcher*, 46(2), 67-77.
<https://doi.org/ezproxy.uvm.edu/10.3102/0013189X17699373>
- Bastedo, M. N., & Jaquette, O. (2011). Running in place: Low-income students and the dynamics of higher education stratification. *Educational Evaluation and Policy Analysis*, 33(3), 318-339. <https://doi.org/10.3102/0162373711406718>
- Baum, S., Kurose, C., & Ma, J. (2013). *How college shapes lives: Understanding the issues*. Retrieved from College Board website:
<https://research.collegeboard.org/trends/trends-higher-education>
- Becker, G. S. (1964). *Human capital: A theoretical and empirical analysis, with special reference for education*. University of Chicago Press.
- Berry, B. (2008). Indices of racial residential segregation: A critical review and redirection. In T. Zuberi & E. Bonilla-Silva (Eds.). *White Logic, White Methods: Racism and Methodology* (pp. 203-216). Rowman & Littlefield Publishers, Inc.
- Bloome, D. (2015). Income inequality and intergenerational mobility in the United States. *Social Forces*, 93(3), 1047-1080. <https://muse.jhu.edu/article/576366>
- Bloome, D., Dyer, S., & Zhou, X. (2018). Educational inequality, educational expansion and intergenerational income persistence in the United States. *American Sociological Review*, 83(6), 1215-1253.
<https://doi.org/10.1177/0003122418809374>
- Bloome, D., & Western, B. (2011). Cohort change and racial differences in educational and income mobility. *Social Forces*, 90(2), 375-395.

- Bound, J., & Turner, S. (2007). Cohort crowding: How resources affect collegiate attainment. *Journal of Public Economics*, 91(5-6), 877-899.
<https://doi.org/10.1016/j.jpubeco.2006.07.006>
- Bound, J., Lovenheim, M. F., & Turner, S. (2010). Increasing time to baccalaureate degree in the United States. *NBER Working Paper 15892*.
<http://www.nber.org/papers/w15892>
- Bowden, R., & Gonzalez, L. P. (2012). The rise of contingent faculty: Its impact on the professoriate and higher education. *Journal of Applied Research in Higher Education*, 4(1), 5-22.
<https://doi.org/ezproxy.uvm.edu/10.1108/17581181211230603>
- Bowen, W. G., Chingo, M. M., & McPherson, M. S. (2009). *Crossing the finish line: Completing college at American public universities*. Princeton University Press.
<https://www.jstor.org/stable/j.ctt7rp39>
- Braxton, J. M., Hirschy, A. S., & McClendon, S. A. (2004) *Understanding and reducing college student departure*. ASHE-ERIC Higher Education Report: Volume 30, Number 3.
- Braxton, J. M., Willis, A. J., Hirschy, A. S., & Hartley III, H. V. (2008). The role of active learning in college student persistence. *New Directions for Teaching and Learning*, 115, 71-83. <https://doi.org/10.1002/tl.326>
- Breault, D. A., & Callejo Perez, D. M. (2012). Conclusions and thoughts on prestige. *Counterpoints*, 401, 131-145. <https://www.jstor.org/stable/42981541>
- Brookings Institute. (2016). *Economic Mobility Project*. https://www.brookings.edu/wp-content/uploads/2016/06/05useconomics_morton.pdf

- Brown, T. A. (2006). *Confirmatory factor analysis for applied research*. Guilford.
- Buchmann, C., Condrón, D. J., & Roscigno, V. J. (2010). Shadow education, American style: Test preparation, the SAT and college enrollment. *Social Forces*, 89(2), 435-461. <https://doi.org/10.1353/sof.2010.0105>
- Capstick, M. K., Harrell-Williams, L. M., Cockrum, C. D. *et al.* (2019). Exploring the effectiveness of academic coaching for academically at-risk college students. *Innov High Educ* 44, 219-231. <https://doi-org.ezproxy.uvm.edu/10.1007/s10755-019-9459-1>
- Carey, J. M., Carmen, K. P., Horiuchi, Y., Htun, M., & Ortiz, B. (2020). Who wants to hire a more diverse faculty? A conjoint analysis of faculty and student preferences for gender and racial/ethnic diversity, *Politics, Groups, and Identities*, 8(3), 535-553. <https://doi.org/10.1080/21565503.2018.1491866>
- Carnegie Classifications. (2018). *Undergraduate profile classification* [Dataset and Methodology]. https://carnegieclassifications.iu.edu/classification_descriptions/undergraduate_profile.php
- Carnevale, A. P., Rose, S. J., & Cheah, B. (2011). *The college payoff: Education, occupations, lifetime earnings*. Retrieved from <https://cew.georgetown.edu/wp-content/uploads/2014/11/collegepayoff-complete.pdf>
- Carneval, A. P., & Rose, S. J. (2013). *Socioeconomic status, race/ethnicity, and selective college admissions*. The Century Foundation.

- Carnevale, A. P., & Van Der Werf, M. (2017). The 20% solution: Selective colleges can afford to admit more pell grant recipients. *Report of the Georgetown University Center on Education and the Workforce*. Retrieved from <https://cew.georgetown.edu/cew-reports/pell20/>
- Carrell, S. E., Fullerton, R. L., & West, J. E. (2008). Does your cohort matter? Measuring peer effects in college achievement. *Journal of Labor Economics*, 27(3), 439-464. <https://doi.org/10.1086/600143>
- Chase, A. (2020). As the world interns: The impact of identity and social, economic, and cultural capital on college student internship engagement, [Doctoral dissertation, University of Vermont]. ScholarWorks @ UVM. <https://scholarworks.uvm.edu/graddis/1195>
- Chetty, R., & Hendren, N. (2018). The impacts of neighborhoods on intergenerational mobility I: Childhood exposure effects. *The Quarterly Journal of Economics*, 133(3), 1107-1162. <https://doi.org/10.1093/qje/qjy007>
- Chetty, R., Hendren, N., Kline, P., Saez, E., & Turner, N. (2014). Big data in macroeconomics: New insights from large administrative datasets. *American Economic Review*, 104(5), 141-147. <https://doi.org/10.1257/aer.104.5.141>
- Chetty, R., Friedman, J., Saez, E., Turner, N., & Yagan, D. (2017a). *Mobility report cards: The role of colleges in intergenerational mobility*. <https://doi.org/10.3386/w23618>

- Chetty, R., Friedman, J., Saez, E., Turner, N., & Yagan, D. (2017b). *Mobility report cards: The role of colleges in intergenerational mobility*. [Data set and codebook]. Opportunity Insights Data. <https://opportunityinsights.org/data/>
- Chetty, R., Grusky, D., Hell, M., Hendren, N., Manduca, R., & Narang, J. (2017c). The fading American dream: Trends in absolute income mobility since 1940. *Science*, 356(April), 398-406.
- Clayson, D. E., & Haley, D. A. (2015). Marketing models in education: Students as customers, products, or partners. *Marketing Education Review*, 15(1), 1-10. <https://doi.org/10.1080/10528008.2005.11488884>
- Cohodes, S., & Goodman, J. (2012). First degree earns: The impact of college quality on college completion rates. *HKS Faculty Research Working Paper Series RWP12-033*. <http://nrs.harvard.edu/urn-3:HUL.InstRepos:9396433>
- Cooke, N. A. (2014). Pushing back from the table: Fighting to maintain my voice as a pre-tenure minority female in the white academy. *Polymath: An Interdisciplinary Journal of Arts & Science*, 4(2), 39-49. <https://ojcs.isg.siue.edu/ojs/index.php/polymath/article/view/2934>
- Creusere, M., Zhao, H., Huie, S. B., & Troutman, D. R. (2019). Postsecondary education impact on intergenerational income mobility: Differences by completion status, gender, race/ethnicity, and type of major. *The Journal of Higher Education*, 90(6), 915-939. <https://doi.org/10.1080/00221546.2019.1565882>
- Crisp, R. J., & Turner, R. N. (2011). Cognitive adaptation to the experience of social and cultural diversity. *Psychological Bulletin*, 137(2), 242-266. <https://doi.org/10.1037/a0021840>

- Dale, S., & Krueger, A. B. (2011). Estimating the return to college selectivity over the career using administrative earning data. *NBER Working Paper 17159*.
<http://www.nber.org/papers/w17159>
- de Alva, J. K. (2019). *Is the university next door the way to upward mobility?* American Enterprise Institute. <https://www.aei.org/research-products/report/is-the-university-next-door-the-way-to-upward-mobility/>
- Denson, N., & Chang, M. J. (2009). Racial diversity matters: The impact of diversity-related student engagement and institutional context. *American Educational Research Journal*, 46(2), 322-353. <https://www.jstor.org/stable/40284795>
- Dill, D. D., & Soo, M. (2005). Academic quality, league tables, and public policy: A cross-national analysis of university ranking systems. *Higher Education*, 49, 495-533. <https://doi.org/ezproxy.uvm.edu/10.1007/s10734-004-1746-8>
- Dixon-Roman, E. J., Everson, H. T., & McArdle, J. J. (2013). Race, poverty, and SAT scores: Modeling the influences of family income on black and White high school students' SAT performance. *Teacher College Record*, 115, 1-33.
- Dougherty, K. J., & Reddy, V. (2013). Performance funding for higher education: What are the mechanisms? What are the impacts? [Special Issue]. *ASHE Higher Education Report* 39(2), 1-134. <https://doi.org/10.1002/aehe.20008>
- Dougherty, K. J., Jones, S. M., Lahr, H., Natow, R. S., Pheatt, L., & Reddy, V. (2016). Looking inside the black box of performance funding for higher education: Policy instruments, organizational obstacles, and intended and unintended impacts, *The Russell Sage Foundation Journal of the Social Sciences*, 2(1) 147-173.
<https://doi.org/10.7758/RSF.2016.2.1.07>

- Eide, E. R., Hilmer, M. J., & Showalter, M. H. (2016). Is it where you go or what you study? The relative influence of college selectivity and college major on earnings. *Contemporary Economic Policy*, 34(1), 37-46.
- Elliot, W., & Friedline, T. (2013). “You pay your share, we’ll pay our share”: The college cost burden and role of race, income, and college assets. *Economics of Education Review*, 33, 134-153. <https://doi.org/10.1016/j.econedurev.2012.10.001>
- Ewing, A. M. (2012). Estimating the impact of relative expected grade on student evaluations of teachers. *Economics of Education Review*, 31, 141-154. <https://doi.org/10.1016/j.econedurev.2011.10.002>
- Ficano, C. C. (2010). Peer effects in college academic outcomes - Gender matters! *Economics of Education Review*, 31(2012), 1102-1115. <https://doi.org/10.1016/j.econedurev.2012.07.012>
- Finkelstein, M.J., Conley, V.M., & Schuster, J.H. (2016, April). *Taking the measure of faculty diversity*. TIAA Institute.
- Flaherty, C. (2021, May 14). *The DEI pathway to promotion*. Inside Higher Ed. <https://www.insidehighered.com/news/2021/05/14/iupui-creates-path-promotion-and-tenure-based-dei-work>
- Fox, L., Torche, F., & Waldfogel, J. (2016). Intergenerational mobility. *The Oxford Handbook of the Social Science of Poverty*, April, 1-34. <https://doi.org/10.1093/oxfordhb/9780199914050.013.24>
- Franklin R. S. (2012). Benchmarking student diversity at public universities in the United States: Accounting for state population composition. *The Annals of Regional Science*, 49(2), 355-372. <https://doi.org/10.1007/s00168-011-0454-4>

- Freeman Jr., S., & DiRamio, D. (2016). Elitism or pragmatism? Faculty hiring at top graduate programs in higher education administration. *The Journal of Professoriate*, 8(2), 94-127.
- Fryer, R. G., & Levitt, S. D. (2013). Testing for racial differences in the mental ability of young children. *American Economic Review*, 103(2), 981-1005.
<https://doi.org/10.1257/aer.103.2.981>
- Giani, M. S., Attewell, P., & Walling, D. (2019). The value of an incomplete degree: Heterogeneity in the labor market benefits of college non-completion. *The Journal of Higher Education*. <https://doi.org/10.1080/00221546.2019.1653122>
- Goldrick-Rab, S., Kelchen, R., Harris, D. N., & Benson, J. (2016). Reducing income inequality in educational attainment: Experimental evidence on the impact of financial aid on college completion. *American Journal of Sociology*, 121(6).
<https://doi.org/10.1086/685442>
- Griffith, A., & Rask, K. (2007). The influence of the U.S. News and World Report collegiate rankings on the matriculation decision of high-ability students: 1995-2004. *Economics of Education Review*, 26(2), 255-255.
<https://doi.org/10.1016/j.econedurev.2005.11.002>
- Harley, D., Acord, S. K., & Earl-Novell, S. (2010). *Assessing the future landscape of scholarly communication: An exploration of faculty values and needs in seven disciplines*. Center for Studies in Higher Education.
<https://escholarship.org/uc/item/15x7385g>
- Haskins, R. (2008). Education and economic mobility. *Getting ahead or losing ground: Economic mobility in America*, 91-104.

- Hauser, R. M., & Logan, J. A. (1992). How not to measure intergenerational occupational persistence. *American Journal of Sociology*, 97(6), 1689-1711.
- Hazelkorn, E. (2010). *Rankings and the reshaping of higher education: The battle for world-class excellence*. Palgrave Macmillan.
- Heckman, J., & Krueger, A. B. (2005). Inequality in America: What role for human capital policies? *Focus*, 23(3), 2-10.
<https://EconPapers.repec.org/RePEc:mtp:titles:0262582600>.
- Heil, S., Reisel, L., & Attewell, P. (2014). College selectivity and degree completion. *American Educational Research Journal*, 51(5), 913-935.
<https://doi.org/10.3102/0002831214544298>
- Hoekstra, M. (2009). The effect of attending the flagship university on earnings: A discontinuity-based approach. *The Review of Economics and Statistics*, 91(4), 717-724.
- Hout, M. (1988). More universalism, less structural mobility: The American occupational structure in the 1980s. *American Journal of Sociology* 93(6): 1358-1400.
- Hurlburt, S., & McGarrah, M. (2016). *Cost savings or cost shifting? The relationship between part-time contingent faculty and institutional spending*. Delta Cost Project, American Institutes for Research.
- Hurtado, S., Alvarez, C. L., Guillermo-Wann, C., Cuellar, M., & Arellano, L. (2012). A model for diverse learning environments. In J. C. Smart & M. B. Paulsen (Eds.), *Higher education: Handbook of theory and research*, 27, 41-122. Springer.

- Jackson, V., & Saenz (2021). *States can choose better path for higher education funding in COVID-19 Recession*. Center for Budget and Policy Priorities.
<https://www.cbpp.org/sites/default/files/2-17-21sfp.pdf>
- Jacob, B., McCall, B., & Stange, K. M. (2013). *College as country club: Do colleges cater to student's preferences for consumption?* NBER Working Paper 18745.
<https://www.nber.org/papers/w18745>
- Jacoby, D. (2006) Effects of part-time faculty employment on community college graduation rates. *The Journal of Higher Education*, 77(6), 1081-1103.
<https://doi.org/10.1080/00221546.2006.11778957>
- Jayakumar, U. M. (2008). Can higher education meet the needs of an increasingly diverse and global society? Campus diversity and cross-cultural workforce competencies. *Harvard Educational Review*, 78(4), 615-651.
- Jehangir, R. R., Stebleton, M. J., & Deenanath, V. (2015). *An exploration of intersecting identities of first-generation, low-income students*. Stylus Publishing.
- Johnson, I. Y. (2011). Contingent instructors and student outcomes: An artifact or a fact? *Research in Higher Education* 52, 761-785.
<https://doi.org/ezproxy.uvm.edu/10.1007/s11162-011-9219-2>
- Johnson, D. R., Wasserman, T. H., Yildirim, N., & Yonai, B. A. (2014). Examining the effects of stress and campus climate on the persistence of students of color and White students: An application of Bean and Eaton's psychological model of retention. *Research in Higher Education*, 55(1), 75-110.

- Judson, K. M., & Taylor, S. (2014). Moving from marketization to marketing of higher education: The co-creation of value in higher education. *Higher Education Studies*, 4. <https://doi.org/10.5539/hes.v4n1p51>
- Jury, M., Smeding, A., Stephens, N. M., Nelson, J. E., Nelson, Aelenei, C., & Darnon, C. (2017). The experience of low-SES students in higher education: Psychological barriers to success and interventions to reduce social-class inequality. *Journal of Social Issues*, 73(1), 23-41. <https://doi.org/10.1111/josi.12202>
- Kilgo, C. A., Sheets, J. K. E., & Pascarella, E. T. (2015). The link between high-impact practices and student learning: Some longitudinal evidence. *Higher Education*, 69, 509-525. <https://doi.org/ezproxy.uvm.edu/10.1007/s10734-014-9788-z>
- Kim, J. (2018). The functions and dysfunctions of college rankings: An analysis of institutional expenditure. *Research in High Education* 59, 54-87. <https://doi.org/ezproxy.uvm.edu/10.1007/s11162-017-9455-1>
- Kugelmass, H., & Ready, D. D. (2010). Racial/ethnic disparities in collegiate cognitive gains: A multilevel analysis of institutional influences on learning and its equitable distribution. *Research in Higher Education*, 52, 323-348. <https://doi.org/10.1007/s11162-010-9200-5>
- Kuh, G. D. (2008) *High-impact practices: What they are, who has access to them, and why they matter*. <https://secure.aacu.org/imis/ItemDetail?iProductCode=E-HIGHIMP&Category=>
- Kuh, G. D., & Pascarella, E. T. (2004). What does institutional selectivity tell us about educational quality? *Change: The Magazine of Higher Learning*, 36(5), 52-59. <https://doi.org/10.1080/00091380409604986>

- Lin, X. (2010). Identifying peer effect in student academic achievement by spatial autoregressive models with group observables. *Journal of Labor Economics*, 28(4), 825-860. <https://doi.org/10.1086/653506>
- Liu, A. (2011). Unraveling the myth of meritocracy within the context of U.S. higher education. *Higher Education*, 62, 383-397. <https://doi.org/ezproxy.uvm.edu/10.1007/s10734-010-9394-7>
- Lundy-Wagner, V. C. (2012). 'Class'ifying ethnicity/race and gender: An intersectional critique of bachelor's degree completion research. *Interactions*, 8(2). <https://escholarship.org/uc/item/8nc1m3m0>
- Luppino, M., & Sander, R. (2015). College major peer effects and attrition from the sciences. *IZA Journal of Labor Economic*, 4(4), 1-23. <https://doi.org/10.1186/s40172-014-0019-8>
- Ma, Y., & Savas, G. (2014). Which is more consequential: Fields of study or institutional selectivity? *The Review of Higher Education*, 37(2), 221-247. <https://doi.org/10.1353/rhe.2014.0001>.
- Manzoni, A., & Streib, J. (2019). The equalizing power of a college degree for first-generation college students: Disparities across institutions, majors, and achievement levels. *Research in Higher Education*, 60, 577-605. <https://doi.org/10.1007/s11162-018-9523-1>
- Martinez, M. A., Nino, J. M., & Torres, I. (2018). Examining intersectionalities among male faculty of color on the tenure-track. *Intersections: Critical Issues in Education* 2(2). <https://digitalrepository.unm.edu/intersections/vol2/iss2/3>

- Marx, D. M., & Goff, A. P. (2010). Clearing the air: The effect of experimenter race on target's test performance and subjective experience. *British Journal of Social Psychology, 44*(4), 645-657.
<https://doi.org/ezproxy.uvm.edu/10.1348/014466604X17948>
- Mayhew, M. J., Rothenbach, A. N., Bowman, N. A., Seifert, T. A., Wolniak, G. C., Pascarella, E. T., & Terenzini, P. T. (2016). *How college affects students: 21st century evidence that higher education work*. Jossey-Bass.
- Medina, J., Benner, K., & Taylor, K. (2019, March 12). *Actress, business leaders and other wealthy parents charged in U.S. college entry fraud*.
<https://www.nytimes.com/2019/03/12/us/college-admissions-cheating-scandal.html>
- Melguizo, T., & Strober, M. (2007). Faculty salaries and the maximization of prestige. *Research in Higher Education, 48*(6), 633–668.
- Mettler, S. (2014). *Degrees of inequality: How the politics of higher education sabotaged the American dream*. Basic Books.
- Mincer, J. A. (1974). *Schooling, experience and earnings*. National Bureau of Economic Research.
- Mitchell, M., Leachman, M., & Saenz, M. (2019). *State higher education funding have pushed costs to students, worsened inequality*. Center on Budget and Policy Priorities. Retrieved from <https://www.cbpp.org/research/state-budget-and-tax/state-higher-education-funding-cuts-have-pushed-costs-to-students>

- Monsen, C. Z. (2018). Upward intergenerational mobility of college students: Does the type of institution matter? *The Park Place Economist*, 26.
<https://digitalcommons.iwu.edu/parkplace/vol26/iss1/17/>
- Mueller, C. W., & Parcel, T. L. (1981). Measures of socioeconomic status: Alternatives and recommendations. *Child Development*, 52(1), 13-20. <https://doi.org/10.2307/1129211>
- Naidoo, R. (2004). Fields and institutional strategy: Bourdieu on the relationship between higher education, inequality and society. *British Journal of Sociology of Education*, 25(4), 457-471. <https://doi.org/10.1080/0142569042000236952>
- National Center for Educational Statistics. (2008). *Integrated Postsecondary Education Data System (IPEDS)*, [Institutional data file]. <https://nces.ed.gov/ipeds/use-the-data/download-access-database>
- National Center for Educational Statistics. (2012). *Baccalaureate and beyond longitudinal study*. [Data file and codebook]. Retrieved from <https://nces.ed.gov/surveys/b&b/>
- National Center for Educational Statistics (2014). *Barron's Admissions Competitiveness Index* [Data file].
- Noel, R. A. (2018, May) *Race, economics, and social status*. U.S. Bureau of Labor Statistics. <https://www.bls.gov/spotlight/2018/race-economics-and-social-status/home.htm>
- Noftsinger, J. B., & Newbold, K. F., Jr. (2007). Historical underpinnings of access to American higher education. *New Direction for Higher Education*, 2007(138), 3-18. <https://doi.org/10.1002/he.250>

- O'Meara, K. A. (2007). Striving for what? Exploring the pursuit of prestige. In J.C. Smart (Ed.), *Higher Education: Handbook of Theory and Research* (Vol. XXII., pp. 121-179). Springer.
- Oreopoulos, P., & Petronijevic, U. (2013). Making college worth it: A review of research on the returns to higher education. *The Future of Children*, 23(1), 41-65.
- Ost, B. (2010). The role of peers and grades in determining major persistence in the sciences. *Economics of Education Review*, 29(6), 923-934.
<https://doi.org/10.1016/j.econedurev.2010.06.011>
- Park, J. J., Denson, N., & Bowman, N. A. (2013). Does socioeconomic diversity make a difference? Examining the effects of racial and socioeconomic diversity on the campus climate for diversity. *American Educational Research Journal*, 50(3), 466-496. <https://doi.org/ezproxy.uvm.edu/10.3102/0002831212468290>
- Pascarella, E. T., Seifert, T. A., & Whitt, E. J. (2008). Effective instruction and college student persistence: Some new evidence. *New Directions for Teaching & Learning*, 115, 55-70. <https://doi.org/10.1002/tl.325>
- Pérez-Peña, R., & Slotnik, D. E. (2012, January 31). Gaming the college rankings. *The New York Times*. <https://www.nytimes.com/2012/02/01/education/gaming-the-college-rankings.html>
- Perna, L. W., & Thomas, S. L. (2006). A framework for reducing the college success gap and promoting success for all. *National Symposium on Postsecondary Student Success: Spearheading a Dialog on Student Success*.
https://repository.upenn.edu/gse_pubs/328

- Perry, A. M. (2019, May 17). *Students need more than an SAT adversity score, they need a boost in wealth*. Brookings. <https://www.brookings.edu/blog/the-avenue/2019/05/17/students-need-more-than-an-sat-adversity-score-they-need-a-boost-in-wealth/>
- Pfeffer, F. T., & Hertel, F. R. (2015). How has educational expansion shaped social mobility trends in the United States? *Social Forces*, *94*(1), 143-180. <https://doi.org/10.1093/sf/sov045>
- Posselt, J. R., Jaquette, O., Bieibly, R., & Bastedo, M. N. (2012). Access without equity: Longitudinal analyses of institutional stratification by race and ethnicity, 1972-2004. *American Educational Research Journal*, *49*(6), 1074-1111. <https://doi.org/10.3102/0002831212439456>
- Preacher, K. J., Zyphur, M. J., & Zhang, Z. (2010). A general multilevel SEM framework for assessing multilevel mediation. *Psychological Methods*, *15*(3), 209-233. <https://doi.org/10.1037/a0020141>
- Raudenbush, S. W., & Bryk, A. S. (2002). *Hierarchical linear models: Applications and data analysis methods* (2nd ed.). Sage Publications.
- Reardon, S. F., Weathers, E. S., Fahle, E. M., Jang, H., & Kalogrides, D. (2019). *Is separate still unequal? New evidence on school segregation and racial academic achievement gaps*. (CEPA Working Paper No.19-06). Retrieved from <http://cepa.stanford.edu/wp19-06>
- Reback, R., & Alter, M. (2013). True for your school? How changing reputations alter demand for selective U.S. colleges. *Educational Evaluation and Policy Analysis*, *36*(3), 346-370. <https://doi.org/ezproxy.uvm.edu/10.3102/0162373713517934>

- Reber, S., & Sinclair, C. (2020, May 19). *Opportunity engines: Middle-class mobility in higher education*. Brookings Institute.
<https://www.brookings.edu/research/opportunity-engines-middle-class-mobility-in-higher-education/>
- Rivera, L. A. (2015). *Pedigree: How elite students get elite jobs*. Princeton University Press.
- Saenz, V. B. (2010). Breaking the segregation cycle: Examining students' precollege racial environments and college diversity experiences. *Review of Higher Education*, 34(1), 1-37. <https://doi.org/10.1353/rhe.2010.0000>
- Siedman, A. (2012). *College student retention: Formula for student success* (2nd ed.). Rowan & Littlefield Publishers.
- Silva, B. C., Boscancianu, C. M., & Littvay, L. (2020). *Multilevel structural equation modeling: Quantitative applications in the social sciences*, 179. Sage Publications
- Smith, D. G., Tova, E., & Garcia, H. A. (2012) Where are they? A multilevel examination of the distribution of full-time faculty by institutional type, race/ethnicity, gender and citizenship. *New Directions for Institutional Research*, 2012(155), 5-26.
<https://doi.org/ezproxy.uvm.edu/10.1002/ir.20019>
- Sneyers, E., & De Witte, K. (2017). Interventions in higher education and their effect on students success: A meta analysis, *Educational Review*, 70(2), 208-228.
<https://doi.org/10.1080/00131911.2017.1300874>
- Spence, M. (1974). Job market signaling. *The Quarterly Journal of Economics*, 87(3), 355-374. <https://doi.org/10.2307/1882010>

- Stinebrickner, R., & Stinebrickner, T. R. (2006). What can be learned about peer effects using college roommates? Evidence from new survey data and students from disadvantaged backgrounds. *Journal of Public Economic*, *90*, 1435-1454. <https://doi.org/10.1016/j.jpubeco.2006.03.002>
- Stout, R., Archie, C., Cross, D., & Carman, C. A. (2018). The relationship between faculty diversity and graduation rates in higher education. *Intercultural Education*, *29*(3), 399-417. <https://doi.org/10.1080/14675986.2018.1437997>
- Tamborini, C. R., Kim, C. H., & Sakamoto, A. (2015). Education and lifetime earnings in the United States. *Demography*, *52*(4), 1383-1407. <https://doi.org/10.1007/s13524-015-0407-0>
- Taylor, B. J., & Cantwell, B. (2019). *Unequal higher education: Wealth, status, and student opportunity*. Rutgers University Press.
- The Pell Institute for the Study of Opportunity in Higher Education. (2019). *Indicators of Higher Education Equity in the United States*. Retrieved from http://pellinstitute.org/indicators/reports_2019.html
- Thomas, S. L., Heck, R. H., & Bauer, K. W. (2005). Weighting and adjusting for design effects in secondary data analyses. *New Directions for Institutional Research*, *127*(Fall), 51-72.
- Thompson, J. (2019). Mobility in the middle: Bachelor's degree selectivity and the intergenerational association in status in the United States. *Research in Social Stratification and Mobility*, *60*, 16-28. <https://doi.org/10.1016/j.rssm.2019.02.001>
- Tinto, V. (1993). *Leaving college: Rethinking the causes and cures of student attrition* (2nd ed.). University of Chicago Press.

- Torche, F. (2011). Is a college degree still the great equalizer? Intergenerational mobility across levels of schooling in the United States. *American Journal of Sociology*, *117*(3), 763-807.
- Umbach, P. D., & Kuh, G.D. (2006). Students' experiences with diversity at liberal arts colleges: Another claim of distinctiveness. *The Journal of Higher Education*, *77*(1), 169-192. <https://doi.org/1080/00221546.2006.11778923>
- Wang, X., Su, Y., Cheung, S., Wong, E., & Kwong, T. (2013). An exploration of Biggs' constructive alignment in course design and its impact on students' learning approaches. *Assessment and Evaluation in Higher Education*, *38*(4). <https://doi.org/10.1080/02602938.2012.658018>
- Whitford, E. (2020, October 8). *There are so few that have made their way*. *Inside Higher Ed*. <https://www.insidehighered.com/news/2020/10/28/black-administrators-are-too-rare-top-ranks-higher-education-it%E2%80%99s-not-just-pipeline>
- WICHE. (2020). *Knocking at the college door*. <https://knocking.wiche.edu/report/>
- Wikipedia. (2019, December). *Dean's list*. https://en.wikipedia.org/wiki/Dean's_List
- Winston, G. C., & Zimmerman, D. J. (2003). Peer effects in higher education. *NBER Working Paper No. 9501*. <http://www.nber.org/papers/w9501>
- Zhang, L., Ehrenberg, R. G., & Liu, X. (2015). *Changing faculty employment at four-year colleges and universities in the United States*. NBER Working Paper 21827. <http://www.nber.org/papers/w21827>
- Zimmerman, D. J. (2006). Peer effects in academic outcomes: Evidence from a natural experiment. *Review of Economics and Statistics*, *85*(1), 9-23. <https://doi.org/10.1162/003465303762687677>

4.1.13. Appendix A.

Student and Institution Descriptive Statistics

Table A1

Student Demographics

Race	n	%
White	7550	73.9%
Black or African American	800	7.9%
Hispanic	720	7.1%
Asian	800	7.8%
American Indian or Alaska Native	30	0.3%
Native Hawaiian or other Pacific Islander	30	0.3%
Other	20	0.2%
Two or more races	250	2.4%
Sex		
Male	4380	42.8%
Female	5840	57.2%

SOURCE: U.S. Department of Education, National Center for Education Statistics, 2008/12 Baccalaureate and Beyond Longitudinal Study(B&B:08/12).

Table A2

Institutional Descriptive Statistics

Control	n	%
Private for-profit	50	0.5%
Private non-profit	4090	40.0%
Public	6080	59.5%
Size		
Under 1,000	100	1.0%
1,000 - 4,999	2570	25.1%
5,000 - 9,999	1680	16.4%
10,000 - 19,999	2480	24.3%
20,000 and above	3390	33.1%

SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), Fall 2008.

4.1.14. Appendix B.

Covariance and Correlation Matrices

Table B1

Within variance/covariance matrix

	PEER2	PEER4	PEER5	PEER6	PEER7
PEER2	1				
PEER4	0.444	1			
PEER5	0.594	0.403	1		
PEER6	0.224	0.119	0.214	1	
PEER7	0.041	0.051	0.036	0.178	1

Table B2

Within correlation matrix

	PEER2	PEER4	PEER5	PEER6	PEER7
PEER2	1				
PEER4	0.444	1			
PEER5	0.594	0.403	1		
PEER6	0.535	0.284	0.513	1	
PEER7	0.290	0.362	0.250	0.178	1

Table B3*Between variance/covariance matrix*

	PEER2	PEER4	PEER5	IGMR	INST1	INST2	INST3	INST7	INST12	PEER6	PEER7
PEER2	0.059										
PEER4	0.037	0.054									
PEER5	0.045	0.060	0.128								
IGMR	-0.075	-0.115	-0.107	2.208							
INST1	0.011	0.055	0.156	0.586	2.493						
INST2	0.018	0.028	0.042	-0.050	0.162	0.033					
INST3	0.195	0.347	0.597	-1.443	2.740	0.399	8.323				
INST7	0.060	0.127	0.176	-0.025	1.159	0.162	2.121	1.213			
INST12	0.108	0.193	0.282	-0.356	1.235	0.179	2.896	1.068	1.614		
PEER6	0.014	0.011	0.015	-0.035	0.028	0.009	0.084	0.027	0.062	0.026	
PEER7	0.007	0.013	0.011	-0.011	-0.001	0.002	0.022	0.003	0.008	0.001	0.008

Table B4*Between correlation matrix*

	PEER2	PEER4	PEER5	IGMR	INST1	INST2	INST3	INST7	INST12	PEER6	PEER7
PEER2	1										
PEER4	0.660	1									
PEER5	0.511	0.716	1								
IGMR	-0.207	-0.334	-0.202	1							
INST1	0.028	0.15	0.275	0.250	1						
INST2	0.398	0.667	0.651	-0.183	0.563	1					
INST3	0.277	0.518	0.577	-0.337	0.601	0.760	1				
INST7	0.223	0.497	0.447	-0.015	0.667	0.801	0.668	1			
INST12	0.348	0.654	0.619	-0.189	0.616	0.776	0.790	0.764	1		
PEER6	0.348	0.292	0.257	-0.144	0.110	0.309	0.180	0.154	0.302	1	
PEER7	0.317	0.646	0.338	-0.082	-0.011	0.155	0.087	0.030	0.068	0.101	1

4.1.15. Appendix C

Faculty and Staff of Color Structural Models

Figure C1

Staff of color structural model with significant pathways

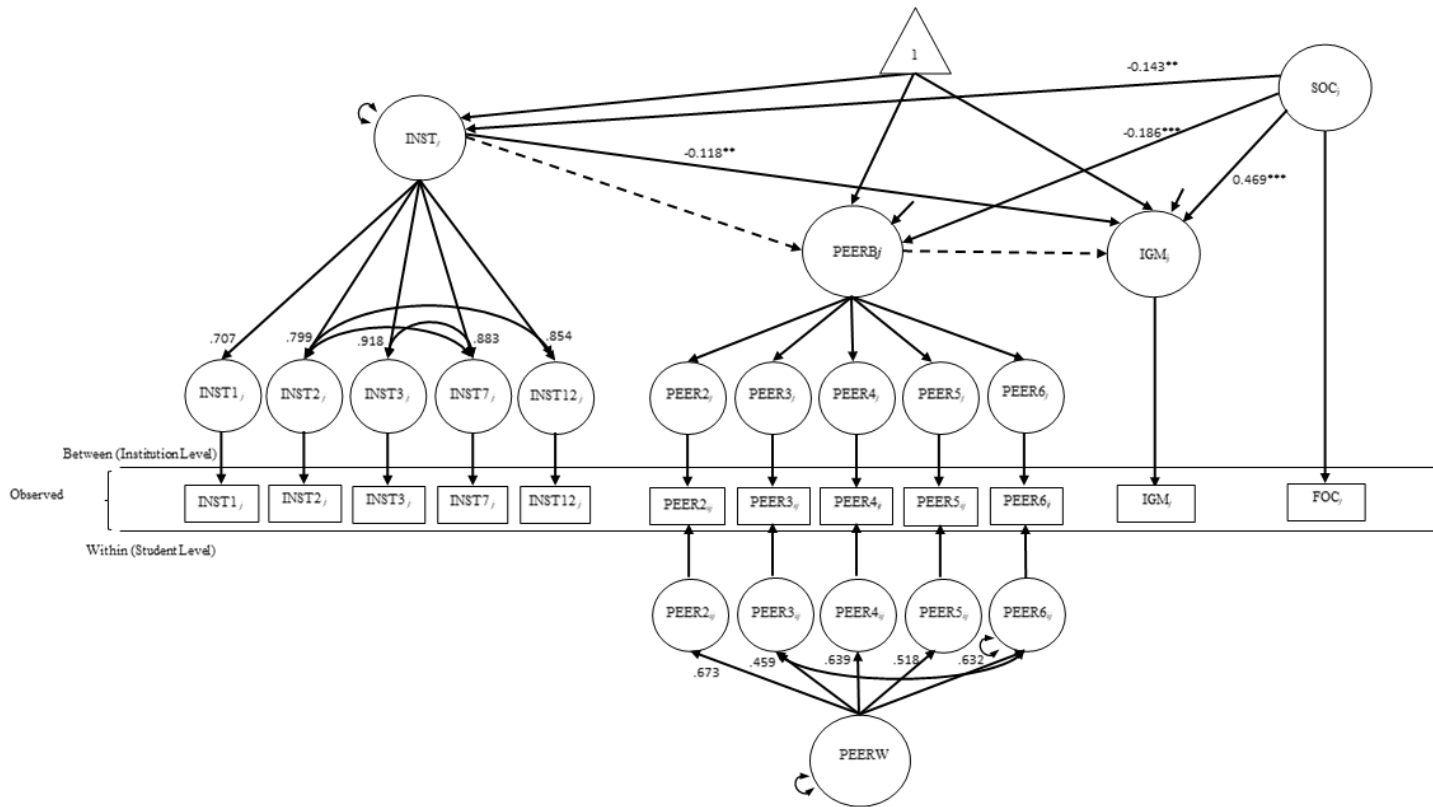
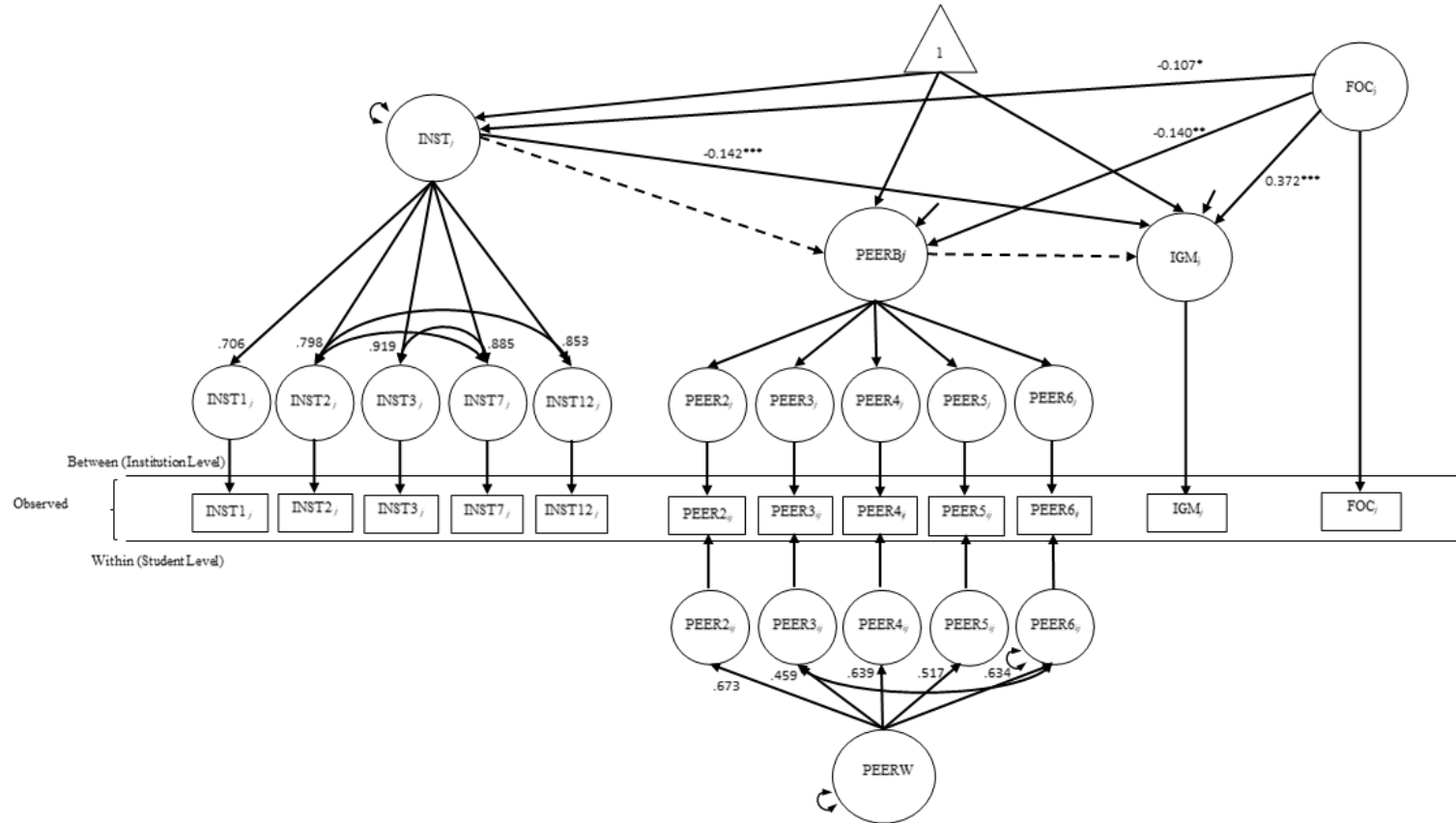


Figure C2

Faculty of color structural model with significant pathways



4.1.16. Appendix D.

Exploratory Factor Analysis Loadings

Table D1

EFA loadings

Variable	Factor 1	Factor 2
	Institutional Quality	Expenditures
Average faculty salary	0.745*	0.203*
Graduation Rate	0.933*	-0.110*
Median Parent Income	0.833*	-0.165*
Academic expenditures	0.004*	-0.891*
Faculty tenure ratio	0.047*	0.033
Student to faculty ratio	-0.421*	0.331*
Retention Rate	0.885*	0.081*
Research Expenditures	0.396*	0.763*
Endowment	0.502*	0.026
Admit Rate	-0.567*	0.100*
Yield Rate	-0.100*	0.242*
Median SAT	0.914*	0.006*

RMSEA=0.089; CFI=0.842; TLI=0.757; $\chi^2=22327.569$, $p=0.000$; SRMR=0.05

4.2. Title: Pathways of Mobility: Examining the Role of Higher Education Institutions in Student's Post-Graduation Socioeconomic Outcomes

This paper takes a novel approach to examining socioeconomic outcomes for college graduates, conceptualizing socioeconomic status as a multi-dimensional variable. My findings provide insights into the socioeconomic pathways students take following graduation and the importance of understanding student post-graduation trajectories.

4.2.1. Abstract

Utilizing national datasets, this study examined students' post-graduation socioeconomic outcomes and their relationship with measures of institutional quality, peer environment, intergenerational mobility, and compositional racial diversity. Analyzing multiple measures of socioeconomic status using latent class analysis, the results showed meaningful groupings of graduates both one and four years after graduation. The institutional intergenerational mobility rate was influential on group membership at both time points, while institutional quality was only influential one year after graduation. These findings demonstrate the importance of examining students' long-term socioeconomic outcomes and the influence of institutional characteristics.

Keywords: Post-graduation Outcomes, Socioeconomic Status, Higher Education

4.2.2. Introduction

Every year students and their families make the decision to pay the ever-increasing cost of attending college under the assumption that higher education is either a pathway to upward socioeconomic mobility or at least a safety net against downward mobility (Pope & Fermin, 2003; Roth, 2019). In exploring the role of higher education in socioeconomic outcomes, researchers from the fields of sociology and economics have traditionally analyzed the relationship through the lens of intergenerational mobility. Scholars have viewed higher education as a mechanism for disrupting the transmission of socioeconomic status between parents and adult children since Hout's (1988) study showing the association between socioeconomic origins and destinations almost disappeared for individuals with a bachelor's degree.

While researchers have consistently demonstrated the weakened association between the parent's socioeconomic status and adult children who obtain a bachelor's degree (Fox et al., 2016; Hauser & Logan, 1992; Pfeffer & Hertel, 2015; Torche, 2011), researchers pay less attention to how that association is weakened; relatively little attention is paid to differences in the institutions students attend or the diversity of students who attend them. However, higher education is not a monolithic experience, nor are the students attending a homogenous population; students experience differential outcomes, based on their demographics (Baum et al., 2013; Bowen et al. 2009; Creusere et al., 2019), as well as the institutional type (Giani, 2016; Heil et al., 2014; Monsen, 2018; Thompson, 2019). Additionally, traditional intergenerational mobility research captures individuals' socioeconomic status around the age of 40; this is the age at which lifetime earnings have been found to peak, making it a more accurate measure of

potential lifetime earnings (Baker & Solon, 2003; Haider & Solon, 2006; Torche, 2015).

To better understand how students and institutions interact to produce socioeconomic outcomes, my study examines how graduates' socioeconomic trajectories differ based on the institutional factors associated with institutional quality, peer environment, intergenerational mobility, and compositional racial diversity.

4.2.2. Language Clarification

Before delving into higher education's role in graduates' socioeconomic outcomes, it is essential to clarify what is meant by socioeconomic status. Socioeconomic status is a complex concept, with disagreement across the disciplines regarding measuring it. Socioeconomic status is defined by the American Psychological Association as follows:

Socioeconomic status (SES) encompasses not just income but also educational attainment, financial security, and subjective perceptions of social class.

Socioeconomic status can encompass quality of life attributes as well as the opportunities and privileges afforded to people in society. (n.d., para. 1)

Alternatively, Mueller and Parcel (1981) define socioeconomic status as a relational concept, stating socioeconomic status, "...describes social systems (usually society of community) in which individuals, families, or groups are ranked on certain hierarchies or dimensions according to their access to or control over some combination of valued commodities such as wealth, power, and social status" (p. 14).

4.2.3. Review of Literature

To contextualize the role of higher education in student socioeconomic trajectories, I provide the following literature review. I first summarize the existing

research on higher education outcomes, followed by an overview of the concept of intergenerational mobility to demonstrate the alignment between these two areas of study. I then provide a summary of the potential mechanisms through which attending higher education might disrupt socioeconomic status.

Higher Education Outcomes

Research on how higher education impacts students is an extensive, interdisciplinary area of study that explores the complex interaction between institutions and students (Mayhew et al., 2016). To understand higher education's role in socioeconomic trajectories, existing research on students' persistence to graduation and post-graduation earning based on institutional factors can guide how we account for the complicated relationship between students and institutions. The following section provides an overview of institutional factors associated with student persistence to graduation and post-graduation earnings.

Persistence to Graduation. Student persistence, which is defined by the National Student Clearinghouse Research Center (2015) as “continued enrollment (or degree completion) at any institution,” is a critical component to consider in exploring socioeconomic trajectories. Students who do not complete their degree benefit far less from their college experience than those who graduate (Giani et al., 2019). Yet persistence rates correlate strongly with socioeconomic status (Bailey & Dynarski, 2013), as do graduation rates (The Pell Institute for the Study of Opportunity in Higher Education, 2019).

Graduation and persistence rates vary across institutional selectivity, with open access colleges having the lowest rates at 49 percent, while selective colleges have the

highest at 82 percent (Carnevale & Van Der Werf, 2017). The stratification of institutions confounds the problematic differences in these graduation rates by socioeconomic status; selective institutions disproportionately enroll high-income students, while students from lower socioeconomic backgrounds attend less-selective or open-access institutions (Carnevale & Van Der Werf, 2017; Chetty et al., 2017a). The convergence of institutional stratification and differential graduation rates means that those in the top income quartile are more than twice as likely to graduate as those from the bottom quartile (Bailey & Dynarski, 2013).

Researchers seeking to explore other institutional factors contributing to improved student graduation rates have found institutional compositional elements such as lower student-to-faculty ratios and higher numbers of full-time faculty to be positively correlated with higher graduation rates (Long, 2008). Per-student instructional spending is also linked to higher graduation rates (Brown et al., 2018). However, institutions are again stratified in these areas; more selective institutions, on average, spend more per student than less selective institutions (National Center for Education Statistics, 2020), have lower student-to-faculty ratios, and a higher number of full-time faculty (Bound et al., 2009). The strong correlation between institutional selectivity and these institutional factors makes it challenging to draw any conclusions from the results due to the high likelihood of multicollinearity.

Earnings. In examining the influence of institutional factors on post-graduation earnings, graduates from more selective institutions can expect a higher return on their college degree than students attending lower selectivity institutions (Benson et al., 2017; Chetty et al., 2017a; Hoekstra, 2009). This wage premium significantly increases over

time rather than narrowing as students gain more workforce experience (Thomas & Zhang, 2005). Interestingly, Andrews et al. (2016) found that attending a high-quality (as defined by selectivity) institution benefited students from lower socioeconomic backgrounds the most. The influence of institutional selectivity can also vary by students' major choice (Eide et al., 2016; Thomas & Zhang), participation in campus experiences such as high-impact practices (Wolniak & Engberg, 2019), or alignment between occupation and major are influential on initial earnings (Melguizo & Wolniak, 2012; Oreopoulos & Petronijevic, 2013). Additionally, graduates of highly selective institutions may gain an earnings premium through well-placed alumni and social networks provided by the institution (Eide et al.; Rivera, 2015).

Intergenerational Mobility

Research on intergenerational mobility seeks to examine the relationship between an individual's socioeconomic origins and destination (Chetty et al., 2014) by comparing parents' socioeconomic status with their adult children's status (Fox et al., 2016). Upward intergenerational mobility indicates that an individual has achieved higher socioeconomic than their parents, while downward mobility suggests the opposite (Reeves, 2017). Studies by sociologists and economists consistently find that, on average, there is a weakened relationship between parent's and adult children's socioeconomic status for bachelor's degree recipients (Chetty et al., 2017a; Fox et al.; Gregg et al., 2017; Monsen, 2018).

However, when studies have included additional student and institutional characteristics, the relationship between higher education and mobility has become more complex. For example, while selective institutions provide high mobility rates, they

enroll relatively low percentages of students from lower socioeconomic backgrounds (Chetty et al., 2017a). In contrast, mid-tier public institutions combine moderate mobility levels with higher access for students from low- and middle-income backgrounds, providing greater mobility levels than selective institutions (Chetty et al.; Reber & Sinclair, 2020). Additionally, a 2019 study by de Alva found that institutions with the highest mobility levels also had the lowest percentages of first-generation students, students receiving Pell Grants, and Black students.

As demonstrated in the sections above, selectivity is a common metric for differentiating higher education institutions in research on student outcomes and intergenerational mobility. Yet, selectivity primarily captures students' pre-entry attributes and admissions standards; it does not, in fact, measure institutional characteristics (National Center for Educational Statistics, 2014; Carnegie Classification, 2018). Institutional quality measures may provide better insight to more accurately measure how institutional factors influence students' post-graduation socioeconomic trajectories.

Institutional Quality

Most of the previous studies highlighted in this review of literature use selectivity to differentiate institutions. Yet, selectivity as an institutional measure is typically a measure of admissions criteria, such as test scores, high school GPA, or high school ranking (National Center for Educational Statistics, 2014) and does not measure any features of the institution itself. Instead, selectivity serves as a proxy for quality due to its association with demand (Reback & Alter, 2014). The confluence of better outcomes, increased demand, and strong academic credentials of incoming students creates the

perception that the experiences within the institution are highly desirable and, therefore, high quality. This assumption overlooks selective institutions' inherent advantage to select students most likely to succeed within higher education regardless of institution attended. However, if what researchers seek to understand is how differences within institutions might influence student outcomes, other institutional measures such as academic quality and peer environment may provide better measures than selectivity alone.

Academic Quality. Many rankings organizations claim to measure the quality of institutions. Yet, like selectivity, rankings such as U.S. News and World Report, Princeton Review, etc., focus primarily on measures of quality associated with institutional reputation and admissions criteria (Dill & Soo, 2005; Ehrenberg, 2002). These organizations overlook essential elements of institutions, such as the quality of the learning experience or institutions' ability to support students' academic pursuits. Measuring the quality of the learning experiences is inherently difficult to assess since learning is a complex relational process. However, researchers have demonstrated that active learning techniques (Braxton et al., 2000; Braxton et al., 2008), instructional clarity and preparation (Pascarella et al., 2008), as well as alignment between course outcomes and assessment tasks (Wang et al., 2013) contribute to student learning and achievement of course outcomes. The body of research focused on *high-impact practices* and also highlights some of the methods through which students actively engage with

curricular and co-curricular learning and are considered essential factors in determining an institution's academic quality (Kilgo et al., 2015; Kuh, 2008).

How institutions allocate resources, especially as cuts in state and federal funding continue to make financial resources scarce (Mitchell et al., 2018), is another marker of academic quality. The allocation of scarce resources provides insight into college administrators' priorities. Decisions on the distribution of resources impact the number of courses offered, size of course, and academic support availability. The results of these decisions affect students' learning and their ability to complete their degrees (Bound et al., 2010; Bound & Turner, 2007). Elite private and public research institutions dedicate more of their financial resources to research activities. In contrast, less selective state college and private institutions resources are directly or indirectly allocated to instructing and supporting students (Taylor & Cantwell, 2019).

Finally, engagement with diverse environments and cross-racial interactions has shown to be beneficial for post-college outcomes for students across racial backgrounds (Denson & Chang, 2009), and institutions with more faculty of color resulted in more frequent interactions across race (Park et al., 2013). Engagement with diversity can allow for students to challenge stereotypes, beliefs, and worldviews (Crisp & Turner, 2011) and potentially weaken the "cycle of segregation" within society (Sáenz, 2010). Institutions with more faculty of color also have higher graduation rates across all racial groups, but especially for students from minoritized racial groups (Stout et al., 2018). However, it should be noted that proximity does not necessarily lead to interactions (Berry, 2008), and a positive racial climate, as well as numeric diversity, is required for beneficial cross-racial interactions (Jayakumar, 2008). For students from minoritized populations, having

faculty who share their identities is valuable as they are not the sole representative of the race in the classroom or other campus settings (Marx & Goff, 2005).

Peer Environment. Research on the effect of peers on individual student's learning, also known as the peer effect, suggests that peers within an academic environment can also influence outcomes (Winston & Zimmerman, 2003). Peer effect research indicates that peer academic ability and other peer characteristics, such as social capital or leadership ability, might positively influence an individual's academic performance (Carrell et al., 2008; Ficano, 2010; Zimmerman, 2003). Since high achieving students (defined by SAT scores and high school GPA), as well as students with more social capital, tend to be concentrated in more selective institutions (Buchmann et al., 2010; Rivera, 2015), it is essential to consider peer characteristics as a mechanism through which selective institution influence intergenerational mobility.

While initial studies on peer effects within higher education found peers to be influential, these studies were concentrated at small, selective institutions (Goethels et al., 1999; Zimmerman, 2003). More recent studies provide a more complicated picture, where students are not equally influenced by all peers, with friends and classmates being more influential than roommates (Lin, 2010; Luppino & Sander, 2015; Ost, 2010). There is also disagreement in the literature regarding the direction of the impact. Luppino and Sanders found that students majoring in science were less likely to graduate when surrounded by academically stronger peers. In contrast, Ost found that individuals persisted more in science courses when their peers were also more likely to persist. Finally, differences appear to exist based on gender (Ficano, 2012; Ost; Stinebricker & Stinebricker, 2006).

Influence of the Labor Market. Students' transition from college into the labor market is another area where institutions may influence students' socioeconomic outcomes, with students, institutions, and employers all playing a role in the process. While researchers outside of the US have investigated this transitional process, it is an area that has received less attention within the US due to the challenge of tracking students' past graduation (Asonitou, 2015; Bridgestock & Cunningham, 2014; Clarke, 2017; Tholen et al., 2013).

Intergenerational mobility researchers assume education influences mobility either through the lens of human capital theory or signaling screening theory. Through a human capital lens, employers value degrees because they believe that graduates have enhanced their skills and knowledge through education (Becker, 1964). Alternatively, signaling screening theories view degrees as a signal of an individual's inherent skills and characteristics and *signaled* by a degree (Spence, 1974). Both theories operate under the assumption that it is primarily intellectual skills and abilities that account for employers' demand, overlooking the role of social and cultural capital in navigating the transition through education and into the workforce (Armstrong & Hamilton, 2013; Rivera, 2011).

Central to the role of social and cultural capital in the transition into the labor market is the idea of employability and what skills, abilities, or qualities are most valued in the labor market. In exploring what makes graduates employable and how institutions facilitate that employability, Holmes (2013) presented three perspectives to examine the relationship between higher education and student employability. These three perspectives suggest employability as based on specific skills individuals acquire (employability as possession), possession of dominant class cultural capital and

understanding of the rules of the game (employability as social positioning), or a starting stage in an individual's post-graduation trajectories that are influenced by contextual and social background (employability as processual).

It is worth noting that there may be considerable overlap between academic quality, peer environment, and labor market trajectories. Selective institutions can be more discriminating in their admissions as their prestigious reputations lead to higher demand for limited admissions slots. Institutions can select students with built-in advantages of enhanced academic preparation, strengthening the academic environment (Clark et al., 2009; Bastedo & Jaquette, 2017). With prestige also come more resources allowing institutions to hire more tenure-track faculty, offer more courses and sections, provide more academic support resources, and focus more acutely on the central mission of student learning (O'Meara, 2007). Additionally, these institutions can provide more resources and support to students as they navigate the transition into the workforce and leverage their substantial networks in the process (Rivera, 2016). The interrelated nature of academic quality, peer environment, prestige, and transition into the labor market makes understanding higher education's role in student's socioeconomic outcomes challenging.

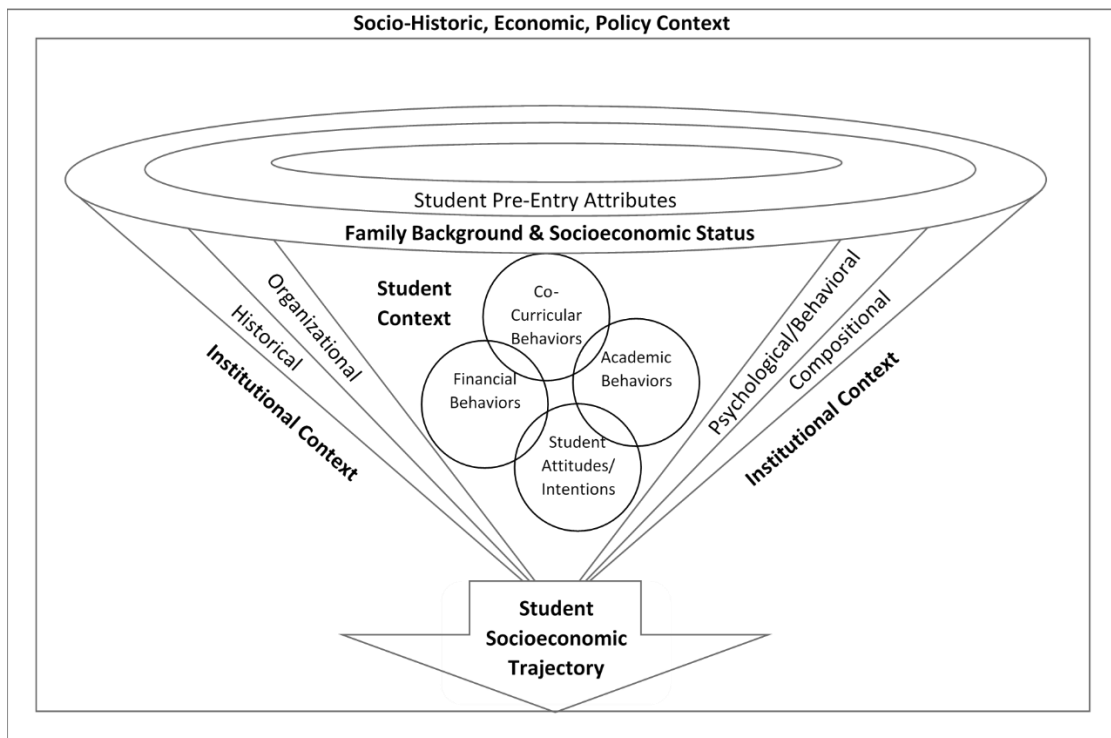
4.2.4. Conceptual Framework

The complexity of the relationship between students and institutions adds to the challenge of understanding higher education's role in intergenerational mobility. To capture the complexity of the relationship, the integrative model of higher education and intergenerational mobility conceptual framework (Figure 1) recognizes the interrelated relationship between institutions and students that is necessary for understanding the role

of higher education in intergenerational mobility (Simpfenderfer, forthcoming). Drawing from student persistence, student engagement, and ecological systems theories, this holistic model provides a visual of how student and institutional characteristics interact to influence students' pathways through higher education and their socioeconomic trajectories following graduation.

Figure 1

Integrative Model of Intergenerational Mobility and Higher Education



The model defines the institutional context, not just in terms of structural-demographic features, but as a multi-dimensional environment made up of institutional-level (historical legacy, organizational structure, and compositional diversity) and individual-level (psychological perceptions and behavioral experiences) dimensions (Hurtado et al., 2012). Additionally, this model's institutional context interacts with the

student and family context to shape students' experience within higher education and their post-graduation trajectory. The student context pulls from Tinto (1993), Astin (1999), and Perna and Thomas (2006) to conceptualize the complex nature of students' experiences within higher education. Students' academic, financial, and co-curricular behaviors, as well as their attitudes and intentions, interweave to impact their pathway through the institution and to their socioeconomic status following graduation. The conceptual framework acknowledges that students do not merely pass through higher education but are shaped by institutions' organizational context that continues to influence students' outcomes follow graduation.

4.2.5. Methods

The integrative model of higher education and intergenerational mobility and literature review demonstrates the complexity of understanding higher education's influence on graduates' socioeconomic trajectories. This study's primary purpose is to explore that complexity by examining how institutional factors might impact graduates' socioeconomic trajectories. The questions guiding this analysis include:

1. To what extent do college graduates cluster into meaningful groups based on socioeconomic indicators?
2. To what extent do measures of institutional quality, peer environment, and intergenerational mobility rates predict the probability of college graduates' socioeconomic grouping?
3. How do the above results differ when accounting for the institution's compositional diversity of faculty and staff?

Positionality

As a researcher, it is important that I acknowledge my own identity and continually reflect on how that identity and my experiences shape and impact my research, including the topics I am drawn to, the choices I make, and how I interpret information. I am a White, straight, cisgender woman who grew up in an upper-middle-class environment. I spent most of my life around people who looked like me, and my values and beliefs were shaped by the conservative mentality of “pulling yourself up by your bootstraps.” It was not until I attended college that I began to recognize that my experience was not the experience of all students. While my family experienced financial hardships at the time, I was applying to and attending college. I now recognize the privilege afforded to me from my upper-middle-class background. The access to education I took for granted is not universal, and many individuals experience barriers to education due to social and economic forces beyond their control. The inequities within higher education drive me to interrogate how access to and success within higher education differs amongst and across different groups and explore how access to higher education shapes post-graduation opportunities.

Data Sources and Sample

Data for this research study was drawn from the third cohort of the NCES Baccalaureate and Beyond Longitudinal Study (B&B:08/12) and the Integrated Postsecondary Education Data System (IPEDS, 2008). In creating the sample for this study, I first limited institutions to four-year degree-granting institutions included in the B&B:08/12 study. Using only institutions that exist in B&B:08/12, supplemental institutional information was drawn from IPEDS. To best estimate institutional

characteristics that coincided with students from B&B:08/12, I limited data drawn from IPEDS to the 2007/2008 academic year, which is the year B&B:08/12 students graduated.

In considering students to include in the study, the sample was limited to those who had not previously received a bachelor's degree before their 2007/2008 graduation. I removed individuals who completed the 2009 but not the 2012 wave from the analysis. Additionally, individuals who were currently enrolled in a school in 2012 were also removed from the final sample, resulting in $n=7250$.

Measures

To analyze the influence of institutional factors on students' post-graduation trajectories, I included socioeconomic status measures, institutional quality, peer environment, intergenerational mobility rates, and compositional racial diversity.

Socioeconomic Index. The first step in examining the socioeconomic trajectories for individuals graduating with a bachelor's degree was selecting socioeconomic well-being measures. I chose the below variables from the dataset as measures that relate to an individual's socioeconomic well-being, recognizing the socioeconomic well-being is more than a single measure, such as income (American Psychological Association, 2015). Scholars have found that multiple socioeconomic measures more accurately measure socioeconomic well-being (Bavaro & Tuillio, 2019; Cowan et al., 2012; Dotto et al., 2018). All variables were collected through B&B:08/12 in both the 2009 and 2012 follow-up studies. The selected variables are detailed below in Table 1 with their associated values. Original values and distributions are provided in Appendix A, Table A1. The categorical values' scaling was adjusted so that a lower score on the socioeconomic variables indicates a lower level of socioeconomic well-being and vice

versa. I converted values from the B&B:08/12 dataset that were continuous (loan repayment, salary, and unemployment) into categorical values, so they were compatible with latent class. Additionally, I chose to keep responses coded as legitimately skipped as part of the B&B:08/12 interview protocol (National Center for Educational Statistics, 2015) in the dataset rather than treating the variables as missing to determine if skipped responses were related to class membership.

Institutional Quality. I selected institutional quality as a latent construct because theoretically, the institutional environment's quality should influence student socioeconomic outcomes (Becker, 1964). Therefore, students attending higher quality institutions should see improved socioeconomic outcomes due to either the superior skills and knowledge acquired from that institution or its reputation. The institutional quality measures also operationalize the organizational, compositional, historical, and behavioral elements of the conceptual framework presented above. These elements create the institutional context and shape the environment in which students learn and develop. Descriptive statistics of variables selected to operationalize institutional quality, the elements of the conceptual framework they speak to, and the range of values for each variable are provided in Appendix B, Table B1.

Peer Environment. I selected peer environment based on the existing literature indicating that peers influence students' learning and that peers confer additional academic and social benefits that result in improved socioeconomic outcomes. Tables B2 and B3 in Appendix B include variables selected, the elements of the conceptual framework they speak to, and the range of values for each variable. For the dichotomous peer variables, I recoded the measures so that one signified a desirable behavior (e.g., not

being on academic probation) and zero signified a non-desirable behavior (e.g., stopping out). Theoretically, at the individual student level, students learning in an environment with higher quality peers would enhance their skills and abilities (both academic and cultural) through the interaction (Winston & Zimmerman, 2003). However, I choose to examine these academic behaviors as institutional environmental factors rather than individual student behaviors.

Intergenerational Mobility. I used the intergenerational mobility variable from Chetty and colleagues' (2017a) work that created mobility scorecards for higher education institutions. In this study, the researchers calculated mobility rates as a product of the fraction of students who come from the bottom income quintile and the fraction of those students who end up in the top income quintile.

Compositional Racial Diversity. Faculty of color and staff of color were drawn from IPEDS and represent the percent of faculty or staff at an institution who identify as being folx of color.

4.2.6. Data Analysis

To address my research questions, I explored institutions' influence on individuals' socioeconomic status following graduating with a bachelor's degree. To expand the conceptualization of socioeconomic status, I chose to use multiple measures rather than a single measure such as occupation, income, class status, or wealth. Utilizing multi-dimensional socioeconomic status measures is more common in health outcomes research, especially in developing countries, where measures such as income are hard to come by for large populations (Goodwin et al., 2017; Sartipi et al., 2016). While this method of defining socioeconomic status is less common in intergenerational mobility

research, Torche and Spilerman (2009) utilized this method to operationalize family wealth in a study conducted on the influence of Mexican family's wealth on their adult children's outcomes.

To examine socioeconomic status following graduation, I utilized latent class analysis (LCA) modeling to determine if graduates cluster into distinct groups based on socioeconomic indicators. LCA is an appropriate technique for this analysis because it can divide individuals into unobserved (latent) subgroups or classes based on selected observed variables (Oberski, 2015). Each individual is assumed to belong to one and only one class, and individuals within a class are similar but differ across classes. LCA is preferable to simple cluster analysis because the probability modeling that underlies LCA allows formal statistical analysis for determining the number of clusters (Magidson & Vermunt, 2002). This type of modeling lends itself well to examining socioeconomic status. It allows for a multi-dimensional examination of socioeconomic well-being rather than unidimensional measures such as income or occupation. FIML was used to address missing or incomplete data.

Table 1*Socioeconomic Variables*

Variable name (Code)	Unweighted		Weighted	
	n	%	n	%
2009 Loan Repayment (SES091)				
0=Skipped	1160	16%	1030.96	14%
1=9%+	3100	43%	3507.99	48%
2=2-9%	970	13%	818.03	11%
3=0-2%	950	13%	887.61	12%
4=0%	1090	15%	1009.42	14%
2012 Loan Repayment (SES121)				
1=12%+	1780	25%	1557.56	21%
2=2-12%	1630	22%	1429.68	20%
3=0-4%	1010	14%	966.04	13%
4=0%	2830	39%	3300.72	46%
2009 Own a Home (SES092)				
1=Don't own a home	6150	85%	6113.51	84%
2=Own a home	1110	15%	1140.49	16%
2012 Own a Home (SES122)				
1=Don't own a home	4970	69%	5045.17	70%
2=Own a home	2280	31%	2208.83	30%
2009 Annual salary (SES093)				
1=\$0-10000	1820	25%	1638.94	23%
2=\$10000-26000	1860	26%	1841.87	25%
3=\$26000-39500	1760	24%	1866.51	26%
4=\$39500-250000	1810	25%	1906.69	26%
2012 Annual salary (SES123)				
1=\$0-22880	1810	25%	1734.29	24%
2=\$22880-37000	2750	38%	2805.10	39%
3=\$37000-53040	910	13%	939.33	13%
4=\$53040-470000	1780	24%	5684.17	78%
2009 Employer benefits (SES094)				
0=Skipped	1370	19%	1270.16	18%
1=No benefits	1580	22%	1475.30	20%
2=Benefits	4300	59%	4508.54	62%

2012 Employer benefits (SES124)				
0=Skipped	640	9%	664.50	9%
1=No benefits	930	13%	905.33	12%
2=Benefits	5690	78%	5684.17	78%
2009 Percent of time unemployed (SES095)				
1 = 2%+	1180	16%	1257.61	17%
2 = 1-2%	2060	28%	2039.20	28%
3 = 0 – 1%	4010	55%	3957.19	55%
2012 Percent of time unemployed (SES125)				
1=2%+	1740	24%	1668.13	23%
2=1-2%	1550	21%	1344.48	19%
3=0 – 1%	3960	55%	4241.39	58%
2009 Job satisfaction (SES096)				
0=Skipped	1250	17%	1138.47	16%
1=Not satisfied	1550	21%	1612.01	22%
2=Satisfied	4450	61%	4508.54	62%
2012 Job Satisfaction (SES126)				
1=Not satisfied	2060	30%	2089.07	30%
2=Satisfied	4810	70%	4814.15	70%
2009 Number of jobs (SES097)				
0=0 job	1250	17%	1138.47	16%
1=1 jobs	5010	69%	5141.06	71%
2=2 jobs	840	12%	826.68	11%
3=3+ jobs	150	2%	147.79	2%
2012 Number of jobs (SES127)				
0=0 job	1190	16%	1093.36	15%
1=1 jobs	5600	77%	5728.35	79%
2=2 jobs	420	6%	389.96	5%
3=3+ jobs	40	1%	42.33	1%

SOURCE: U.S. Department of Education, National Center for Education Statistics, 2008/12 Baccalaureate and Beyond Longitudinal Study(B&B:08/12).

To determine the appropriate number of classes in both 2009 and 2012, I conducted LCA using Mplus 8.3 for different numbers of classes. The first step was to create unconditional probabilities for class membership for an individuals' socioeconomic status in 2009 and 2012. The unconditional probability indicates the

proportion of the population expected to belong to a latent class. I began with two classes and then increased the number of classes until fit indices, including AIC, BIC, ABIC, Lo-Mendell-Rubin likelihood ratio (LMR LR), and adjusted Lo-Mendell-Rubin likelihood ratio (ALMR LR) (Wang & Wang, 2020). Once I determined the appropriate number of classes for each year, I utilized the probabilities of belonging to each class based on socioeconomic variables to interpret the categories and provide a general description for each class.

Finally, I added four covariates to the model using a latent multinomial logit model: institutional quality, peer environment, institutional intergenerational mobility rate, and faculty or staff of color. The institutional quality and peer environment measures were latent factor scores generated through a multilevel structural equation model examining the relationship between institutional factors and intergenerational mobility (Simpfenderfer, forthcoming). The factor loadings and descriptive statistics of these factors can be found in Appendix B. For a more detailed overview of the construction of these factors, please refer to Simpfenderfer (forthcoming).

Limitations

The ability to measure an individual's socioeconomic outcomes is limited by data availability within the B&B:08/12 dataset. Some participants in the 2009 study did not complete the 2012 study, meaning I had to exclude them from the analysis. Although analysis indicated these individuals' attrition was not associated with any identifiable variables, their omission could bias the results, making them not generalizable to the larger population of college graduates. Additionally, while more robust than a single measure, socioeconomic status measures may not encompass all elements of individual

well-being. Essential factors such as familial wealth and support were not available. Finally, few students reported the amount of their student loan repayment, which could also influence socioeconomic well-being.

4.2.7. Results

The following section provides the results of each stage of my analysis used to answer my research questions. I have divided the results into sections that outline my analysis's progressive steps to highlight how each stage built upon the previous one. The analysis was conducted on graduates who reported in both 2009 and 2012 waves of B&B:08/12.

2009 Latent Class Identification

To begin, LCA was run for the socioeconomic variables provided by graduates in 2009 to determine the appropriate number of classes. Table 2 presents summaries of the LCA fit indices for each time period for two to four classes. The 2-class model has the largest AIC (82234.313), BIC (82475.439), and ABIC (82364.217) values, indicating that this model fits the data worse than all the other models. In addition, while the 2-class model had perfect entropy, the p-values of the LMR LR and ALMR LR are all <0.0001 ; this indicates that additional latent classes could provide a better fit for the data. The 4-class model shows slightly better fits for the AIC (79047.678), BIC (79536.819), and ABIC (79311.197) than the 3-class model. However, the p-values for both the LMR LR and ALMR LR are not significant, meaning that there is not a significant gain in the model fit by adding the fourth class. Plots showing the patterns of responses estimated from the three-class LCA are provided in Appendix C, Figure C1.

Table 2*2009 LCA Model Comparison*

	AIC	BIC	ABIC	LMR LR p-value	ALMR LR p-value	Entropy
2-Class Model	82234.313	82475.439	82364.217	0.000	0.000	1.000
3-Class Model	79302.043	79667.176	79498.754	0.000	0.000	0.848
4-Class Model	79047.678	79536.819	79311.197	0.253	0.2576	0.732

Based on the fit indices, I selected the 3-class model to examine the interpretability of the classes since the interpretability of the classes in LCA is as important as fit. I examined the interpretability of the latent class membership using the estimated item probabilities (Table 3). From the probabilities, three distinct groups emerged based on the socioeconomic indicators: SES insecure (Class 1), SES secure (Class 2), and SES frustrated (Class 3). The majority of the graduates (54%) were categorized as SES secure (i.e., in Class 2). Only 9% of the graduates had student debt that was over 9% of their incomes; almost a quarter (23%) owned their own home; 90% of them were making over \$26,000 a year, with 48% making over \$39,500²; 94% had a job with benefits; 62% had been unemployed for less than one percent of the time since graduation; 82% were satisfied with their job; 91% were working two jobs. These probabilities taken together indicate that while the graduates in this category may have some student debt and more than one job, they have achieved a relatively stable level of socioeconomic status.

² Salaries are presented in 2009 dollars and not adjusted for inflation.

Compared to the SES secure group, the SES insecure and SES frustrated had class probabilities indicating a less stable level of socioeconomic status. Over 20% of the SES insecure group had student debt that was greater than 9% of their income; 92% did not own a home; 65% made between \$10,000 and \$26,000 a year; 56% had no benefits; 51% had been unemployed for less than 1% of the time; 59% were, however, satisfied with their job; and 73% had more than two jobs. These probabilities indicate that these students may have achieved less socioeconomic stability than the SES secure group but that they are not necessarily unhappy with their current status – a contrast between this group and the SES frustrated group.

Table 3

2009 Class Probabilities

	Latent class		
	1 - SES Insecure (n=2189)	2 - SES Secure (n=3926)	3 - SES frustrated (n=1138)
<i>Unconditional probability</i>	0.300	0.540	0.160
<i>Conditional probability</i>			
2009 Loan Repayment (SES091)			
0 = skipped	0.388	0.387	1.000
1=9%+	0.213	0.087	0.000
2=2-9%	0.076	0.186	0.000
3=0-2%	0.037	0.240	0.000
4=0%	0.286	0.099	0.000
2009 Own a Home (SES092)			
1=Don't own a home	0.921	0.772	0.925
2=Own a home	0.079	0.228	0.075
2009 Annual salary (SES093)			
1=\$0-10000	0.221	0.000	1.000
2=\$10000-26000	0.647	0.098	0.000

3=\$26000-39500	0.107	0.422	0.000
4=\$39500-250000	0.025	0.481	0.000
2009 Employer benefits (SES094)			
0=Skipped	0.041	0.010	1.000
1=No benefits	0.564	0.051	0.000
2=Benefits	0.395	0.939	0.000
2009 Percent of time unemployed (SES095)			
1 = 2%+	0.201	0.107	0.342
2 = 1-2%	0.288	0.273	0.294
3 = 0 – 1%	0.510	0.620	0.364
2009 Job satisfaction (SES096)			
0=Skipped	0.000	0.000	1.000
1=Not satisfied	0.410	0.177	0.000
2=Satisfied	0.590	0.823	0.000
2009 Number of jobs (SES097)			
1=1 job	0.000	0.000	1.000
2=2 jobs	0.726	0.908	0.000
3=3 jobs	0.226	0.082	0.000
4=4+ jobs	0.048	0.010	0.000

The SES frustrated group was the most likely to skip questions related to their socioeconomic status. 100% of this group skipped the student loan, benefits, and satisfaction questions. Additionally, 93% did not own a home; 100% had salaries of \$10,000 or less; over 60% had been employed for more than 1% of the time, with 34% having been employed for more than 2%; 100% also only had one job. The probabilities taken in combination show that the graduates with the lowest salaries may feel frustrated with their current status, leading them to skip questions in the survey.

2012 Latent Class Identification

Like the 2009 class identification, LCA was run for the socioeconomic responses provided by graduates in 2012 to determine the appropriate number of classes. **Error!**

Reference source not found. Table 4 presents summaries of the LCA fit indices for each

time period for two to four classes. The 2-class model again had the largest AIC (83873.715), BIC (84087.284), and ABIC (83988.773) values, indicating that this model fits the data worse than all the other models. In addition, the p-values of the LMR LR and ALMR LR are all $p < 0.0001$; this indicates that additional latent classes could provide a better fit for the data. Both the 3-class and 4-class models showed better fits for AIC, BIC, and ABIC than the 2-class model, with the 4-class model providing slightly better fits across all indices. All the p-values for both the LMR LR and ALMR LR for the 3-class model were not significant at $p < .001$, and the 4-class model were not significant at $p < 0.01$. However, the entropy for the 4-class model was better higher (0.694) than the 3-class model (0.633).

Table 4

2012 Model Comparisons

	AIC	BIC	ABIC	LMR LR p-value	ALMR LR p-value	Entropy
2-Class Model	83873.715	84087.284	83988.773	0.000	0.000	0.754
3-Class Model	83157.275	83481.073	83331.717	0.002	0.002	0.633
4-Class Model	82732.911	83166.937	82966.737	0.028	0.029	0.694

Since the fit indices did not provide a clear picture of the appropriate number of classes, I examined both the 3-class and 4-class probabilities for interpretability. Similar to the 2009 LCA, the 3-class model for 2012 (Table 5) provided a more interpretable grouping of individuals and was selected as the appropriate model. The 3-class model probabilities are provided in Table 5 below. From the probabilities, three distinct groups emerged based on the socioeconomic indicators: SES Insecure (Class 1), SES satisfied

(Class 2), and SES secure (Class 3). Plots showing the patterns of responses estimated from the 3-class LCA are provided in Appendix C, Table C2.

Table 5

2012 Class Probabilities

	Latent class		
	1 - SES Insecure (n=1318)	2 - SES Satisfied (n=3319)	3 - SES Secure (n=2617)
<i>Unconditional probability</i>	0.180	0.460	0.360
<i>Conditional probability</i>			
2012 Loan Repayment (SES121)			
1=12%+	0.400	0.298	0.004
2=2-12%	0.051	0.251	0.209
3=0-4%	0.036	0.063	0.278
4=0%	0.513	0.388	0.509
2012 Own a Home (SES122)			
1=Don't own a home	0.855	0.745	0.542
2=Own a home	0.145	0.255	0.458
2012 Annual salary (SES123)			
1=\$0-22880	0.863	0.151	0.003
2=\$22880-37000	0.089	0.600	0.278
3=\$37000-53040	0.012	0.139	0.183
4=\$53040-470000	0.036	0.109	0.536
2012 Employer benefits (SES124)			
0=Skipped	0.401	0.000	0.037
1=No benefits	0.402	0.080	0.027
2=Benefits	0.197	0.920	0.936
2012 Percent of time unemployed (SES125)			
1=2%+	0.349	0.289	0.087
2=1-2%	0.155	0.233	0.141
3=0 – 1%	0.496	0.478	0.772
2012 Job Satisfaction (SES126)			

1=Not satisfied	0.610	0.269	0.216
2=Satisfied	0.390	0.731	0.784
2012 Number of jobs (SES127)			
1=1 job	0.499	0.117	0.000
2=2 jobs	0.407	0.830	0.952
3=3 jobs	0.077	0.050	0.045
4=4+ jobs	0.017	0.003	0.003

In 2012, slightly less than half of the graduates in the sample (46%) were categorized as SES satisfied (i.e., in Class 2), which was a group not present based on 2009 responses. Graduates in this group were split across levels of student debt as a percent of income, with 25% having moderate levels (2-12%) and 39% having no debt; over a quarter (~26%) owned their own home; 60% were making \$22,800 to \$37,000 a year³, with only 15% making less than \$22,800; 92% had a job with benefits; 48% had been unemployed less than one percent of the time since graduation; 73% were satisfied with their job; 83% had two jobs. These probabilities taken together suggest that while these graduates were making relatively less compared to other graduates and may have needed a second job to support themselves, they were still satisfied with their job.

Compared to the SES satisfied groups, the SES secure group had socioeconomic indices that indicated a higher level of socioeconomic status across most measures. Almost 80% of the SES secure group paid less than 4% of their income in student loans, with 51% paying nothing; nearly half (46%) owned their own home; 54% made over \$53,000 a year; 94% had a job that provided benefits; 94% were satisfied with their job; 77% had been unemployed less than one percent of the time since graduation; and,

³ Salaries are presented in 2012 dollars and not adjusted for inflation.

similar to the satisfied group, 95% were working two jobs. These probabilities suggest the graduates had reached a relatively stable socioeconomic status, to the point where almost half were able to purchase their own home.

At the other end of the spectrum, the SES insecure group was much less likely to achieve higher levels on the socioeconomic measure included in this analysis. Although 51% of this group had no student loan debt, 41% were paying over 12% of their income towards their loans; 86% of these graduates did not own a home; 86% were making less than \$22,800 a year; only 20% were in a job that provided benefits; 50% had been unemployed less than one percent of the time since graduation; 61% were not satisfied with their job; 50% had only one job. As a whole, these probabilities suggest that these students may be in a more challenging socioeconomic position than their SES satisfied or SES secure peers and less satisfied with their current status. With the latent classes for socioeconomic status in both 2009 and 2012 established, the next part of my analysis involved including covariates to predict the latent class membership.

2009 Relationship to Covariates

I explored the relationship between the three latent classes in 2009 and four covariates: institutional quality, peer environment, institutional intergenerational mobility rate, and compositional racial diversity using a latent multinomial logit model (Appendix D, Table D1). I added the variables sequentially, starting with the institutional quality and peer environment, to examine how the institutional characteristics predicted class membership, then intergenerational mobility. Finally, I ran the model with both the faculty of color and staff of color separately as there is a strong correlation (0.878)

between the variables and because students interact with faculty and staff differently within higher education.

Across all the models, peer environment was not a significant predictor of class membership. However, institutional quality had a significant negative effect across all the models. Graduates who attended institutions with lower levels of institutional quality were more likely to be in the SES insecure (Class 1) and SES secure (Class 2) rather than the SES frustrated (Class 3) group. Likewise, in Model 2, graduates of institutions with lower levels of intergenerational mobility were more likely to be in the SES insecure, and SES secure rather than the SES frustrated group. In other words, both higher levels of institutional quality and intergenerational mobility resulted in graduates being more likely to be frustrated with their current socioeconomic status.

The addition of the faculty of color (Model 3) resulted in a significant negative relationship with graduates being more likely to be in the SES insecure rather than the SES frustrated group. This means institutions with lower percentages of faculty of color were more likely to be in the SES insecure group rather than the SES frustrated group. The addition of the FOC variable also changed the relationship between intergenerational mobility and class membership. Intergenerational mobility was no longer significant for predicting membership in the SES insecure rather than SES frustrated group. However, it did remain a significant negative predictor of membership in the SES secure group over the frustrated group. The staff of color (Model 4) variables were not a significant predictor of group membership. However, the addition of the SOC variable to the model had the same result on intergenerational mobility as the FOC variable. Intergenerational mobility was no longer significant for predicting membership in the SES insecure rather

than SES frustrated group. These results indicated that while the compositional diversity of the institution may not significantly affect socioeconomic trajectories, it may mitigate the influence of intergenerational mobility.

2012 Relationship to Covariates

I also explored the relationship between the three latent classes in 2012 and the same four covariates: institutional quality, peer environment, institutional intergenerational mobility rate, and compositional racial diversity using a latent multinomial logit model (Appendix D, Table D2). Across all the models, intergenerational mobility was the only variable that had a significant relationship on group membership. For Models 2-4, there was a significant negative relationship between intergenerational mobility and graduates' membership in the SES satisfied (Class 1) rather than SES secure (Class 2) and SES insecure (Class 3) groups. In other words, graduates who attended institutions with higher intergenerational mobility levels were more likely to be satisfied with their current socioeconomic status.

4.2.8. Discussion

This study explored students' socioeconomic outcomes and two points in time and their relationship with institutional quality, peer environment, institutional intergenerational mobility rate, and the institution's compositional racial diversity. My findings help advance our understanding of higher education's role in students' socioeconomic outcomes by looking at multiple socioeconomic well-being measures across time. Previous research on student post-graduation outcomes has primarily looked at earnings as a measure of socioeconomic status (Hu & Wolniak, 2013; Wolniak & Engberg, 2019). Likewise, intergenerational mobility research has historically utilized

only one socioeconomic status measure such as earnings, class, or occupation (Torche, 2015). In contrast, my study conceptualizes socioeconomic status as a multi-dimensional measure of socioeconomic well-being. My results indicate that students do cluster into meaningful groups following graduation based on these measures and that some institutional factors influence those groupings. The discussion section that follows places my findings in the context of both existing research and the integrative model of higher education and intergenerational mobility.

My results show an interesting grouping pattern of student socioeconomic outcomes one year and four years following graduation. One year after graduation, students were almost evenly split between those characterized as being socioeconomically secure (54%) and either insecure or frustrated with their circumstances (46%). These results reinforce existing research indicating that graduating from higher education is not a guaranteed ticket to socioeconomic well-being and that graduates may take diverse trajectories following graduation (Arum & Roska, 2014; Vedder et al., 2013). While some students do obtain relative economic stability following graduation, others may struggle. Within these groups, the individual variables also provide a more nuanced picture of graduates' lives. Student debt, which is a hotly contested issue across the country (Goldrick-Rab, 2016), varies across the groups. For the SES secure group, not only did they have higher salaries, but their loans were a lower percentage of the income, making loan repayment more feasible. For the SES insecure group, loan debt was split. Almost an equal percentage had zero debt (28%), as had debt over 9% of their income (21%). One explanation for this may be that students without debt have more flexibility to take a job that pays less but aligns with their interests or a

low-paid internship (American Student Assistance, 2015). This explanation also aligns with the high percentage of graduates who are satisfied with their job, even though it does not pay as well. Those with lower incomes and higher percentages of debt may fall into the 41% of graduates who were dissatisfied with their job.

Higher education administrators often tout the benefits of higher education regarding increased access to benefits, less time unemployed, and health outcomes (College Board, 2019). However, my study results indicate that college graduates are not guaranteed benefits or low levels of time unemployed. Instead, the responses grouped around income levels. Graduates in the SES secure group with higher income were more likely to have benefits and be unemployed for a shorter amount of time than graduates in the SES insecure group. However, one interesting finding was that most graduates in the secure and insecure groups had two jobs. For the secure group, this second job could be used by graduates to bolster economic security, while for the insecure group, the additional job could be out of necessity.

The SES frustrated group was notable for the pattern of skipping questions. All the graduates in this group skipped the student loan question, the benefits question, and the job satisfaction question. This skipped question pattern suggests these students may not have wanted to answer these questions due to sensitivity to the questions themselves (McNeeley, 2012). These graduates had the lowest levels of salary (<\$10,000) and may have experienced shame or embarrassment around their current socioeconomic status, leading them to skip these questions (Konstam et al., 2015). These graduates may personify the underemployed college graduate who finds themselves working at Starbucks or McDonald's rather than in the job or position they pictured.

Underemployment has been an especially troubling trend for students who graduated around the time of the great recession – over 40% of recent college grads report being employed in a role that does not require a college degree (Federal Reserve Bank of New York, 2021 February).

Four years after graduation, in 2012, graduates socioeconomic status grouped into similar clusters with both a socioeconomically secure and insecure group readily identifiable and with similar response patterns. However, most graduates were in a new category, SES satisfied, and the frustrated group was no longer present. The satisfied group is unique in that the graduates had relatively low incomes (\$22,880 – 37,000), but the vast majority (73%) were satisfied with those jobs. In contrast, the insecure group had low incomes (<\$22,880), but most (61%) were dissatisfied, while the secure group had high incomes (>\$37,000), but the vast majority (74%) were satisfied with their jobs. This grouping provides a much clearer delineation across the classes than was seen in the 2009 responses, indicating that socioeconomic trajectories were more stable further out from graduation. As the largest percentage of respondents, the emergence of the satisfied group also suggests that while students may initially prioritize socioeconomic security, they may gravitate to more fulfilling roles over time. Additionally, the percentage of graduates with benefits and lower amounts of time spent unemployed suggests that income may not be the sole driving factor in employment.

In examining the second research question, the institutional variables provided insight into how institutional environments might contribute to students' socioeconomic outcomes. Across all the models, the peer environment factor did not significantly influence students' group membership. These results are contrary to what would be

expected based on peer effects research – that peers within an academic environment influence outcomes (Winston & Zimmerman, 2003). Based on my study results, it appears that while the peer environment may be influential during college, its impact did not extend beyond graduation. Additionally, one year after graduation, the institution's quality was negatively associated with students belonging to the SES secure or insecure group rather than the frustrated group. This result indicates that the higher the institutions' quality, the more likely students were to be in the SES frustrated group rather than the SES insecure or SES secure groups. Students attending higher quality institutions may have greater expectations regarding their post-graduation socioeconomic outcomes and may be more easily disappointed or frustrated.

Chetty and colleagues' (2017a) study examined how institutions' combination of access and success provided greater intergenerational mobility levels for students within the institution. Additionally, previous research on intergenerational mobility has demonstrated that attending higher education is sufficient to disrupt individual socioeconomic status (Fox et al., 2016; Hauser & Logan, 1992; Pfeffer & Hertel, 2015; Torche, 2011). However, my study results indicate that the institutions' intergenerational mobility rate only influenced graduates' probability of being in the frustrated group versus the insecure group and had no influence on membership in the secure group. Like quality, the class membership was associated with lower intergenerational mobility levels, meaning that graduates attending institutions with lower mobility rates were more likely to be in the SES secure than SES frustrated group. These results make sense if we revisit Chetty and colleagues' study. In their results, the most prestigious institutions had the lowest mobility rates because they provided low access levels for students from lower

socioeconomic backgrounds. It is not unexpected, as my results indicate that graduates from these highly selective institutions are more socioeconomically secure.

Previous research specifically focused on earnings has found a long-term influence of attending a more selective institution on long-term earnings (Thomas & Zhang, 2005; Witteveen & Attewell, 2017). These studies indicate that the type of institution continues to influence earnings long past graduation. However, my results show that neither institutional quality nor peer environment significantly impacted how graduates grouped into classes four years after graduation. Suggesting that when considering socioeconomic variables other than just earnings, the institution attended might have less long-term influence. In contrast, the institutions' intergenerational mobility rate indicated that graduates were more likely to be in the SES satisfied group than the SES secure and SES insecure groups. Consistent with the results in 2009, group membership in the satisfied group was associated with lower institutional intergenerational mobility rates and more prestigious or selective institutions. Graduates from these institutions may not accept lower-paying positions or internships that are more fulfilling, as parents may buffer some of the economic challenges or provide financial support (Hamilton et al., 2018).

Engaging with diverse environments and cross-racial interactions is beneficial for post-college outcomes for students across racial backgrounds (Denson & Chang, 2009); institutions with greater numbers of faculty and staff of color result in more frequent interactions across races (Park et al., 2013). Yet, the addition of the faculty of color and staff of color variables into my model had no impact on graduates' groupings, which means that the institution's compositional racial diversity was not significantly predictive

of students being in one group over the other. These results indicate that while compositional racial diversity may provide educational benefits (Part et al., 2013), enhance student engagement (Museus et al., 2011), and improved graduation rates (Stout et al., 2018), these benefits may not extend beyond the campus experience to long term student outcomes.

Placing my results in the context of the integrative model of higher education and intergenerational mobility provides additional insight into the relationship between higher education institutions and socioeconomic outcomes. My results present defined groups of graduates, both one and four years out from graduation, demonstrating that students group into consistent clusters around socioeconomic outcomes. The groups identified in this study illuminate the complicated nature of socioeconomic outcomes, especially compared to previous research on earning alone. My study also connected the institutional environment with socioeconomic outcomes, as represented in the conceptual model, to understand how an institution's contextual elements influence student trajectories. Only the institutional quality and intergenerational mobility rates had a significant relationship with the socioeconomic outcomes presented in this study. These findings indicate that while the strength of the peer environment within an institution may influence students' academic behaviors and persistence to graduation, they do not have a long-term influence on outcomes. In contrast, the institution's organizational and behavioral elements, as captured by the institutional quality and intergenerational, appear to continue to influence graduates' outcomes immediately after graduation but may diminish over time. Based on these results, the following section provides implications for stakeholders and suggestions for future research.

4.2.9. Implications

Understanding the impact of higher education on long-term socioeconomic outcomes is essential for both institutional decision-makers and policymakers to fulfill the promise of upward mobility presented to students and their families. Based on this study's results, I make recommendations for the ways presidents, provosts, student affairs leaders, and employers might use these results to improve graduates' socioeconomic outcomes. Additionally, I offer policymakers and researchers recommendations for expanding my work to better understand the connection between higher education and post-graduation outcomes.

At the institutional level, enhanced focus on the transition into the workforce should be a priority for both presidents, provosts, and student affairs leaders. There has been an increased focus on retention and graduation rates to measure students' success and institutions' role in that success in recent decades (Barbera et al., 2017). However, much less attention is paid to the long-term outcomes of graduates. While many institutions report students' initial employment information through the National Association of Colleges and Employers (NACE) first destination survey and rankings organizations such as USNWR, these metrics only look at employment six months after graduation (Morse & Brooks, 2020; NACE, n.d.). While the lack of long-term data collection is understandable due to the difficulty of collecting information on graduates, it still limits institutional leaders' understanding of socioeconomic outcomes and their responsibility in those outcomes. With over 40% of recent graduates reporting being underemployed following graduation (Federal Reserve Bank of New York, 2021 February) and students graduating with increasing amounts of debt (Kerr, 2020),

institutions can no longer abdicate their responsibility to student outcomes once students cross the graduation stage.

Each year institutions spend millions of dollars on students' transition into college through orientation, residential living communities, and first-year experiences (van der Zanden et al., 2018; Wang et al., 2012). Yet, students navigate the transition out of college and into the workforce with less, if any, support. Students have to opt into many career programs and supports, despite the evidence that students from higher socioeconomic backgrounds are most likely to utilize and leverage campus resources (Zimmerman, 2017). To address the lack of structured support for college graduates, institutional leaders should take a more integrative approach to workforce transition. This integrative approach should include a proactive approach to career services, building career development into the curriculum, and integrating career and academic advising to holistically support students (Tudor, 2018). Many employers cite graduates as lacking vital interpersonal skills and knowledge to secure a job and succeed in the workplace (Wilkie, 2019). Integrating career development within the curriculum and academic advising programs could reduce barriers for students from lower-socioeconomic backgrounds by leveraging experiences they are already participating in on campus.

Employers are the other side of the workforce transition equation, possessing immense power in determining who has access to employment. Numerous studies have demonstrated the cultural and racial bias in hiring practices (Gaddis, 2015; Lang & Manove, 2011; Patterson et al., 2017), indicating a pressing need for employers to reevaluate their hiring practices, especially when it comes to campus recruiting. Many of the most prominent employers only recruit from select college campuses, based on the

institution's reputation (Rivera, 2016). This type of exclusionary hiring practices disadvantages students of color and students from lower socioeconomic backgrounds who are underrepresented at many of the top feeder schools for prestigious employers (Ma & Savas, 2014; The Pell Institute for the Study of Opportunity in Higher Education, 2019). Previously such employers have selected the time and resources required for traditional on-campus recruiting. However, as the COVID-19 pandemic has demonstrated, many activities, including hiring that were challenging or expensive due to travel requirements, can be accomplished remotely. Employers should take many of the strategies employed throughout the pandemic to recruit students from a more diverse pool of institutions rather than focusing on a select few.

Finally, educational researchers need to expand research on socioeconomic outcomes immediately after graduation and long-term. Other countries such as the United Kingdom and Australia have robust research around students' post-graduation outcomes, lacking in the US (Asonitou, 2015; Bridgestock & Cunningham, 2014; Clarke, 2017; Tholen et al., 2013). Part of this is due to the absence of connected data in the US, allowing students' college records to connect to their employment records. The lack of available data makes any kind of systemic tracking of students after graduation dependent on volunteers who agree to share their information. Both researchers and policymakers need to continue to push for more connected data systems, such as those proposed in the College Transparency Act of 2019. This legislation would allow for the collection of student-level data, which has previously been prohibited under the Higher Education Opportunity Act (2008), and facilitate the evaluation of student enrollment patterns,

progression, completion, and post-collegiate outcomes, in addition to higher education costs and financial aid.

Regarding directions for future research, the expansion of research on socioeconomic outcomes following graduation, as outlined above, is an essential first step. Access to longitudinal data would allow for analysis such as latent growth curve and growth mixture modeling, expanding on my study's research to examine how individuals' socioeconomic status changes over time. Additionally, studies that examine student variables such as major and occupation could provide information on the study's groupings. At the institutional level, the institutional and peer environment factors consisted of limited institutional and student behavior variables present in IPEDS and B&B:08/12. These variables only scrape the surface of the institutional factors that might influence students' socioeconomic outcomes. Supplementary data on students' interactions with higher education, such as the data collected through NSSE, FSSE, and Diverse Learning Environments surveys, could enhance researchers' ability to examine the relationship between students and institutions. Finally, qualitative and mixed methods research could look at higher education's role in students' socioeconomic outcomes at a deeper level. Adding students' personal stories and experiences, as well as institutional case studies, could further our understanding of the complexity of students' lived experiences as they transition out of higher education.

4.2.10. Conclusion

In this study, I take a novel approach to examining socioeconomic outcomes following graduation by conceptualizing socioeconomic status as a multi-dimensional variable. My findings provide new insights into the socioeconomic pathways students

take and the institutional factors influencing these pathways. Examining pathways reveal the importance of understanding students' socioeconomic trajectories and how institutional environments can affect them to provide socioeconomic mobility pathways.

4.2.11. References

- Andrews, R. J., Imberman, S. A., & Lovenheim, M. F. (2016). Recruiting and supporting low-income, high-achieving students at flagship universities. *NBER Working Paper* (22260). <http://www.nber.org/papers/w22260>
- American Psychological Association. (n.d.). *Education & socioeconomic status*. Retrieved from the American Psychological Association website: <https://www.apa.org/pi/ses/resources/publications/factsheet-education.pdf>
- American Student Assistance (2015). *Life delayed: The impact of student debt on the daily lives of young Americans*. https://www.canisius.edu/sites/default/files/*/life_delayed_12-2015_1.pdf
- Armstrong, E. A., & Hamilton, L. T. (2013). *Paying for the party: How college maintains inequality*. Harvard University Press.
- Asonitou, S. (2015). Employability skills in higher education and the case of Greece. *Procedia – Social and Behavioral Sciences*, 175, 283-290. doi:10.1016/j.sbspro.2015.01.1202
- Astin, A. W. (1999). Student involvement: A developmental theory for higher education. *Journal of College Student Development*, 40(5), 518–529.
- Arum, R., & Roksa, J. (2014). *Aspiring adults adrift: Tentative transitions of college graduates*. University of Chicago Press.
- Bailey, M. J., & Dynarski, S. M. (2013). Gains and gaps: Changing inequality in US college entry and completion. *NBER Working Paper*, 53(9), 1689–1699. <https://doi.org/10.1017/CBO9781107415324.004>
- Baker, M., & Solon, G. (2003). Earnings dynamics and inequality among Canadian men,

1976–1992. *Journal of Labor Economics* 21, 289–321.

- Barbera, S. A., Berkshire, S. D., Boronat, C., & Kennedy, M. H. (2017). Review of undergraduate student retention and graduation since 2010: Patterns, predictions, and recommendations for 2020. *Journal of College Student Retention: Research, Theory, & Practice*, 22(2), 227-250. <https://doi-org.ezproxy.uvm.edu/10.1177/1521025117738233>
- Bastedo, M. N., & Jaquette, O. (2011). Running in Place: Low-Income Students and the Dynamics of Higher Education Stratification. *Educational Evaluation and Policy Analysis*, 33(3), 318–339. <https://doi.org/10.3102/0162373711406718>
- Baum, S., Kurose, C., & Ma, J. (2013). *How college shapes lives: Understanding the issues*. Retrieved from College Board website: <https://research.collegeboard.org/trends/trends-higher-education>
- Bavaro, M. & Tullio, F. (2019). *Intergenerational mobility measurement with latent transition matrices* (Paper 358). ECINEQ. http://www.ecineq.org.ezproxy.uvm.edu/ecineq_paris19/papers_EcineqPSE/paper_358.pdf
- Becker, G.S. (1964). *Human capital: A theoretical and empirical analysis, with special reference for education*. Chicago, IL: University of Chicago Press.
- Benson, A., and Esteva, R., & Levy, F. S., (2017). Is college worth it? The economic return to college adjusted for dropouts, taxes, and risk. Manuscript in preparation. <https://ssrn.com/abstract=2555950>
- Berry, B. (2008). Indices of racial residential segregation: A critical review and redirection. In T. Zuberi & E. Bonilla-Silva (Eds.). *White Logic, White Methods:*

- Racism and Methodology* (pp. 203-216). Rowman & Littlefield Publishers, Inc.
- Bound, J., Lovenheim, M. & Turner, S. (2009). Why have college completion rates declined? An analysis of changing student preparation and collegiate resources. National Bureau of Economic Research, Working Paper No. 15566
- Bound, J. & Turner, S. (2007). Cohort crowding: How resources affect collegiate attainment. *Journal of Public Economics*, 91(5-6), 877-899.
<https://doi.org/10.1016/j.jpubeco.2006.07.006>
- Bound, J., Lovenheim, M. F., & Turner, S. (2010). Increasing time to baccalaureate degree in the United States. *NBER Working Paper 15892*.
<http://www.nber.org/papers/w15892>
- Bowen, W. G., Chingo, M. M., & McPherson, M. S. (2009). *Crossing the finish line: Completing college at American public universities*. Princeton University Press.
<https://www.jstor.org/stable/j.ctt7rp39>
- Braxton, J. M., Milem, J. F., & Sullivan, A. S. (2000). The influence of active learning on the college student departure process: Toward a revision of Tinto's theory. *The Journal of Higher Education*, 71(5). 569-590. DOI 10.2307/2649260
- Braxton, J. M., Willis, A. J., Hirschy, A. S., & Hartley III, H. V. (2008). The role of active learning in college student persistence. *New Directions for Teaching and Learning*, 115, 71-83. doi:10.1002/tl.326
- Bridgestock, R., & Cunningham, S. (2015). Creative labour and graduate outcomes: Implications for higher education and cultural policy. *International Journal of Cultural Policy*, 22(1), 10-26. <https://doi.org/10.1080/10286632.2015.1101086>
- Brown, J., Kurzweil, M., & Pritchett, W. (2017). *Quality assurance in U.S. higher*

education: The current landscape and principles for reform. Ithika S+R.

<https://doi.org/10.18665/sr.303620>

Buchmann, C., Condrón, D. J., & Roscigno, V. J. (2010). Shadow education, American style: Test preparation, the SAT and college enrollment. *Social Forces*, 89(2), 435-461. <https://doi.org/10.1353/sof.2010.0105>

Carnevale, A. P., & Van Der Werf, M. (2017). The 20% solution: Selective colleges can afford to admit more pell grant recipients. *Report of the Georgetown University Center on Education and the Workforce*. Retrieved from <https://cew.georgetown.edu/cew-reports/pell20/>

Carrell, S. E., Fullerton, R. L., & West, J. E. (2008). Does your cohort matter? Measuring peer effects in college achievement. *Journal of Labor Economics*, 27(3), 439-464. <https://doi.org/10.1086/600143>

Carnegie Classifications (2018) *Undergraduate Profile Classification* [Dataset and Methodology]. https://carnegieclassifications.iu.edu/classification_descriptions/undergraduate_profile.php

Chetty, R., Hendren, N. Kline, P. Saez, E., & Turner, N. (2014). Big data in macroeconomics: New insights from large administrative datasets. *American Economic Review*, 104(5), 141-147. DOI: 10.1257/aer.104.5.141

Chetty, R., Friedman, J., Saez, E., Turner, N., & Yagan, D. (2017a). Mobility report cards: The role of colleges in intergenerational mobility. <https://doi.org/10.3386/w23618>

- Clarke, M. (2017). Rethinking graduate employability: The role of capital, individual attributes and context. *Studies in Higher Education, 43*(1), 1923-1937.
- Clark, M., Rothstein, J., & Schanzenbach, D. W. (2009). Selection bias in college admissions test scores. *Economics of Education Review, 28*(3), 295-307.
<https://doi.org/10.1016/j.econedurev.2008.08.001>
- Cowan, C. D., Hauser, R. M., Kominski, R. A., Levin, H. M., Lucas, S. R., Morgan, S. L., Spencer, M. B., & Chapman, C. (2012). *Improving the measurement of socioeconomic status for the national assessment of educational progress: A theoretical foundation*. National Center for Educational Statistics.
https://nces.ed.gov/nationsreportcard/pdf/researchcenter/Socioeconomic_Factors.pdf
- Creusere, M., Zhao, H., Huie, S. B., & Troutman, D. R. (2019) Postsecondary education impact on intergenerational income mobility: Differences by completion status, gender, race/ethnicity, and type of major, *The Journal of Higher Education, 90*(6), 915-939, DOI: 10.1080/00221546.2019.1565882
- Crisp, R. J., & Turner, R. N. (2011). Cognitive adaptation to the experience of social and cultural diversity. *Psychological Bulletin, 137*(2), 242–266.
<https://doi.org/10.1037/a0021840>
- de Alva, J. K. (2019). *Is the university next door the way to upward mobility?* American Enterprise Institute. <https://www.aei.org/research-products/report/is-the-university-next-door-the-way-to-upward-mobility/>
- Denson, N., & Chang, M. J. (2009). Racial diversity matters: The impact of diversity-related student engagement and institutional context. *American Educational*

- Research Journal*, 46(2), 322-353. <https://www.jstor.org/stable/40284795>
- Dill, D. D., & Soo, M. (2005). Academic quality, league tables, and public policy: A cross-national analysis of university ranking systems. *Higher Education*, 49, 495-533. <https://doi-org.ezproxy.uvm.edu/10.1007/s10734-004-1746-8>
- Dotto, F., Farcomeni, A., Pittau, M. G., & Zelli, R. (2018). A dynamic inhomogenous latent state model for measuring material deprivation. *Royal Statistical Society*, 182(2), 495-516. <https://doi-org.ezproxy.uvm.edu/10.1111/rssa.12408>
- Ehrenberg, R. G. (2002). Reaching for the brass ring: The U.S. News & World Report rankings and competition. *The Review of Higher Education*, 26(2), 145-162. <https://digitalcommons.ilr.cornell.edu/articles/752>
- Eide, E. R., Hilmer, M. J., & Showalter, M. H. (2016). Is it where you go or what you study? The relative influence of college selectivity and college major on earnings. *Contemporary Economic Policy*, 34(1), 37-46.
- Federal Reserve Bank of New York (2021, February 12). *The Labor Market for Recent College Graduates*. https://www.newyorkfed.org/research/college-labor-market/college-labor-market_underemployment_rates.html
- Ficano, C.C. (2010). Peer effects in college academic outcomes - Gender matters! *Economics of Education Review*, 31(2012), 1102-1115. <https://doi.org/10.1016/j.econedurev.2012.07.012>
- Fox, L., Torche, F., & Waldfogel, J. (2016). Intergenerational mobility. *The Oxford Handbook of the Social Science of Poverty*, April, 1-34. DOI: 10.1093/oxfordhb/9780199914050.013.24
- Gaddis, M. S. (2015). Discrimination in the credential society: An audit study of race and

- college selectivity in the labor market. *Social Forces*, 93(4), 1451-1479.
<https://doi.org/10.1093/sf/sou111>
- Giani, M.S., Attewell, P., & Walling, D. (2019). The value of an incomplete degree: Heterogeneity in the labor market benefits of college non-completion. *The Journal of Higher Education*. <https://doi.org/10.1080/00221546.2019.1653122>
- Goethals, G. (1999). Peer Influences among college students: The Perils and the potentials, *Williams Project on the Economics of Higher Education DP-51*.
<https://sites.williams.edu/wpehe/files/2011/06/DP-50.pdf>
- Goldrick-Rab, S., Kelchen, R., Harris, D.N., & Benson, J. (2016). Reducing income inequality in educational attainment: Experimental evidence on the impact of financial aid on college completion. *American Journal of Sociology*, 121(6).
<https://doi.org/10.1086/685442>
- Goodwin, L., Gazard, B., Aschan, S., MacCrimmon, Hotopf, M., & Hatch, L. (2017). Taking an intersectional approach to define latent classes of socioeconomic status, ethnicity and migration status for psychiatric epidemiological research. *Epidemiology and Psychiatric Sciences*, 27, 589-600.
doi:10.1017/S2045796017000142
- Gregg, P., Jonsson, J.O., Macmillan, L., & Mood, C. (2017). The role of education for intergenerational income mobility: A comparison of the United States, Great Britain, and Sweden. *Social Forces*, 96(1), 121-152. doi: 10.1093/sf/sox051
- Haider, S., & Solon, G. (2006). Life-cycle variation in the association between current and lifetime earnings. *American Economic Review*, 96(4), 1308–20.

- Hamilton, L., Roska, J., & Nielsen, K. (2018). Providing a “leg up”: Parental involvement and opportunity hoarding in college. *Sociology in Education*, *91*(2), 111-131. <https://doi-org.ezproxy.uvm.edu/10.1177/0038040718759557>
- Hauser, R. M., & Logan, J. A. (1992). How not to measure intergenerational occupational persistence. *American Journal of Sociology*, *97*(6), 1689-1711.
- Heil, S., Reisel, L., & Attewell, P. (2014). College selectivity and degree completion. *American Educational Research Journal*, *51*(5), 913-935.
doi:10.3102/0002831214544298
- Hoekstra, M. (2009). The effect of attending the flagship university on earnings: A discontinuity-based approach. *The Review of Economics and Statistics*, *91*(4), 717–724.
- Holmes, L. (2013). Competing perspective on graduate employability: Possession position, or process? *Studies in Higher Education*, *38*(4), 538-554.
- Hout, M. (1988). More universalism, less structural mobility: The American occupational structure in the 1980s. *American Journal of Sociology* *93*(6), 1358-1400.
- Hu, S., & Wolniak, G. C. (2013) College student engagement and early career earnings: Differences by gender, race/ethnicity, and academic preparation. *Review of Higher Education*, *36*(2), 211-233.
- Hurtado, S., Alvarez, C. L., Guillermo-Wann, C., Cuellar, M., & Arellano, L. (2012). A model for diverse learning environments. In J. C. Smart & M. B. Paulsen (Eds.), *Higher education: Handbook of theory and research* (Vol. 27, pp. 41-122). New York: Springer.

- Jayakumar, U. M. (2008). Can higher education meet the needs of an increasingly diverse and global society? Campus diversity and cross-cultural workforce competencies. *Harvard Educational Review*, 78(4), 615–651.
- Kerr, E. (2020, September 15). *See 10 years of average total student loan debt*. U.S. News & World Report. <https://www.usnews.com/education/best-colleges/paying-for-college/articles/see-how-student-loan-borrowing-has-risen-in-10-years>
- Kilgo, C. A., Sheets, J. K. E., & Pascarella, E. T. (2015). The link between high-impact practices and student learning: Some longitudinal evidence. *Higher Education*, 69, 509-525. <https://doi-org.ezproxy.uvm.edu/10.1007/s10734-014-9788-z>
- Konstam, V., Celen-Demirtas, S., Tomack, S., & Sweeney, K. (2015). Career adaptability and subjective well-being in unemployed emerging adults: A promising and cautionary tale. *Journal of Career Development*, 42(6), 436-477. <https://doi-org.ezproxy.uvm.edu/10.1177/0894845315575151>
- Kuh, G. D. (2008) *High-impact practices: What they are, who has access to them, and why they matter*. Retrieved from <https://secure.aacu.org/imis/ItemDetail?iProductCode=E-HIGHIMP&Category=>
- Lang, K., & Manove, M. (2011). Education and labor market discrimination. *American Economic Review*, 101, 1467-1496. <http://www.aeaweb.org/articles.php?doi=10.1257/aer.101.4.1467>
- Lin, X. (2010). Identifying peer effect in student academic achievement by spatial autoregressive models with group observables. *Journal of Labor Economics*, 28(4), 825-860. <https://doi.org/10.1086/653506>
- Long, M. C. (2008). College quality and early adult outcomes. *Economics of Education*

Review, 27(5), 588-602.

Luppino, M., & Sander, R. (2015). College major peer effects and attrition from the sciences. *IZA Journal of Labor Economic*, 4(4), 1-23. doi:10.1186/s40172-014-0019-8

Ma, J., Pender, M., & Welch, M. (2019). *Education pays 2019: The benefits of higher education for individual and society*. College Board.

<https://research.collegeboard.org/pdf/education-pays-2019-full-report.pdf>

Magidson, J., & Vermunt, J.K. (2002). Latent class models for clustering: a comparison with K-means. *Canadian Journal of Marketing Research*, 20, 36-43.

Marx, D. M., & Goff, A. P. (2010). Clearing the air: The effect of experimenter race on target's test performance and subjective experience. *British Journal of Social Psychology*, 44(4), 645-657. <https://doi-org.ezproxy.uvm.edu/10.1348/014466604X17948>

Mayhew, M.J., Rothenbach, A.N., Bowman, N.A., Seifert, T.A., Wolniak, G.C.,

Pascarella, E.T., & Terenzini, P.T. (2016). *How college affects students: 21st century evidence that higher education work*. Jossey-Bass.

McNeeley, S. (2012). Sensitive issues in surveys: Reducing refusals while increasing reliability and quality of responses to sensitive survey items. In L. Gideon (Ed.), *Handbook of Survey Methodology for the Social Sciences* (pp. 377-396). Springer Science+Business Media

Melguizo, T., & Wolniak, G.C. (2012). The earnings benefits of majoring in STEM fields among high achieving minority students. *Research in Higher Education* 53, 265-291.

- Mitchell, M., Leachman, M., Masterson, K., & Waxman, S. (2018, October 4). *Unkept promises: State cuts to higher education threaten access and equity*. Center on Budget and Policy Priorities. <https://www.cbpp.org/research/state-budget-and-tax/unkept-promises-state-cuts-to-higher-education-threaten-access-and>
- Monsen, C.Z. (2018). Upward intergenerational mobility of college students: Does the type of institution matter? *The Park Place Economist*, 26. <https://digitalcommons.iwu.edu/parkplace/vol26/iss1/17/>
- Morse, R., & Brooks, E. (2020, September 13). *How U.S. news calculated the 2021 best colleges rankings*. U.S. News & World Report. <https://www.usnews.com/education/best-colleges/articles/how-us-news-calculated-the-rankings>
- Mueller, C. W., & Parcel, T. L. (1981). Measures of socioeconomic status: Alternatives and recommendations. *Society for Research in Child Development*, 52(1), 13-30. <https://www.jstor.org/stable/1129211>
- Museus, S. D., Palmer, R. T., Davis, R. J., & Maramba, D. C. (2011). Special issues: Racial and ethnic minority students' success in STEM education. *ASHE Higher Education Report*, 36(6), 1-140. <http://dx.doi.org/10.1002/aehe.3606>
- National Association of Colleges and Employers. (2019, July). *Standards and protocols for the collection and dissemination of graduating students initial career outcomes information for undergraduates*. NACE. <https://www.nacweb.org/uploadedfiles/files/2020/publication/first-destination/first-destination-survey-standards-and-protocols.pdf>

- National Center for Educational Statistics. (2008) *Integrated Postsecondary Education Data System (IPEDS)*, [Institutional data file]. <https://nces.ed.gov/ipeds/use-the-data/download-access-database>
- National Center for Educational Statistics. (2012) *Baccalaureate and beyond longitudinal study*. [Data file and codebook]. Retrieved from <https://nces.ed.gov/surveys/b&b/>
- National Center for Educational Statistics (2014). *Barron's Admissions Competitiveness Index* [Data file]. National Center for Educational Statistics. (2020, May). *The condition of education: Postsecondary institution expenses*. https://nces.ed.gov/programs/coe/indicator_cue.asp
- National Student Clearinghouse Research Center. (2015). *Persistence & retention - 2015*. Retrieved from <https://nscresearchcenter.org/snapshotreport-persistenceretention18/>
- Oberski, D. L., Hagenars, J. A. P., & Saris, W. E. (2015). The latent class multitrait-multimethod model. *Psychological Methods*, 20(4), 422-443. <https://doi.org/10.1037/a0039783>
- O'Meara, K. A. (2007). Striving for what? Exploring the pursuit of prestige. In J.C. Smart (Ed.), *Higher Education: Handbook of Theory and Research* (Vol. XXII., pp. 121-179). Springer.
- Oreopoulos, P., & Petronijevic, U. (2013). Making college worth it: A review of research on the returns to higher education. *The Future of Children*, 23(1), 41–65.
- Ost, B. (2010) The role of peers and grades in determining major persistence in the sciences. *Economics of Education Review*, 29(6), 923-934.

- Park, J. J., Denson, N., & Bowman, N. A. (2013). Does socioeconomic diversity make a difference? Examining the effects of racial and socioeconomic diversity on the campus climate for diversity. *American Educational Research Journal*, 50(3), 466-496. <https://doi-org.ezproxy.uvm.edu/10.3102/0002831212468290>
- Pascarella, E. T., Seifert, T. A., & Whitt, E. J. (2008). Effective instruction and college student persistence: Some new evidence. *New Directions for Teaching & Learning*, 115, 55-70. doi:10.1002/tl.325
- Patterson, S. E., Damaske, S., & Sheroff, C. (2017). Gender and the MBA: Differences in career trajectories, institutional support, and outcomes. *Gender & Society*, 31(3). <https://doi.org/10.1177/0891243217703630>
- Perna, L. W., & Thomas, S. L. (2006). A framework for reducing the college success gap and promoting success for all. *National Symposium on Postsecondary Student Success: Spearheading a Dialog on Student Success*. https://repository.upenn.edu/gse_pubs/328
- Pfeffer, F. T., & Hertel, F. R. (2015). How has educational expansion shaped social mobility trends in the United States? *Social Forces*, 94(1), 143–180. <https://doi.org/10.1093/sf/sov045>
- Pope, M. L., & Fermin, B. (2003). The perceptions of college students regarding the factors most influential in their decision to attend postsecondary education. *C & U Journal*, Spring, 19-25. <https://ccrc.tc.columbia.edu/media/k2/attachments/perceptions-college-students-regarding-factors.pdf>

- Reback, R., & Alter, M. (2013). True for your school? How changing reputations alter demand for selective U.S. colleges. *Educational Evaluation and Policy Analysis*, 36(3), 346-370. <https://doi-org.ezproxy.uvm.edu/10.3102/0162373713517934>
- Reber, S., & Sinclair, C. (2020, May 19). *Opportunity engines: Middle-class mobility in higher education*. Brookings Institute.
<https://www.brookings.edu/research/opportunity-engines-middle-class-mobility-in-higher-education/>
- Reeves, R. (2017). *Dream hoarders: How the American upper middle class is leaving everyone in the dust, why that is a problem and what do about it*. Brookings Institution Press.
- Rivera, L. A. (2011). Hiring as cultural matching: The case of elite professional service firms. *American Sociological Review*, 77(6), 999-1022.
doi:10.1177/0003122412463213
- Rivera, L. A. (2015). *Pedigree: How elite students get elite jobs*. Princeton University Press.
- Roth, G. (2019) *The educated underclass: Students and the promise of social mobility*. Pluto Press.
- Saenz, V. B. (2010). Breaking the segregation cycle: Examining students' precollege racial environments and college diversity experiences. *Review of Higher*, 34(1), 1–37. <https://doi.org/10.1353/rhe.2010.0000>
- Sartipi, M., Nedjat, S., Mansournia, M. A., Baigi, V., & Fotouhi, A. (2016). Assets as a socioeconomic status index: Categorical principal components analysis vs. latent class analysis. *Arch Iran Med*, 18(11), 791-796.

- Spence, M. (1974). Job market signaling. *The Quarterly Journal of Economics*, 87(3), 355-374. doi:10.2307/1882010
- Stout, R., Archie, C., Cross, D., & Carman, C. A. (2018). The relationship between faculty diversity and graduation rates in higher education. *Intercultural Education*, 29(3), 399-417. doi:10.1080/14675986.2018.1437997
- Stinebrickner, R., & Stinebrickner, T. R. (2006). What can be learned about peer effects using college roommates? Evidence from new survey data and students from disadvantaged backgrounds. *Journal of Public Economic*, 90, 1435-1454. doi:10.1016/j.jpubeco.2006.03.002
- Stout, R., Archie, C., Cross, D., & Carman, C. A. (2018). The relationship between faculty diversity and graduation rates in higher education, *Intercultural Education*, 29(3), 399-417. doi:10.1080/14675986.2018.1437997
- Taylor, B. J., & Cantwell, B. (2019). *Unequal higher education: Wealth, status, and student opportunity*. Rutgers University Press.
- Tinto, V. (1993). *Leaving college: Rethinking the causes and cures of student attrition* (2nd ed.). University of Chicago Press.
- The Pell Institute for the Study of Opportunity in Higher Education (2019). *Indicators of higher education equity in the United States*. Retrieved from http://pellinstitute.org/indicators/reports_2019.shtml
- Tholen, G., Brown, P., Power, S., & Allouch, A. (2013). The role of networks and connections in educational elites' labour market entrance. *Research in Social Stratification and Mobility*, 34(0), 142-154. <https://doi.org/10.1016/j.rssm.2013.10.003>

- Thompson, J. (2019). Mobility in the middle: Bachelor's degree selectivity and the intergenerational association in status in the United States. *Research in Social Stratification and Mobility*, 60, 16-28. <https://doi.org/10.1016/j.rssm.2019.02.001>
- Thomas, T. L., & Zhang, L. (2005). Post-baccalaureate wage growth within four years of graduation: The effects of college quality and college major. *Research in Higher Education*, 45(4), 437-459. <https://doi.org/10.1007/s11162-005-2969-y>
- Torche, F. (2011). Is a college degree still the great equalizer? Intergenerational mobility across levels of schooling in the United States. *American Journal of Sociology*, 117(3), 763-807.
- Torche, F. (2015). Analyses of intergenerational mobility: An interdisciplinary review. *The Annals of the American Academy*, 657(January), 37–62. <https://doi.org/10.1177/0002716214547476>
- Torche, F., & Spilerman, S. (2009). Intergenerational influences of wealth in Mexico. *Latin American Research Review*, 44(3), 75-101. <https://www.jstor.org/stable/40783671>
- Tudor, T. R. (2018). Fully integrating academic advising with career coaching to increase students retention, graduation rates and future job satisfaction: An industry approach. *Industry and Higher Education*, 32(2), 73-79. [doi:10.1177/0950422218759928](https://doi.org/10.1177/0950422218759928)
- van der Zanden, P. J. A. C, Denessen, E., Clillessen, A. H. N., & Meijer, P. C. (2018). Domains and predictors of first-year student success: A systematic review. *Educational Research Review*, 23, 57-77. <https://doi.org/10.1016/j.edurev.2018.01.001>

- Vedder, R., Denhart, C., & Robe, J. (2013). *Why are recent college graduates underemployed? University enrollments and labor market realities*. Center for College Affordability and Productivity.
<https://files.eric.ed.gov/fulltext/ED539373.pdf>
- Wang, X., Su, Y., Cheung, S., Wong, E., & Kwong, T. (2013) An exploration of Biggs' constructive alignment in course design and its impact on students' learning approaches. *Assessment and Evaluation in Higher Education*, 38(4).
doi:10.1080/02602938.2012.658018
- Wang, N., Wilhite, S. C., Wyatt, J., Young, T., & Bloemker, G. (2012). Impact of a college freshman social and emotional learning curriculum on student learning outcomes: An exploratory study. *Journal of University Teaching & Learning Practice*, 9(2). <https://ro.uow.edu.au/jutlp/vol9/iss2/8>
- Wang, J., & Wang, X. (2020) *Structural equation modeling: Applications using Mplus*. Wiley.
- Wilkie, D. (2019, October 21). *Employers say students aren't learning soft skills in college*. SHRM. <https://www.shrm.org/ResourcesAndTools/hr-topics/employee-relations/Pages/Employers-Say-Students-Arent-Learning-Soft-Skills-in-College.aspx>
- Winston, G. C., & Zimmerman, D. J. (2003). Peer effects in higher education. *NBER Working Paper No. 9501*. <http://www.nber.org/papers/w9501>
- Witteveen, D., & Attewell, P. The earning payoff from attending a selective college. *Social Science Research*, 66, 154-169.
<https://doi.org/10.1016/j.ssresearch.2017.01.005>

Wolniak, G. C., & Engberg, M. E. (2019). Do “high-impact” college experiences affect early career outcomes? *The Review of Higher Education*, 42(3), 825–858.

<https://doi.org/10.1353/rhe.2019.0021>

Zimmerman, D. J. (2003). Peer effects in academic outcomes: Evidence from a natural experiment. *Review of Economics and Statistics*, 85(1), 9-23.

<https://doi.org/10.1162/003465303762687677>

Zimmerman, K. (2017). Use of academic resources among different socioeconomic classes. *Sacred Heart University Scholar*, 1, 11-23.

<http://digitalcommons.sacredheart.edu/shuscholar/vol1/iss1/3/>

4.2.12. Appendix A.

Variable Descriptive Statistics

Table A3

Original categorical variable frequency

Variable name (Code)	Unweighted	
	n	%
2009 Own a Home (SES092)		
0=Neither own home nor pay rent	1850	25%
1=Own home or pay mortgage	1050	14%
2=Pay rent	4300	59%
3=Both own home and pay rent	60	1%
2012 Own a Home (SES122)		
0=Don't own a home	4970	69%
1=Own a home	2280	31%
2009 Employer benefits (SES094)		
0=Skipped	1370	19%
1=No benefits	1580	22%
2=Benefits	4300	59%
2012 Employer benefits (SES124)		
0=Skipped	640	9%
1=No benefits	930	13%
2=Benefits	5690	78%
2009 Job satisfaction (SES096)		
0=Skipped	1250	17%
1=Not satisfied	1550	21%
2=Satisfied	4450	61%
2012 Job Satisfaction (SES126)		
1=Very dissatisfied	410	6%
2=Dissatisfied	590	9%
3=Neither satisfied nor dissatisfied	1070	16%
4=Satisfied	2340	34%
5=Very satisfied	2470	36%
2009 Number of jobs (SES097)		
0=0 jobs	1250	17%

1=1 job	5010	69%
2=2 jobs	840	12%
3=3 jobs	130	2%
4=4 jobs	20	0.2%
5=5 jobs	<10	0.1%
2012 Number of jobs (SES127)		
0=0 jobs	1190	16%
1=1 job	5610	77%
2=2 jobs	420	6%
3=3 jobs	40	0.5%
4=4 jobs	<10	0.08%
7=7jobs	*	0.01%

SOURCE: U.S. Department of Education, National Center for Education Statistics, 2008/12 Baccalaureate and Beyond Longitudinal Study(B&B:08/12).

Table A4

Original variable distribution

	Min.	Median	Mean	Max.
2009 Loan Repayment	0%	6%	9.18%	200%
2012 Loan Repayment	0%	4%	15.03%	200%
2009 Annual salary	\$0	\$26000	\$26618	\$250000
2012 Annual salary	\$0	\$40000	\$43121	\$470000
2009 Percent of time unemployed	0%	0%	1.64%	23%
2012 Percent of time unemployed	0%	0%	3.05%	58%

SOURCE: U.S. Department of Education, National Center for Education Statistics, 2008/12 Baccalaureate and Beyond Longitudinal Study(B&B:08/12).

4.2.13. Appendix B.

Latent Factors

Table B1

Institutional quality variables

Variable Name (code)	Conceptual Framework	Unweighted		Weighted	
		Mean	Std.	Mean	Std.
	Operationalization		Error		Error
Academic expenditures (INST4)	Organizational & Behavioral	6.002	1.954	5.856	1.848
Admit Rate (INST10)	Organizational & Historical	63.662	319.853	62.391	348.100
Average faculty salary (INST1)	Organizational & Behavioral	7.423	2.571	7.589	2.588
Endowment (INST9)	Organizational & Historical	0.061	0.052	0.066	0.054
Faculty tenure ratio (INST5)	Compositional & Behavioral	0.551	0.028	0.551	0.027
Graduation Rate (INST2)	Organizational & Historical	0.605	0.028	0.609	0.029
Median SAT (INST12)	Organizational & Historical	11.215	1.421	11.249	1.532
Median Parent Income (INST3)	Historical & Compositional	9.868	7.242	10.063	8.006
Research Expenditures (INST8)	Organizational & Behavioral	0.804	0.956	0.866	0.915
Retention Rate (INST7)	Organizational & Behavioral	8.000	1.038	8.070	1.008
Student to faculty ratio (INST6)	Organizational & Behavioral	1.714	0.234	1.730	0.227
Yield Rate (INST11)	Organizational & Historical	3.968	2.358	3.997	2.237

Note. Values were divided by constants to reduce the variance to a manageable scale for statistical analysis.

SOURCE: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS), Fall 2008.

Table B2

Peer Environment Continuous Variables

Variable Name	Conceptual Framework Operationalization	Unweighted		Weighted	
		Mean	Std. Error	Mean	Std. Error
Credits earned vs. attempted (PEER7)	Academic Behaviors	0.998	0.026	0.992	0.029
GPA (PEER6)	Academic Behaviors	3.327	0.005	3.316	0.005
Hours Studying (PEER8)	Academic Behaviors	16.197	105.592	15.169	99.547

SOURCE: U.S. Department of Education, National Center for Education Statistics, 2008/12 Baccalaureate and Beyond Longitudinal Study(B&B:08/12).

Table B3

Categorical variable percentages

Variable Name	Conceptual Framework Operationalization	Unweighted		Weighted	
		% Yes (n)	% No (n)	% Yes (n)	% No (n)
Stopped out (PEER1)	Academic Behaviors	17% (1630)	88% (8590)	15% (1537.85)	85% (8679.16)
Academic probation (PEER2)	Academic Behaviors	8% (750)	97% (9470)	7% (757.09)	93% (9459.91)
Dean's list (PEER3)	Academic Behaviors	73% (7150)	31% (3070)	70% (6583.51)	30% (3103.91)
Incomplete grade (PEER4)	Academic Behaviors	9% (900)	95% (9310)	9% (914.93)	91% (9302.07)
Repeated a course (PEER5)	Academic Behaviors	79% (7700)	26% (2570)	76% (7717.20)	24% (2499.80)

SOURCE: U.S. Department of Education, National Center for Education Statistics, 2008/12 Baccalaureate and Beyond Longitudinal Study(B&B:08/12).

Figure B3

Institutional quality CFA

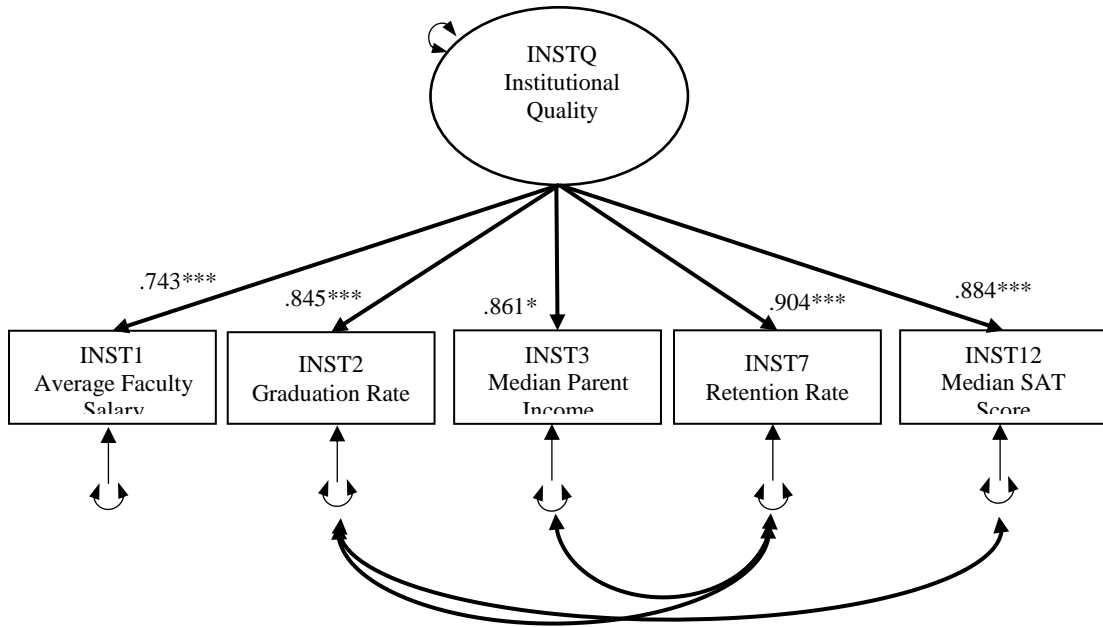


Figure B4

Peer Environment CFA

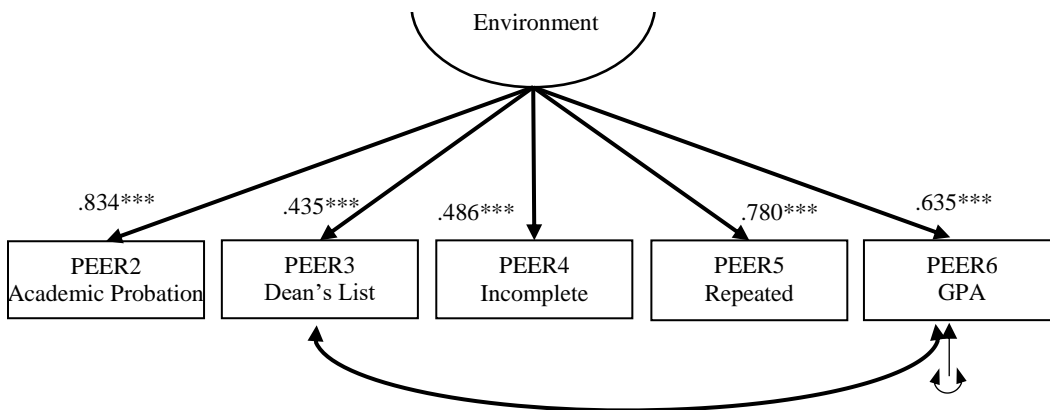


Table B1

Factor score descriptive statistics

	Min.	Median	Mean	Max.
PEERB	-2.93	-0.11	-0.039	9.967
INSTQ	-2.689	0.41	0.42	4.10

4.2.14. Appendix C.

Latent Class Analysis Plots

Figure C1

2009 Response patterns

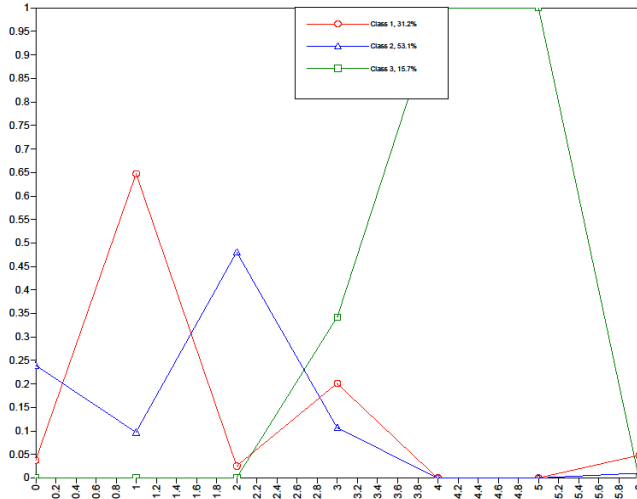
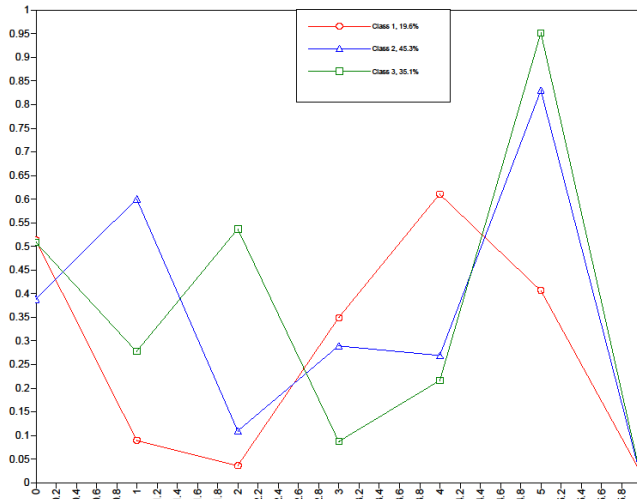


Figure C2

2012 Response patterns



4.2.15. Appendix D

Latent Class Covariate Tables

Table D12

2009 Covariates

Covariates	SES Insecure vs SES Frustrated					SES Secure vs SES Frustrated					SES Secure vs SES Insecure							
	β	SE	OR	CI 95%	p-value	β	SE	OR	CI 95%	p-value	β	SE	OR	CI 95%	p-value			
Model 1																		
Peer Environment	-0.026	0.049	0.974	0.886	1.071	0.588	-0.017	0.055	0.983	0.883	1.094	0.754	-0.009	0.049	1.009	0.917	1.111	0.852
Institutional Quality	-0.202	0.056	0.817	0.732	0.911	0.000	-0.218	0.06	0.805	0.716	0.904	0.000	0.015	0.052	0.985	0.890	1.090	0.771
Model 2																		
Peer Environment	-0.038	0.056	0.959	0.874	1.053	0.502	-0.042	0.048	0.963	0.863	1.075	0.383	-0.004	0.050	0.996	0.903	1.099	0.935
Institutional Quality	-0.264	0.061	0.790	0.707	0.882	0.000	-0.236	0.057	0.768	0.682	0.865	0.000	0.028	0.054	1.029	0.926	1.143	0.599
Intergen. Mobility	-0.145	0.041	0.899	0.838	0.965	0.000	-0.107	0.036	0.865	0.798	0.938	0.003	0.039	0.038	1.039	0.965	1.120	0.310
Model 3																		
Peer Environment	-0.048	0.048	0.954	0.868	1.047	0.320	-0.042	0.056	0.959	0.860	1.069	0.450	-0.006	0.051	0.994	0.901	1.098	0.912
Institutional Quality	-0.236	0.056	0.790	0.708	0.882	0.000	-0.264	0.060	0.768	0.682	0.865	0.000	0.028	0.054	1.029	0.926	1.144	0.599
Intergen. Mobility	-0.078	0.041	0.925	0.853	1.003	0.059	-0.123	0.046	0.885	0.808	0.968	0.000	0.045	0.04	1.046	0.966	1.131	0.267
Faculty of Color	-1.125	0.574	0.325	0.105	0.999	0.050	-0.904	0.638	0.405	0.116	1.414	0.157	-0.221	0.534	0.801	0.282	2.281	0.678
Model 4																		
Peer Environment	-0.050	0.048	0.951	0.866	1.044	0.291	-0.044	0.056	0.957	0.858	1.068	0.433	-0.007	0.051	0.993	0.900	1.097	0.896
Institutional Quality	-0.235	0.056	0.790	0.708	0.882	0.000	-0.263	0.060	0.768	0.683	0.865	0.000	0.028	0.054	1.028	0.925	1.143	0.606
Intergen. Mobility	-0.072	0.045	0.931	0.852	1.016	0.108	-0.120	0.050	0.887	0.805	0.978	0.016	0.048	0.042	1.049	0.965	1.14	0.258
Staff of Color	-0.795	0.473	0.451	0.179	1.142	0.093	-0.598	0.518	0.550	0.199	1.517	0.248	-0.197	0.417	0.821	0.363	1.859	0.637

Table 13*2012 Covariates*

Covariates	SES Insecure vs SES Satisfied					SES Secure vs SES Insecure					SES Secure vs SES Satisfied							
	β	SE	OR	CI 95%	p-value	β	SE	OR	CI 95%	p-value	β	SE	OR	CI 95%	p-value			
Model 1																		
Peer Environment	0.021	0.055	1.021	0.056	1.138	0.705	0.085	0.062	1.089	0.068	1.230	0.169	0.064	0.069	1.067	0.931	1.222	0.354
Institutional Quality	-0.073	0.088	0.93	0.082	1.105	0.407	0.076	0.095	1.079	0.102	1.299	0.421	0.149	0.139	1.161	0.884	1.525	0.284
Model 2																		
Peer Environment	-0.024	0.058	0.976	0.872	1.093	0.677	0.077	0.058	1.080	0.963	1.211	0.187	0.101	0.07	1.024	0.915	1.147	0.148
Institutional Quality	-0.178	0.098	0.837	0.691	1.015	0.070	0.069	0.091	1.072	0.896	1.281	0.448	0.247	0.138	1.194	0.985	1.448	0.075
Intergen. Moblity	-0.200	0.053	0.819	0.738	0.909	0.000	-0.025	0.048	0.975	0.888	1.071	0.598	0.174	0.059	1.221	1.101	1.354	0.003
Model 3																		
Peer Environment	-0.027	0.058	0.974	0.869	1.091	0.648	0.075	0.059	1.078	0.961	1.209	0.200	0.102	0.07	1.107	0.965	1.269	0.146
Institutional Quality	-0.177	0.098	0.838	0.691	1.016	0.072	0.068	0.091	1.071	0.895	1.281	0.455	0.245	0.139	1.278	0.973	1.678	0.078
Intergen. Moblity	-0.188	0.056	0.828	0.742	0.924	0.001	-0.020	0.052	0.98	0.885	1.085	0.696	0.168	0.063	1.183	1.045	1.339	0.008
Faculty of Color	-0.402	0.704	0.669	0.169	2.657	0.568	-0.213	0.635	0.808	0.233	2.803	0.737	0.188	0.761	1.207	0.272	5.36	0.805
Model 4																		
Peer Environment	-0.024	0.058	0.976	0.871	1.093	0.673	0.074	0.059	1.076	0.959	1.208	0.210	0.098	0.070	1.103	0.962	1.265	0.161
Institutional Quality	-0.180	0.099	0.835	0.688	1.014	0.069	0.073	0.096	1.076	0.892	1.298	0.445	0.253	0.144	1.288	0.971	1.710	0.079
Intergen. Moblity	-0.202	0.062	0.817	0.723	0.923	0.001	-0.008	0.058	0.992	0.886	1.111	0.894	0.194	0.067	1.214	1.064	1.385	0.004
Staff of Color	0.040	0.538	1.041	0.363	2.985	0.941	-0.409	0.574	0.664	0.216	2.044	0.476	-0.449	0.625	0.638	0.187	2.175	0.473

CHAPTER 5: IMPLICATIONS

Higher education has been considered a mechanism for upward mobility since Hout (1988) found no association between socioeconomic origin and destination for individuals who received a bachelor's degree. However, despite continued findings of the average economic benefits associated with obtaining a bachelor's degree (Carnevale et al., 2011; Haskins, 2008; Oreopoulos & Petronijevic, 2013; Tamborini et al., 2015), there continue to be vast differences in graduation rates and post-graduation earnings based on student demographics (Baum et al., 2013; Bowen et al., 2009; Creusere et al., 2019;), as well as the institutional type (Giani, 2016; Heil et al., 2014; Monsen, 2018; Thompson, 2019).

The contradiction between higher education as a mechanism for upward mobility while remaining inequitable in terms of both access and outcomes indicates the need to interrogate higher education's role in intergenerational mobility. Socioeconomic status is multidimensional, where the effects of race, class, and gender intersect to influence individuals' quality of life and ability to navigate the inequitable social systems in the United States. Researchers and policy makers can no longer rely on two-dimensional solutions to an inherently complex problem. In this study, I sought to take a multidimensional approach by interrogating socioeconomic status and intergenerational mobility from both an institutional and individual perspective. From an institutional perspective, I examined the association between institutional intergenerational mobility and institutional quality, peer environment, and compositional racial diversity. From an

individual perspective, I examined students' post-graduation socioeconomic trajectories and how measures of institutional quality, peer environment, and compositional racial diversity influence these trajectories. I used multi-level structural equation modeling and latent class analysis to test my research hypotheses:

1. I hypothesized that institutional factors associated with institutional quality mediated through the peer environment would account for variance in intergenerational mobility rates across institutions.
2. I hypothesized that college graduates would cluster into meaningful groups based on socioeconomic indicators.
3. I hypothesized that institutional quality, peer environment, and intergenerational mobility rates would significantly predict the probability of college graduates' socioeconomic grouping.
4. I hypothesized that there would be a significant difference in results when accounting for the institution's compositional racial diversity of faculty and staff?

This chapter provides a brief discussion of the results, implications of my findings, limitations of this study, and directions for future research.

5.1. Discussion of results

My first research question was, "To what extent do institutional factors associated with institutional quality mediated through the peer environment account for variances in intergenerational mobility rates across institutions?" From my analysis utilizing multilevel structural equation modeling, the results indicated that institutional quality and peer environment measures were associated with a lower intergenerational mobility rate.

In other words, institutions with higher levels of institutional quality and stronger peer environments had lower rates of moving students from the bottom income quartile to the top income quartile. To better understand this result, it is worth delving into the individual variables that make up these latent factors.

Institutional quality consisted of median faculty salary, graduation rate, retention rate, median SAT score, and median parent income. While researchers use these measures to quantify institutions' effectiveness (Millea et al., 2018) and higher education rankings (Morse & Brooks, 2020), they appear to have a negative relationship with an institution's ability to provide upward mobility to students from lower socioeconomic backgrounds. My results suggest that these measures, which might boost an institution's quality in terms of reputation, may have the opposite effect on mobility. Institutional leaders who prioritize reputation and engage in prestige-seeking behaviors may direct resources and attention towards institutional goals that create a context that hinders access and success for students from lower socioeconomic backgrounds (Brealt & Callejo Perez, 2012; Pérez-Peña & Slotnik, 2012).

The peer environment measures consisted of academic probation, receiving an incomplete grade, repeating a course, making the dean's list, and student GPA. The negative relationship between the peer environment and the institutions' intergenerational mobility rate indicates that institutions with stronger academic environments based on these measures have lower intergenerational mobility rates. These results are contrary to what one might expect based on previous peer effect research showing that students benefit from academically stronger peers (Carrell, Fullerton, & West, 2008; Winston &

Zimmerman, 2003). Conversely, my study results indicate that institutions don't need to have an academic environment where students avoid negative behaviors and exhibit positive behaviors to promote intergenerational mobility.

My second research question was, "To what extent do college graduates cluster into meaningful groups based on socioeconomic indicators?" To answer this question, I used latent class analysis to group graduates one (2009) and four years (2012) after graduation using multiple socioeconomic status measures. My results indicated that graduates clustered into three distinct classes in both 2009 and 2012. In 2009 these groups were characterized as SES secure, SES insecure, and SES frustrated. In 2012 the SES secure and SES secure groups remained, although the proportion of students within them changed. The SES frustrated group was no longer present in 2012, but a new group, SES satisfied, emerged as the largest proportion of graduates.

My third research question was, "To what extent do measures of institutional quality, peer environment, and intergenerational mobility rates predict the probability of college graduates' socioeconomic grouping? To answer this question, I added the covariates of institutional quality, peer environment, and intergenerational mobility to the latent class analysis used in the previous research questions. For the 2009 groups, graduates who attended institutions with lower levels of institutional quality were more likely to be in the SES insecure (Class 1) and SES secure (Class 2) rather than the SES frustrated (Class 3) group. Likewise, in model 2, graduates of institutions with lower levels of intergenerational mobility were more likely to be in the SES insecure, and SES secure rather than the SES frustrated group. In other words, both higher levels of

institutional quality and intergenerational mobility resulted in graduates being more likely to be frustrated with their current socioeconomic status. For the graduates in 2012, intergenerational mobility was the only variable that had a significant relationship on group membership. Similar to 2009, there was a significant negative relationship between intergenerational mobility and graduates membership in the SES satisfied (Class 1) rather than SES secure (Class 2) and SES insecure (Class 3) groups. In other words, graduates who attended institutions with higher intergenerational mobility levels were more likely to be satisfied with their current socioeconomic status.

My final research question was, “How do the above results differ when accounting for the institution’s compositional racial diversity of faculty and staff?” To answer this research question, I reran the MSEM analysis and the latent class analysis with the additional covariates of faculty of color (FOC) and staff of color (SOC). In the MSEM analysis, the faculty of color and staff of color variables were the only items in the model that were associated with higher rates of intergenerational mobility for institutions. Not only were these measures significant, but they also accounted for a considerable amount of the variance in intergenerational mobility rates (46.9% for staff and 37.2% for faculty). These results reinforce the importance of compositional diversity within institutions, especially for improving outcomes for students who have historically been minoritized by higher education institutions (Stout et al., 2018). The percentage of staff of color also had a stronger association with intergenerational mobility than faculty, indicating that it is not just curricular but co-curricular experiences that matter.

The addition of the SOC and FOC variables to the latent class analysis had less of an impact on the results than the MSEM model. For the 2009 model, the addition of the faculty of color (Model 3) resulted in a significant negative relationship with graduates being more likely to be in the SES insecure rather than the SES frustrated group. Intergenerational mobility was no longer significant for predicting membership in the SES insecure rather than SES frustrated group. However, it did remain a significant negative predictor of membership in the SES secure group over the frustrated group. For 2012, there was no change in the 2012 model with the FOC or SOC variables' addition.

Placed in the context of the integrative model of higher education and intergenerational mobility, my results provide some insight into how institutional factors contribute to socioeconomic outcomes and intergenerational mobility. For decades, student persistence theories and research have promoted the importance of understanding student behaviors and motivations in reaching graduation (Guiffrida, 2006; Pascarella & Terenzini, 2005; Yasso, 2005). Students' GPA (Schudde, 2013), credit load (Pfeffer & Goldrick-Rab, 2011), and time to graduation (Letkiewicz et al., 2014) are all considered positive markers of students' success within the literature. Additionally, researchers of peer effects suggest that peer academic ability and peer characteristics, such as family income, social capital, and leadership ability, influence academic achievement (Carrell et al., 2008; Ficano, 2010; Winston & Zimmerman, 2003; Zimmerman, 2006). While these student behaviors and peer effects may influence student outcomes within higher education, my results suggest they may not impact post-graduation outcomes as strongly. The negative relationship between peer environment and intergenerational mobility

indicates that institutions can provide access and mobility even if students within the institution may struggle academically. Since all students in this study did graduate, this finding could indicate that, despite academic setbacks, the institutional environment provides the support students needed to finish their degree. The lack of influence of the peer environment on students' socioeconomic trajectories also reinforces the finding that peer environment may not be as essential to post-graduation outcomes.

Institutional quality operationalized the organizational and behavioral elements of the integrative model of higher education and intergenerational mobility, illustrating the challenges in assessing institutional quality. While the measures of institutional quality included in my model are frequent measures of institutional comparisons in college rankings (Morse & Brooks, 2020), college scorecards (U.S. Department of Education, 2021), and institutional effectiveness (Millea et al., 2018), the relationship with intergenerational mobility suggests, they may be capturing prestige rather than value-added through knowledge and skills. Chetty and colleagues (2017), who created the intergenerational mobility rate used in this study, identified mid-tier public colleges such as Cal State University – LA, Pace University, and SUNY –Stoney Brook as having the highest intergenerational mobility rates. These institutions and others like them are not considered prestigious. They are unlikely to have high demand from upper-income students (Carnevale & Van Der Werf, 2017) who have access to resources to perform well on SAT, allowing them admission to more selective institutions (Dixon-Roman et al., 2013). Many of the institutions at the top of the mobility rates list were also open access, accepting a much broader range of students. On average, less selective and open-

access institutions have lower graduation and retention rates (Pell Institute, 2019), further clarifying the negative relationship between the institutional quality factor and intergenerational mobility. In other words, the measures often used to capture institutional quality are not the institutional factors supporting students' upward mobility, meaning the actual mechanisms promoting mobility have yet to be identified.

My conclusion is further supported by the influence of institutional quality and intergenerational mobility on individual socioeconomic trajectories in the latent class analysis. Graduates' from higher-quality institutions were not guaranteed secure socioeconomic status outcomes one or even four years past graduation. One year after graduation, my results indicate that the higher the institutions' quality, the more likely students were to be in the SES frustrated group rather than the SES insecure or SES secure groups. Students attending higher quality institutions may have greater expectations regarding their post-graduation socioeconomic outcomes and may be more easily disappointed or frustrated. However, class membership was also associated with lower intergenerational mobility levels; graduates attending institutions with lower mobility rates were more likely to be in the SES secure than SES frustrated group. These results make sense if we revisit Chetty and colleagues' (2017a) study. In their results, the most prestigious institutions had the lowest mobility rates because they provided relatively little access for students from lower socioeconomic backgrounds. As my results indicate, it is not unexpected that graduates from these highly selective institutions are more socioeconomically secure, as their higher socioeconomic backgrounds afford privileges and advantages unavailable to students from lower socioeconomic

backgrounds (Armstrong & Hamilton, 2013; Hamilton et al., 2018; Rivera, 2016). Four years after graduation, group membership in the satisfied group was associated with lower institutional intergenerational mobility rates and more prestigious or selective institutions. Graduates from these institutions may not accept lower-paying positions or internships that are more fulfilling, as parents may buffer some of the economic challenges or provide financial support (Hamilton et al., 2018).

Finally, diversity and inclusion within higher education continue to be an area of challenge for higher education institutions and their administrators. While institutions have made progress in increasing the compositional racial diversity, faculty and administrative racial diversity has improved at a much slower rate than the student body (Finkelstein et al., 2016), and campuses remain disproportionately white (Pell Institute, 2019; Smith et al., 2012). At the institutional level, my results reinforce previous research on the benefits of diverse campus environments (Park et al., 2013; Stout et al., 2018; Hurtado et al., 2012), finding that institutional with higher percentages of faculty and staff of color have higher rates of intergenerational mobility. However, at the individual level, faculty and staff of color did not influence graduates' initial socioeconomic trajectories. These results indicate that while compositional racial diversity may provide educational benefits (Part et al., 2013), enhance student engagement (Museus et al., 2011), and improved graduation rates (Stout et al., 2018), these benefits may be realized in graduates long-term socioeconomic benefits, rather than short-term.

5.2. Implications

The results of my study have implications for a wide range of higher education stakeholders. While I hope many of these stakeholders will find my results helpful or illuminating, I direct my implications and recommendations specifically to Presidents, Provosts, and admissions directors. These campus decision-makers have the power to make impactful choices in terms of institutional resource allocation, priorities, goals, as well as accessibility to students from diverse backgrounds.

At the institutional level, the relationship between institutional quality and peer environment and intergenerational mobility warrants consideration of institutional priorities by these decision-makers. As state appropriations have decreased (Mitchall et al., 2019), institutions have found themselves in an arms race for students. This arms race has resulted in prestige-seeking behaviors that compromise academic quality by diverting resources towards activities intended to enhance prospective student's perceptions of the institution and away from activities that support student learning (Brealt & Callejo Perez, 2012; Pérez-Peña & Slotnik, 2012). These behaviors are designed to attract students with higher test scores, who are disproportionately from higher socioeconomic backgrounds (Buchmann et al., 2010), that can bolster the institution's reputation in rankings such as U.S. News and World Report (Kim, 2018). This trend is evident, even in the institutions with the highest intergenerational mobility rates. Recent trends show decreasing access levels at these institutions for students from lower socioeconomic backgrounds (Chetty et al., 2017). However, my findings suggest that these factors are negatively associated with intergenerational mobility, indicating that if campus leaders truly want their institutions

to be a mechanism for mobility, they will need to reevaluate their priorities. Continuing to compete for the shrinking pool of high school students (WICHE, 2020) with top test scores and GPAs may continue to disenfranchise students from lower socioeconomic backgrounds and perpetuate economic inequality.

An enhanced focus on the transition into the workforce should also be a priority for both Presidents and provosts. There has been an increased focus on retention and graduation rates to measure students' success and institutions' role in that success in recent decades. However, much less attention is paid to the long-term outcomes of graduates. While many institutions report students' initial employment information through the National Association of Colleges and Employers (NACE) first destination survey and rankings organizations such as USNWR, these metrics only look at employment six months after graduation (NACE, n.d.). While the lack of long-term data collection is understandable due to the difficulty of gathering data on graduates after they leave campus, it still limits institutional leaders' understanding of socioeconomic outcomes and their responsibility in those outcomes. With over 40% of recent graduates reporting being underemployed following graduation (Federal Reserve Bank of New York, 2021), and students continue to graduate with increasing amounts of debt (Goldrick-Rab, 2016). Institutions can no longer abdicate their responsibility to student outcomes once students cross the graduation stage.

Each year institutions spend millions of dollars on students' transition into college through orientation, residential living communities, and first-year experiences (Wang et al., 2012; van der Zanden et al., 2018). Yet, students navigate the transition out of college

and into the workforce with less, if any, support. Students have to opt into many career programs and supports, despite the evidence that students from higher socioeconomic backgrounds are most likely to utilize and leverage campus resources (Zimmerman, 2017). To address the lack of structured support for college graduates, institutional leaders should take a more integrative approach to workforce transition. This integrative approach should include a proactive approach to career services, building career development into the curriculum, and integrating career and academic advising to holistically support students (Sean et al., 2018; Tudor, 2018). Many employers cite graduates as lacking vital interpersonal skills and knowledge to secure a job and succeed in the workplace (Society for Human Resource Management, 2019). Integrating career development within the curriculum and academic advising programs could reduce barriers for students from lower-socioeconomic backgrounds by leveraging experiences they are already participating in while in college.

Institutional decision-makers should also continue to promote racial diversity amongst faculty and staff, in addition to students. While both student and faculty racial diversity has improved over time, campuses are still disproportionately white (Smith et al., 2012). Additionally, faculty racial diversity has improved at a much slower rate than student diversity, particularly in tenured positions, leaving a gap between students and faculty diversity (Finkelstein et al., 2016). Faculty and staff of color are also disproportionately represented in lower levels of the organizational hierarchy, with the upper administration being predominantly white and male (Whitford, 2020). If institutional racial diversity contributes to an institutional environment that facilitates

intergenerational mobility, as my results suggest, this should continue to be a high priority for campus decision-makers.

Furthermore, it is not enough to merely recruit faculty and staff of color if institutional leaders cannot create supportive environments to retain them. Despite the benefits of a diverse faculty, institutions continue to struggle to recruit but, most importantly, retain faculty of color. While institutions still blame the pipeline of available for lack of faculty of color within higher education, the “leaks” in the pipeline are predominantly due to hostile climate, bias, and discrimination resulting in few Ph.D. recipients pursuing academic professions or progressing through the ranks (Carey et al., 2018). Faculty experience tokenization, isolation exclusion, marginalization, and both invisibility and hyper-visibility on campus (Brayboy et al., 2012; Cooke, 2014; Martinez et al., 2018). Presidents and Provosts must prioritize creating campus environments and organizational structures that support faculty and staff of color.

5.3. Limitations

My study, like all studies, had certain limitations. As mentioned previously, the ability to examine intergenerational mobility is, first and foremost, limited by the lack of availability of datasets that allow the tracking of individuals through higher education and into their post-graduation careers. While my study examines the influence of higher education on intergenerational mobility at the institutional level and through individuals’ transitions out of higher education, I cannot directly measure individual intergenerational mobility. The second challenge of the available datasets is the ability to take an in-depth look at the student experiences that might play a role in students’ higher education

experiences. To conduct my analysis, I had to combine three different datasets to examine the relationship between students, institutions, and intergenerational mobility. Even with this combination, the student level variable provided in B&B:08/12 did not provide information on the relational aspects or environmental factors known to influence students' success within higher education (Mayhew et al., 2016). Combining intergenerational mobility measures with surveys such as the National Survey of Student Engagement (NSSE) could provide greater insight into the experiential aspects of attending higher education, such as engagement with faculty or involvement with student organizations.

My ability to measure an individual's socioeconomic outcomes was limited by data availability within the B&B:08/12 dataset. Some participants in the 2009 study did not complete the 2012 study, meaning I had to exclude them from the analysis. While analysis indicated these individuals' attrition was not associated with any identifiable variables, their omission could bias the results, making them not generalizable to the larger population of college graduates. I also chose not to include individuals who were enrolled in graduate programs in either 2009 or 2012 since additional years of schooling influence individuals' socioeconomic status. Additionally, while more robust than a single measure, the socioeconomic status measures I used may not encompass all elements of individual well-being. Specifically, essential factors such as familial wealth and support were not available.

Finally, my study only looked at four-year institutions, which receive a disproportionate amount of attention from intergenerational mobility researchers. I did

not examine the role of two-year institutions in intergenerational mobility, nor did I explore the experiences of students who transfer between institutions. Considering students attending two-year institutions and transfer students may provide additional insight into the role of higher education in intergenerational mobility but was beyond the scope of this study.

5.4. Directions for Future Research

Regarding avenues for future research, further scholarship should seek a more critical lens to what has historically been a very normative research area. Future research should take a more intersectional approach to intergenerational mobility to examine how race, class, and gender overlap to influence students' pathways following graduation. While this study included racial composition as an environmental factor, future research could examine how systemic racism within higher education and labor markets influences access to intergenerational mobility. Additionally, the model variables I selected are still primarily surface-level measures of complex organizations. The student-level variables included in the model are limited measures of students' experiences within higher education. Therefore, including variables related to student involvement, campus climate, student-faculty engagement, etc., could provide additional insights into how students' experiences within higher education might influence intergenerational mobility. Most of the datasets that contain robust measures of student engagement and campus environment are proprietary and do not allow researchers to connect the data to individual institutions. This prevents connection to other datasets and cross-institutional analysis, which could provide enhanced analysis of how institutions can enhance

socioeconomic outcomes. Additionally, qualitative and mixed methods research methods could be combined with this area of study to examine how students' interactions with higher education environments supported individuals who achieve intergenerational mobility. Future research should also consider community colleges' role in intergenerational mobility and transfer pathways into four-year institutions.

Finally, actual, individual, student intergenerational mobility measures would help understand how institutions influence individual student trajectories, rather than just the institutions' intergenerational mobility rate. Individual intergenerational mobility rates would allow researchers to explore the influence of students' major, gender, race, and post-graduation decisions such as marriage or graduate school on intergenerational mobility. Finally, the ability to track students' socioeconomic status longitudinally, rather than at just one point in time, could provide a more robust understanding of the complexity of post-graduation outcomes and the long-term influence of higher education. Access to longitudinal data would allow for analysis such as latent growth curve and growth mixture modeling, expanding my study results to examine how individuals' socioeconomic status changes over time. This type of data analysis would require student-level tied to institutions to compare and analyze best practices. There is currently legislation in front of Congress called the College Transparency Act of 2019, allowing for better analysis. This legislation would allow for the collection of student-level data, which has previously been prohibited under the Higher Education Opportunity Act (2008), and facilitate the evaluation of student enrollment patterns, progression,

completion, and post-collegiate outcomes, in addition to higher education costs and financial aid.

5.5. Conclusion

As the US continues to see growing levels of inequality, higher education is faced with a choice – continue to contribute to the growing inequality or work against it. In this study, I take a closer examination of the ways in which institutions contribute to intergenerational mobility. My results indicate that at both the institutional level and individual level, institutional prestige and prestige-seeking behaviors are associated with lower levels of mobility and socioeconomic security. If institutional leaders and policy makers seek to combat growing levels of inequality through higher education, they will be able to rectify the contradiction between presenting college as a pathway to mobility while reinforcing socioeconomic stratification and inequality.

COMPREHENSIVE BIBLIOGRAPHY

- Akee, R., Jones, M. R., & Porter, S. R. (2017). Race matters: Income shares, income inequality, and income mobility for all U.S. races. *NBER Working Paper: 23733*. <https://doi.org/10.3386/w23733>
- Alon, S., & Haberfield, Y. (2007). Labor force attachment and the evolving wage gap between White, Black, and Hispanic young women. *Work and Occupation* 34(4), 369-398.
- Altonji, J., Blom, E., & Meghir, C. (2012). Heterogeneity in human capital investments: High school curriculum, college major, and careers. *Annual Review of Economics*, 4, 185-223.
- American Psychological Association. (n.d.). *Education & socioeconomic status*. Retrieved from <https://www.apa.org/pi/ses/resources/publications/factsheet-education.pdf>
- American Psychological Association. (2015). *Measuring socioeconomic status and subjective social status*. Retrieved from <https://www.apa.org/pi/ses/resources/class/measuring-status>
- American Student Assistance. (2015). *Life delayed: The impact of student debt on the daily lives of young Americans*. https://www.canisius.edu/sites/default/files/*/life_delayed_12-2015_1.pdf
- Andrews, R. J., Imberman, S. A., & Lovenheim, M. F. (2016). Recruiting and supporting low-income, high-achieving students at flagship universities. *NBER Working Paper (22260)*. <http://www.nber.org/papers/w22260>
- Andrews, R. J., Li, J., & Lovenheim, M. F. (2016). Quantile treatment effects of college quality on earnings. *Journal of Human Resources*, 51(1), 200-238. muse.jhu.edu/article/609070.
- Arana, R., Casteneda-Sound, C., Blanchard, S., & Aguilar, T. E. (2011). Indicators of persistence for Hispanic undergraduate achievement: Toward an ecological model. *Journal of Hispanic Higher Education*, 10(3), 237-251. <https://doi.org/10.1177/1538192711405058>
- Arcidiacono, P. (2004). Ability sorting and the returns to college major. *Journal of Econometrics*, 121(1-2), 343-375. <https://doi.org/10.1016/j.jeconom.2003.10.010>
- Arcidiacono, P., Kinsler, J., & Ransom, T. (2020). Legacy and athlete preferences at Harvard. *NBER Working Paper (26316)*. <https://doi.org/10.3386/w26316>
- Armstrong, E. A., & Hamilton, L. T. (2013). *Paying for the party: How college maintains inequality*. Harvard University Press.
- Arrow, K. J. (1973). Higher education as a filter. *Journal of Public Economics*, 2(3), 193-216. [https://doi.org/10.1016/0047-2727\(73\)90013-3](https://doi.org/10.1016/0047-2727(73)90013-3)
- Arum, R., & Roksa, J. (2010). *Academically adrift: Limited learning on college campuses*. The University of Chicago Press.
- Arum, R., & Roksa, J. (2014). *Aspiring adults adrift: Tentative transitions of college graduates*. University of Chicago Press.

- Ashworth, J., & Ransom, T. (2019). Has the college wage premium continued to rise? Evidence from multiple U.S. surveys. *Economics of Education Review*, 69, 149-154. <https://doi.org/10.1016/j.econedurev.2019.02.003>
- Asonitou, S. (2015). Employability skills in higher education and the case of Greece. *Procedia – Social and Behavioral Sciences*, 175, 283-290. <https://doi.org/10.1016/j.sbspro.2015.01.1202>
- Association of American Colleges & Universities. (n.d.). *Advocacy for liberal education*. <https://www.aacu.org/advocacy-liberal-education-0>
- Astin, A. W. (1984). Student involvement: A developmental theory for higher education. *Journal of College Student Personnel*, 25(4), 297-08.
- Astin, A. W. (1999). Student involvement: A developmental theory for higher education. *Journal of College Student Development*, 40(5), 518-529.
- Bailey, M. J., & Dynarski, S. M. (2013). Gains and gaps: Changing inequality in U.S. college entry and completion. *NBER Working Paper*, 53(9), 1689-1699. <https://doi.org/10.1017/CBO9781107415324.004>
- Baker, M., & Solon, G. (2003). Earnings dynamics and inequality among Canadian men, 1976-1992. *Journal of Labor Economics* 21, 289-321.
- Barbera, S. A., Berkshire, S. D., Boronat, C., & Kennedy, M. H. (2017). Review of undergraduate student retention and graduation since 2010: Patterns, predictions, and recommendations for 2020. *Journal of College Student Retention: Research, Theory, & Practice*, 22(2), 227-250. <https://doi-org.ezproxy.uvm.edu/10.1177/1521025117738233>
- Bastedo, M. N., & Bowman, N. A. (2017). Improving admission of low-SES students at selective colleges: Results from an experimental simulation. *Educational Researcher*, 46(2), 67-77. <https://doi-org.ezproxy.uvm.edu/10.3102/0013189X17699373>
- Bastedo, M. N., & Jaquette, O. (2011). Running in place: Low-income students and the dynamics of higher education stratification. *Educational Evaluation and Policy Analysis*, 33(3), 318-339. <https://doi.org/10.3102/0162373711406718>
- Baum, S., Kurose, C., & Ma, J. (2013). *How college shapes lives: Understanding the issues*. Retrieved from <https://research.collegeboard.org/trends/trends-higher-education>
- Bavaro, M., & Tullio, F. (2019). *Intergenerational mobility measurement with latent transition matrices* [Paper 358]. ECINEQ. http://www.ecineq.org.ezproxy.uvm.edu/ecineq_paris19/papers_EcineqPSE/paper_358.pdf
- Bean, J. P., & Eaton, S. (2000). A psychological model of college student retention. In J. M. Braxton (Ed.), *Reworking the departure puzzle: New theory and research on college student retention*. University of Vanberbilt Press.
- Bean, J. P., & Metzner, B. S. (1985). A conceptual model of nontraditional undergraduate student attrition. *Review of Educational Research*, 55(4), 485-540. <https://doi.org/10.3102/00346543055004485>
- Becker, G. S. (1964). *Human capital: A theoretical and empirical analysis, with special reference for education*. University of Chicago Press.

- Beller, E. (2009). Bringing intergenerational social mobility research into the 21st century. Why mothers matter. *American Sociological Review*, 74, 507-528.
- Benson, A., Esteva, R., & Levy, F. S. (2017). Is college worth it? The economic return to college adjusted for dropouts, taxes, and risk. Manuscript in preparation. <https://ssrn.com/abstract=2555950>
- Bennett, D. C. (2001). Assessing quality in higher education. *Liberal Education*, 87(2). <https://www.aacu.org/publications-research/periodicals/assessing-quality-higher-education>
- Berg, A. G., & Ostry, J. D. (2011). *Inequality and unsustainable growth: Two sides of the same coin?* (SDN/11/08). Retrieved from <https://www.imf.org/external/pubs/ft/sdn/2011/sdn1108.pdf>
- Berger, J. B. (2000). Organizational behavior at colleges and student outcomes: A new perspective on college impact. *The Review of Higher Education*, 23(2), 177-198. <https://doi.org/10.1353/rhe.2000.0001>.
- Berger, J. B., & Milem, J. F. (2000). Organizational behavior in higher education and student outcomes. *Higher Education: Handbook of Theory and Research*, 29(July), 268-338.
- Berry, B. (2008). Indices of racial residential segregation: A critical review and redirection. In T. Zuberi & E. Bonilla-Silva (Eds.). *White Logic, White Methods: Racism and Methodology* (pp. 203-216). Rowman & Littlefield Publishers, Inc.
- Blau, P. M., & Duncan, O. D. (1967). *The American occupational structure*. Wiley.
- Bloome, D. (2015). Income inequality and intergenerational mobility in the United States. *Social Forces*, 93(3), 1047-1080. <https://muse.jhu.edu/article/576366>
- Bloome, D., Dyer, S., & Zhou, X. (2018). Educational inequality, educational expansion and intergenerational income persistence in the United States. *American Sociological Review*, 83(6), 1215-1253. <https://doi.org/10.1177/0003122418809374>
- Bloome, D., & Western, B. (2011). Cohort change and racial differences in educational and income mobility. *Social Forces*, 90(2), 375-395.
- Boudon, R. (1974). *Education, opportunity and social inequality*. John Wiley and Sons.
- Bound, J., Lovenheim, M., & Turner, S. (2009). Why have college completion rates declined? An analysis of changing student preparation and collegiate resources. *National Bureau of Economic Research*, [Working Paper No. 15566].
- Bound, J., & Turner, S. (2007). Cohort crowding: How resources affect collegiate attainment. *Journal of Public Economics*, 91(5-6), 877-899. <https://doi.org/10.1016/j.jpubeco.2006.07.006>
- Bound, J., Lovenheim, M. F., & Turner, S. (2010). Increasing time to baccalaureate degree in the United States, *NBER Working Paper 15892*. <http://www.nber.org/papers/w15892>
- Bourdieu, P., & Passeron, J. C. (1977). *Reproduction in education, society and culture* (R. Nice, Trans.). Sage.

- Bowden, R., & Gonzalez, L. P. (2012). The rise of contingent faculty: Its impact on the professoriate and higher education. *Journal of Applied Research in Higher Education*, 4(1), 5-22. <https://doi-org.ezproxy.uvm.edu/10.1108/17581181211230603>
- Bowen, W. G., Chingo, M. M., & McPherson, M. S. (2009). *Crossing the finish line: Completing college at American public universities*. Princeton University Press. <https://www.jstor.org/stable/j.ctt7rp39>
- Bowman, N. A., & Bastedo, M. N. (2009). Getting on the front page: Organizational reputation, status signals, and the impact of U.S. News and World Report on student decisions. *Res High Educ* 50, 415-436 (2009). <https://doi-org.ezproxy.uvm.edu/10.1007/s11162-009-9129-8>
- Brand, J. E., & Xie, Y. (2010). Who benefits most from college? Evidence for negative selection in heterogeneous economic returns to higher education. *American Sociological Review*, 75(2), 273-302. <https://doi.org/10.1177/0003122410363567>
- Braxton, J. M., Hirschy, A. S., & McClendon, S. A. (2004). Understanding and reducing college student departure. *ASHE-ERIC Higher Education Report*, 30(3).
- Braxton, J. M., Milem, J. F., & Sullivan, A. S. (2000). The influence of active learning on the college student departure process: Toward a revision of Tinto's theory. *The Journal of Higher Education*, 71(5), 569-590. <https://doi.org/10.2307/2649260>
- Braxton, J. M., Willis, A. J., Hirschy, A. S., & Hartley III, H. V. (2008). The role of active learning in college student persistence. *New Directions for Teaching and Learning*, 115, 71-83. <https://doi.org/10.1002/tl.326>
- Brayboy, B., Fann, A., Castagno, A., & Solyom, J. (2012). Postsecondary education for American Indian and Alaska Natives: Higher education for nation building and self-determination. *Research Report from ASHE Higher Education Report Volume 37*(5). Wiley Periodicals Inc. <https://doi.org/10.1002/aehe.v37.5>
- Breault, D. A., & Callejo Perez, D. M. (2012). Conclusions and thoughts on prestige. *Counterpoints*, 401, 131-145. <https://www.jstor.org/stable/42981541>
- Bridgestock, R., & Cunningham, S. (2015). Creative labour and graduate outcomes: Implications for higher education and cultural policy. *International Journal of Cultural Policy*, 22(1), 10-26. <https://doi.org/10.1080/10286632.2015.1101086>
- Bronfenbrenner, U. (1994). Ecological models of human development. In T. Husen & T. N. (Eds.), *International Encyclopedia of Education*, 2(3), 3-44. Elsevier.
- Brookings Institute. (2016). *Economic mobility project*. https://www.brookings.edu/wp-content/uploads/2016/06/05useconomics_morton.pdf
- Brooms, D. R., & Davis, A. R. (2017). Staying focused on the goal: Peer bonding and faculty mentors supporting Black males' persistence in college. *Journal of Black Studies*, 48(3), 305-326. <https://doi.org/10.1177/0021934717692520>
- Brown, T. A. (2006). *Confirmatory factor analysis for applied research*. Guilford.
- Brown, J., Kurzweil, M., & Pritchett, W. (2017). *Quality assurance in U.S. higher education: The current landscape and principles for reform*. Ithika S+R. <https://doi.org/10.18665/sr.303620>

- Buchmann, C., Condrón, D. J., & Roscigno, V. J. (2010). Shadow education, American style: Test preparation, the SAT and college enrollment. *Social Forces*, 89(2), 435-461. <https://doi.org/10.1353/sof.2010.0105>
- Burd, S. (2013, May 8). Undermining Pell: How colleges compete for wealthy students and leave the low-income behind. *New America*. <https://www.newamerica.org/education-policy/policy-papers/undermining-pell/>
- Cabrera, A. F., Nora, A., & Castaneda, M. B. (1993). College persistence: Structural equations modeling test of an integrated model of student retention. *The Journal of Higher Education*, 64(2), 123-139.
- Capstick, M. K., Harrell-Williams, L. M., Cockrum, C. D. et al. (2019). Exploring the effectiveness of academic coaching for academically at-risk college students. *Innov High Educ*, 44, 219-231. <https://doi-org.ezproxy.uvm.edu/10.1007/s10755-019-9459-1>
- Carey, J. M., Carmen, K. P., Horiuchi, Y., Htun, M., & Ortiz, B. (2020). Who wants to hire a more diverse faculty? A conjoint analysis of faculty and student preferences for gender and racial/ethnic diversity. *Politics, Groups, and Identities*, 8(3), 535-553. <https://doi.org/10.1080/21565503.2018.1491866>
- Carnegie Classifications. (2018). *Undergraduate profile classification* [Dataset and Methodology]. https://carnegieclassifications.iu.edu/classification_descriptions/undergraduate_profile.php
- Carnevale, A. P., Rose, S. J., & Cheah, B. (2011). *The college payoff: Education, occupations, lifetime earnings*. Retrieved from <https://cew.georgetown.edu/wp-content/uploads/2014/11/collegepayoff-complete.pdf>
- Carneval, A. P., & Rose, S. J. (2013). *Socioeconomic status, race/ethnicity, and selective college admissions*. The Century Foundation.
- Carnevale, A. P., & van der Werf, M. (2017). The 20% solution: Selective colleges can afford to admit more Pell Grant recipients. *Report of the Georgetown University Center on Education and the Workforce*. Retrieved from <https://cew.georgetown.edu/cew-reports/pell20/>
- Carrell, S. E., Fullerton, R. L., & West, J. E. (2008). Does your cohort matter? Measuring peer effects in college achievement. *Journal of Labor Economics*, 27(3), 439-464. <https://doi.org/10.1086/600143>
- Chen, R. (2012). Institutional characteristics and college student dropout risks: A multilevel event history analysis. *Research in Higher Education*, 53, 487-505. <https://doi.org/10.1007/s11162-011-9241-4>
- Chetty, R., & Hendren, N. (2018). The impacts of neighborhoods on intergenerational mobility I: Childhood exposure effects. *The Quarterly Journal of Economics*, 133(3), 1107-1162. <https://doi.org/10.1093/qje/qjy007>
- Chetty, R., Hendren, N., Kline, P., Saez, E., & Turner, N. (2014). Big data in macroeconomics: New insights from large administrative datasets. *American Economic Review*, 104(5), 141-147. <https://doi.org/10.1257/aer.104.5.141>

- Chetty, R., Friedman, J., Saez, E., Turner, N., & Yagan, D. (2017a). *Mobility report cards: The role of colleges in intergenerational mobility*. <https://doi.org/10.3386/w23618>
- Chetty, R., Friedman, J., Saez, E., Turner, N., & Yagan, D. (2017b). *Mobility report cards: The role of colleges in intergenerational mobility*. [Data set and codebook]. Opportunity Insights Data. <https://opportunityinsights.org/data/>
- Chetty, R., Grusky, D., Hell, M., Hendren, N., Manduca, R., & Narang, J. (2017c). The fading American dream: Trends in absolute income mobility since 1940. *Science*, 356 (April), 398-406.
- Clarke, M. (2017). Rethinking graduate employability: The role of capital, individual attributes and context. *Studies in Higher Education*, 43(1), 1923-1937. <https://doi.org/10.1080/03075079.2017.1294152>
- Clay, R. A. (2018, January). Keys to success when going for tenure. *Monitor on Psychology*, 49(7), 76. <http://www.apa.org/monitor/2018/07-08/success-tenure>
- Clayson, D. E., & Haley, D. A. (2015). Marketing models in education: Students as customers, products, or partners. *Marketing Education Review*, 15(1), 1-10. <https://doi.org/10.1080/10528008.2005.11488884>
- Cohodes, S., & Goodman, J. (2012). First degree earns: The impact of college quality on college completion rates. *HKS Faculty Research Working Paper Series RWP12-033*. <http://nrs.harvard.edu/urn-3:HUL.InstRepos:9396433>
- College Transparency Act 2019 (U.S.).
- Cooke, N. A. (2014). Pushing back from the table: Fighting to maintain my voice as a pre-tenure minority female in the white academy. *Polymath: An Interdisciplinary Journal of Arts & Science*, 4(2), 39-49. <https://ojcs.isg.siue.edu/ojs/index.php/polymath/article/view/2934>
- Cowan, C. D., Hauser, R. M., Kominski, R. A., Levin, H. M., Lucas, S. R., Morgan, S. L., Spencer, M. B., & Chapman, C. (2012). *Improving the measurement of socioeconomic status for the national assessment of educational progress: A theoretical foundation*. National Center for Education Statistics. https://nces.ed.gov/nationsreportcard/pdf/researchcenter/Socioeconomic_Factors.pdf
- Cox, E. P. (1980). The optimal number of response alternatives for a scale: A review. *Journal of Marketing Research*, 17(4), 407-422. <https://doi.org/10.1177/002224378001700401>
- Cox, R. D. (2016). Complicating conditions: Obstacles and interpretations to low-income students' college "choices." *The Journal of Higher Education*, 87(1), 1-26. <https://doi.org/10.1353/jhe.2016.0005>
- Cox, B. E., McIntosh, K., Reason, R. D., & Terenzini (2014). Working with missing data in higher education research: A primer and real-world example. *The Review of Higher Education*, 37(3), 377-402. <https://doi.org/10.1353/rhe.2014.0026>
- Crenshaw, K. (1989). Demarginalizing the intersection of race and sex: A Black feminist critique of antidiscrimination doctrine, feminist theory and antiracist politics. *University of Chicago Legal Forum* 1(8). <http://chicagounbound.uchicago.edu/uclf/vol1989/iss1/8>

- Crenshaw, K. (1991). Mapping the margins: Intersectionality, identity politics, and violence against women of color. *Stanford Law Review* 43(6), 1241-1299.
- Creusere, M., Zhao, H., Huie, S. B., & Troutman, D. R. (2019). Postsecondary education impact on intergenerational income mobility: Differences by completion status, gender, race/ethnicity, and type of major. *The Journal of Higher Education*, 90(6), 915-939. <https://doi.org/10.1080/00221546.2019.1565882>
- Crisp, G., & Cruz, I. (2009). Mentoring college students: A critical review of the literature between 1990 and 2007. *Research in Higher Education*, 50, 525-545. <https://doi.org/10.1007/s11162-009-9130-2>
- Crisp, G., Doran, E., & Salis Reyes, N. A. (2017). Predicting graduation rates at 4-year broad access institutions using a bayesian modeling approach. *Research in Higher Education*, 59(133), 133-155. doi:10.1007/s11162-017-9459-x
- Crisp, G., Taggart, A., & Nora, A. (2015). Undergraduate Latina/o students: A systematic review of research identifying factors contributing to academic success outcomes. *Review of Educational Research*, 85(2), 249-274. <https://doi.org/10.3102/0034654314551064>
- Crisp, R. J., & Turner, R. N. (2011). Cognitive adaptation to the experience of social and cultural diversity. *Psychological Bulletin*, 137(2), 242-266. <https://doi.org/10.1037/a0021840>
- Crook, S. R., & Evans, G. W. (2014). The role of planning skills in the income-achievement gap. *Child Development*, 85, 405-411. <https://doi.org/10.1111/cdev.12129>
- Crosnoe, R., & Muller, C. (2014). Family socioeconomic status, peers, and the path to college. *Social Problems*, 61(4), 602-624. <https://doi.org/10.1525/sp.2014.12255>
- Curran, J. P., Obeidat, K., & Losardo, D. (2010). Twelve frequently asked questions about growth curve modeling. *Journal of Cognitive Development*, 11(2), 121-136. <https://doi.org/10.1080/15248371003699969>
- Dale, S., & Krueger, A. B. (2011). Estimating the return to college selectivity over the career using administrative earning data. *NBER Working Paper 17159*. <http://www.nber.org/papers/w17159>
- de Alva, J. K. (2019). *Is the university next door the way to upward mobility?* American Enterprise Institute. <https://www.aei.org/research-products/report/is-the-university-next-door-the-way-to-upward-mobility/>
- Deming, D. J., & Walters, C. R. (2017). The impact of price caps and spending cuts on U.S. postsecondary attainment. *NBER Working Paper*.
- Denson, N., & Chang, M. J. (2009). Racial diversity matters: The impact of diversity-related student engagement and institutional context. *American Educational Research Journal*, 46(2), 322-353. <https://www.jstor.org/stable/40284795>
- Dill, D. D., & Soo, M. (2005). Academic quality, league tables, and public policy: A cross-national analysis of university ranking systems. *Higher Education*, 49, 495-533. <https://doi-org.ezproxy.uvm.edu/10.1007/s10734-004-1746-8>
- Dixon-Roman, E. J., Everson, H. T., & McArdle, J. J. (2013). Race, poverty, and SAT scores: Modeling the influences of family income on Black and White high school students' SAT performance. *Teacher College Record*, 115, 1-33.

- Dotto, F., Farcomeni, A., Pittau, M. G., & Zelli, R. (2018). A dynamic inhomogenous latent state model for measuring material deprivation. *Royal Statistical Society*, 182(2), 495-516. <https://doi-org.ezproxy.uvm.edu/10.1111/rssa.12408>
- Dougherty, K. J., & Reddy, V. (2013). Performance funding for higher education: What are the mechanisms? What are the impacts? [Special Issue]. *ASHE Higher Education Report* 39(2), 1-134. <https://doi.org/10.1002/aehe.20008>
- Dougherty, K. J., Jones, S. M., Lahr, H., Natow, R. S., Pheatt, L., & Reddy, V. (2016). Looking inside the black box of performance funding for higher education: Policy instruments, organizational obstacles, and intended and unintended impacts, *The Russell Sage Foundation Journal of the Social Sciences*, 2(1) 147-173. <https://doi.org/10.7758/RSF.2016.2.1.07>
- Duncan, O. (1961). A socioeconomic index for all occupations. In A. J. Reiss, Jr., (Ed.), *Occupations and Social Status* (pp. 109-138). Free Press.
- Duncan, O. D., Featherman, D. L., & Duncan, B. (1972). *Socioeconomic background and achievement*. Seminar Press.
- Duncan, T. E., & Duncan, S. C. (2004). An introduction to latent growth curve modeling. *Behavior Therapy*, 35, 333-363.
- Eagan, K., Stolzenberg, E. B., Bates, A. K., Aragon, M. C., Suchard, M. R., & Rios-Aguilar, C. (2015). *The American freshman: National norms Fall 2015*. Higher Education Research Institute, UCLA. www.heri.ucla.edu
- Ehrlich, T. (2006). *Choosing a college*. Carnegie Perspectives. <http://www.carnegiefoundation.org/perspectives>
- Eide, E. R., Hilmer, M. J., & Showalter, M. H. (2016). Is it where you go or what you study? The relative influence of college selectivity and college major on earnings. *Contemporary Economic Policy*, 34(1), 37-46.
- Elliot, W., & Friedline, T. (2013). "You pay your share, we'll pay our share": The college cost burden and role of race, income, and college assets. *Economics of Education Review*, 33, 134-153. <https://doi.org/10.1016/j.econedurev.2012.10.001>
- Ehrenberg, R. G. (2002). Reaching for the brass ring: The U.S. News & World Report rankings and competition. *The Review of Higher Education*, 26(2), 145-162. <https://digitalcommons.ilr.cornell.edu/articles/752>
- Ehrenberg, R. G., & Zhang, L. (2005). Do tenured and tenure-track faculty matter? *Journal of Human Resources*, 40(3), 647-659. <https://doi.org/10.3368/jhr.xl.3.647>
- Erikson, R., & Goldthorpe, J. H. (1992). *The constant flux: A study of class mobility in industrial societies*. Clarendon Press.
- Ewing, A. M. (2012). Estimating the impact of relative expected grade on student evaluations of teachers. *Economics of Education Review*, 31, 141-154. <http://dx.doi.org/10.1016/j.econedurev.2011.10.002>
- Fox, L., Torche, F., & Waldfogel, J. (2016). Intergenerational mobility. *The Oxford Handbook of the Social Science of Poverty*, April, 1-34. <https://doi.org/10.1093/oxfordhb/9780199914050.013.24>
- Erikson, R., Goldthorpe, J. H., & Portocarero, L. (1979). Intergenerational class mobility in three Western European societies: England, France, and Sweden. *The British Journal of Sociology*, 30(4), 415-441. <https://doi.org/10.2307/589632>

- Federal Reserve Bank of New York (2021, February 12). *The labor market for recent college graduates*. https://www.newyorkfed.org/research/college-labor-market/college-labor-market_underemployment_rates.html
- Ficano, C. C. (2010). Peer effects in college academic outcomes - Gender matters! *Economics of Education Review*, 31(2012), 1102-1115. <https://doi.org/10.1016/j.econedurev.2012.07.012>
- Finkelstein, M. J., Conley, V. M., & Schuster, J. H. (2016, April). *Taking the measure of faculty diversity*. TIAA Institute.
- Flaherty, C. (2021, May 14). *The DEI pathway to promotion*. Inside Higher Ed. <https://www.insidehighered.com/news/2021/05/14/iupui-creates-path-promotion-and-tenure-based-dei-work>
- Franklin R. S. (2012). Benchmarking student diversity at public universities in the United States: Accounting for state population composition. *The Annals of Regional Science*, 49(2), 355–372. <https://doi.org/10.1007/s00168-011-0454-4>
- Franzen, A., & Hangartner, D. (2006). Social networks and labour market outcomes: The non-monetary benefits of social capital. *European Sociological Review*, 22(4), 353-368. <https://www.jstor.org/stable/3806508>
- Freeman Jr., S., & DiRamio, D. (2016). Elitism or pragmatism? Faculty hiring at top graduate programs in higher education administration. *The Journal of Professoriate*, 8(2), 94-127.
- Fry, R. (2019, June 20). U.S. women near milestone in the college-educated labor force. *Pew Research Center*. Retrieved from <https://pewrsr.ch/2ZEVQB3>
- Fryer, R. G., & Levitt, S. D. (2013). Testing for racial differences in the mental ability of young children. *American Economic Review*, 103(2), 981-1005. <https://doi.org/10.1257/aer.103.2.981>
- Gaddis, M. S. (2015). Discrimination in the credential society: An audit study of race and college selectivity in the labor market. *Social Forces*, 93(4), 1451-1479. <https://doi.org/10.1093/sf/sou111>
- Garcia, E., & Weiss, E. (2017, September 27). Education inequalities at the school starting gate: Gaps, trends, and strategies to address them. *Economic Policy Institute*. <https://www.epi.org/publication/education-inequalities-at-the-school-starting-gate/#epi-toc-18>
- Gasiewski, J. A., Eagan, M. K., Garcia, G. A., Hurtado, S., & Chang, M. J. (2012). From gatekeeping to engagement: A multicontextual mixed method study of student academic engagement in introductory STEM courses. *Research in Higher Education*, 53, 229-261. <https://doi.org/10.1007/s11162-011-9247-y>
- Gavazzi, S. M., & Gee, E. G. (2018). *Land-grant universities for the future*. John Hopkins University Press.
- Gervais, M., & Ziebath, N. L. (2017). Life after debt: Post-graduation consequences of federal student loans. *Journal of Economic Literature*, 122.
- Giani, M. S. (2016). Are all colleges equally equalizing?: How institutional selectivity impacts socioeconomic disparities in graduates' labor outcomes. *The Review of Higher Education* 39(3), 431-461. <https://doi.org/10.1353/rhe.2016.0013>.

- Giani, M. S., Attewell, P., & Walling, D. (2019). The value of an incomplete degree: Heterogeneity in the labor market benefits of college non-completion. *The Journal of Higher Education*. <https://doi.org/10.1080/00221546.2019.1653122>
- Gillborn, D. (2010) The White working class, racism and respectability: Victims, degenerates and interest-convergence, *British Journal of Educational Studies*, 58(1), 3-25. <https://doi.org/10.1080/00071000903516361>
- Giroux, H. A. (2002). Neoliberalism, corporate culture, and the promise of higher education: A critical analysis. *Harvard Educational Review*, 72(4), 425-463. <https://doi.org/10.17763/haer.72.4.0515nr62324n71p1>
- Goethals, G. (1999). Peer influences among college students: The perils and the potentials. *Williams Project on the Economics of Higher Education DP-51*. <https://sites.williams.edu/wpehe/files/2011/06/DP-50.pdf>
- Goldberger, A. S. (1989). Economic and mechanical models of intergenerational transmission. *American Economic Review*, 79(3), 504-13.
- Goldrick-Rab, S., Kelchen, R., Harris, D. N., & Benson, J. (2016). Reducing income inequality in educational attainment: Experimental evidence on the impact of financial aid on college completion. *American Journal of Sociology*, 121(6). <https://doi.org/10.1086/685442>
- Goldthorpe, J. H. (2000). *Outline of a theory of social mobility*. In *On Sociology: Numbers, narratives and the integration of research and theory*, 230-58. Oxford University Press.
- Goodwin, L., Gazard, B., Aschan, S., MacCrimmon, Hotopf, M., & Hatch, L. (2017). Taking an intersectional approach to define latent classes of socioeconomic status, ethnicity and migration status for psychiatric epidemiological research. *Epidemiology and Psychiatric Sciences*, 27, 589-600. <https://doi.org/10.1017/S2045796017000142>
- Gottfried, A. W. (1985). Measures of socioeconomic status in child development research: Data and recommendations. *Merrill-Palmer Quarterly*, 31(1), 85-92.
- Graham, J. W., Collins, L. M., Wugalter, S. E., Chung, N. K. (Jr.), & Hansen, W. B. (1991). Modeling transitions in latent stage-sequential processes: A substance use prevention example. *Journal of Consulting and Clinical Psychology*, 59(1), 48-57. <https://doi.org/10.1037/0022-006X.59.1.48>
- Green, R. G. (2008). Tenure and promotion decisions: The relative importance of teaching scholarship, and service. *Journal of Social Work Education*, 44(2), 117-128. <https://doi.org/10.5175/JSWE.2008.200700003>
- Greive, D. E. (2000). *Leadership issues of the new millennium*. In D. E. Greive & C. A. Worden (Eds.), *Managing adjunct & part-time faculty for the new millennium* (pp. 19-44). Info-Tec.
- Gregg, P., Jonsson, J. O., Macmillan, L., & Mood, C. (2017). The role of education for intergenerational income mobility: A comparison of the United States, Great Britain, and Sweden. *Social Forces*, 96(1), 121-152. <https://doi.org/10.1093/sf/sox051>

- Griffin, K., del Pilar, W., McIntosh, K., & Griffin, A. (2012). "Oh, of course I'm going to go to college": Understanding how habitus shapes the college choice process of Black immigrant students. *Journal of Diversity in Higher Education*, 5(2), 96-111. <https://doi.org/10.1037/a0028393>
- Griffith, A., & Rask, K. (2007). The influence of the U.S. News and World Report collegiate rankings on the matriculation decision of high-ability students: 1995-2004. *Economics of Education Review*, 26(2), 255-255. <https://doi.org/10.1016/j.econedurev.2005.11.002>
- Grusky, D. B., & Weeden, K. A. (2008). Are there social classes? A framework for testing sociology's favorite concept. In A. Laureu & D. Conley (Eds.), *Social class: How does it work?*, pp.65-89. Russell Sage Foundation
- Guiffrida, D. A. (2006). Toward a cultural advancement of Tinto's theory. *The Review of Higher Education* 29(4), 451-472. <https://doi.org/10.1353/rhe.2006.0031>.
- Haider, S., & Solon, G. (2006). Life-cycle variation in the association between current and lifetime earnings. *American Economic Review*, 96(4), 1308-20.
- Hall, W., Cabrera, A., & Milem, J. (2011). A tale of two groups: Differences between minority students and non-minority students in their predispositions to and engagement with diverse peers at a predominantly White institution. *Research in Higher Education*, 52(4), 420-439. Retrieved from <http://www.jstor.org/stable/41483793>
- Hamilton, L., Roska, J., & Nielsen, K. (2018). Providing a "leg up": Parental involvement and opportunity hoarding in college. *Sociology in Education*, 91(2), 111-131. <https://doi-org.ezproxy.uvm.edu/10.1177/0038040718759557>
- Hanushek, E. A. (1979). Conceptual and empirical issues in the estimation of educational production functions. *Journal of Human Resources*, 14(3), 351-388
- Harley, D., Acord, S. K., & Earl-Novell, S. (2010). *Assessing the future landscape of scholarly communication: An exploration of faculty values and needs in seven disciplines*. Center for Studies in Higher Education. <https://escholarship.org/uc/item/15x7385g>
- Harris, J. C., & Patton, L. D. (2019). Un/Doing intersectionality through higher education research. *The Journal of Higher Education*, 90(3), 347-372. <https://doi.org/10.1080/00221546.2018.1536936>
- Haskins, R. (2008). Education and economic mobility. *Getting Ahead or Losing Ground: Economic Mobility in America*, 91-104.
- Hauser, R. M. (1978). A structural model of the mobility table. *Social Forces* 56(3), 919-53.
- Hauser, R. M. (2010). *Intergenerational economic mobility in the United States: Measures, differentials, and trends*. [Working Paper 98-12]. Retrieved from University of Wisconsin-Madison Center for Demography and Ecology.
- Hauser, R. M., & Logan, J. A. (1992). How not to measure intergenerational occupational persistence. *American Journal of Sociology*, 97(6), 1689-1711.
- Hauser, R. M., & Warren, J. R. (1997). Socioeconomic indexes for occupations: A review, update and critique. In A. Raftery (Ed.), *Sociological methodology*, 27, 177-298. Jossey-Bass.

- Hearn, J. C., & Rosinger, K. O. (2014). Socioeconomic diversity in selective private colleges: An organizational analysis. *The Review of Higher Education* 38(1), 71-104. <https://doi.org/10.1353/rhe.2014.0043>.
- Heckman, J., & Krueger, A. B. (2005). Inequality in America: What role for human capital policies? *Focus*, 23(3), 2-10. <https://EconPapers.repec.org/RePEc:mtp:titles:0262582600>.
- Heil, S., Reisel, L., & Attewell, P. (2014). College selectivity and degree completion. *American Educational Research Journal*, 51(5), 913-935. <https://doi.org/10.3102/0002831214544298>
- Hernandez, R. (2018). *The fall of employment in the manufacturing sector*. Retrieved from <https://www.bls.gov/opub/mlr/2018/beyond-bls/the-fall-of-employment-in-the-manufacturing-sector.htm>
- Hersch, J. (2019, June 12). Catching up is hard to do: Undergraduate prestige, elite graduate programs, and the earnings premium. *Vanderbilt Law and Economics Research Paper* No. 14-23. <http://dx.doi.org/10.2139/ssrn.2473238>
- Heulsman, M. (2020, March 12). Coronavirus could cause long term higher ed crisis. *Inside Higher Ed*. <https://www.insidehighered.com/views/2020/03/12/coronavirus-could-have-long-term-impact-state-funding-universities-opinion>
- Higher Education Opportunity Act 2008. (Public Law 110-315).
- Hillman, N.W. (2014). College on credit: A multilevel analysis of student loan default. *The Review of Higher Education*, 37(2), 169-195. <https://doi.org/10.1353/rhe.2014.0011>
- Hilmer, M. J., & Hilmer, C. E. (2012). On the relationship between student tastes and motivations, higher education decisions and annual earnings. *Economics of Education Review*, 31, 66-75.
- Hoekstra, M. (2009). The effect of attending the flagship university on earnings: A discontinuity-based approach. *The Review of Economics and Statistics*, 91(4), 717-724.
- Holland, M. M. (2019). *Divergent paths to college: Race, class, and inequality in high schools*. Rutgers University Press.
- Holmes, L. (2013). Competing perspective on graduate employability: Possession position, or process? *Studies in Higher Education*, 38(4), 538-554.
- Hong, B. S. S., Shull, P. J., & Haefner, L. A. (2011). Impact of perceptions of faculty on students' outcomes of self-efficacy, locus of control, persistence, and commitment. *Journal of College Student Retention: Research, Theory & Practice*, 13(3), 289-309. <https://doi.org/10.2190/CS.13.3.b>
- Hout, M. (1983). *Mobility tables*. Sage Publications.
- Hout, M. (1988). More universalism, less structural mobility: The American occupational structure in the 1980s. *American Journal of Sociology* 93(6), 1358-1400.
- Hoynes, H. W., Miller, D. L., & Schaller, J. (2012). Who suffers during recessions? *Journal of Economic Perspectives, American Economic Association*, 26(3), 27-48. <https://doi.org/10.3386/w17951>

- Hu, S., Hood, M., & Creed, P. A. (2020). The relationship between family socioeconomic status and career outcomes: A life history perspective. *Journal of Career Development*. <https://doi.org/10.1177/0894845320958076>
- Hu, S., & Kuh, G. D. (2002). Being (dis)engaged in educationally purposeful activities: The influences of student and institutional characteristics. *Research in Higher Education*, 43(5), 555-575.
- Hu, S., & Wolniak, G. C. (2013). College student engagement and early career earnings: Differences by gender, race/ethnicity, and academic preparation. *Review of Higher Education*, 36(2), 211-233.
- Hudson, S., & Klein-Collins, R. (2018). *More than just a job search: Relevant, intentional, and accessible career services for today's student (and returning adults)*. The Council for Adult and Experiential Learning. <https://files.eric.ed.gov/fulltext/ED586520.pdf>
- Hurlburt, S., & McGarrah, M. (2016). *Cost savings or cost shifting? The relationship between part-time contingent faculty and institutional spending*. Delta Cost Project, American Institutes for Research.
- Hurtado, S., & Carter, D. (1997). Effects of college transition and perceptions of the campus racial climate on Latino college students' sense of belonging. *Sociology of Education*, 70(4), 324-345. <https://doi.org/10.2307/2673270>
- Hurtado, S., Alvarez, C. L., Guillermo-Wann, C., Cuellar, M., & Arellano, L. (2012). A model for diverse learning environments. In J. C. Smart & M. B. Paulsen (Eds.), *Higher education: Handbook of theory and research*, 27 (pp. 41-122). Springer.
- Huston, T. A. (2006). Race and gender bias in higher education: Could faculty course evaluations impede further progress toward parity? *Seattle Journal for Social Justice*, 4(2), 591-611. <http://digitalcommons.law.seattleu.edu/sjsj/vol4/iss2/34>
- Iannacchione, V. G. (1982). Weighted sequential hot deck imputation macros. Seventh Annual SAS User's Group International Conference, San Francisco, CA, February, 1982.
- Jackson, V., & Saenz (2021). *States can choose better path for higher education funding in COVID-19 Recession*. Center for Budget and Policy Priorities. <https://www.cbpp.org/sites/default/files/2-17-21sfp.pdf>
- Jacob, B., McCall, B., & Stange, K. M. (2013). *College as country club: Do colleges cater to student's preferences for consumption?* NBER Working Paper 18745. <https://www.nber.org/papers/w18745>
- Jacoby, D. (2006). Effects of part-time faculty employment on community college graduation rates. *The Journal of Higher Education*, 77(6), 1081-1103. <https://doi.org/10.1080/00221546.2006.11778957>
- Jayakumar, U. M. (2008). Can higher education meet the needs of an increasingly diverse and global society? Campus diversity and cross-cultural workforce competencies. *Harvard Educational Review*, 78(4), 615-651.
- Jehangir, R. R., Stebleton, M. J., & Deenanath, V. (2015). *An exploration of intersecting identities of first-generation, low-income students*. Stylus Publishing.
- Jerrim, J., & Macmillan, L. (2015). Income inequality, intergenerational mobility, and the Great Gatsby curve: Is education the key? *Social Forces*, 94(2), 505-533.

- <https://muse.jhu.edu/article/600816>
- Johnson, I. Y. (2011). Contingent instructors and student outcomes: An artifact or a fact?. *Research in Higher Education* 52, 761-785 <https://doi-org.ezproxy.uvm.edu/10.1007/s11162-011-9219-2>
- Johnson, D. R., Wasserman, T. H., Yildirim, N., & Yonai, B. A. (2014). Examining the effects of stress and campus climate on the persistence of students of color and White students: An application of Bean and Eaton's psychological model of retention. *Research in Higher Education*, 55(1), 75-110.
- Judson, K. M., & Taylor, S. (2014). Moving from marketization to marketing of higher education: The co-creation of value in higher education. *Higher Education Studies*, 4. <https://doi.org/10.5539/hes.v4n1p51>
- Jury, M., Smeding, A., Stephens, N. M., Nelson, J. E., Nelson, Aelenei, C., & Darnon, C. (2017). The experience of low-SES students in higher education: Psychological barriers to success and interventions to reduce social-class inequality. *Journal of Social Issues*, 73(1), 23-41. <https://doi.org/10.1111/josi.12202>
- Karlson, K. B. (2019). College as equalizer? Testing the selectivity hypothesis. *Social Science Research*, 80, 216-229. <https://doi.org/10.1016/j.ssresearch.2018.12.001>
- Karlson, K. B., Holm, A., & Breen, R. (2012). Comparing regression coefficients between same-sample nested models using logit and probit: A new method. *Sociology Methodology*, 42(1), 286-313. <https://doi.org/10.1177/0081175012444861>
- Kelchen, R. (2018). Do performance-based funding policies affect underrepresented student enrollment? *The Journal of Higher Education*, 89(5), 702-727. <https://doi.org/10.1080/00221546.2018.1434282>
- Kerr, E. (2020, September 15). *See 10 years of average total student loan debt*. U.S. News & World Report. <https://www.usnews.com/education/best-colleges/paying-for-college/articles/see-how-student-loan-borrowing-has-risen-in-10-years>
- Kezar, A., Maxey, D., & Eaton, J. (2014). *An examination of the changing faculty: Ensuring institutional quality and achieving desired student learning outcomes* (CHEA Occasional Paper). Institute for Research and Study of Accreditation and Quality Assurance. https://pullias.usc.edu/wp-content/uploads/2014/01/CHEA_Examination_Changing_Faculty_2013.pdf
- Khine, K. (2019, May 10). A greater number of jobs require more education, leaving middle-skill workers with fewer opportunities. [Web log post]. Retrieved from <http://statchatva.org/2019/05/10/a-greater-number-of-jobs-require-more-education-leaving-middle-skill-workers-with-fewer-opportunities/>
- Kilgo, C. A., Sheets, J. K. E., & Pascarella, E. T. (2015). The link between high-impact practices and student learning: Some longitudinal evidence. *Higher Education*, 69, 509-525. <https://doi-org.ezproxy.uvm.edu/10.1007/s10734-014-9788-z>
- Kim, J. K., & Gasman, M. (2011). In search of a "good college": Decisions and determinations behind Asian American students' college choice. *Journal of College Student Development*, 52(6), 706-728. <https://doi.org/10.1353/csd.2011.0073>

- Kim, J. (2018). The functions and dysfunctions of college rankings: An analysis of institutional expenditure. *Research in High Education* 59, 54-87. <https://doi-org.ezproxy.uvm.edu/10.1007/s11162-017-9455-1>
- Kochhar, R. (2020, June 9). *Hispanic women, immigrants, young adults, those with less education hit hardest by COVID-19 job losses*. Pew Research Center. <https://www.pewresearch.org/fact-tank/2020/06/09/hispanic-women-immigrants-young-adults-those-with-less-education-hit-hardest-by-covid-19-job-losses/>
- Kugelmass, H., & Ready, D. D. (2010). Racial/ethnic disparities in collegiate cognitive gains: A multilevel analysis of institutional influences on learning and its equitable distribution. *Research in Higher Education*, 52, 323-348. <https://doi.org/10.1007/s11162-010-9200-5>
- Kuh, G. D. (2001). Organizational culture and student persistence: Prospects and puzzles. *Journal of College Student Retention: Research, Theory & Practice*, 3(1), 23-39. <https://doi.org/10.2190/U1RN-C0UU-WXRV-0E3M>
- Kuh, G. D. (2008) *High-impact practices: What they are, who has access to them, and why they matter*. Retrieved from <https://secure.aacu.org/imis/ItemDetail?iProductCode=E-HIGHIMP&Category=>
- Kuh, G. D., & Hu, S. (2001). The effects of student-faculty interaction in the 1990s. *Journal of the Association for the Study of Higher Education*, 24(3), 309-332. <https://doi.org/10.1353/rhe.2001.0005>
- Kuh, G. D., & Pascarella, E. T. (2004). What does institutional selectivity tell us about educational quality? *Change: The Magazine of Higher Learning*, 36(5), 52-59. <https://doi.org/10.1080/00091380409604986>
- Kumhof, M., & Rancière, R. (2010). *Inequality, leverage and crises* (IMF Working Paper 10/268). Retrieved from <https://www.imf.org/external/pubs/ft/wp/2010/wp10268.pdf>
- Ladson-Billings, G., & Tate, W. F. (2006). Toward a critical race theory of education. *Critical Race Theory In Education: All God's Children got a Song*, 97(1), 47-68.
- Lang, K., & Manove, M. (2011). Education and labor market discrimination. *American Economic Review*, 101, 1467-1496. <http://www.aeaweb.org/articles.php?doi=10.1257/aer.101.4.1467>
- Lanza, S. T., Flaherty, B. P., & Collins, L. M. (2003). Latent class and latent transition analysis. In J. A. Schinka & W. F. Velicer (Eds.), *Handbook of psychology: Research methods in psychology*, 2 (pp. 663-685). John Wiley & Sons Inc. <https://doi.org/10.1002/0471264385.wei0226>
- Lareau, A. (2003). *Unequal childhoods: Class, race, and family life*. University of California Press.
- Laursen, B. P., & Hoff, E. (2006). Person-centered and variable-centered approaches to longitudinal data. *Merrill-Palmer Quarterly* 52(3), 377-389. <https://doi.org/10.1353/mpq.2006.0029>
- Lawrence, M., & Breen, R. (2016). And their children after them? The effect of college on educational reproduction. *American Journal of Sociology*, 122(2), 532-572.
- Lieber, R. (2019). *The price you pay for college: An entirely new road map for the biggest financial decision your family will ever make*. Routledge.

- Lin, X. (2010). Identifying peer effect in student academic achievement by spatial autoregressive models with group observables. *Journal of Labor Economics*, 28(4), 825-860. <https://doi.org/10.1086/653506>
- Liu, A. (2011). Unraveling the myth of meritocracy within the context of U.S. higher education. *Higher Education*, 62, 383-397. <https://doi-org.ezproxy.uvm.edu/10.1007/s10734-010-9394-7>
- Long, M. C. (2008). College quality and early adult outcomes. *Economics of Education Review*, 27(5), 588-602.
- Long, M. C. (2010). Changes in the returns to education and college quality. *Economics of Education Review*, 29(3), 338-347.
- Lundy-Wagner, V. C. (2012). 'Class'ifying ethnicity/race and gender: An intersectional critique of bachelor's degree completion research. *Interactions*, 8(2). <https://escholarship.org/uc/item/8nc1m3m0>
- Luppino, M., & Sander, R. (2015). College major peer effects and attrition from the sciences. *IZA Journal of Labor Economic*, 4(4), 1-23. <https://doi.org/10.1186/s40172-014-0019-8>
- Ma, J., Pender, M., & Welch, M. (2019). *Education pays 2019: The benefits of higher education for individual and society*. College Board. <https://research.collegeboard.org/pdf/education-pays-2019-full-report.pdf>
- Ma, Y., & Savas, G. (2014). Which is more consequential: Fields of study or institutional selectivity? *The Review of Higher Education*, 37(2), 221-247. <https://doi.org/10.1353/rhe.2014.0001>.
- Magidson, J., & Vermunt, J. K. (2002). Latent class models for clustering: A comparison with K-means. *Canadian Journal of Marketing Research*, 20, 36-43.
- Manzoni, A., & Streib, J. (2019). The equalizing power of a college degree for first-generation college students: Disparities across institutions, majors, and achievement levels. *Research in Higher Education*, 60, 577-605. <https://doi.org/10.1007/s11162-018-9523-1>
- Mare, R. D. (1980). Social background and school continuation decisions. *Journal of the American Statistical Association*, 75(370), 295-305. <https://doi.org/10.1080/01621459.1980.10477466>
- Marina, B. L. H., & Holmes, N. D. (2009). Education is the great equalizer. Or is it? *About Campus: Enriching the Student Learning Experience*, 14(3), 29-32. <https://doi.org/10.1002%2Faca.293>
- Marsh, H. W., Lüdtke, O., Robitzsch, A., Trautwein, U., Asparouhov, T., Muthén, B., & Nagengast, B. (2009). Doubly-latent models of school contextual effects: Integrating multilevel and structural equation approaches to control measurement and sampling error. *Multivariate Behavioral Research*, 44(6), 764-802.
- Martin, N. D. (2013, April 8). Forms of social capital: Family resources, campus networks, and dominant class advantage at an elite university. In S. McDonald, (Ed.), *Networks, Work and Inequality (Research in the Sociology of Work, 24)*. Emerald Group Publishing Limited, pp. 359-386. [https://doi-org.ezproxy.uvm.edu/10.1108/S0277-2833\(2013\)0000024016](https://doi-org.ezproxy.uvm.edu/10.1108/S0277-2833(2013)0000024016)

- Martinez, M. A., Nino, J. M., & Torres, I. (2018). Examining intersectionalities among male faculty of color on the tenure-track. *Intersections: Critical Issues in Education* 2(2). <https://digitalrepository.unm.edu/intersections/vol2/iss2/3>
- Marx, D. M., & Goff, A. P. (2010). Clearing the air: The effect of experimenter race on target's test performance and subjective experience. *British Journal of Social Psychology*, 44(4), 645-657. <https://doi-org.ezproxy.uvm.edu/10.1348/014466604X17948>
- Mayer, S. E., & Lopoo, L. M. (2004). Intergenerational economic mobility in the United States, 1940 to 2000. *The Journal of Human Resources*, 43, 139-172. <http://jhr.uwpress.org/content/XL/1/169.abstract>
- Mayhew, M. J., Rothenbach, A. N., Bowman, N. A., Seifert, T. A., Wolniak, G. C., Pascarella, E. T., & Terenzini, P. T. (2016). *How college affects students: 21st century evidence that higher education work*. Jossey-Bass.
- Mazumder, B. (2005). The apple falls even closer to the tree than we thought: New and revised estimates of intergenerational inheritance of earnings. In S. Bowles, H. Gintis, & M. Osbourne (Eds.), *Unequal chances: Family background and Economic Success* (pp. 80-99). Princeton University Press.
- Mazumder, B., & Acosta, M. (2015). Using occupation to measure intergenerational mobility. *The ANNALS of the American Academy of Political and Social Science*, 657(1), 174-193. <https://doi.org/10.1177/0002716214552056>
- McCormick A.C., Kinzie J., & Gonyea R.M. (2013). Student engagement: Bridging research and practice to improve the quality of undergraduate education. In M. Paulsen (Ed.), *Higher Education: Handbook of Theory and Research. Higher Education: Handbook of Theory and Research*, 28. Dordrecht. https://doi-org.ezproxy.uvm.edu/10.1007/978-94-007-5836-0_2
- McIntosh, K., Moss, E., Nunn, R., & Shambaugh, J. (2020). *Examining the Black-White wealth gap*. Brookings. <https://www.brookings.edu/blog/up-front/2020/02/27/examining-the-black-white-wealth-gap/>
- McKiernan, E. C., Schimanski, L. A., Nieves, C. M., Matthias, L., Niles, M. T., & Alperin, J. P. (2019). Use of the journal impact factor in academic review, promotion and tenure evaluations. *eLife*, 8(e47338). <https://doi.org/10.7554/eLife.47338>
- McNaughtan, J., Garcia, H. A., & Nehls, K. (2018). Understanding the growth of contingent faculty. *New Directions for Institutional Research*, 176, 9-26. <https://doi-org.ezproxy.uvm.edu/10.1002/ir.20241>
- McNeeley, S. (2012). Sensitive issues in surveys: Reducing refusals while increasing reliability and quality of responses to sensitive survey items. In L. Gideon (Ed.), *Handbook of survey methodology for the social sciences* (pp. 377-396). Springer Science+Business Media
- Medina, J., Benner, K., & Taylor, K. (2019, March 12). *Actress, business leaders and other wealthy parents charged in U.S. college entry fraud*. <https://www.nytimes.com/2019/03/12/us/college-admissions-cheating-scandal.html>

- Melguizo, T., & Wolniak, G.C. (2012). The earnings benefits of majoring in STEM fields among high achieving minority students. *Research in Higher Education* 53, 265-291.
- Melguizo, T., & Strober, M. (2007). Faculty salaries and the maximization of prestige. *Research in Higher Education*, 48(6), 633-668.
- Meredith, M. (2004). Why do universities compete in the ratings game? An empirical analysis of the effects of the U.S. News and World Report College Rankings. *Research in Higher Education* 45, 443-461. <https://doi-org.ezproxy.uvm.edu/10.1023/B:RIHE.0000032324.46716.f4>
- Mettler, S. (2014). *Degrees of inequality: How the politics of higher education sabotaged the American dream*. Basic Books.
- Michel, J.O., Chadi, D., Jimenez, M., & Campbell, C. M. (2018). Ignis Fatuus effect of faculty category: Is the tenure versus non-tenure debate meaningful to students' course experiences?. *Innov High Educ* 43, 201-216. <https://doi-org.ezproxy.uvm.edu/10.1007/s10755-017-9420-0>
- Millea, M., Willis, R., Elder, A., & Molinea, D. (2018). What matters in college student success? Determinants of college retention and graduation rates. *Education*, 138(4).
- Milem, J. F., & Berger, J. B.(1997). A modified model of college student persistence: Exploring the relationship between Astin's theory of involvement and Tinto's theory of student departure. *Journal of College Student Development*, 11. Retrieved from https://scholarworks.umass.edu/cie_faculty_pubs/11
- Mincer, J. A. (1974). *Schooling, experience and earnings*. National Bureau of Economic Research.
- Mitchell, M., Leachman, M., & Masterson, K. (2017). *A lost decade in higher education funding: State cuts have driven up tuition and reduced quality*. Retrieved from <https://vtechworks.lib.vt.edu/bitstream/handle/10919/83618/TuitionReducedQuality.pdf?sequence=1&isAllowed=y>
- Mitchell, M., Leachman, M., Masterson, K., & Waxman, S. (2018, October 4). *Unkept promises: State cuts to higher education threaten access and equity*. Center on Budget and Policy Priorities. <https://www.cbpp.org/research/state-budget-and-tax/unkept-promises-state-cuts-to-higher-education-threaten-access-and>
- Mitchell, M., Leachman, M., & Saenz, M. (2019). *State higher education funding have pushed costs to students, worsened inequality*. Center on Budget and Policy Priorities. <https://www.cbpp.org/research/state-budget-and-tax/state-higher-education-funding-cuts-have-pushed-costs-to-students>
- Monsen, C. Z. (2018). Upward intergenerational mobility of college students: Does the type of institution matter? *The Park Place Economist*, 26. <https://digitalcommons.iwu.edu/parkplace/vol26/iss1/17/>
- Morse, R., & Brooks, E. (2020, September 13). *How U.S. News calculated the 2021 best colleges rankings*. U.S. News & World Report. <https://www.usnews.com/education/best-colleges/articles/how-us-news-calculated-the-rankings>

- Mueller, C. W., & Parcel, T. L. (1981). Measures of socioeconomic status: Alternatives and recommendations. *Child Development*, 52(1), 13-20.
<https://doi.org/10.2307/1129211>
- Mullen, A. (2010). *Degrees of inequality: Culture, class, and gender in American higher education*. John Hopkins University Press.
- Museus, S. D., Nichols, A. H., & Lambert, A. D. (2008). Racial differences in the effects of campus racial climate on degree completion: A structural equation model. *The Review of Higher Education* 32(1), 107-134. <https://doi.org/10.1353/rhe.0.0030>.
- Museus, S. D., Palmer, R. T., Davis, R. J., & Maramba, D. C. (2011). Special issues: Racial and ethnic minority students' success in STEM education. *ASHE Higher Education Report*, 36(6), 1-140. <http://dx.doi.org/10.1002/aehe.3606>
- Muthén, B., & Asparouhov, T. (2011). *LTA in Mplus: Transition probabilities influenced by covariates*. Mplus Web Notes.
<http://www.statmodel.com/examples/LTAwebnote.pdf>
- Muthén, B., & Shedden, K. (1999). Finite mixture modeling with mixture outcomes using the EM algorithm. *Biometrics*, 55, 463-469.
- Naidoo, R. (2004). Fields and institutional strategy: Bourdieu on the relationship between higher education, inequality and society. *British Journal of Sociology of Education*, 25(4), 457-471. <https://doi.org/10.1080/0142569042000236952>
- National Association of Colleges and Employers. (n.d.). *Career readiness defined*.
<https://www.nacweb.org/career-readiness/competencies/career-readiness-defined/>
- National Association of Colleges and Employers. (2019, July). *Standards and protocols for the collection and dissemination of graduating students' initial career outcomes information for undergraduates*. NACE.
<https://www.nacweb.org/uploadedfiles/files/2020/publication/first-destination/first-destination-survey-standards-and-protocols.pdf>
- National Center for Educational Statistics. (2008). *Integrated Postsecondary Education Data System (IPEDS)*, [Institutional data file]. <https://nces.ed.gov/ipeds/use-the-data/download-access-database>
- National Center for Educational Statistics. (2012). *Baccalaureate and beyond longitudinal study*. [Data file and codebook]. Retrieved from <https://nces.ed.gov/surveys/b&b/>
- National Center for Educational Statistics (2014). *Barron's admissions competitiveness index* [Data file].
- National Center for Educational Statistics. (2020, May). *The condition of education: Postsecondary institution expenses*.
https://nces.ed.gov/programs/coe/indicator_cue.asp
- National Student Clearinghouse Research Center. (2015). Persistence & retention - 2015. Retrieved from <https://nscresearchcenter.org/snapshotreport-persistenceandretention18/>

- Newman, C. B. (2011). Engineering success: The role of faculty relationships with African American undergraduates. *Journal of Women and Minorities in Science and Engineering*, 17(3), 193-207. <https://doi.org/10.1615/JWomenMinorScienEng.2011001737>
- Noel, R. A. (2018, May). *Race, economics, and social status*. U.S. Bureau of Labor Statistics. <https://www.bls.gov/spotlight/2018/race-economics-and-social-status/home.htm>
- Noftsinger, J. B., & Newbold, K. F., Jr. (2007). Historical underpinnings of access to American higher education. *New Direction for Higher Education*, 2007(138), 3-18. <https://doi.org/10.1002/he.250>
- Noguera, P. A. (2017). Introduction to “racial inequality and education: Patterns and prospects for the future.” *The Educational Forum*, 81(2), 129-135. <https://doi.org/10.1080/00131725.2017.1280753>
- Nora, A. (2002). A theoretical and practical view of student adjustment and academic achievement. In W. G. Tierney & L. S. Hagedorn (Eds.), *Increasing access to college: Extending possibilities for all students* (pp. 65-78). SUNY Press.
- Nora, A. (2004). The role of habitus and cultural capital in choosing a college, transitioning from high school to higher education, and persisting in college among minority and nonminority students. *Journal of Hispanic Higher Education*, 3(2), 180-208. <https://doi.org/10.1177/1538192704263189>
- Nylund, K. L., Asparouhov, T., & Muthén, B. O. (2007). Deciding on the number of classes in latent class analysis and growth mixture modeling: A Monte Carlo simulation study. *Structural Equation Modeling: A Multidisciplinary Journal*, 14(4), 535-569. <https://doi.org/10.1080/10705510701575396>
- O’Connell, A. A., Yeomans_maldonado, G., & McCoach, D. B. (2016). Residual diagnostics and model assessment in multilevel framework: Recommendations toward best practice. In J. R. Harring, L. M. Stapleton, & S. N. Beretvas (Eds.), *Advances in multilevel modeling for educational research* (pp. 97-135). Information Age.
- O’Meara, K. A. (2007). Striving for what? Exploring the pursuit of prestige. In J. C. Smart (Ed.), *Higher education: Handbook of theory and research* (Vol. XXII., pp. 121-179). Springer.
- Oberski, D. L., Hagenaars, J. A. P., & Saris, W. E. (2015). The latent class multitrait-Multimethod model. *Psychological Methods*, 20(4), 422-443. <https://doi.org/10.1037/a0039783>
- Oh, B., & Kim, C. (2020). Broken promise of college? New educational sorting mechanisms for intergenerational association in the 21st century. *Social Science Research*, 86. <https://doi.org/10.1016/j.ssresearch.2019.102375>
- Oreopoulos, P., & Petronijevic, U. (2013). Making college worth it: A review of research on the returns to higher education. *The Future of Children*, 23(1), 41-65.
- Oseguera, L. (2005). Four and six-year baccalaureate degree completion by institutional characteristics and racial/ethnic groups. *Journal of College Student Retention: Research, Theory & Practice*, 7(1), 19-59. <https://doi.org/10.2190/E1TU-AW8J-5FYA-GLPW>

- Oseguera, L., & Rhee, B. S. (2009). The influence of institutional retention climates on student persistence to degree completion: A multilevel approach. *Research in Higher Education, 50*(6), 546-569.
- Ost, B. (2010). The role of peers and grades in determining major persistence in the sciences. *Economics of Education Review, 29*(6), 923-934.
<https://doi.org/10.1016/j.econedurev.2010.06.011>
- Pampaloni, A. M. (2010). The influence of organizational image on college selection: What students seek in institutions of higher education. *Journal of Marketing in Higher Education, 20*(1), 19-48. <https://doi.org/10.1080/08841241003788037>
- Park, J. J., Denson, N., & Bowman, N. A. (2013). Does socioeconomic diversity make a difference? Examining the effects of racial and socioeconomic diversity on the campus climate for diversity. *American Educational Research Journal, 50*(3), 466-496. <https://doi-org.ezproxy.uvm.edu/10.3102/0002831212468290>
- Pascarella, E. T., & Terenzini, P. T. (2005). *How college affects students: A third decade of research*. Jossey-Bass.
- Pascarella, E. T., Seifert, T. A., & Whitt, E. J. (2008). Effective instruction and college student persistence: Some new evidence. *New Directions for Teaching & Learning, 115*, 55-70. <https://doi.org/10.1002/tl.325>
- Patterson, S. E., Damaske, S., & Sheroff, C. (2017). Gender and the MBA: Differences in career trajectories, institutional support, and outcomes. *Gender & Society, 31*(3). <https://doi.org/10.1177/0891243217703630>
- Patton, L. D., & Harper, S. R. (2004). Mentoring relationships among African American women in graduate and professional schools. *New Directions in Student Services, 104*, 67-78. <https://doi-org.ezproxy.uvm.edu/10.1002/ss.108>
- Pérez-Peña, R., & Slotnik, D. E. (2012, January 31). Gaming the college rankings. *The New York Times*. <https://www.nytimes.com/2012/02/01/education/gaming-the-college-rankings.html>
- Perna, L. W., & Thomas, S. L. (2006). A framework for reducing the college success gap and promoting success for all. *National Symposium on Postsecondary Student Success: Spearheading a Dialog on Student Success*. https://repository.upenn.edu/gse_pubs/328
- Perry, A. M. (2019, May 17). *Students need more than an SAT adversity score, they need a boost in wealth*. Brookings. <https://www.brookings.edu/blog/the-avenue/2019/05/17/students-need-more-than-an-sat-adversity-score-they-need-a-boost-in-wealth/>
- Pfeffer, F. T. (2014). Multigenerational approaches to social mobility. A multifaceted research agenda. *Research in Social Stratification and Mobility, 35*, 1-12.
<https://doi.org/10.1016/j.rssm.2014.01.001>
- Pfeffer, F. T., & Goldrick-rab, S. (2011). *Unequal pathways through American universities*. (Discussion Paper No. 1391-11). Retrieved from <https://www.irp.wisc.edu/publications/dps/pdfs/dp139111.pdf>
- Pfeffer, F. T., & Hertel, F. R. (2015). How has educational expansion shaped social mobility trends in the United States? *Social Forces, 94*(1), 143-180.
<https://doi.org/10.1093/sf/sov045>

- Pope, D. G., & Pope, J. C. (2014). Understanding college application decisions: Why college sports success matters. *Journal of Sports Economics*, 15(2), 107-131. <https://doi-org.ezproxy.uvm.edu/10.1177/1527002512445569>
- Pössel, P., Burton, S. M., Cauley, B., Sawyer, M. G., Spence, S. H., & Sheffield, J. (2018). Associations between social support from family, friends, and teachers and depressive symptoms in adolescents. *Journal of Youth Adolescence* 47, 398-412. <https://doi-org.ezproxy.uvm.edu/10.1007/s10964-017-0712-6>
- Posselt, J. R., Jaquette, O., Bieibly, R., & Bastedo, M. N. (2012). Access without equity: Longitudinal analyses of institutional stratification by race and ethnicity, 1972-2004. *American Educational Research Journal*, 49(6), 1074-1111. <https://doi.org/10.3102/0002831212439456>
- Quaye, S. J., & Harper, S. R. (2014). *Student engagement in higher education: Theoretical perspectives and practical approaches for diverse populations*. Routledge.
- Ram, N., & Grimm, K. J. (2009). Methods and measures: Growth mixture modeling, a method for identifying differences in longitudinal change among unobserved groups. *International Journal of Behavioral Development*, 33, 565-576.
- Rampell, C. (2015, February 17). *Why do Americans go to college? First and foremost, they want better jobs*. The Washington Post. <https://www.washingtonpost.com/news/rampage/wp/2015/02/17/why-do-americans-go-to-college-first-and-foremost-they-want-better-jobs/>
- Raudenbush, S. W., & Bryk, A. S. (2002). *Hierarchical linear models: Applications and data analysis methods* (2nd ed.). Sage Publications.
- Reardon, S. F., Weathers, E. S., Fahle, E. M., Jang, H., & Kalogrides, D. (2019). *Is separate still unequal? New evidence on school segregation and racial academic achievement gaps* (CEPA Working Paper No.19-06). Retrieved from <http://cepa.stanford.edu/wp19-06>
- Reauthorizing the Higher Education Act: Strengthening Accountability to Protect Students and Taxpayers: *Testimony provided to the committee on Health, Education, Labor, & Pensions of the United States senate* (Cong. 165-62), 116th Cong. (2019) (testimony of David A. Tandberg).
- Reback, R., & Alter, M. (2013). True for your school? How changing reputations alter demand for selective U.S. colleges. *Educational Evaluation and Policy Analysis*, 36(3), 346-370. <https://doi-org.ezproxy.uvm.edu/10.3102/0162373713517934>
- Reber, S., & Sinclair, C. (2020, May 19). *Opportunity engines: Middle-class mobility in higher education*. Brookings Institute. <https://www.brookings.edu/research/opportunity-engines-middle-class-mobility-in-higher-education/>
- Reeves, R. (2017). *Dream hoarders: How the American upper middle class is leaving everyone in the dust, why that is a problem and what do about it*. Brookings Institution Press.
- Renn, K. A. (2003). Understanding the identities of mixed-race college students through a developmental ecology lens. *Journal of College Student Development*, 44(3), 383-403. <https://doi.org/10.1353/csd.2003.0032>

- Rivera, L. A. (2011). Hiring as cultural matching: The case of elite professional service firms. *American Sociological Review*, 77(6), 999-1022. <https://doi.org/10.1177/0003122412463213>
- Rivera, L. A. (2015). *Pedigree: How elite students get elite jobs*. Princeton University Press.
- Rivera, L. A., & Tilcsik, A. (2019). Scaling down inequality: Rating scales, gender bias, and architecture of evaluation [Forthcoming]. *American Sociological Review*.
- Robst, J. (2007). Education and job match: The relatedness of college major and work. *Economics of Education Review*, 26(4), 397-407.
- Roth, G. (2019). *The educated underclass: Students and the promise of social mobility*. Pluto Press.
- de Roux, N., & Riehl, E. R. (2019). *Isolating peer effects in the returns to college selectivity*. Documento CEDE No. 2019-34. Retrieved from <https://ssrn.com/abstract=3450715> or <http://dx.doi.org/10.2139/ssrn.3450715>
- Rubin, M. (2012). Social class differences in social integration among students in higher education: A meta-analysis and recommendations for future research. *Journal of Diversity in Higher Education*, 5(1), 22-38. <https://doi.org/10.1037/a0026162>
- Rumberger, R. W. (2010). Education and the reproduction of economic inequality in the United States: An empirical investigation. *Economics of Education Review*, 29(2), 246-254.
- Ryu, E., & West, S. G. (2009). Level-specific evaluation of model fit in multilevel structural equation modeling. *Structural Equation Modeling: A Multidisciplinary Journal*, 16(4), 583-601.
- Saenz, V. B. (2010). Breaking the segregation cycle: Examining students' precollege racial environments and college diversity experiences. *Review of Higher Education*, 34(1), 1-37. <https://doi.org/10.1353/rhe.2010.0000>
- Saez, E. (2019, March). The evolution of top incomes in the United States. *Pathways Magazine*, Winter, 6-7.
- Sandoval-Lucero, E., Maes, J., & Klingsmith, L. (2014). African American and Latina(o) community college students' social capital and student success. *College Student Journal*, 3(Fall), 522-533.
- Sartipi, M., Nedjat, S., Mansournia, M. A., Baigi, V., & Fotouhi, A. (2016). Assets as a socioeconomic status index: Categorical principal components analysis vs. latent class analysis. *Arch Iran Med*, 18(11), 791-796.
- Schademan, A. R., & Thompson, M. R. (2015). Are college faculty and first-generation, low-income students ready for each other? *Journal of College Student Retention: Research, Theory & Practice*, 18(2), 194-216. <https://doi-org.ezproxy.uvm.edu/10.1177/1521025115584748>
- Schimanski, L. A., & Alperin, J. P. (2018). The evaluation of scholarship in academic promotion and tenure processes: Past, present, and future. *F1000Research*, 7(1605). <https://doi.org/10.12688/f1000research.16493.1>
- Schreiner, L.A., Noel, P., Anderson, E., & Cantwell, L. (2011). The impact of faculty and staff on high-risk college student persistence. *Journal of College Student Development* 52(3), 321-338. <https://doi.org/10.1353/csd.2011.0044>.

- Sewell, W. H., Haller, A., & Portes, A. (1969). The educational and early occupational attainment process. *American Sociological Review*, 34, 82-92.
- Schudde, L. (2013). Heterogeneous treatment effects in higher education: Exploring variation in the effects of college experiences on student success (Doctoral dissertation). University of Wisconsin–Madison, Madison, WI.
- Shamsuddin, S. (2016). Berkeley or bust? Estimating the causal effect of college selectivity on bachelor's degree completion. *Res High Educ* 57, 795-822. <https://doi-org.ezproxy.uvm.edu/10.1007/s11162-016-9408-0>
- Shudde, L. T. (2011). The causal effect of campus residency on college student retention. *The Review of Higher Education*, 34(4), 581-610.
- Siedman, A. (2012). *College student retention: Formula for student success* (2nd ed.). Rowan & Littlefield Publishers.
- Silva, B. C., Boscancianu, C. M., & Littvay, L. (2020). *Multilevel structural equation modeling: Quantitative applications in the social sciences*, 179. Sage Publications.
- Smith, B., & Hawkins, B. (2011). Examining student evaluations of Black college faculty: Does race matter? *The Journal of Negro Education*, 80(2), 149-162.
- Smith, D. G., Tova, E., & Garcia, H. A. (2012). Where are they? A multilevel examination of the distribution of full-time faculty by institutional type, race/ethnicity, gender and citizenship, *New Directions for Institutional Research*, 2012(155), 5-26. <https://doi-org.ezproxy.uvm.edu/10.1002/ir.20019>
- Snellman, K., Silva, J. M., Fredrick, C. B., & Putnam, R. D. (2015). The engagement gap: Social mobility and extracurricular participation among american youth. *The Annals of the American Academy of Political and Social Science*, 657(1), 194-207. <https://doi.org/10.1177%2F0002716214548398>
- Sneyers, E., & De Witte, K. (2017). Interventions in higher education and their effect on students success: A meta analysis, *Educational Review*, 70(2), 208-228. <https://doi.org/10.1080/00131911.2017.1300874>
- Sørensen, A. (1994). Women, family and class. *Annual Review of Sociology*, 20, 27-47.
- Spence, M. (1974). Job market signaling. *The Quarterly Journal of Economics*, 87(3), 355-374. <https://doi.org/10.2307/1882010>
- Stinebrickner, R., & Stinebrickner, T. R. (2006). What can be learned about peer effects using college roommates? Evidence from new survey data and students from disadvantaged backgrounds. *Journal of Public Economic*, 90, 1435-1454. <https://doi.org/10.1016/j.jpubeco.2006.03.002>
- Stephens, N. M., Townsend, S. S. M., & Dittmann, A. G. (2019). Social-class disparities in higher education and professional workplaces: The role of cultural mismatch. *Current Directions in Psychological Science*, 28(1), 67-73. <https://doi.org/10.1177/0963721418806506>
- Stout, R., Archie, C., Cross, D., & Carman, C. A. (2018). The relationship between faculty diversity and graduation rates in higher education. *Intercultural Education*, 29(3), 399-417. <https://doi.org/10.1080/14675986.2018.1437997>
- Stuber, J. M. (2012). *Inside the college gates: How class and culture matter in higher education*. Lexington Books.

- Tamborini, C. R., Kim, C. H., & Sakamoto, A. (2015). Education and lifetime earnings in the United States. *Demography*, *52*(4), 1383-1407.
<https://doi.org/10.1007/s13524-015-0407-0>
- Taylor, B. J., & Cantwell, B. (2019). *Unequal higher education: Wealth, status, and student opportunity*. Rutgers University Press.
- Thacker, L. (2008). Pulling rank: A plan to help students with college choice in an age of rankings. *The New England Journal of Higher Education*, *22*(4), 15-16.
<https://files.eric.ed.gov/fulltext/EJ794236.pdf>
- The Pell Institute [Pell Institute] for the Study of Opportunity in Higher Education. (2019). Indicators of higher education equity in the United States. Retrieved from http://pellinstitute.org/indicators/reports_2019.shtml
- Tholen, G., Brown, P., Power, S., & Allouch, A. (2013). The role of networks and connections in educational elites' labour market entrance. *Research in Social Stratification and Mobility*, *34*(0), 142-154.
<https://doi.org/10.1016/j.rssm.2013.10.003>
- Thomas, S. L., Heck, R. H., & Bauer, K. W. (2005). Weighting and adjusting for design effects in secondary data analyses. *New Directions for Institutional Research*, *127*(Fall), 51-72.
- Thomas, T. L., & Zhang, L. (2005). Post-baccalaureate wage growth within four years of graduation: The effects of college quality and college major. *Research in Higher Education*, *45*(4), 437-459. <https://doi.org/10.1007/s11162-005-2969-y>
- Thompson, J. (2019). Mobility in the middle: Bachelor's degree selectivity and the intergenerational association in status in the United States. *Research in Social Stratification and Mobility*, *60*, 16-28. <https://doi.org/10.1016/j.rssm.2019.02.001>
- Tierney, W. (1992). An anthropological analysis of student participation in college. *The Journal of Higher Education*, *63*(6), 603-618. <https://doi.org/10.2307/1982046>
- Tinto, V. (1993). *Leaving college: Rethinking the causes and cures of student attrition* (2nd ed.). University of Chicago Press.
- Torche, F. (2011). Is a college degree still the great equalizer? Intergenerational mobility across levels of schooling in the United States. *American Journal of Sociology*, *117*(3), 763-807.
- Torche, F. (2015). Analyses of intergenerational mobility: An interdisciplinary review. *The Annals of the American Academy*, *657*(January), 37-62.
<https://doi.org/10.1177/0002716214547476>
- Torche, F., & Spilerman, S. (2009). Intergenerational influences of wealth in Mexico. *Latin American Research Review*, *44*(3), 75-101.
<https://www.jstor.org/stable/40783671>
- Tsui, L. (2003). Reproducing social inequalities through higher education: Critical thinking as valued capital. *The Journal of Negro Education*, *72*(3), 318-332.
<https://doi.org/10.2307/3211250>
- Tudor, T. R. (2018). Fully integrating academic advising with career coaching to increase students' retention, graduation rates and future job satisfaction: An industry approach. *Industry and Higher Education*, *32*(2), 73-79.
<https://doi.org/10.1177/0950422218759928>

- Umbach, P. D. (2007). How effective are they? Exploring the impact of contingent faculty on undergraduate education. *The Review of Higher Education* 30(2), 91-123. <https://doi.org/10.1353/rhe.2006.0080>
- Umbach, P. D., & Kuh, G. D. (2006). Students' experiences with diversity at liberal arts colleges: Another claim of distinctiveness. *The Journal of Higher Education*, 77(1), 169-192. <https://doi.org/10.1080/00221546.2006.11778923>
- U.S. Census Bureau. (2019). *Historical income tables: Households* [Data file]. Retrieved from <https://www.census.gov/data/tables/time-series/demo/income-poverty/historical-income-households.html>
- van der Zanden, P. J. A. C., Denessen, E., Clillessen, A. H. N., & Meijer, P. C. (2018). Domains and predictors of first-year student success: A systematic review. *Educational Research Review*, 23, 57-77. <https://doi.org/10.1016/j.edurev.2018.01.001>
- Vedder, R., Denhart, C., & Robe, J. (2013). *Why are recent college graduates underemployed? University enrollments and labor market realities*. Center for College Affordability and Productivity. <https://files.eric.ed.gov/fulltext/ED539373.pdf>
- Velez, E. (2018). Debt burden after college: The effect of student loan debt on graduates' employment, additional schooling, family formation, and home ownership. *Education Economics*, 27(2). <https://doi-org.ezproxy.uvm.edu/10.1080/09645292.2018.1541167>
- Wang, X. (2009). Baccalaureate attainment and college persistence of community college transfer students at four-year institutions. *Research in Higher Education*, 50(6), 570-588.
- Wang, X. (2012). Factors contributing to the upward transfer of baccalaureate aspirants beginning at community college. *Journal of Higher Education*, 83(6), 851-875.
- Wang, N., Wilhite, S. C., Wyatt, J., Young, T., & Bloemker, G. (2012). Impact of a college freshman social and emotional learning curriculum on student learning outcomes: An exploratory study. *Journal of University Teaching & Learning Practice*, 9(2), 2012. <https://ro.uow.edu.au/jutlp/vol9/iss2/8>
- Wang, X., Su, Y., Cheung, S., Wong, E., & Kwong, T. (2013). An exploration of Biggs' constructive alignment in course design and its impact on students' learning approaches. *Assessment and Evaluation in Higher Education*, 38(4). <https://doi.org/10.1080/02602938.2012.658018>
- Wang, J., & Wang, X. (2020). *Structural equation modeling: Applications using Mplus*. Wiley.
- Waterman, S. J., Lowe, S. C., & Shotton, H. J. (Eds.). (2018). *Beyond access: Indigenizing programs for Native American student success*. Stylus Publishing, LLC.
- Weaver, A. (2010). Reevaluating prestige: The influence of history on the decision to reclassify to division I: A case study. *Journal of Issues in Intercollegiate Athletics*.

- Webster, T. J. (2001). A principal component analysis of the U.S. News & World Report tier rankings of colleges and universities. *Economics of Education Review*, 20(3), 235-244. [https://doi-org.ezproxy.uvm.edu/10.1016/S0272-7757\(99\)00066-7](https://doi-org.ezproxy.uvm.edu/10.1016/S0272-7757(99)00066-7)
- Whiteford, E. (2020, May 6). *Who holds professional positions in higher ed, and who gets paid?* Inside Higher Ed. <https://www.insidehighered.com/news/2020/05/06/report-details-gaps-women-and-minority-professionals-higher-ed>
- Whiteford, E. (2020, October 8). *There are so few that have made their way.* Inside Higher Ed. <https://www.insidehighered.com/news/2020/10/28/black-administrators-are-too-rare-top-ranks-higher-education-it%E2%80%99s-not-just-pipeline>
- WICHE. (2020). *Knocking at the college door.* <https://knocking.wiche.edu/report/>
- Wilke, D. (2019, October 21). *Employers say students aren't learning soft skills in college.* SHRM. <https://www.shrm.org/ResourcesAndTools/hr-topics/employee-relations/Pages/Employers-Say-Students-Arent-Learning-Soft-Skills-in-College.aspx>
- Wikipedia. (2019, December). *Dean's list.* https://en.wikipedia.org/wiki/Dean's_List
- Winston, G. C., & Zimmerman, D. J. (2003). Peer effects in higher education. *NBER Working Paper No. 9501.* <http://www.nber.org/papers/w9501>
- Witteveen, D., & Attewell, P. (2017). The earning payoff from attending a selective college. *Social Science Research*, 66, 154-169. <https://doi.org/10.1016/j.ssresearch.2017.01.005>
- Wolniak, G. C., & Engberg, M. E. (2019). Do “high-impact” college experiences affect early career outcomes? *The Review of Higher Education*, 42(3), 825-858. <https://doi.org/10.1353/rhe.2019.0021>
- Wolniak, G. C., Mayhew, M. J., & Engberg, M. E. (2012). Learning's weak link to persistence. *Journal of Higher Education*, 83(6), 795-823.
- Xie, Y. (1992). The log-multiplicative layer effect model for comparing mobility tables. *American Sociological Review* 57(3), 380-95.
- Yosso, T. J. (2005). Whose culture has capital? A critical race theory discussion of community cultural wealth. *Race Ethnicity and Education*, 8(1), 69-91. <https://doi.org/10.1080/1361332052000341006>
- Zhang, L. (2008). Gender and racial gaps in earnings among recent college graduates. *Review of Higher Education*, 32(1), 51-72.
- Zhang, L., Ehrenberg, R. G., & Liu, X. (2015). *Changing faculty employment at four-year colleges and universities in the United States.* NBER Working Paper 21827. <http://www.nber.org/papers/w21827>
- Zimmerman, D. J. (1992). Regression toward mediocrity in economic stature. *American Economic Review* 8, 409-429.
- Zimmerman, D. J. (2003). Peer effects in academic outcomes: Evidence from a natural experiment. *Review of Economics and Statistics*, 85(1), 9-23. <https://doi.org/10.1162/003465303762687677>

Zimmerman, K. (2017) Use of academic resources among different socioeconomic classes. *Sacred Heart University Scholar*, 1(1), 11-23.
<http://digitalcommons.sacredheart.edu/shuscholar/vol1/iss1/3/>