

**INPUTS FOR POST-GRADUATE EDUCATION ENROLLMENT AND
COMPLETION AMONG HISPANICS**

by

PAULINA CANO MCCUTCHEON, M.B.A.

DISSERTATION
Presented to the Graduate Faculty of
The University of Texas at San Antonio
in Partial Fulfillment
of the Requirements
for the Degree of

DOCTOR OF PHILOSOPHY DEGREE IN APPLIED DEMOGRAPHY

COMMITTEE MEMBERS:
P. Johnelle Sparks, Ph.D., Chair
Lloyd B. Potter, Ph.D.,
Vanessa A. Sansone, Ph.D.
Corey S. Sparks, Ph.D.

THE UNIVERSITY OF TEXAS AT SAN ANTONIO
College of Public Policy
Department of Demography
May 2020

Copyright 2020 Paulina Cano McCutcheon
All Rights Reserved

DEDICATION

This dissertation is dedicated to my wife, Meagan. Thank you for being a constant source of support, unwavering love and understanding throughout this entire process. I could not have done this without you.

ACKNOWLEDGEMENTS

I wish to thank my dissertation committee: Dr. Johnelle Sparks, Dr. Lloyd Potter, Dr. Vanessa Sansone and Dr. Corey Sparks. Without their support and guidance I would not have been able to complete this research project. I especially want to thank Dr. Johnelle Sparks, my chair, who always went above and beyond to help me throughout my research and writing process. Her encouragement, patience and dedication were essential in helping me believe in myself and complete this dissertation. I am especially indebted to Dr. Corey Sparks for encouraging me to pursue this doctoral program. It has opened opportunities that I never expected. I would also like to express my gratitude to all the faculty members of the Demography department for their enormous dedication to their students and commitment to our success. Finally, I want to gratefully acknowledge the support provided by the Graduate School through the G-TAP scholarship that allowed me to pursue my doctoral studies.

May 2020

INPUTS FOR POST-GRADUATE EDUCATION ENROLLMENT AND COMPLETION AMONG HISPANICS

Paulina Cano McCutcheon, Ph.D.
The University of Texas at San Antonio, 2020

Supervising Professor: P. Johnelle Sparks, Ph.D.

In the past decades, we have seen a rise in the demand of post-graduate education with graduate degrees becoming a requirement for job opportunities and social mobility. However, the Hispanic population has remained behind in their educational attainment when compared to other racial groups. Considering that Hispanics are expected to represent close 30% of the population by the year 2050, their current educational attainment level is concerning. This research attempts to uncover potential sources of structural inequality in our academic institutions and systems that are hindering the success of Hispanics at the post-graduate level.

Three aims are addressed in this research project. The first aim explores the relationship of social capital on the expectations of Hispanics to complete a post-graduate degree. Social capital is operationalized using high-impact activities previously associated with high levels of learning and development among college students. The second aim focuses on exploring the relationship of immigration status and the attainment of post-graduate degrees among Hispanics. This segment of the Hispanic population is rarely explored in the context of post-graduate education but represents an important group of the highly educated Hispanics. The last aim explores the association of HSI grants and the graduation rates of Hispanics at an institutional level using a causal inference method.

Findings suggest that socio-economic and immigration status are important elements in the post-graduate attainment of Hispanics. At the institutional level, this research identifies areas that

needs further improvement to serve Hispanic students successfully including online education and support of part-time enrollment students.

TABLE OF CONTENTS

Acknowledgements.....	iv
Abstract.....	v
List of Tables	vii
List of Figures.....	viii
Chapter One: Introduction	1
Theoretical Frameworks	2
Aims and Research Questions	3
Chapter Two: Expectations of Post-Graduate Education and Social Capital	5
Introduction.....	5
Theoretical Framework.....	9
Social Capital	10
Research Design.....	13
Analytical Strategy.....	15
Measures	15
Findings.....	18
Discussion.....	23
Chapter Three: Post-Graduate Education and Immigration.....	26
Introduction.....	26
Theoretical Framework.....	32
Methods.....	34
Sample.....	35
Measures	35

Data Analysis	38
Findings.....	38
Discussion.....	45
Chapter Four: Hispanic Serving Institutions and Graduation Rates of Hispanics.....	48
Introduction.....	48
Theoretical Framework.....	54
Research Design.....	55
Analytical Strategy.....	56
Measures	59
Findings.....	63
Discussion	72
Chapter Five: Conclusion	76
References.....	81
Vita	

LIST OF TABLES

Table 2.1	Weighted Descriptive Statistics	19
Table 2.2	Logistic Regression Results for Expectations to Complete a Post-Graduate Education Degree.....	21
Table 3.1	Weighted Descriptive Statistics of Individual Variables	39
Table 3.2	Descriptive Statistics of Group Level Variables.....	10
Table 3.3	Logistic Regression Results for Completion of Post-Graduate Education Degree	41
Table 3.4	Weighted Binary Logistic Regression with Random Intercept - Individual Level Variables	43
Table 3.5	Weighted Binary Logistic Regression with Random Intercept - Individual & Group Level Variables of Post-Graduate Attainment.....	44
Table 4.1	Descriptive Statistics for Unmatched Samples of HSI Institutions and HSI Grants	64
Table 4.2	Generalized Linear Model Predicting HSI Grants at HSI Institutions	65
Table 4.3	Odd Ratios of HSI Grants at HSI Institutions.....	66
Table 4.4	Descriptive Statistics for Unmatched and Matched Samples of HSI Institutions	68
Table 4.5	Descriptive Statistics for Unmatched and Matched Samples of HSI Institutions	69
Table 4.6	Linear Mixed Model with Random Intercept - Individual & Group Level Variables of Hispanic Graduation Rates at Hispanic Serving Institutions	71

LIST OF FIGURES

Figure 2.1	Conceptual Model of Social Capital and Expectations to Earn a Post-Graduate Degree	13
Figure 2.2	Fitted Probabilities of Post-Graduate Expectations among Hispanics by Sex and Family Annual Income Who Participated in Volunteering and Internship Activities and Whose Parents Do Not have a Bachelor's Degree	22
Figure 2.3	Figure 2.3 Fitted Probabilities of Post-Graduate Expectations among Hispanics by Sex and Family Annual Income Who Participated in Volunteering and Internship Activities and Whose Parents have a Bachelor's Degree	23
Figure 4.1	Location of HSI Institutions and Percent of Hispanic Population by State as of 2017.....	50
Figure 4.2	Conceptual Model of Hispanic Serving Institutions Grants and Graduation Outcomes of Hispanics	54
Figure 4.3	Area of Common Support of 2-Year and 4-Year Institutions by HSI Grant Status	67

CHAPTER ONE: INTRODUCTION

The system of higher education has served as a long-standing structure providing a vehicle for social mobility. The current state of our economy requires individuals to gain additional training to enhance long-term financial stability and improve job opportunities. Post-graduate degrees, master's or doctoral degrees, are on track to becoming a requirement for social mobility and job opportunities. In 2015, the total number of individuals enrolled in a post-graduate program in the United States averaged 1.7 million and is projected to increase by at least 10% over the next decade (National Center for Educational Statistics, 2017).

Considering the changing demographics of the United States, where Hispanics are expected to grow by 86% between the years 2015 and 2050 (Krogstad, 2014), it is critical that we take a deeper look at the current academic achievement of this growing group. As of the year 2018, Hispanics continue to be one of the least educated groups; only 17% have earned a bachelor's degree or higher compared to 54% of Asians and 35% of White non-Hispanics (U.S. Census Bureau, 2018a). The disadvantages that Hispanics experience in their educational achievement start early and have a cumulative effect. Yosso (2005) explains that out of 100 Hispanic students who start in elementary school, seven will earn a bachelor's degree, two will earn a masters or professional degree and less than one will earn a doctoral degree.

The academic success of Hispanics is critical to improve their employment opportunities and social mobility. This dissertation explores the influence of various inputs on the enrollment and completion of post-graduate education among Hispanics. Three empirical studies were conducted focusing on the influence of social capital, immigration status, and institutional structures with the purpose of uncovering potential sources of structural inequality in our academic institutions, education policies, and systems.

Theoretical Frameworks

Each chapter uses a set of theoretical frameworks to inform the analytical strategy and measures selected. The work of Bourdieu, Putnam, and Coleman is used to analyze the effects of social capital on the expectations of postgraduate attainment among Hispanics. Their work helps better understand the structural and contextual forces that influence the college decision-making process and academic attainment of minorities. Specifically, using the work of Coleman (1988), this dissertation emphasizes the importance of access to college information which is severely lacking in Hispanic communities. Coleman's work also highlights the importance of social structures and contexts as sources of social capital. Among Hispanics, the main sources of social capital are found in their schools, families and communities where their expectations to earn a graduate degree first emerge.

The Hispanic population and their college education experience is diverse, heterogenous and cannot be grouped under an isolated identity. Therefore, the influence of immigration status among Hispanics' post-graduate attainment is captured in this dissertation and framed using the theory of intersectionality and critical race theory. The theory of intersectionality frames the experiences of individuals as a result of multiple systems of race, class and gender inequality to understand social disadvantages (Baca Zinn & Thornton Dill, 1996). Critical race theory complements the theory of intersectionality by ascertaining patterns of racism experienced by immigrants embedded in systems of post-graduate education that may be hindering the academic attainment of Hispanics. Critical Race Theory validates the unique experiences of people of color, challenging traditional and dominant ideologies (Yosso, 2005). In using intersectionality and critical race theory, this dissertation recognizes the different academic experiences and unique disadvantages of Hispanics immigrants.

The last empirical study in this dissertation explores the effects of institutional structures, specifically the impact of Hispanic Serving Institutions (HSIs), on the graduation rates of Hispanics. A multidimensional conceptual framework of servingness proposed by Garcia, Núñez and Sansone (2019) is used to further understand institutional mechanisms of HSIs that impact the academic and non-academic outcomes of students and experiences of faculty/staff. The collection of these outcomes serves to create environments at HSI institutions that hinder or encourage the academic attainment of their Hispanic student population. Considering that each HSI has unique institutional characteristics, the model by Garcia et al., (2019) is adapted to account for institutional diversity.

Aims and Research Questions

To explore the influence of social capital, immigration status, and the influence of institutional structures on the educational attainment of Hispanics, each empirical study in this dissertation includes a literature review, theoretical framework, analyses, and results addressing the following aims and research questions:

Aim 1. The expectations of post-graduate education and social capital

- 1.1 Does social capital, measured through “high impact activities”, influence Hispanic men and women differently in their expectations to enroll in post-graduate education?
- 1.2 How does parental socio-economic status play a role in influencing the aspirations of Hispanics to enroll in post-graduate programs, independent of social capital?

Aim 2. Post-graduate education and immigration status

- 2.1 Are Hispanics who are non-citizens less likely to have completed a post-graduate degree than Hispanics who are citizens?
- 2.2 Are individual Hispanic students living in states with more favorable economic conditions and higher education state level funding more likely to have completed a post-graduate degree than those living in states with worse economic conditions and less higher education state funding?

Aim 3. Hispanic Serving Institutions and graduation rates of Hispanic students

- 3.1 What is the effect of HSI designated funds on the institutional graduation rates of Hispanic students at HSIs compared to HSI institutions that lacked HSI grant funds in the year 2017?

Results attained from each of these theoretically informed research aims and questions has important implications for the field of higher education and improvement of post-graduate programs interested in serving Hispanic students. This is particularly important for HSIs that have a larger percentage of Hispanic students enrolled and should have a corresponding mission to serve Hispanic students, in their undergraduate programs and could serve as drivers and leaders in increasing the post-graduate attainment of Hispanics.

CHAPTER TWO: EXPECTATIONS OF POST-GRADUATE EDUCATION AND SOCIAL CAPITAL

Introduction

Today, more than 3.2 million Hispanics students are enrolled in universities and colleges across the nation. At the undergraduate level, the percentage of Hispanics acquiring a bachelor's degree has nearly doubled between the years 2000 to 2017 (National Center of Education Statistics, 2019a), surpassing the growth of other racial/ethnic groups, like that of White and African-American students. The last two decades have been key in the number of Hispanics entering colleges as this population has grown to represent nearly 20% of the U.S. population (U.S. Census Bureau, 2017).

The percentage of post-graduate degrees conferred to Hispanics at higher education institutions has seen an increase between the years 2000 and 2017. Enrollment in master level programs among Hispanics experienced a 5% increase, surpassing African-American students, which increased by 4.2% and White students which experienced a decrease of 13% over the same period (National Center for Education Statistics, 2019b). At the doctoral level, similar trends are observed; Hispanics experienced an increase in degrees conferred of 3%, Blacks of 2.2%, while White students experienced a decrease of 9.6% (National Center for Education Statistics, 2019c). Despite the increasing numbers in post-graduate education among Hispanics, only 15% of all Hispanics across the United States over the age of 25 have earned a bachelor's degree or higher, while 34.5% of White individuals and over 50% of Asians have already acquired this level of education (U.S. Census Bureau, 2017). This is concerning as Hispanics will represent close to 30% of the U.S. population by the year 2050 (Passel and Cohn, 2008); the need to invest in this segment of the population is therefore critical for the prosperity of the U.S. economy and its labor force.

As a result of the Hispanic population growth, interest and attention among researchers and policymakers has increased. Recent studies have tried to further understand the factors that influence the aspirations and expectations of Hispanics in their pursuit of post-graduate education, including institutional or individual characteristics. Specifically, studies interested in understanding the drivers that influence the decision-making process of Hispanic youth have increased. Understanding the drivers that allow Hispanics to gain access to advanced education is critical during a time where the bachelor's degree has begun to lose significance and even less return on investment among recruiters and employers, resulting in an increase demand for continuous education and training (Burlutskaia, 2014; Pfeffer & Hertel, 2015).

It is important to note that much of the literature related to the academic attainment expectations of Hispanics uses the terms “expectations” and “aspirations” interchangeably. For instance, Hanson, Paulsen and Pascarella (2016) center their study around aspirations yet the language presented to their survey participants focuses on academic “plans”. Similarly, Frost (2007) asks participants what level of education they would “like” to complete, yet the author describes this as an expectation. The distinction between aspirations and expectations is an important one. Aspirations are defined as the desire to achieve a specific academic level while expectations refer to the assessment of the likelihood to achieve a desired academic level (Bohon, Kirkpatrick & Gorman, 2006). In other words, an aspiration is more abstract, whereas an expectation is more concrete. This chapter focuses on the academic expectations of Hispanics with a specific emphasis on their expectation to attend graduate school.

Academic Expectations of Hispanics

Hispanic youth have been found to have some of the lowest academic expectations when compared to their Black and White peers (Kao & Tienda, 1998; Turcios-Cotto, 2013). College

attainment expectations drop significantly by the time Hispanic students reach the 12th grade and rarely translate into academic attainment (May & Witherspoon, 2019). This drop is more noticeable among Hispanic males than females who appear to maintain their graduate school expectations much longer (May, et al., 2019). Among Hispanics, low college expectations are even more noticeable among Mexican and Puerto Rican groups which are characterized by having poorer and less educated families when compared to other Hispanic groups like Cubans (Bohon, et al., 2006). The influence of socio-economic status has been well documented, indicating a strong association between low income and low academic expectations and aspirations amongst Hispanics (St-Hilaire, 2002; Destin & Oyserman, 2009). This relationship was tested by Xu (2016), who determined that in the case of underrepresented minorities, both men and women that come from a lower income family, are less likely to apply to post-graduate education programs in STEM.

Members of higher social classes usually have a larger pool of necessary resources and easier access to graduate school than students from lower social classes. Torche (2011) proposed a theory that can help explain who is more likely to enroll and reap the rewards of a post-graduate degree. She explains that members of higher social classes may be more likely to choose a riskier bachelor's degree as part of a path to a graduate program while the opposite occurs for members of lower social classes. In the past 50 years, the gap between high income families and low-income families has widened, leading high-income families to earn 11 times more than low-income families (Reardon, 2013). The additional resources have allowed high-income families to spend more on their children's education, upbringing, and academic preparation. Not surprisingly, the aspirations of Hispanics to pursue a graduate education are higher for those who come from higher income families than those who come from middle- or lower-income families (Xu, 2016).

The impact of social class, as well as intergenerational status, seems to gain strength as an individual acquires additional education and reaches post-graduate levels. A college degree helps erase or eliminate the “advantages of origins in the competition for socioeconomic success, at least when success is measured by class position” (Torche, 2011, p.784). In other words, advantages from the student’s parents’ social class or household income disappear after completion of a bachelors’ degree. Contrary to this, Torche (2011) found evidence that as an individual acquires additional education beyond the bachelor’s degree, the association between the social origin and socioeconomic status remains strong, particularly among men. Individuals from higher social classes whose parents are well educated have a greater advantage and are more encouraged to enter a professional or doctoral program than those of lower social classes (Mullen, Goyette & Sores, 2003).

The effects of social class are thus more noticeable among men from high socio-economic status who are able to select more financially rewarding post-graduate programs (science and math) than women from the same social class (Goyette & Mullen, 2006). However, it is possible that this mechanism works differently for Hispanics considering the decline of the Hispanic male in post-graduate programs. For Hispanics, attending graduate school is highly influenced by family. For instance, Hispanic men are more likely to choose employment over the decision to continue their education in a graduate program to meet his family’s expectations and traditionally, his role as a provider (Rodriguez, 2009). Hispanic women on the other hand, are more likely than Hispanic men to build a protective relationship while in college that provide support and encouragement to pursue their educational aspirations (Barajas & Pierce, 2001). However, unlike Hispanic men, Hispanic women’s decision to attend graduate school is much more influenced by

the physical proximity to a university and their ability to stay close to their family obligations often foregoing the opportunity to attend better programs or more selective institutions (Ramirez, 2013).

Hispanic students of both sexes face additional obstacles including having limited access to information related to future careers, college admission processes, financial aid and educational requirements (Turcios-Cotto et al., 2013; Destin et al., 2009). This lack of information is observed among young Hispanics even in cases where they appear to have positive attitudes and high academic aspirations (Kao, et al., 1998).

Theoretical Framework

The combination of resources (e.g. financial assets, access to information, social support, etc.) contributes to the social capital of Hispanic students. This chapter is grounded in social capital theory influenced primarily by the works of Bourdieu, Putnam, and Coleman. Bourdieu focused on the interaction of habitus, capitals, and fields, where *habitus* refers to the set of durable dispositions influenced by social context; *capitals* refers to the various forms of capital: social, economic, symbolic and cultural; and *fields* refer to a structured space where forces and struggles take place (Bourdieu, 1986). The study of the expectations of Hispanics towards post-graduate education is in line with Bourdieu's social capital theory as institutions of higher education are structured spaces and Hispanic students are significantly influenced by their capital and habitus in their decision to attend graduate school.

Expanding on the understanding of social capital, Coleman (1988) identified three components of social capital: 1) information-flow; 2) norms and sanctions; and finally, 3) obligations and expectations. Coleman describes *information* as a resource that facilitates actions, *norms and sanctions* as sources of social capital which reward social behaviors and/or constrain others, and *obligations and expectations* as additional resources where social structures with high

levels of obligations have more social capital to draw from (Coleman, 1988). Putnam (1996) expands on Coleman's work by stating the importance of obligations and expectations in increasing the ability of individuals to connect with others and act cohesively in the pursuit of similar objectives.

In the context of Coleman's understanding of social capital, post-graduate expectations among Hispanics are thus influenced by access to information and norms or sanctions established in their family and academic environments that may reinforce or prevent expectations through "social support, status, honor, and other rewards" (Coleman, 1988). Social capital can be considered as a precondition for promoting educational achievement, particularly post-graduate education (O'Brien & Ó Fathaigh, 2005).

Social Capital

Social capital is commonly defined as the result of individuals using resources available in their social networks to achieve their interests (Coleman, 1988). Sources of social capital that influence the decision-making process of students to enroll in a graduate program have been heavily debated. On the one side, it has been suggested that students learn about post-graduate educational opportunities while attending college, making graduate school decisions independently from the influence of their parents or their family's socio-economic status (Stolzenberg, 1994). The institution then becomes the primary source of social capital, as students reach higher levels of educational attainment beyond the bachelor's degree. However, other studies suggest that social capital is more of a cumulative resource.

Sources of social capital for post-graduate students include networks and connections formed through their higher education experience in addition to those formed during their earlier academic years (e.g. high school) (Winkle-Wagner and McCoy, 2016) demonstrating that the

social capital available prior to adulthood continues to have an impact through the college years and beyond (DiMaggio & Mohr, 1985). Evidence has suggested that certain groups are more likely to benefit from their social capital and networks during their graduate studies when compared to other groups. For instance, in a study by Ramirez (2017), the distribution of professional development opportunities, faculty mentorship, and funding (e.g. fellowships) among graduate students was found to favor White, middle-class and male students. This is more critical for Hispanic graduate students who have reported that faculty mentorship plays a more important role in their success when compared to non-Hispanic graduate students (Tran, Jean-Marie, Powers, Bell, Sanders, 2016).

Once an individual has acquired a post-graduate degree, his or her earnings continue to be influenced by social origins and socio-economic background, particularly for men contributing to an “intergenerational reproduction of inequality among the educational elite” (Torche, 2011, p.799). Tilly (1998) explains that in systems of categorical inequality, well connected people can obtain a significant return through the coordination of effort from outsiders. A possible explanation of this is that advanced-degree holders from a higher-socio economic background may be able to leverage their connections and networks to secure better opportunities and higher paying positions after acquiring their graduate degree.

Operationalizing social capital has been a complicated task varying by field and research study. In the case of adult education for instance, it has been measured through the sociodemographic characteristics of the individual’s strongest ties, and their level of access to the labor market and career information (Hoenig, Pollak, Schulz and Stocké, 2016). Other measures include unemployment rates and the ethnic diversity of a social network (Van Tubergen & Volker, 2015), levels of political participation (e.g. voting), and membership to social organizations

(Putnam, 1996; Marimoto & Friedland, 2013). In some cases social capital is measured by looking at family and peer support, supportive academic structures, program satisfaction, and access to a faculty mentor (Tran, et al., 2016). Lloyd, Leicht and Sullivan (2008) considered academic preparation, parental, peer, and high school support when looking at the aspirations of high school students towards law school. However, among Hispanics specific measures of social capital appear to be the most impactful such as community service, community engagement, and class participation (Nunez, 2009; Strayhorn, 2010)

Measuring social capital cannot be accomplished through a single variable. Engbers, Thompson and Slaper (2017) suggest utilizing factor analyses that include measures from economic development to social support and diversity. Data sources, however, cannot always capture information on every aspect of social capital in a comprehensive manner. For purposes of this chapter, I focus on measures identified in previous research as being associated with college expectations of Hispanics, such a parent's level of education and parental socio-economic status. Most studies have focused their attention on the expectations of Hispanics to attend post-graduate programs while enrolled in high school or prior to that. This study helps explore the post-secondary impact of parent's socio-economic status in their expectations to attend graduate school while considering measures of social capital.

This chapter uses a sample from the Educational Longitudinal Survey (ELS) to explore the relationship between social capital and post-graduate education. Social capital is measured by examining survey responses related to *high-impact activities* which have been associated with high levels of learning and development among college students. *High-impact activities* are composed of community service, community engagement, access to a faculty mentor and activities such as research, study abroad, etc. First identified by the National Survey of Student Engagement in 2006,

high-impact activities have now been included in other surveys including the ELS. Measures of social capital for this chapter are summarized in Figure 2.1.

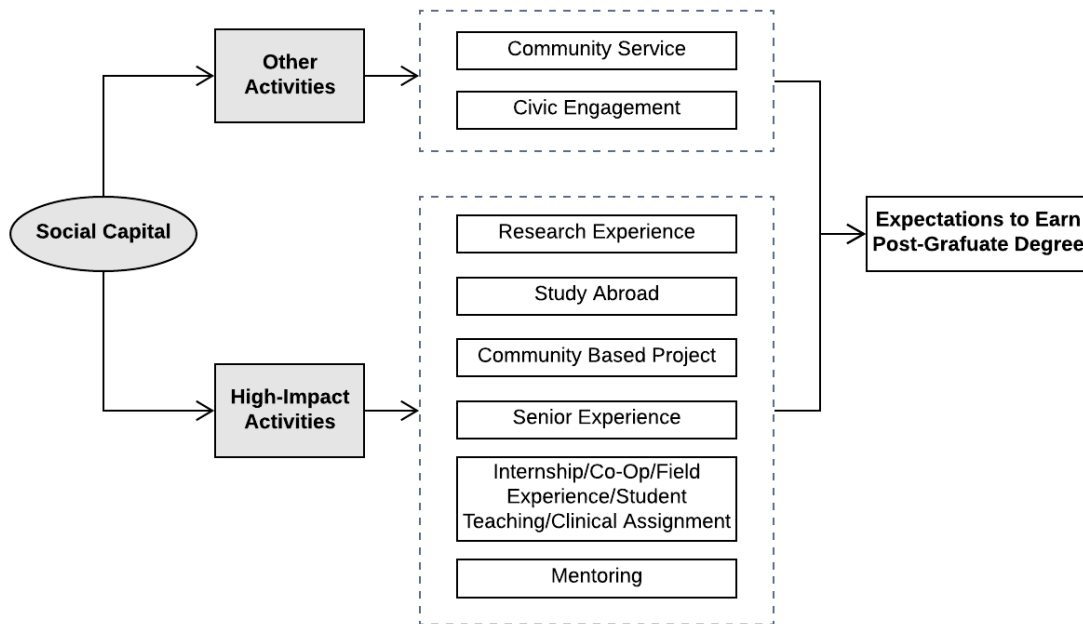


Figure 2.1 Conceptual Model of Social Capital and Expectations to Earn a Post-Graduate Degree

This chapters aims to answer the two following questions:

1. Does social capital, measured through “high impact activities”, influence Hispanic men and women differently in their expectations to enroll in post-graduate education?
2. How does parental socio-economic status play a role in influencing the aspirations of Hispanics to enroll in post-graduate programs independent of social capital?

Research Design

The analysis of this chapter estimates the relationship between social capital and post-graduate academic expectations among Hispanic students. In accordance with the finding by

Núñez (2009) on social capital, I expect measures related to social capital to be positively related to Hispanic students having educational attainment expectations that exceed that of a bachelor's degree. I also expect to find that female Hispanic students will have higher academic expectations than of males based on the findings of (Barajas et al., 2001), as females are more likely to build support networks that allow them to continue their education, thus maximizing their use of social capital sources. Considering the relationship between post-graduate enrollment and social class as established by Torche (2011), I expect to see a negative effect on the post-graduate expectations of Hispanic students in cases where the parents have an educational attainment below a bachelor's degree and have lower levels of income.

This chapter uses data collected through the Educational Longitudinal Study (ELS) 2002-2010. The ELS is a multilevel longitudinal survey sponsored by the National Center for Education Statistics that follows a cohort of students in their trajectories from high school through their post-secondary experiences. It collects information from students, schools and parents providing a comprehensive perspective on the student's experience (Ingels, et al., 2014). This survey uses a two-stage sample selection process where schools are first selected following by the selection of students (Ingels, et al., 2014).

In using the ELS, patterns about academic expectations, high school completion and college enrollment can be identified. Students who did not continue from the baseline through the third wave of the ELS survey were excluded from the dataset. Students who were not Hispanic and did not provide answers related to their educational expectations, parent's education, parent's income and all measures under high-impact activities were also excluded from the sample. The sample in this chapter uses primarily measures from the third wave of data collection or 8 years after the completion of high school for all participants. All survey participants included in the

sample were born between 1983 and 1987. The total number of survey participants included in the sample for this analysis is 872.

Analytical Strategy

All statistical analyses were performed using *R* (3.6.0). Frequency distributions were first examined looking at the graduate expectations across sex, participation in high-impact activities, parent's education and parent's income. Chi-square tests for equality of means for each variable and graduate expectations were also conducted. Furthermore, a test for multicollinearity was performed to test for high correlation among my independent variables. In order to estimate the effect of social capital on the expectation to attend graduate school, a logistic regression model was performed considering the survey design: primary sampling unit, student weights and strata. Unique cases were selected to generate fitted probabilities for the likelihood of a survey respondent having positive expectations of attending graduate school based on their participation in high-impact activities and the socio-economic status of parents.

All variables in the model are categorical and only includes complete cases. In other words, if a respondent was missing an answer, that respondent was not included in the analytic sample.

Measures

The dependent variable in this analysis is the expectation of Hispanic students to pursue post-graduate education. This is defined by the respondent's selection of the highest level of education expected to complete during the third wave of the ELS, that is 8 years after high school. Answers including high school, certificate, associate or bachelors degrees are coded as 0, while answering a graduate degree is coded as 1.

The independent variables in this analysis include various measures of social capital using "high-impact activities" as well as measures of the socio-economic status of parents:

- Internship/Co-Op/Field Experience/Student Teaching/Clinical Assignment
 - Respondents were asked if during their undergraduate or college education they participated in any internship, co-op, field experience, student teaching or clinical assignment. If the respondent answered yes to any of the choices provided, it was coded as 1. If the respondent marked no to all options, it was coded as 0.
- Research
 - Respondents were asked if during their college or undergraduate education they participated in a research project with a faculty member outside of a course or program. If the respondent marked yes, it was coded as 1. If the respondent marked no, it was coded as 0.
- Study Broad
 - Respondents were asked if during their undergraduate or college education they participated in study abroad. If the respondent marked yes, it was coded as 1. If the respondent marked no, it was coded as 0.
- Community Project
 - Respondents were asked if during their undergraduate or college education they participated in a community-based project like service learning as part of a regular course. If the respondent marked yes, it was coded as 1. If the respondent marked no, it was coded as 0.
- Senior Experience
 - Respondents were asked if during their undergraduate or college education they participated in a culminating senior experience. This could include a capstone course, thesis, comprehensive exam or senior project. If the respondent marked yes

to any of the choices, it was coded as 1. If the respondent marked no, it was coded as 0.

- Mentoring
 - Respondents were asked if during their undergraduate or college education they participated in a program in which they were mentored. If the respondent marked yes to any of the choices, it was coded as 1. If the respondent marked no, it was coded as 0.

Other non-high impact activities known also as measures of engagement and sources of social capital include:

- Civic Engagement
 - Respondents were asked if they voted in any local/state/national election during 2009, 2010 or 2011. If the respondent marked yes to any of the choices, it was coded as 1. If the respondent marked no to all, it was coded as 0.
- Community Service
 - Respondents were asked how often they spent time volunteering or performing community service in the past two years. Choices included less than once a month, at least once a month but not weekly, or at least once a week. If the respondent marked yes to any of the choices, it was coded as 1; otherwise it was marked as 0.

Additionally, covariates measuring the socio-economic status of the students' parents were included using the baseline wave of the ELS survey:

- Family Income

- The parents of the respondents were asked to mark their total family income from all sources from the provided choices. Income choices were coded in the following categories: less than \$20,000; \$20,001 to \$50,000; \$50,001 to \$100,000; and more than \$100,000. This variable uses \$20,001 to \$50,000 as reference.
- Parents Level of Educational Attainment
 - The parents of the respondents were asked to provide their highest level of education. The highest option between mother and father is included in this measure and coded as 1 if the mother or father had a bachelor degree or higher and as 0 if the educational level for either parent was below a bachelor's degree. This variable uses "bachelor education or less" as reference.

Included in the covariates were measures for sex (male and female), as well as the primary sample unit, sample weight and strata to account for the complex survey design. This analysis is not without limitations as not all factors that influence the decision-making process for Hispanics to complete a post-graduate degree are accounted for. For instance, measures related to college debt, grade point average, and undergraduate discipline are not included. Future research can further analyze the impact of those measures in the context of social capital and socio-economic origins.

Findings

As observed in Table 2.1, results from the descriptive analysis show that 41.7% of students expected to attend graduate school while 58.2% of students did not. Among those who did expect to attend (41.7%), females represented the majority (25.5%) while males represented only 16.2%.

Table 2.1 Weighted Descriptive Statistics

Educational Longitudinal Study (2002-2010), n=872				
Variable	Total	Expectation to Attend Graduate School		Chi-Square pvalue
		Yes	No	
All survey respondents	100.0%	41.7%	58.3%	
Sex				
Male	44.0%	16.2%	27.7%	0.028
Female	56.0%	25.5%	30.4%	
High-Impact Activities				
Participated in Internship/Co-Op/Field Experience/Student Teaching/Clinical	33.6%	20.7%	12.9%	<0.0001
Participated in Research	11.4%	7.9%	3.5%	<0.0001
Participated in Study Abroad	6.0%	4.5%	1.5%	<0.0001
Participated in Community Project	12.1%	7.8%	4.3%	<0.0001
Participated in Senior Experience	15.4%	10.2%	5.2%	<0.0001
Participated in Mentoring	13.7%	8.5%	5.2%	<0.0001
Other Activities				
Voted	35.5%	17.5%	18.0%	0.006
Participated in community service	35.8%	20.6%	15.2%	<0.0001
Parents Socio-Economic Status				
<i>Parents Educational Attainment</i>				
Less than a Bachelor's Degree	72.4%	25.9%	46.5%	<0.0001
More than a Bachelor's Degree	27.4%	15.8%	11.6%	
<i>Family Income</i>				
Less than \$20,000	24.6%	9.10%	15.50%	<0.0001
\$20,001-\$50,000	46.8%	17%	29%	
\$50,001-\$100,000	20.9%	9.20%	11.7%	
More than \$100,000	7.4%	5.90%	1.50%	

In terms of high impact activities, the largest percentage of individuals who expected to go to graduate school were those who participated in an internship, co-op, field experience, student teaching or clinical assignment (20.7%), followed by those who completed a senior experience project (10.2%) and those who received mentoring (8.5%). Individuals whose parent's education

level was below a bachelor's degree appear to have 10% higher expectations to attend graduate school than those whose parents completed a bachelors or more.

A similar trend is observed among the parent's education where most individuals who expected to attend graduate school appear to have a family income below \$100,000 during the first wave of the survey. Chi-square results show that there is a significant relationship between all variables and the expectation to attend graduate school with p-values <0.05 . This confirms the information presented in the theoretical framework that describes the connection between social capital measures and the expectation among Hispanics to attend graduate school. Results from the multicollinearity test showed no evidence of overly high correlations among the independent variables. The largest variance inflation factor (VIF) value among all variables was below 1.6, which is much lower than the value of 10 commonly used to identify traces of high correlation.

Figure 2.2 reports the odd ratios and 95% confidence intervals that resulted from the logistic regression model with adjustments for survey design. Females appear to have 21% higher odds of expecting to attend graduate school compared to men. Participation in each of the high-impact activities appears to increase the odds of the expectation to attend graduate school, particularly participating in an internship, co-op, field experience, student teaching or clinical assignment. Participation in other activities also shows a trend of increasing expectations, especially community service, with these students indicating they are almost twice as likely to have expectations to attend graduate school than students not engaged in community service activities. Similarly, Hispanics whose parents have more than a bachelor's degree are almost twice as likely (1.89) to have graduate school expectations. Finally, results related to family income show an increase in graduate school expectations if the family makes over \$100,000.

Table 2.2 Logistic Regression Results for Expectations to Complete a Post-Graduate Education Degree

Educational Longitudinal Study 2002-2010 (<i>n</i> =872)		
Variable	Odds Ratio	[95% CI]
Sex		
Female (ref: male)	1.21	[0.86, 1.71]
High-Impact Activities		
Participated in Internship/Co-Op/Field Experience/Student Teaching/Clinical Assignment (ref: not participating in internship/co-Op/field experience/student teaching/clinical assignment)	2.34***	[1.49, 3.68]
Participated in Research (ref: not participating in research)	1.62	[0.97, 2.72]
Participated in Study Abroad (ref: not participating in study abroad)	2.14	[0.78, 5.87]
Participated in Community Project (ref: not participating in community project)	1.14	[0.60, 2.14]
Participated in Senior Experience (ref: not participating in senior experience)	1.67	[0.93, 2.99]
Participated in Mentoring (ref: not participating in mentoring)	1.14	[0.66, 1.97]
Other Activities		
Voted (ref: not voted)	1.39	[0.98, 1.98]
Participated in community service (ref: not participating in community service)	1.99***	[1.37, 2.90]
Parents Educational Attainment		
More than a Bachelor's Degree (ref: bachelor's or less)	1.89**	[1.25, 2.84]
Family Income (ref: \$20,001 to \$50,000)		
Less than \$20,000	1.24	[0.75, 2.06]
\$50,001-\$100,000	1.01	[0.64, 1.60]
More than \$100,000	4.80***	[2.37, 9.73]

p*<.05, *p*<.01, ****p*<.001

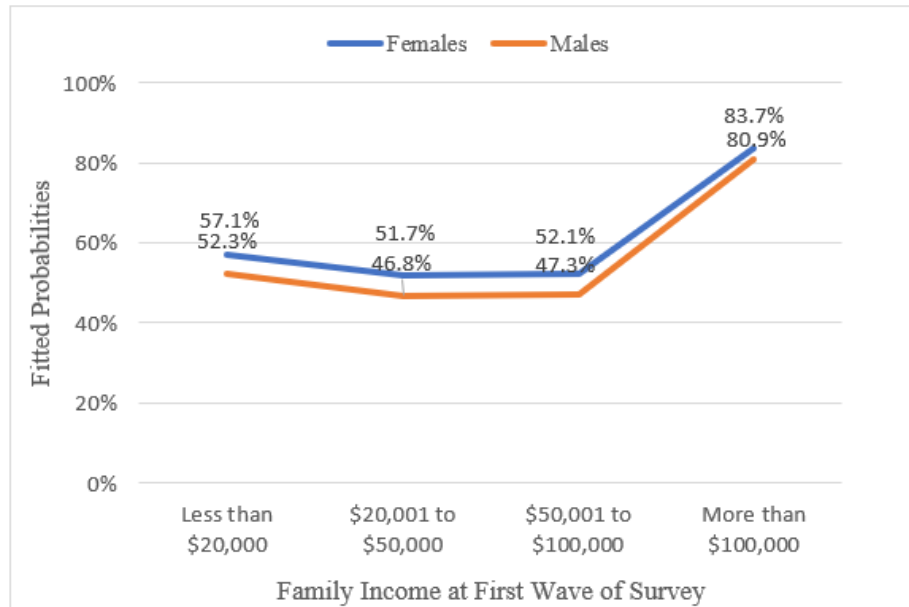


Figure 2.2 Fitted Probabilities of Post-Graduate Expectations among Hispanics by Sex and Family Annual Income who Participated in Volunteering and Internship Activities and Whose Parents do not have a Bachelor's Degree

Fitted probabilities were calculated to examine the effects of the social capital measures (high-impact activities and other forms of activities) on specific participant characteristics. Several scenarios were examined. The first, focused on Hispanics that participated in an internship and whose parents did not have a bachelor's degree by sex and family income. Figure 2.1 summarizes findings based on this scenario, showing that females are consistently more likely than males to anticipate earning a post-graduate degree. As observed in previous findings, family incomes that exceed \$100,000 significantly increases the odds of either sex of expecting to go to graduate school.

The previous scenario is then replicated using parental education. Figure 2.2 includes Hispanic students that participated in an internship and whose parents did not have a bachelor's degree by sex and family income. Overall, this scenario shows higher probabilities for both sexes

to indicate post-graduate expectations if their parent has a bachelor’s degree and higher family income.

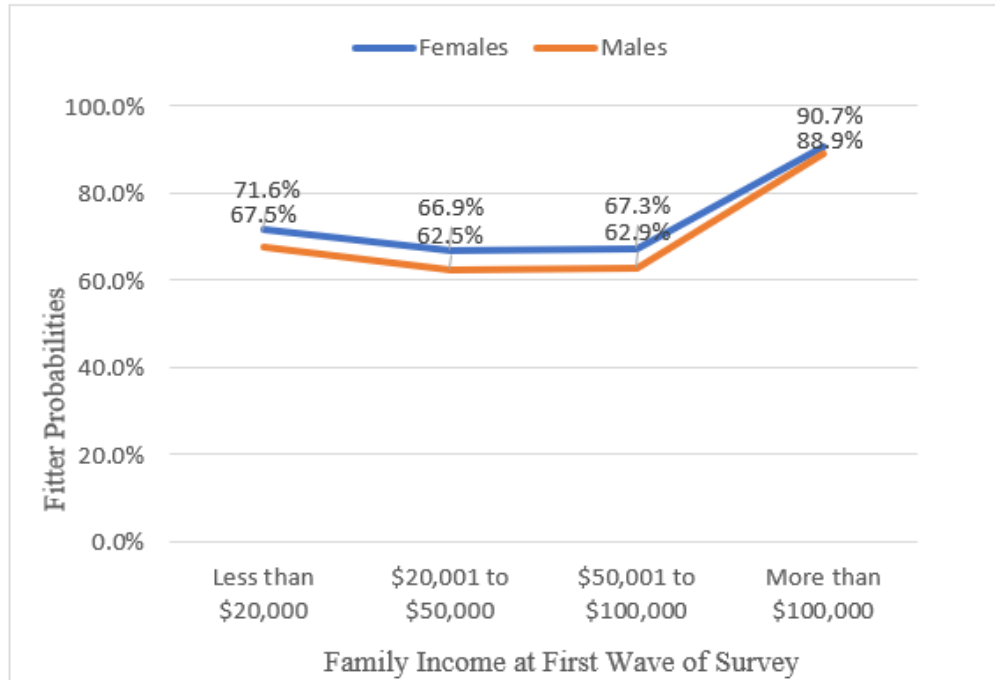


Figure 2.3 Fitted Probabilities of Post-Graduate Expectations among Hispanics by Sex and Family Annual Income Who Participated in Volunteering and Internship Activities and Whose Parents have a Bachelor's Degree

The largest increase is again observed for individuals whose family income exceeds \$100,000. Under this scenario male and female Hispanic students with educated parents and high family incomes are 20% more likely to have expectations of attending graduate school.

Discussion

Based on the findings presented in this chapter, I can confirm that social capital as measured by high-impact activities, voting and volunteering positively influences Hispanic student’s expectations of earning a post-graduate degree. As predicted, the expectations of female Hispanics were higher than men, confirming findings by May, et al., (2019) that suggest Hispanic women retain graduate expectation longer in their academic trajectory than men. Barajas et al.,

(2001) note this could be the result of Hispanic women being more likely to establish a support network that allows them to navigate the higher education system despite cultural barriers, thus leveraging sources of social capital more effectively.

The findings in this chapter also confirm the second hypothesis; Hispanics are less likely to have expectations to obtain a post-graduate degree when their parents have lower socio-economic status, as measured by family income and parental educational attainment. This finding extends the work of Torche (2011) that discusses the effects of the socio-economic origins on the earnings of individuals after completing a post-graduate degree. In this fashion, low socio-economic origins continue to impact the expectations to obtain a post-graduate degree among Hispanics 8 years after high school regardless of their involvement in key activities that increase an individual's social capital, like having a mentor, participating in research, or studying abroad among others.

Among the activities explored in this chapter as key sources of social capital, participating in an internship/co-Op/field experiences/student teaching/clinical assignment and doing volunteering work appear to have the most impact on the probability of Hispanic students having post-graduate attainment expectations. Engagement in community service has been associated with higher levels of a sense of belonging, a form of social capital that helps increase academic advancement particularly for traditionally segregated students like Hispanics (Nuñez, 2009). Furthermore, volunteerism is connected to greater levels of academic achievement (Morimoto et al., 2013). Volunteering, as well as participating in internships or similar experiences, has been known to provide students with an effective way to integrate and apply their knowledge making learning in college more meaningful (Larson, Measham & Williams, 2006). It is not surprising to see the positive effects of both types of activities on the post-graduate expectations of Hispanics.

This chapter points at the importance of providing community service opportunities and access to internships/co-Ops/field experiences/student teaching/clinical assignments as an effective method of increasing social capital for Hispanic students. Colleges and universities can work to lessen the persistent effects of the socio-economic origins of Hispanic students by providing access to highly-engaged learning activities, such as experiential learning activities, that improve their overall learning experience and enhance their social capital, and thus, their expectation to earn a graduate degree.

CHAPTER THREE: POST-GRADUATE EDUCATION AND IMMIGRATION STATUS

Introduction

Hispanic immigrants represent an important part of the Hispanic population and contribute to the education system in the United States. Their identity as Hispanics or Latinos is often intertwined with that of immigrants. Many Hispanics in this country are forced through public sentiments to think about their immigrant ancestry as a dilemma to overcome rather than a social characteristic (Rodriguez, 2009). This is further intensified with the development of harmful stereotypes, belief and profiles of immigrants fueled by national narratives that focus on the control and deportation of immigrants (Casas and Cabrera, 2011). The college experience for Hispanic immigrants is cluttered with similar stereotypes as they experience an educational system that is often unprepared to serve their needs and is guided by deficit-based assumptions about their academic potential (Solorzano, Villalpando and Osegueda, 2005). Not surprisingly, the educational achievement of Hispanics is influenced by their immigration status as well as educational systems and policies, that in many cases, hinder their success in college (Nunez, 2014).

The purpose of this chapter is to contribute to the field of education by exploring the relationship of immigration status and state-level measures on the completion of post-graduate education among Hispanics. Previous studies have often explored the transition between secondary and undergraduate education; however, as graduate education continues to become a requirement for social mobility, it is important to explore the factors that influence the academic success of Hispanic immigrants.

The term immigrant is difficult to define, often described as individuals who were born outside of the United States or whose parents were born outside of the United States (Soria and Stebleton, 2011). The National Center for Education Statistics (2016) identifies immigrants as

citizens, permanent residents, or noncitizens eligible for citizenship who were born abroad to at least one foreign-born parent, while the Census Bureau (2019) uses the term “Non-Citizen” to describe anyone who is not a U.S. citizen at birth. In some studies, the use of the term immigrant is used to describe specific groups, like that of DACA recipients and undocumented individuals. Students under these statuses, however, face unique challenges in their pursuit of higher education when compared to other non-citizens. Some of those challenges include: limited federal financial assistance, fewer resources and lack of pathways to gain citizenship (Gonzales, Terriquez & Ruszczyk, 2014).

At the undergraduate level, Hispanics represent the largest group among immigrant students accounting for 34.8% of all immigrants, followed by Asian immigrants at 28.5% (National Center for Education Statistics, 2016a). The large Hispanic representation among immigrants is consistent with recent demographic shifts. According the U.S. Census Bureau (2018b), a total of 22,289,490 individuals, or 6.9% of the U.S. population, describe themselves as non-citizens. The largest immigrant group as of 2018 is represented by Latin American immigrants who accounted for 13,485,959 individuals, or 61% of all non-citizens, and is primarily composed of Mexican immigrants (U.S. Census Bureau, 2018b). Mexican immigrants account for over 11 million individuals, or close to 80% of all Latin American immigrants. Unfortunately, when compared to other immigrant groups, Mexican immigrants have one of the lowest levels of educational attainment. From 1980 to present, Mexican immigrants have experienced only a 3% growth in their attainment of a bachelor’s degree, while immigrants from Korea, Vietnam, China and India have experienced gains of over 15% over the same period (Pew Research Center, 2018). This pattern was confirmed by Covarrubias (2011) who concluded that citizenship status is strongly associated with baccalaureate attainment among Mexican-origin individuals.

Yosso (2005) developed a pipeline model to show the poor educational attainment associated with Hispanic students. In her model, she described that out of 100 Hispanic students who started in elementary school, seven would earn a bachelor's degree, two would earn a masters or professional degree and less than one would earn a doctoral degree. Covarrubias and Lara (2014) applied the educational pipeline model presented by Yosso (2005) to the migrant population finding that among Mexican-origin immigrants, only four rather than seven out of 100 students that started in elementary would earn a bachelor's degree, one instead of two would earn a masters or professional degree and zero would earn a doctoral degree (Covarrubias, et al., 2014). The trend is even more discouraging for Mexican-origin undocumented individuals, particularly among undocumented women who are even less likely to earn a master's degree (Covarrubias, et al., 2014).

Research has also shown that the time after arrival to the country and acculturation process matters in the educational attainment of Hispanic immigrants. For instance, studies have found that in the case of Mexican immigrants, becoming more acculturated is associated with lower levels of academic achievement, particularly after the ninth grade (St-Hilaire, 2002). This dip in academic aspirations that Mexican immigrants experience happens during a time in which preparing for college is critical (Perez-Brena, Delgado, Rodriguez De Jesus, Updegraff and Umana-Taylor, 2017). This chapter's analytic strategy incorporates years in the US after migrating to evaluate if it plays a role in these students' ability to attain a post-graduate degree.

Studies have identified key factors associated with the poor educational attainment of Hispanic immigrants. Some of those factors include limited English language skills, poor study behaviors, family responsibilities and mental health concerns (Soria et al., 2011). Other barriers unique to Hispanic immigrants include poor self-efficacy beliefs, financial and/or legal concerns

and cultural expectations related to “familismo” or familism (Gonzalez, Stein and Huq, 2012). Familism refers to the perceived support from the family and family obligations which are a central dimension of the Hispanic culture and strongest among the less acculturated (Sabogal, Marin and Otero-Sabogal, 1987; Niemeyer, Wong, Westerhaus, 2009). Among immigrant families, family cohesion is positively correlated with higher educational expectations while family obligations are negatively correlated with the desire to pursue a post-secondary education. (Toyokawa and Toyokawa, 2019).

The influence of family responsibilities is an important one to highlight, particularly for students in post-graduate education. An indication of this can be seen in the postponement of childbearing among women with a college degree or higher (Rindfuss, Morgan and Offutt, 2016), while women without a college degree, tend to have children at younger ages (Shang and Weinberg, 2013). For immigrants pursuing a college education, the patterns of delaying childbearing with education is also observed, especially for Mexican and Central American women (Hill and Johnson, 2004). It is important to mention that fertility outcomes do differ by academic area. Women whose academic field is in science and technology are more likely to delay having a child than those in the fields of education or health which offer lower motherhood employment penalties and are less male dominated (Michelmore and Musick, 2014). Interestingly, women whose academic field is in the arts, are more likely to remain childless than any other field (Michelmore, et. al., 2014). This chapter’s analytic strategy includes a control for the number of children among Hispanic immigrants who have attained a post-graduate degree as it plays such an important factor in their family obligations.

Hispanic immigrants rely heavily on family as well other networks and resources in their transition from their home country to the United States. Access to such resources reduces their

cost of migration and increases access to sources of labor and opportunities (Massey, 1990). Among Hispanic immigrant students these relationships are equally important in their selection and enrollment in college. Compared to other racial/ethnic groups, Hispanics students prefer to attend colleges near their home, influenced by their sense of familism (Desmond and Lopez Turley, 2009). Hispanic college students are also more likely to live with their parents and family during their studies than non-Hispanic White students (Fry, 2004). Ayala (2012) has also identified that Hispanic students tend to attend colleges and universities in states with higher proportions of Hispanics like Texas, Florida and Arizona. She also adds that Hispanic students are also more likely to attend 2-year colleges, which have the largest enrollment of Hispanics among all types of higher education institutions. Yet, the enrollment in 2-year colleges for many Hispanics has not come without a cost and is likely to be a factor in their low enrollment in post-graduate education. In a study by Solorzano, et al., (2005), only one third of Hispanics that enrolled in a 2-year college successfully transferred to a 4-year university. Delaying entry into a 4-year institution, and instead, attending a 2-year program reduces the chances of achieving a 4-year degree (Fry, 2004). These enrollment patterns shape local opportunity structures providing Hispanic populations higher access to two-year colleges rather than four-year colleges (Hillman, 2016). The clustered patterns of Hispanic college enrollment limit their ability to expand their opportunities beyond the familiar networks (Ayala, 2012).

Hispanic immigrants' educational attainment is also influenced by the place they live in addition to their individual characteristics. Research has shown that Hispanics who come from higher income families are more likely to want to pursue a graduate education than those who come from middle- or lower-income families (Xu, 2016). An important factor related to this is that Hispanics who are more affluent and acculturated tend to live in suburbs, while those who are less

affluent appear to live in central cities (Logan, Alba, McNulty, & Fisher, 1996) despite it being one of the places along with rural areas with the highest levels of segregation for Hispanics (Lichter, Parisi, Taquino and Grice, 2010). This represents neighborhoods that have better access to resources and businesses like coffee shops, restaurants, etc. providing a difference in their social experience (Leyden, 2003). Neighborhoods with low levels of poverty have a larger collective agreement on the importance of college, while the opposite is found among those with higher levels of poverty, contributing to a structural disadvantage that impacts the educational attainment of Hispanics (Berg, Stewart and Stewart, 2013). Hispanic immigrants are less likely to live in high-income neighborhoods with proportionally more non-Hispanic White residents even at their highest level of educational attainment (Akresh and Frank, 2018). The influence of socio-economic status is such that once controlled it can explain the Hispanic-White wealth gap proving that if Hispanic families had similar financial decision-making power this gap would be eliminated (Emmons and Ricketts, 2017).

Finally, this chapter also considers the impact of state economies and educational funding policies which can have an effect on the educational attainment of Hispanic immigrant students. For example, the states of California and Colorado allow individuals who graduate from high schools in the state to be able to pay in-state tuition at their public universities which helps immigrant students, particularly those without documentation (Wallace and De Trinidad Young, 2018). Studies have shown that access to in-state tuition for immigrants increases their enrollment in college (Kaushal, 2008). The state of Texas house bill 588 passed in 1997 guarantees admission to students who graduate in their top 10 percent of their high school class to any public institution in the state. However, the success of educational policies is often difficult to measure considering the problems with population definitions (e.g. Hispanic, Minority, Immigrant, etc), the inability to

set numeric targets (Mendez, Astiz and Beltran, 2000), and in some cases, failure to address the external barriers that impact Hispanic immigrant students. Admission and enrollment disadvantages are common barriers to the success of state policies like the Top 10% rule in Texas, where the lack of financial resources often prevents students from enrolling in competitive institutions even after gaining acceptance (Harris and Tienda, 2010). Other metrics to consider are local and state unemployment rates which are associated with fluctuations in college enrollment as well as demand for community colleges; periods of weaker economic stability are correlated with a greater demand for education (Hillman and Orians, 2013). Historically, periods of recession coupled with longer durations of unemployment benefits have been associated with increases in college enrollment (Barr and Turner, 2015). This chapter's analysis includes metrics that account for both higher education funding as well as measures of state-level economies to analyze their impact on the educational attainment at the post-graduate level for Hispanic students.

Theoretical Framework

The exploration of immigration status among Hispanics in post-graduate education can be framed using two theories: 1) the theory of intersectionality and 2) critical race theory. It may appear that at higher levels of education and accomplishment all students are equal, but forms of discrimination and inequality continue to exist in subtle ways (Solorzano, 1998). Critical race theory contributes to the understanding of the experiences of Hispanic immigrants in post-graduate education by helping identify hidden patterns of racism embedded in post-graduate education systems and state-level conditions that may hinder access and opportunity for minorities. Critical Race Theory explores the intercentricity of race and racism, challenges the dominant ideology, advances social justice, and acknowledges and validates the experiences of people of color (Yosso, 2005). In graduate education, forms of racism may take the shape of microaggressions, such as

low expectations among faculty or limited support (Solorzano, 1998). In some cases, the status of graduate students of color as being the “only one” or “one of the very few” creates an environment of marginalization similar to tokenism (Gay, 2004). Critical Race Theory is thus a fitting framework to explore the complexity of the identity of Hispanic immigrants as minorities. It is important to note that Critical Race Theory has been used primarily in qualitative studies to create counter-narratives challenging views of traditionalism and meritocracy in higher education systems. However, Critical Race Theory can be successfully used in quantitative studies using multivariate analyses (Sablan, 2019) as included in this chapter.

The theory of intersectionality postulates that systems of race, class, and gender inequality together, instead of as isolated identities, produce structures of oppression and privilege that influence the life experiences of individuals (Baca et al., 1996). The theory of intersectionality fits with the study of Hispanic immigrants as it can be used to examine the different forms of inequality that prevent their completion of a post-graduate degree. It helps provide a framework for a discussion that integrates the plurality of individual experiences such that we discover structural issues like racism (Crenshaw, 1989). Consequently, intersectionality helps clarify the interconnectedness of individuals and groups in a multidimensional stratification system establishing a bridge between structural and micro-level research (Baca Zinn, et al., 1996; Hancock, 2008). In the study of immigration and race/ethnicity lies the need for a multilevel approach that can help identify sources of college access inequalities that impact Hispanics (Nunez, 2014).

This chapter uses the Integrated Public Use Microdata Series (IPUMS) to further explore the relationship between immigration status and post-graduate education among Hispanics by

focusing on the completion of an advanced degree. The intention of the analysis is to answer the following two questions:

1. Are Hispanics who are non-citizens less likely to have completed a post-graduate degree than Hispanics who are citizens?
2. Are individual Hispanic students living in states with more favorable economic conditions and higher education state level funding more likely to have completed a post-graduate degree than those living in states with worse economic conditions and less higher education state funding?

Methods

In order to address the research questions presented, this chapter uses data collected through the American Community Survey (ACS), five-year estimates from the years 2014 to 2018, as well as data from the Integrated Public Use Microdata Series (IPUMS). Selected variables are included in a hierarchical analytical model that explores the differences of Hispanic immigrants versus non-immigrants as well as those who have enrolled in post-graduate education versus those that have completed it.

The ACS collects information on over 3.5 million households randomly selected in the United States on topics related to educational attainment, occupation, citizenship status, age, income, etc. Each home address in the United States has a 1 in 480 chances of being selected to participate in the ACS survey, which is mailed once a month to approximately 295,000 homes across the country (United States Census Bureau, 2017).

Data from IPUMS is also included in the analyses as it includes information collected through various other sources such as Census Bureau, Bureau of Labor Statistics, National Science Foundation, National Center for Health Statistics, the Center for Disease Control and the National

Aeronautics and Space Administration. IPUMS is the largest database of census microdata with over a billion records of harmonized data from topics related to education, labor force and health among others (University of Minnesota, 2020). In using both the ACS and IPUMS sources, information regarding the educational status of Hispanic immigrants, as well as the economic conditions of the states they live in, can be easily captured. Finally, data related to the financial support of states to higher education is captured from the full nominal data report published by the State Higher Education Executive Officers Association (SHEEO) for the year 2017.

Sample

Using data from IPUMS from the year 2017, a sample is generated corresponding to individuals who identified themselves as persons of Hispanic/Spanish/Latino origin regardless of race who had attained at least a bachelor's degree at time of survey. The total number of respondents was 21,854 individuals.

Measures

Dependent Variable: If the individuals reported that they had acquired a graduate or professional school degree, they were coded as 1. If the respondent reported they had not acquired post-graduate degree, they were coded as 0.

The following independent variables are included in the analysis:

- Citizenship Status:

Respondents were asked to report their citizenship status. If the respondent answered yes to being born to American parents or being naturalized, then they were coded as 0. If the respondent stated that they were not a citizen, not a citizen but have received papers or foreign born without reporting their citizenship, they were coded as 1.

- Number of Children

Respondents were asked to provide the number of their own children residing with them including stepchildren, adopted children and biological children. Answers were coded in three separate categories corresponding to: no children, 1 to 2 (reference) and 3 or more children.

- Age

Respondents were asked to report their age as of the last birthday. Responses were recoded and categorized as follows: ages 18 to 30, ages 31 to 40 (reference group), ages 41 to 50, and 51 years and older.

- Income

Respondents were asked to report their total pre-tax wage and salary income received from an employee over the previous 12 months. Sources of income could include wages, salaries, commissions, cash, bonuses, tips and other income received from an employer. Any payments in-kind or reimbursements for business expenses are excluded. Income amounts were adjusted for inflation and recoded categorically as follows: \$0 to \$20,000, \$20,001 to \$50,000 (reference group), \$50,001 to \$100,000, and incomes greater than \$100,000.

- Sex

Respondents were asked to report whether they were male or female. Females were coded as 1, and males were coded as 0.

The following state-level independent variables are included in the analysis:

- Poverty Level

Poverty information is captured from the ACS data profile tables for each state in the United States. The average of the percentage of families living in each state whose income in the past 12 months was below poverty level was scaled and categorized as “below average” using the mean minus two standard deviations or “higher than average” if it exceeded the mean minus two standard deviations. The reference for this variable was “higher than average”.

- Unemployment Rate

Unemployment information is captured from the ACS data profile tables for each state in the United States. The average unemployment rate per state was scaled and categorized as “below average” using the mean unemployment rate minus two standard deviations or “higher than average” if it exceeded the mean unemployment rate minus two standard deviations. The reference for this variable was “higher than average”.

- State Support for Higher Education

Financial support amounts for all institutions in Higher Education by the states represented in the sample were included from SHEEO. The average financial support amount for each state was scaled and categorized as “below average” using the mean of state financial support minus one standard deviation or “higher than average” if it exceeded the mean of state financial support minus one standard deviation. The reference for this variable was “higher than average”.

Included in the covariates were IPUMS survey design measures for the primary sampling unit, sample weight and strata to account for the complex survey design.

Data Analysis

All statistical analyses were performed using *R* (3.6.0). Frequency distributions were first examined. Particular attention was given to the distribution by immigration status of the respondents (citizen vs. non-citizen), age, number of children, income and sex. Chi-square tests for equality of means for the dependent variable and each of the independent variables were also conducted. In order to estimate the likelihood of completion of a post-graduate degree, a logistic regression model was estimated that accounted for survey design elements.

Following this, a fixed-effects ANOVA was estimated to test for variation in the post-graduate attainment among Hispanics across states. Two binary logistic regression models with a random intercept were then performed: the first includes only individual level variables and the second includes state level variables. Finally, a comparison between the model fit between models using a ratio test was conducted. All variables that are numerical were scaled and the sample includes only complete cases.

Findings

As observed in Table 3.1, results from the descriptive analysis show a similar distribution of post-graduate degree attainment by sex, 53.5% of the respondents were females and 46.5% were males. In terms of citizenship status, 40.2% of post-graduate degree attainers were not citizens and 59.8% were citizens. Among the sample, 30.2% of individuals had already acquired a post-graduate degree at the time of survey, while 69.8% individuals had not earned a post-graduate degree.

In terms of the number of children, 47.9% of the respondents did not have children, 42.9% had one or two children and only 9.1% had three or more children. Among the sample, 14.9% of respondents were under the age of 30, 25.4% of respondents were between the ages of 31 and 40, 25.8% were between the ages of 41 and 50, while the remaining 33.9% were over the age of 51.

Table 3.1 Weighted Descriptive Statistics of Individual Variables

Integrated Public Use Microdata Series (IPUMS) 2017				
	Attained a Post-Graduate Degree, n=21,743			
Variable	Total	Yes	No	Chi-Square pvalue
All survey respondents	100.0%	30.2%	69.8%	
Sex				<0.0001
Male	46.5%	15.2%	31.3%	
Female	53.5%	15.0%	38.5%	
Citizenship Status				<0.0001
Citizen	59.8%	19.3%	40.6%	
Non-Citizen	40.2%	10.9%	29.3%	
Number of Children				<0.0001
No children	47.9%	15.2%	32.7%	
1 or 2 children	42.9%	12.8%	30.2%	
3 or more children	9.1%	2.2%	6.9%	
Age Groups				<0.0001
< 30	15.0%	2.8%	12.2%	
31 to 40	25.4%	7.7%	17.7%	
41 to 50	25.8%	7.8%	18.0%	
51 or over	33.9%	11.9%	22.0%	
Income				<0.0001
< \$20,000	41.8%	10.6%	31.2%	
\$20,001 to \$50,000	25.2%	5.9%	19.3%	
\$50,001 to \$100,000	21.8%	8.0%	13.9%	
>\$100,001	11.0%	5.7%	5.4%	
Years in the US				<0.0001
Weighted Average	21.8	23.3	21.2	

In addition, 41.8% of respondents reported incomes below \$20,000, 25.2% of respondents reported wages between \$20,001 and \$50,000, 21.8% reported incomes between \$50,001 and \$100,000 and 11% of the respondents reported incomes of over \$100,001.

Table 3.2 shows the distribution of the group level variables, which included data from all 50 states in the country represented in the sample. In 2017, 10.8% of families reported incomes below the federal poverty level, while the mean unemployment rate was 6.8 percent across states. Poverty rates were highest in Mississippi (16%) and lowest in New Hampshire (5%). Similarly, the highest unemployment rate was observed for Mississippi (2.7%), with North Dakota having the lowest unemployment rate.

Table 3.2 Descriptive Statistics of Group Level Variables

American Community Survey, 5-Year Estimates (ACS) 2017 & State Higher Education Executive Officers Association (SHEEO) 2017								
Variable	N	Average	SD	Min	Max	Chi-Square pvalue	Percent of States Below Average	Percent of States Higher than Average
Poverty	50	10.7%	1.6%	5.0%	16.0%	< 0.0001	18%	82%
Unemployment	50	6.8%	0.7%	2.7%	8.8%	< 0.0001	2%	97%
Higher Education Funding	50	\$5,937,959,821	\$4,264,747,292	\$93,158,125	\$13,562,573,000	< 0.0001	86%	14%

Among the states represented in the sample, a mean poverty rate of 6.8% is observed. Over 80% of the states in the sample had a poverty rate higher than average while 18% had a poverty rate below average. Funding for all higher education by states was also captured at the group level. The average state funding was of 5.9 billion dollars. The state with the highest amount of higher education funding was California with a total expense of 13.5 billion dollars while the lowest being the state of Vermont with an expense of 93 million dollars. It is also worth noting that 86% of the institutions have levels of higher education funding below the average and only 14% have funding levels above the sample's average.

Following the descriptive analyses, a series of chi-square analyses were conducted between each of the independent variables and having earned a post-graduate degree. Chi-square results showed significant p-values = <0.0001 for all tests which confirmed the relationship between each

of the variables and the outcome included in Table 3.1 and Table 3.2. The next step was to conduct a logistic regression analysis and estimate odds ratios to further explore post-graduate attainment among Hispanics. Table 3.3 summarizes these findings.

Table 3.3 Logistic Regression Results for Completion of Post-Graduate Education Degree

Integrated Public Use Microdata Series (IPUMS) 2017		
	Attained a Post-Graduate Degree, n=21,743	
Variable	Odds Ratio	[95% CI]
Sex (ref: male)		
Female	0.98	[0.91, 1.06]
Citizenship (ref: citizen)		
Non-Citizen	0.98***	[0.73, 1.06]
Age Groups (ref: 31 to 40)		
< 30	0.53***	[0.46, 0.61]
41 to 50	1.00	0.93, 1.14]
51 or over	1.24***	[1.15, 1.41]
Number of Children (ref: 1 or 2 children)		
No children	1.25***	[1.15, 1.35]
3 or more children	0.78***	[0.69, 0.90]
Income (ref: \$20,001 to \$50,000)		
< \$20,000	1.04	[0.92, 1.12]
\$50,001 to \$100,000	1.81***	[1.63, 2.02]
>\$100,001	3.14***	[2.70, 3.50]
Years in the U.S.	1.05*	[1.00, 1.11]
Years in the U.S. X Non-Citizen	0.69***	[0.62, 0.78]

*p<.05, **p<.01, ***p<.001

Non-significant results were noted in attaining a post-graduate degree based on sex. Citizenship status, however, was statistically significant, indicating that non-citizens had 2% lower odds of attaining a post-graduate degree when compared to Hispanics who were citizens. An interaction effect between immigration status and years in the country showed that these individuals had 30% lower odds of having a post-graduate degree with increasing years of living in the country.

Further, findings by age group showed a significant relationship with post-graduate attainment for the youngest and the oldest groups of Hispanics. Among respondents over the age of 51, results showed 24% higher odds of having a post-graduate degree while respondents below the age of 30 had 47% lower odds of having earned a post-graduate degree.

Significant results were found by the number of children present in the household. Respondents with no children had 25% higher odds than those with 1 or 2 children to have attained a post-graduate degree. The opposite was observed among the respondents with 3 or more children who showed 22% lower odds of having attained this academic level.

In terms of income, odds of having a post-graduate degree increased at higher income brackets. For instance, respondents with incomes between \$50,000 and \$100,000 had 81% higher odds of having attained a graduate degree than respondents whose earnings ranged between \$20,000 and \$50,000. Among the respondents with incomes exceeding \$100,000, the odds tripled when compared to those in the \$20,000 to \$50,000 range.

The next step consisted of a hierarchical analytical approach that employed a random-intercept multi-level logistic regression model. A null model was first conducted with only the intercept and states. The null model with 50 groups was significant at $p < 0.001$ which indicates that post graduate degree attainment varies by state and confirms the need for a multilevel method. Following this, a multilevel model was fitted with only individual covariates summarized in Table 3.4. Results of this model mirror the findings in Table 3.3. Higher levels of income, older age groups and having no children continue to increase the odds of Hispanics students earning a post-graduate degree. Being non-citizen, having more than 3 children and the number of years since arrival all continued to show negative association and therefore decreasing the odds of earning a post-graduate degree among Hispanics.

Table 3.4 Weighted Binary Logistic Regression with Random Intercept - Individual Level Variables

Integrated Public Use Microdata Series (IPUMS) 2017				
Attained a Post-Graduate Degree, n=21,743				
	B	SE	OR	[95% CI]
Fixed Effects				
<i>intercept</i>	-1.13	0.07	***	[0.41, 0.55]
Sex (ref: male)				
Female	-0.020	0.03	0.97	[0.91, 1.04]
Citizenship (ref: citizen)				
Non-Citizen	-0.20	0.04	0.81***	[0.74, 0.88]
Age Groups (ref: 31 to 40)				
< 30	-0.7	0.05	0.52***	[0.46, 0.58]
41 to 50	0.04	0.04	1.02	[0.93, 1.12]
51 or over	0.19	0.04	1.31***	[1.20, 1.44]
Number of Children (ref: 1 or 2 children)				
No children	0.18	0.03	1.20***	[1.12, 1.29]
3 or more children	-0.25	0.06	0.77***	[0.68, 0.87]
Income (ref: \$20,001 to \$50,000)				
< \$20,000	0.01	0.04	1.01	[0.94, 1.12]
\$50,001 to \$100,000	0.57	0.04	1.76**	[1.60, 1.94]
>\$100,001	1.12	0.05	3.06***	[2.73, 3.44]
Years in the U.S.	0.03	0.02	1.04	[0.98, 1.09]
Years in the U.S. x Non-Citizen	-0.34	0.04	0.70***	[0.64, 0.77]
Random Effects				
	Variance	SD		
Strata	0.25	0.49		
State	0.08	0.28		
Model Fit				
AIC	23941			

* p < 0.05 | ** p < 0.01 | *** p < 0.001

A final multilevel regression model that integrated state level variables is summarized in Table 3.5. This model included unemployment rates, poverty rates and state funding for all higher education to help evaluate state-level effects on the post-graduate attainment of individual Hispanic students. Non-significant findings were noted for all of the state level variables. It is likely that other state or local economic factors as well as additional policies of higher education not accounted in this chapter, may be contributing to the variation in Hispanic post graduate attainment across states.

In order to assess the model fit, a likelihood-ratio test, which assesses the goodness of fit of two statistical and competing models, was performed. The results showed that the model with the individual variables was a better fitting option than the model with the state level variables, which had a p-value of .81. In addition, the AIC increased from 23,941 to 23,946 as further evidence of the poor fitting of the multilevel regression model with group level variables.

Table 3.5 Weighted Binary Logistic Regression with Random Intercept - Individual & Group

Integrated Public Use Microdata Series (IPUMS) 2017, American Community Survey, 5-Year				
Attained a Post-Graduate Degree, n=21,743				
	B	SE	OR	[95% CI]
<i>intercept</i>	-1.17	0.11	***	[0.24, 0.38]
Sex (ref: male)				
Female	-0.02	0.03	0.97	[0.91,1.04]
Citizenship (ref: citizen)				
Non-Citizen	-0.20	0.04	0.81***	[0.74, 0.88]
Age Groups (ref: 31 to 40)				
< 30	-0.64	0.05	0.52***	[0.46, 0.58]
41 to 50	0.02	0.04	1.02	[0.93, 1.12]
51 or over	0.27	0.04	1.31***	[1.20 1.44]
Number of Children (ref: 1 or 2 children)				
No children	0.18	0.03	1.20***	[1.12, 1.29]
3 or more children	-0.25	0.06	0.77***	[0.68, 0.87]
Income (ref: \$20,001 to \$50,000)				
< \$20,000	0.01	0.04	1.01	[0.92, 1.10]
\$50,001 to \$100,000	0.56	0.04	1.77***	[1.60, 1.94]
>\$100,001	1.12	0.05	3.06***	[2.73, 3.44]
Years in the U.S.	0.03	0.02	1.04	[0.99, 1.09]
Years in the U.S. x Non-Citizen	-0.34	0.04	0.70***	[0.64, 0.77]
State Economic Characteristics				
Below Average Poverty (ref. higher than average)	0.04	0.13	1.12	[0.86, 1.45]
Below Average Unemployment (ref. higher than average)	-0.08	0.19	0.96	[0.66, 1.40]
Limited Higher Education Funding (ref. higher than average)	-0.02	0.12	0.97	[0.76, 1.23]
Random Effects	Variance	SD		
Strata	0.24	0.5		
State	0.07	0.27		
Model Fit				
AIC	23946			

* p < 0.05 | ** p < 0.01 | *** p < 0.001

Discussion

This chapter focused on understanding the post-graduate education outcomes of a subgroup of Hispanic students: non-citizens or immigrants. The Hispanic immigrant population is diverse based on the number of nationalities represented, cultural differences, legal statuses and many other demographic characteristics. They represent over 13 million people in the United States and are an important asset of this country. The academic success of all Hispanics is therefore key to improve social mobility and close the educational gap observed between races.

The results on this chapter show that immigration status plays an important role in the likelihood of Hispanics with a bachelor's level education of earning a post-graduate degree. Hispanics who are not citizens are less likely to have earned a graduate degree when compared to Hispanics who are citizens even after accounting for state level effects.

Several factors that may contribute to the lack of representation of Hispanic immigrants at the graduate level including the influence of family obligations. Consistent with the findings of Hill et al., (2004), this chapter showed that Hispanics with no children are less likely to have earned a post-graduate degree than those with children. Family obligations and sense of familismo have a unique influence for Hispanics and could be contributing further to the lack of representation of Hispanic immigrants among post-graduate degree holders. It is critical for colleges and universities to examine the student support (e.g. financial, career, etc.) given to all Hispanics at the undergraduate and graduate level that may be contributing to their lack of access to post-graduate education. Springer, Parker and Leviten-Reid (2009) suggest that mentoring and faculty support of graduate student should be enhanced by considering the needs of student parents such that family-life discussions can be part of the support provided to students.

Consistent with the theory of intersectionality, the findings in this chapter also suggest an influence of social class; Hispanics with higher incomes are more likely to have earned a graduate degree. A limitation of this study is the inability to measure family income overtime or account for the individual's parents' income; however, previous research has established the relationship between class and graduate education. Hispanics that come from higher income families are more likely to want to pursue a graduate education than those from lower incomes (Xu, 2016). This structure of privilege that allows some Hispanics to have access to higher levels of education is critical as the Hispanic population continues to grow and the demand for graduate degrees increases.

An interesting finding was observed for the interaction between non-citizens and the time spent in the country. Newer Hispanic immigrants appear to have higher odds of earning a post-graduate degree. This could be the effect of immigrants who might have arrived in the country with the intention of pursuing a post-graduate degree while those individuals who have been living in the U.S. longer may prioritize employment or family versus continuing their education beyond the bachelor's level. This finding is also consistent with recent reports of increased levels of education among recent immigrants as a result of the rise of college education in other countries (Krogstad and Radford, 2018). This chapter does not account for the motivation to migrate or whether there was an intention to continue their education upon arrival in the United States.

Finally, this chapter also presented a research question examining the economic conditions of states, including state funding for all higher education on the post-graduate outcomes of individual Hispanic students. Results showed that there is no statistically significant relationship observed between state level conditions like unemployment, poverty and higher education funding are considered. This does not mean however, that external economic conditions do not affect the

demand of post-graduate education or the ability of individual students to navigate higher education within this larger structural systems of economic forces; however, in this analysis using the sample included here, the individual characteristics of Hispanic students were more influential in determining whether or not they completed a post graduate degree.

CHAPTER FOUR: HISPANIC SERVING INSTITUTIONS AND GRADUATION RATES OF HISPANIC STUDENTS

Introduction

Today, Hispanics represent over 18%, or 57.5 million, of the population (U.S. Census, 2018c); an increase of 6% since the year 2000 and 13% since the year 1970 (Krogstad and Noe-Bustamante, 2019). Hispanics are the second fastest growing minority group after Asians with more than half of all Hispanics in the country living primarily in three states: California, Texas and Florida (Krogstad, et. al., 2019). However, the Hispanic college graduation rate is far below that of other groups despite their growth in college enrollment. In 2002, Hispanic college enrollment was approximately 1.6 million and by the year 2018, it had reached 3.5 million (National Center for Education Statistics, 2018). Four-year college graduation has not experienced the same growth when compared to other races, in fact the graduation rate for Hispanics is 32 percent, while the rate for Whites is 45 percent and 50 percent for Asians. Considering that Hispanics are one of the fastest growing demographic groups in the country, it is of concern that their college graduation rates are far below other groups and the limitations this places on their social mobility.

In response to the increasing number of Hispanics enrolling in college, the Higher Education Act was reauthorized in 1998 to include a Title V program to develop Hispanic-Serving Institutions (HSIs). HSIs are defined by the Department of Education and the U.S. Government as non-profit institutions that enroll at least 25% Hispanic students. This program provides additional funds to colleges and universities to specifically serve the increasing number of Hispanic students enrolling at their campuses (Hurtado and Ruiz, 2012). HSIs have the unique task to educate many Hispanics in their own communities while contributing economically to these areas, most of which

are underserved (Hurtado, et al., 2012). Among students that are underrepresented, Hispanics are most concentrated in HSIs, particularly community colleges (Flores and Park, 2013; Nuñez, Sparks and Hernandez, 2011). Research has suggested that Hispanic students, especially those with limited resources, may perceive 2-year colleges as a safer investment with a lower economic cost in case they fail (Alexander, Garcia, Gonzalez and O'Brien, 2007). Hispanic students tend to lack information about the higher education system and their college choices which has led to their over-representation at community colleges despite aspiring to earn 4-year degrees (O'Connor, Hammack and Scott, 2009). Hispanic students are also more likely to enroll in college part-time than other ethnic groups which is associated with higher rates of dropping out (Arbona and Nora, 2007) and is considered a challenge for HSI institutions (Nuñez, et al., 2011).

An HSI designation results in various benefits including recognition and institutional pride; the most important is access to federal resources in the forms of Title V and Title III grants. To continue to receive such benefits, HSIs must meet a criterion for institutional effectiveness, maintain accreditation status, and offer educational programs that lead to a degree. As of the year 2018, there were 523 institutions, including both 4-year and 2-year institutions, in United States and Puerto Rico with such a designation (HACU, 2018). HSIs are primarily concentrated in states with a larger percentage of Hispanic or Latino residents, like California, Texas and Florida. Figure 4.1 includes a map distribution of HSIs in the United States as well as the percentage of the Hispanic population by state.

The purpose of the federal funds allocated to HSI institutions is to build and develop a wide variety of institutional initiatives including development and improvement of academic programs, faculty development, student support services, curriculum development, and physical renovations (U.S. Department of Education, 2019). Gastic and Gonzalez-Nieto (2010, p.836) noted in their

paper, that the most “successful HSIs align student support services with academic programs to provide effective support environments for students”. Effective HSIs create programs that include undergraduate research, student support services and allow for key empowerment agents to transform the campus climate (Garcia and Ramirez, 2018)

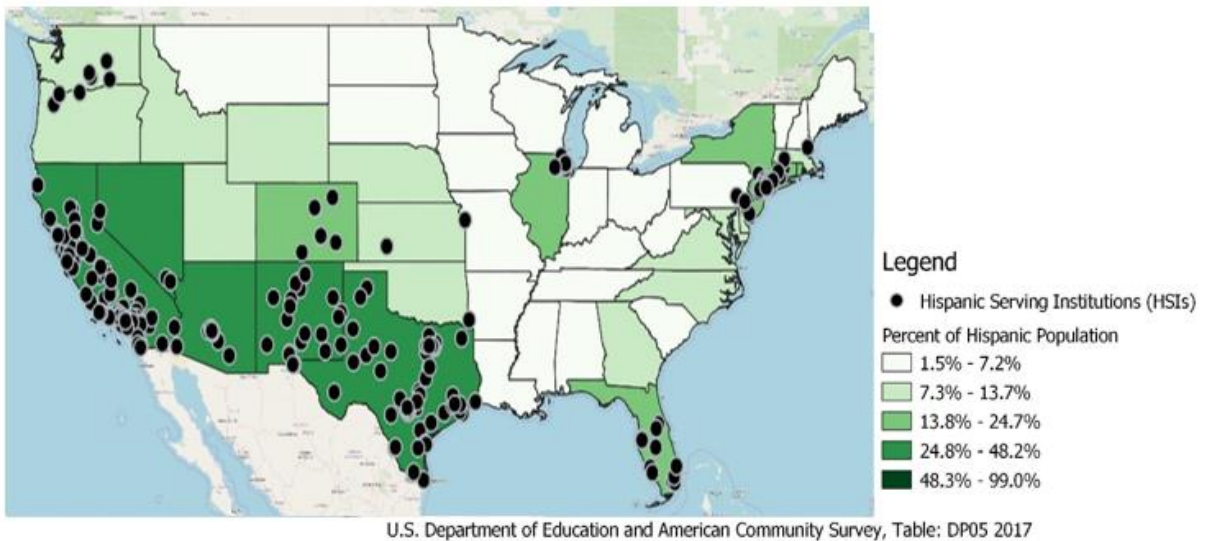


Figure 4.1 Location of HSI Institutions and Percent of Hispanic Population by State as of 2017

However, recent studies have identified gaps on the strategic use of such funds. For instance, HSI institutions that receive funding in the form Title V grants, experience a gap in the percentages of Hispanic faculty and Hispanic students. At these institutions, the Hispanic student to Hispanic faculty ratio at HSIs with Title V funding is of 146 to 1, while the average student to faculty ratio of all races is 28 to 1 (Vargas Villa-Palomino and Davis, 2020). This is of concern considering that Hispanic students who have access to Hispanic faculty and administrators tend to have greater academic satisfaction and success (Arbelo-Marrero¹ and Milacci, 2016; Craft DeFreitas and Bravo, 2012).

A study examining the completion rates at HSI institutions for Hispanics in several California colleges found lower completion rates for Latinos when compared to White students (Contreras and Contreras, 2015). This trend appears to continue after graduation when looking at a comparison by earnings of Hispanic students who attend HSIs vs. non-HSIs. Findings show that there is no significant difference between HSIs and non-HSIs in post-graduation earnings and that any difference is driven by selectivity and institutional resources rather than by HSI designation (Park, Flores and Ryan, 2018). This is supported by Garcia (2012) who found evidence that HSIs with higher requirements of admissions and additional institutional funding have better graduation rates for Hispanic students than those with less rigorous admission requirements and less funding.

The connection between adequate funding and the success of Hispanic students should be intuitive, and while we expect funding decisions to be driven by the enrollment of Hispanic students, evidence suggests that HSI funding increases by the rate of non-Hispanic White students. A study by Vargas (2018) found that for each additional percentage of non-Hispanic White students, there is an increase in the likelihood of receiving Title V HSI funding.

Overall, findings suggest that funding provided to HSI institutions may not translate into a higher graduation rate among Hispanics students. However it is important to note that HSI institutions face unique challenges when compared to non-HSI and non-minority serving institutions including, limited funding, difficulties with student retention and ineffective practices when hiring faculty members that understand the needs of Hispanic students (De los Santos and Cuamea, 2010). In addition, HSIs often enroll students who have weaker academic preparation than other colleges (Nuñez and Bowers, 2011; De los Santos, et. al., 2010) and who are more likely to be first generation students (Nuñez, et al., 2011). Many of these institutions obtained their HSI designation with 75% of their student body being non-Hispanic, therefore, changing their identity,

systems and structures from that of White research institution to a Hispanic serving identity cannot happen overnight (Marin, 2019). This becomes more intricate for HSI's who often have multiple identities, priorities and activities when compared to other types of minority serving institutions like Tribal Colleges or Historically Black Colleges and Universities (HBCUs) (Hurtado, et al., 2012). Hurtado et. al., (2012) continues to explain that HSIs include various types of institutions from 4-year universities, 2-year colleges, research institutions, etcetera.

This chapter explores the effects of HSI grants by looking at a diverse national sample of over 300 HSI institutions, including 2-year and 4-year institutions, that have received HSI funds to examine and compare against institutions with a similar designation that did not receive additional funds as reported by the Department of Education in the year 2018. Previous research has focused on comparing HSI institutions within states or by comparing the outcomes of one institution at a time. In examining over 300 HSI institutions, this chapter can provide a more global picture of the impact of HSI funds on graduation rates in an effort to respond to the following question: do HSI designated funds provided to HSI institutions increase the graduation rates of Hispanic students when compared to HSI institutions that have not received federal funds?

In accordance with previous findings, including that of Garcia (2012), I hypothesize that the weak relationship of graduation rates of Hispanics and institutions receiving HSI grants found in studies conducted at specific institutions will be replicated when examining a national sample. These research studies have shown that the relationship between HSI grants and graduation rates is weak when compared to other factors like admissions criteria, quality of instruction and amount of resources among other.

This chapter refers to the typology model created by Nuñez, Crisp and Elizondo (2016) to the examine the relationship between HSIs funding and graduation rates among Hispanic students.

Their typology model expands on traditional institutional classification approaches by identifying five forms of diversity that characterize HSI institutions including: system (type, control and enrollment), programmatic (graduate education), constituential (faculty and student characteristics), resource (amount spent on instruction, student and academic services) and environmental diversity (region/state/city characteristics). Drawing from the typology model of Nuñez et al., (2016), selected variables are included in the analysis of this chapter. Additional variables not included in the work of Nuñez, et al., (2016), are the availability of online programs as well as HSI's designated funds.

Previous work exploring the impact of the digital divide in Hispanics communities has shown that significant gaps exist in the usage of the internet between Hispanics and Anglo users (Hacker and Steiner, 2002). Recent census data shows that 86% of Non-Hispanic White individuals have access to broadband internet compared to 79% of the Hispanics (U.S. Census, 2018d)

College campuses have attempted to narrow gaps by providing technology services in their libraries and other facilities. However, access to technology at home is still a challenge for Hispanic college students who often lack reliable internet connections making them more susceptible to the digital divide phenomena (Huerta, Winkel and Eisenman, 2019). This may explain in part why Hispanics college students appear to enroll at lower rates than Non-Hispanic White students in online classes or programs (Wladis, Hachey and Conway, 2015). In the current context of higher education, access to reliable internet is critical for student's success, in the year 2017 over 6 million college students or 33% of all students enrolled in undergraduate programs were taking some sort of online education (National Center for Education Statistics, 2017).

Considering these statistics, this chapter integrates a measure on the availability of online programs at HSI institutions.

Theoretical Framework

Previous research on the outcome of Hispanic students in HSIs have used theoretical frameworks based on organizational or institutional theories that may not consider the multilayer identity of HSIs. This chapter uses a multidimensional conceptual framework of servingness proposed by Garcia, et al., (2019) to further understand the mechanisms that allow for Hispanics students to succeed at an HSI. Garcia et al., (2019) define servingness of an HSI institution by operationalizing this concept through various components that include academic and non-academic outcomes of students, the experiences of faculty, staff and students and structural factors that measure institutional activities, practices and investments.

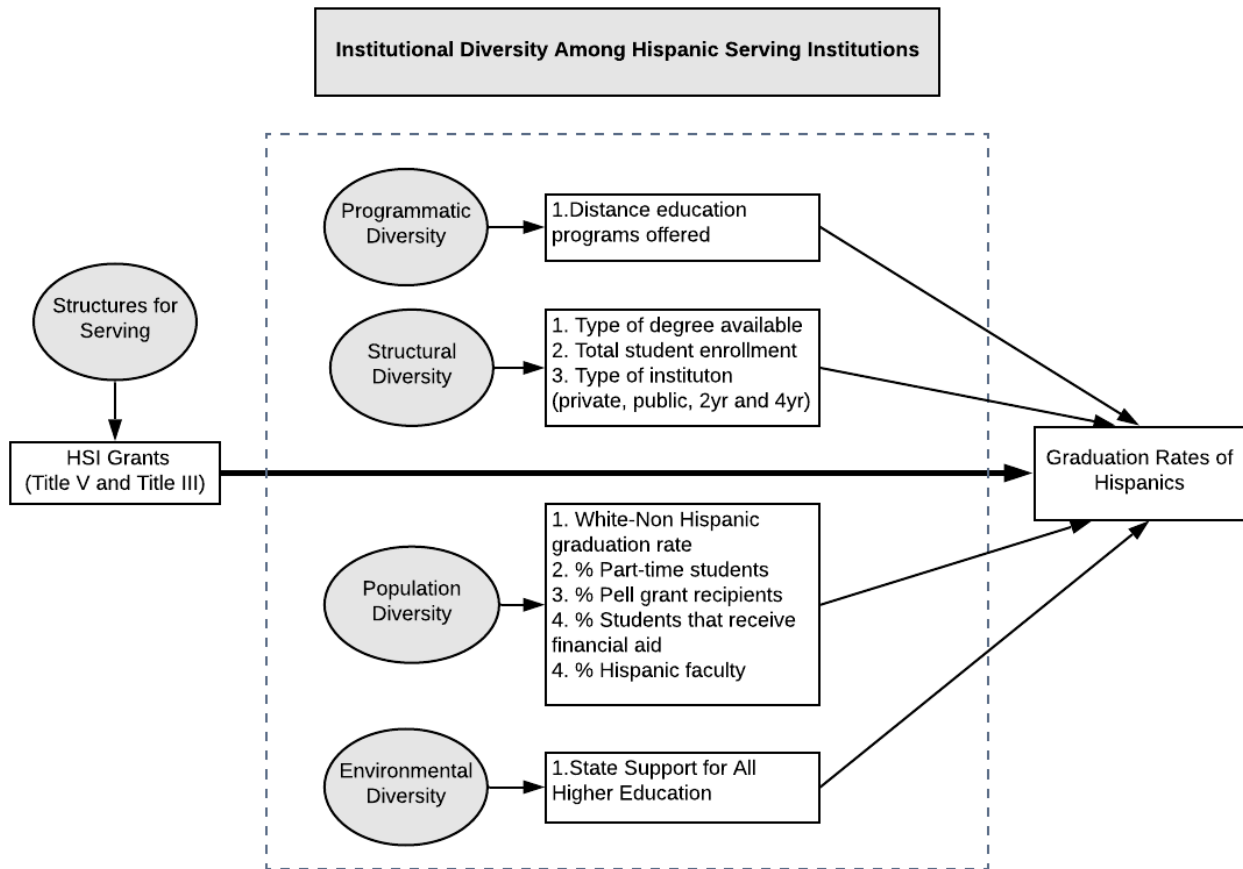


Figure 4.2 Conceptual Model of Hispanic Serving Institutions Grants and Graduation Outcomes of Hispanics

Their multidimensional conceptual framework also considers the influence of external factors such as federal, state, and local legislations as well as white supremacist systems that may create environments where racism, discrimination and microaggressions exist (Garcia, et al., 2019). Figure 4.2 incorporates the multidimensional conceptual framework to explore the effects of HSI grants originally listed as a structural factor in the work of Garcia et al., (2019) while taking into account institutional diversity characteristics proposed by Nuñez (2016) to answer the following question: What is the effect of HSI designated funds on the institutional graduation rates of Hispanic students at HSIs compared to HSI institutional that lacked HSI grant funds in the year 2017?

In accordance with previous findings, including that of Garcia (2012), I hypothesize that the weak relationship between graduation rates of Hispanics and institutions receiving HSI grants found in studies conducted at specific institutions will be replicated when examining a larger sample.

Research Design

A propensity score matching technique was used to assess the effect of HSI funding on Hispanic graduation rates within institutions. Propensity Score Matching (PSM) is used to reduce the bias of confounding variables on a sample of 321 institutions who have received a Hispanic Serving Institution Designation as of the year 2017. In order to conduct the PSM method, a separate sample was generated for 2-year and 4-year institutions. In the 2-year institution sample, the treatment and control groups included 73 institutions each. The 4-year institution sample included 60 institutions in each of the control and treatment groups. The treatment corresponds to institutions having an HSI grant in the year 2017 while the control refers to institutions not having an HSI grant in the same year.

In using PSM, we can compare the effect of HSI grants on institutions that have all met the criteria to be considered as an HSI but have not received the funds. Furthermore, this chapter includes a multilevel model that includes state-level effects to account for the variations in the Hispanic graduation rates within HSIs by state.

Information for this sample is gathered from the 2017 Eligibility Matrix documentation released by the U.S. Department of Education, which includes information on all grants awarded to HSI institutions, as well as some characteristics of each institution. Additional information is gathered from the final data release available through the Integrated Postsecondary Education Data System (IPEDS), which is a postsecondary education data collection sponsored by the National Center for Education Statistics (NCES). Financial data of institutions was gathered from the State Higher Education Executive Officers Association (SHEEO) finance report for the year 2017. This report provides state-level fiscal data to broaden the understanding of trends, context and funding decisions in higher education institutions. All sources were combined using the unique institution's identifier number.

Analytical Strategy

All statistical analyses were performed using *R* (3.6.0). Frequency distributions were first examined looking at the Hispanic graduation rates within institutions by their type (private vs. public and 2yr vs. 4yr), enrollment demographics, availability of distance education, part-time enrollment, financial aid recipients, post-graduate offering and total enrollment and Hispanic staff or faculty. A descriptive analysis was also conducted to review the characteristics of institutions that have received an HSI grant (treatment group) versus institutions that did not have an HSI grant for the year 2017 (control group). Following this a series of two sample t-tests were conducted to determine if there was a significant difference between the means of the Hispanic graduation rates

within institutions and each covariate in the analysis, as well as a series of two sample t-tests between HSI grant recipient institutions and each of the covariates.

A propensity score matching (PSM) method was then incorporated using the *R* (3.6.0) package *Matchit* (3.0.2) by Ho, Imai, King, Stuart and Whitworth (2018) with a ratio of 1:1. PSM is commonly used to examine the causal effects of a policy or intervention. It is defined as the probability of participants receiving a treatment based on observable or measurable characteristics using propensity scores and a matching algorithm to calculate a causal effect (Li, 2013). PSM has been used in previous higher education studies to determine the effect of educational “treatments” on students making it a preferable method to estimate treatment effects than parametric regression methods (Reynolds and DesJardins, 2009). This chapter’s analysis aims to determine the causal effect of HSI grants on the Hispanic graduation rates within institutions. More specifically, this chapter compares the Hispanic graduation rates at HSI institutions that had an HSI grant versus HSI institutions who did not have an HSI grant as of the year 2017. It is important to note that HSI grants are not randomly distributed or allocated to institutions, instead they are acquired through a competitive process between HSI designated institutions. Therefore, generating propensity scores using institutional characteristics is an appropriate method to establish a treatment and control group. In order to accomplish this, steps of PSM are followed as recommended by Randolph, Falbe, Manuel and Balloun (2014).

The likelihood of an HSI institution receiving an HSI grant is first examined by fitting a logistic regression model with an HSI grant as the outcome for the complete sample of 320 institutions. The sample contained one 2-year private institution which was excluded from the data. The resulting coefficients of the logistic regression are exponentiated to determine odd ratios. Following this, the matching with nearest-neighbor and a ratio of 1:1 is performed separately for

2-year and 4-year institutions to generate a propensity score $p(x_i)$ using institutional characteristics, including the graduation rate of Hispanic students, graduation rate of non-Hispanic White students, percentage of Pell recipients, percentage of financial aid recipients, percentage of part-time students enrolled, percentage of Hispanic instructional staff, total enrollment, availability of distance education programs, availability of graduate programs, type of institution (2-year public, 4-year private, and 4-year public) and financial amount of state support for all higher education.

The resulting matched samples data corresponds to the pairs of institutions that have a very similar propensity score but are different in HSI grant status. This is commonly referred as the region of common support in PSM. Institutions that fall outside of the region of common support are excluded from the sample. A descriptive analysis is performed on the new matched sample and compared with the original sample. Additional matching methods were also tested including “optimal matching”, “exact matching”, “genetic matching” and “coarsened exact matching”; however, nearest neighbor was most effective at producing a comparable match and larger sample. The matching sample is evaluated through a series of two sample t-tests of difference-in-means between the covariates and the variable HSI grant to confirm that it was successful. In this case, non-significant results on each t-test indicate a successful match.

The next step in PSM is to use the new matched samples to calculate treatment effects on the Hispanic graduation rates using a logistic regression model. This allows for the research question: What is the effect of HSI designated funds usage among HSI institutions on the Hispanic graduation rates, as compared to Hispanic graduation rates at an HSI that lacked HSI funds in the year 2017 ? to be answered.

Finally, an analysis using the matched sample was performed to incorporate a fixed-effects ANOVA to test for the variation in the Hispanic graduation rates within institutions across states.

A liner-mixed effects regression model with a random intercept was also fitted to identify changes in the variation after incorporating all the covariates. Models are then compared using a ratio test.

Measures

The dependent variable:

- Hispanic graduation rates within institutions. This measure includes a rate calculation for all first-time, full-time degree or certificate seeking Hispanic students from the 2011 cohort for 4-year institutions and 2014 cohort for 2-year institutions provided by IPEDS. This rate represents completers within 150% of normal time and does not include students who left institution due to service with the armed forces, foreign aid service of the federal government and official church missions. This continuous variable was scaled and centered. Data was gathered from the graduation rates data release available through IPEDS (2017).

The independent variables include the following:

Structures for Serving

- Institution recipient of HSI grant which includes Title V and Title III grants. Institutions were selected from the 2017 matrix eligibility data release from the Hispanic-Serving Institutions Division, U.S. Department of Education. Institutions that were a current grantee of the HSI grant program were coded as a 1, institutions that were eligible to apply for the grant program but were not current grantees, were coded as 0. Institutions who did not meet the eligibility criteria for HSI grants were excluded. Data were collected from the 2017 Eligibility Matrix documentation released by the Hispanic Serving Institution Division at the U.S. Department of Education.

Programmatic Diversity

- Distance education offered. This includes any program for which all the required coursework for the program has the ability to be completed via distance education classes. If the institution responded “yes”, the answer was coded as 1. Categorical answers such as “not reported”, “implied no” and “not applicable” were coded as 0. Data were gathered from the institutional characteristics data release available through IPEDS (2017).

Structural Diversity

- Total student enrollment reported as of October 15 during the academic year 2017-2018. This includes all men and women students enrolled for credit in the fall of the academic year, commonly reported on October 15. This continuous variable was scaled and centered. Data were gathered from the fall enrollment data release available through IPEDS (2017).
- Type of institution. This includes a control/type category assigned to every institution as either: two-year private, two-year public, four-year private or four-year public. Data were gathered from the 2017 Eligibility Matrix documentation released by the Hispanic Serving Institution Division at the U.S. Department of Education.
- Level of degree offered. This is a categorical variable that captures if the institution offers a post-bachelor’s program or does not. If the institution offers a graduate program, it is categorized a 1, otherwise it is categorized as zero. Data were collected from the 2017 Eligibility Matrix documentation released by the Hispanic Serving Institution Division at the U.S. Department of Education.

Population Diversity

- Percentage of part-time students reported as of October 15 during the academic year 2017-2018. This includes all men and women enrolled for credit part time in the fall of the academic year. For undergraduate students this includes 11 quarter credits or less, or 24 contact hours per semester. This continuous variable was scaled and centered. Data were gathered from the fall enrollment data release available through IPEDS (2017).
- Percentage of Pell grant recipients. This includes the percentage of undergraduate students awarded Pell grant aid through the Pell grant program (Higher Education Act of 1965, Title IV, Part A, Subpart I, as amended). This grant program is designed to meet the financial needs and help with education expenses of eligible students. This continuous variable was scaled and centered. Data were gathered from the student financial aid and net price data release available through IPEDS (2017).
- Percentage of Students that received financial aid during the 2017-2018 academic year. This refers to the percentage of undergraduate students that were awarded grant aid including scholarships, aid awarded by the federal government, state, local government, the institution and any other source. This continuous variable was scaled and centered. Data were gathered from the student financial aid and net price data release available through IPEDS (2017).
- Percentage of Hispanic Instructional Staff and Faculty. This includes all instructional staff tenured, on-tenure track, not on tenure or under a no tenure system that reports their ethnicity as Hispanic or Latino (Cuban, Mexican, South or Central American, Puerto Rican or other Spanish culture or origin) regardless of race during the academic year 2017-2018.

This continuous variable was scaled and centered. Data were gathered from the human resources data release available through IPEDS (2017).

- Graduation rate of Non-Hispanic White students. This measure includes a rate calculation for all first-time, full-time degree or certificate seeking Non-Hispanic White students from the 2011 cohort for 4-year institutions and 2014 cohort for 2-year institutions provided by IPEDS. This rate represents completers within 150% of normal time and does not include students who left institution due to service with the armed forces, foreign aid service of the federal government and official church missions. This continuous variable was scaled and centered. Data were gathered from the graduation rates data release available through IPEDS (2017).

Environmental Diversity

- State support for all higher education. This is a calculation provided by SHEEO that adds state tax support, non-tax support, non-appropriated support, endowment earnings, portions of multiyear appropriations from previous years, and other state support. This amount is then subtracted from unused appropriated funds. This continuous variable is scaled and centered. Data were gathered from the State Higher Education Executive Officers Association (SHEEO) finance report for the year 2017.

This chapter's analytic strategy and models contain some limitations worth noting. Measures such as detailed characteristics in programs, curriculum or activities implemented by HSI institutions to serve Hispanic students are not measured using data from the National Center for Education Statistics. Detailed public data obtained through the U.S. Department of Education was only available for the year 2017. This dataset contains information on grants awarded. Future studies may consider requesting previous years of data to compare outcomes of students across

time. The sample of HSI institutions does not capture a new designation developed by the U.S. Department of Education known as “Emerging HSIs”. Comparing the outcomes of HSIs that are able to transition from Emerging HSIs to HSIs on the outcomes of Hispanic students may provide additional insight into how institutions can better support student success, specifically for Hispanic students.

Findings

Results from the descriptive analysis include 321 HSI institutions (133 with an HSI grant and 188 without an HSI grant) are presented in Table 4.1. A comparison by type of institution shows that 52% of the sample are 2-year public colleges, less than 1% are 2-year private institutions while the remaining are 4-year private (21.9%) and (25.8%) 4-year public institutions. In terms of the distribution of HSI grants, 41.4% of all institutions in the sample had an HSI grant in the year 2017 while 58.6% did not have an HSI grant. Further examination shows that 22.7% of institutions with an HSI grant were 2-year institutions, 13.7% were 4-year public institutions and the remaining 5% were 4-year private institutions. Other important findings of the descriptive analysis show that Hispanic graduation rates are 2% higher at institutions without an HSI grant at 33.7% compared to 31.3% at institutions with an HSI grant. Distance education programs appear to be very common, with 90% or more of all HSI institutions in the sample offering them. Graduate programs are only offered by 36.4% of the sample institutions, with an even distribution between institutions with an HSI grant and without them. Hispanic instructional staff has a limited representation at all institutions with an average of 14% and slightly higher representation at institutions with an HSI grant. The non-Hispanic White graduation rate is 37.6% for all institutions and 2% higher at institutions without an HSI grant.

Table 4.1 Descriptive Statistics for Unmatched Samples of HSI Institutions and HSI Grants

Integrated Postsecondary Education Data System (IPEDS), State Higher Education Executive Officers				
Variable	HSI Institutions			
	Total, n=321	Mean of institutions with an HSI grant, n=133	Mean of institutions without an HSI grant, n=188	T-test
All HSI Institutions (%)	100	41.4	58.6	
Type of Institution				
2-year private institution (%)	0.31 (5.58)	0.0 (0.0)	0.31 (7.2)	<0.0001
2-year public institution (%)	52 (50.0)	22.7 (49.9)	29.3 (50.1)	<0.001
4-year private institution (%)	21.9 (41.3)	5.0 (32.5)	16.9 (45.3)	<0.0001
4-year public institution (%)	25.8 (43.8)	13.7 (47.2)	12.1 (40.6)	<0.0001
Distance education programs (%)	94.7 (22.4)	97.7 (14.9)	92.5 (26.3)	<0.0001
Graduate education programs (%)	36.4 (48.2)	38.2 (47.4)	38.2 (48.7)	0.19
Hispanic Instructional Staff (%)	14.0 (12.2)	15.3 (10.6)	13.1 (13.1)	<0.0001
Hispanic Graduation Rates (%)	32.7 (17.7)	31.3 (15.2)	33.7 (19.2)	<0.0001
White Non-Hispanic Graduation Rates (%)	37.6 (18.0)	36.5 (15.8)	38.4 (19.4)	<0.0001
Financial Aid Recipients (%)	61.0 (18.0)	59.3 (17.0)	62.4 (18.5)	<0.0001
Pell Percent Recipients (%)	40.7 (14.7)	38.2 (13.0)	42.5 (15.6)	<0.0001
Part-time Enrollment (%)	49.8 (24.2)	52.6 (22.9)	47.9 (25.0)	<0.0001
Total Student Enrollment	11,244 (11,123)	13,819 (12,230)	9,423 (9,904)	<0.0001
State Support	\$7,832,849,695 (\$4,942,563,703)	\$8,528,178,541 (\$4,938,483,257)	\$7,340,941,523 (\$4,899,071,123)	

Sample mean (standard deviation).

The average percentage of financial aid recipients for all institution is 61%, and 40.7% for Pell Recipients. For both measures of financial assistance, institutions without HSI grants show slightly higher percentages of students receiving some type of financial assistance. The percentage of part-time students at all HSI institutions is 49.8% and is 3% higher at HSIs with an HSI grant and 2% lower at those without an HSI grant.

Student enrollment for all institution averages 11,244 students. This number is higher at institution with an HSI grant (13,819) and lower at institutions without an HSI grant (9,423). The total amount of state funding for all higher education institutions averages around \$7 billion.

Institutions with an HSI grant appear to have an average one billion more in funding on average than institutions without an HSI grant. Results from the t-tests are also included in Table 4.1.

When conducting the t-tests between the HSI grant status variable and each of the covariates, only one measure did not show statistically significant results, graduate education with a p-value of .19; however when conducting t-tests based on an institution’s Hispanic graduation rates, all covariates were statistically significant.

The probability of institutions receiving an HSI grant was calculated using a logistic regression model with HSI grant as the outcome. This was performed using a sample of 320 HSI institutions. Results are summarized in Table 4.2, which show statistically significant findings for

Table 4.2 Generalized Linear Model Predicting HSI Grants at HSI Institutions

Integrated Postsecondary Education Data System (IPEDS) 2017, State Higher Education Executive Officers Association (SHEEO) 2017 and U.S. Department of Education 2017				
	HSI Institutions, n=320			
Variables	Estimate	SD	z-value	p-value
Intercept	-3.39	1.28	-2.64	0.00**
Type of Institution (ref: private 4-year institutions)				
2-year public institution	0.63	0.59	1.08	0.27
4-year public institution	1.02	0.49	2.08	0.03*
Distance education programs	0.64	0.70	0.91	0.35
Graduate education programs	-0.12	0.50	-0.24	0.81
Hispanic Instructional Staff	0.2	0.12	1.75	0.07
Hispanic Graduation Rates	-0.05	0.23	-0.22	0.81
White Non-Hispanic Graduation Rates	-0.06	0.22	-0.27	0.78
Financial Aid Recipients	0.22	0.20	1.07	0.28
Pell Percent Recipients	-0.39	0.19	-1.99	0.04*
Part-time Enrollment	-0.2	0.25	-0.8	0.41
Total Student Enrollment	0.20	0.14	1.46	0.14
State Support	0.05	12	0.37	0.71
Model Fit				
AIC	430.88			

*p<.05, **p<.01

4-year public universities (p-value=.03) and the percentage of Pell grant recipients (p-value=.04).
 Odd ratios were also calculated to simplify the interpretation and are included in Table 4.3.

Table 4.3 Odd Ratios of HSI Grants at HSI Institutions

Integrated Postsecondary Education Data System (IPEDS) 2017, State Higher Education Executive Officers Association (SHEEO) 2017 and U.S. Department of Education 2017		
	HSI Institutions, n=320	
Variables	OR	(95% CI)
Intercept	0.03**	[0.00, 0.38]
Type of Institution, ref: 4-year private institutions		
2-year public institution	1.89	[0.59, 6.10]
4-year public institution	2.78*	[1.07, 7.41]
Distance education programs	1.90	[0.53, 9.02]
Graduate education programs	0.88	[0.33, 2.44]
Hispanic Instructional Staff	1.25	[0.97, 1.62]
Hispanic Graduation Rates	0.94	[0.59, 1.47]
White Non-Hispanic Graduation Rates	0.94	[0.59, 1.52]
Financial Aid Recipients	1.25	[0.83, 1.89]
Pell Percent Recipients	0.67*	[0.45, 0.98]
Part-time Enrollment	0.81	[0.49, 1.33]
Total Student Enrollment	1.23	[0.93, 1.63]
State Support	1.05	[0.78, 1.40]

*p<.05, **p<.01

For the significant findings, the odd ratios show that 4-year institutions are almost three times more likely to receive an HSI grant. This finding is not surprising considering that 4-year institutions generally have more resources to submit competitive grant applications. Findings also show that HSI institutions with a higher percentage of Pell recipients are 33% less likely to have an HSI grant. Considering Pell recipients are economically disadvantaged and are often forced to choose less selective institutions, this finding could be the result of other institutional constraints not captured in this analysis. Two matched samples corresponding to 2-year institutions and 4-year

institutions accordingly were generated using PSM with nearest-neighbor and a ratio of 1:1 corresponding to the pairs of institutions that had a very similar propensity score but different HSI grant status.

These propensity scores were generated using the institutional characteristics included in Table 4.3. The matched sample of 2-year institutions consisted of 146 institutions, while the sample of 4-year institutions consisted of 120 institutions. Figure 4.3 includes a visualization of the area of common support identified through the PSM method for each sample.

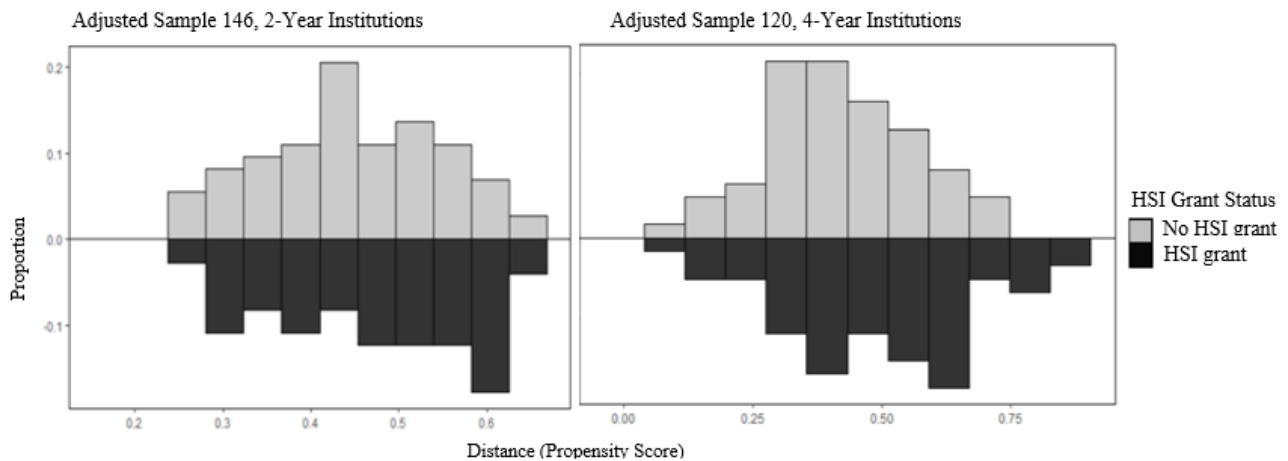


Figure 4.3 Area of Common Support of 2-Year and 4-Year Institutions by HSI Grant Status

The descriptive statistics of the matched samples were compared to the unmatched sample of HSI institutions. Table 4.4 summarizes the differences. Among the more substantial descriptive findings, it can be observed that the representation of Hispanic instructional staff increased in the new matched samples by around 9%. Hispanic graduation rates as well as Non-Hispanic White graduation rates is 10% or higher in the 4-year institution sample than in the 2-year or the unmatched sample. A similar pattern is observed in the percentage of financial aid and Pell grant recipients at each institution; 4-year-institutions surpass the 2-year institution sample and the

unmatched sample. Average student enrollment is higher for the 4-year institution sample with an additional 3,000 student compared to the 2-year sample and unmatched sample.

Table 4.4 Descriptive Statistics for Unmatched and Matched Samples of HSI Institutions

Integrated Postsecondary Education Data System (IPEDS), State Higher Education Executive Officers Association (SHEEO) and U.S. Department of Education			
Variable	Samples		
	Unmatched Sample, n=321	2-Year Institutions Matched Sample, n=146	4-Year Institutions Matched Sample, n=266
HSI grant (%)	41.4 (49.4)	50.0 (50.1)	50.0 (50.1)
Type of Institution			
2-year private institution (%)	0.31 (5.58)	Excluded	Excluded
2-year public institution (%)	52 (50.0)	100 (0)	Excluded
4-year private institution (%)	21.9 (41.3)	Excluded	65.8 (47.6)
4-year public institution (%)	25.8 (43.8)	Excluded	34.2(47.6)
Distance education programs (%)	94.7 (22.4)	97.9 (14.2)	97.5 (15.7)
Graduate education programs (%)	36.4 (48.2)	0.0	77.5 (41.9)
Hispanic Instructional Staff (%)	14.0 (12.2)	23.5 (14.6)	23.1 (16.4)
Hispanic Graduation Rates (%)	32.7 (17.7)	23.6 (8.3)	42.8 (17.3)
White Non-Hispanic Graduation Rates (%)	37.6 (18.0)	29.1 (11.3)	46.5 (17.8)
Financial Aid Recipients (%)	61.0 (18.0)	51.6 (13.8)	68.6 (16.2)
Pell Percent Recipients (%)	40.7 (14.7)	33.5 (12.1)	45.6 (13.0)
Part-time Enrollment (%)	49.8 (24.2)	65.9(12.1)	32.7 (20.7)
Total Student Enrollment	11,244 (11,123)	11,577 (9,597)	14,035 (12,911)
State Support	\$7,832,849,695 (\$4,942,563,703)	\$8,411,134,523 (\$5,117,603,909)	\$7,755,974,493 (\$4,630,546,444)

Sample mean (standard deviation).

The 2-year institution sample appears however to have a greater mean percentage of part-time enrollment at 65.9% while the 4-year institution and unmatched sample are far below this value with a mean percentage of 32.7% and 49.8%, respectively. Finally, the 2-year institution sample surpasses the average state fund amounts for the other two samples by around 1 billion dollars. The matching samples were evaluated through a series of two sample t-tests of difference-in-means between the covariates and the variable HSI grant to confirm that it was successful.

Results showed that there were no significantly different results between each of the covariates and the HSI grant variable confirming a successful match for both samples. The next step in the PSM was to use the combined 2-year and 4-year matched samples to calculate treatment effects on the Hispanic graduation rates of institution. This was performed using a logistic regression approach. Odds ratios were also calculated and compared to the ratios of the original sample. Table 4.5 contains the results of the logistic regression model for both the combined matched sample and the unmatched sample for comparison.

Table 4.5 Logistic Regression Odd Ratios of Hispanic Graduation Rates at Hispanic Serving Institutions with Unmatched Sample vs Matched Sample

Integrated Postsecondary Education Data System (IPEDS) 2017, State Higher Education Executive Officers Association (SHEEO) 2017 and U.S. Department of Education 2017				
Variables	Unmatched Sample of Institutions, n=320		Combined Matched Sample of 2-Year and 4-Year Institutions, n=266	
	Odds Ratio	[95% CI]	Odds Ratio	[95% CI]
<i>Intercept</i>	1.37	[0.72, 2.52]	2.32*	[1.12, 4.79]
HSI grant	0.95	[0.83, 1.10]	0.95	[0.85, 1.07]
Type of Institution (ref: private 4-year institutions)				
2-year public institution	0.89	[0.66, 1.19]	0.79	[0.59, 1.06]
4-year public institution	0.89	[0.70, 1.15]	0.81	[0.63, 1.05]
Distance education programs	0.82	[0.60, 1.13]	0.61*	[0.40, 0.93]
Graduate education programs	1.34*	[1.06, 1.71]	1.40**	[1.08, 1.80]
Hispanic Instructional Staff	1.09*	[1.01, 1.17]	1.07*	[1.00, 1.13]
White Non-Hispanic Graduation Rates	1.78***	[1.63, 1.95]	1.68***	[1.53, 1.84]
White Non-Hispanic Graduation Rates x Financial Aid Recipients	1.02	[0.95, 1.09]	1.05	[0.98, 1.13]
Financial Aid Recipients	0.89*	[0.80, 0.99]	0.89*	[0.80, 0.99]
Pell Percent Recipients	1.12*	[1.01, 1.23]	1.07	[0.96, 1.19]
Part-time Enrollment	0.83**	[0.73, 0.94]	0.81**	[0.71, 0.92]
Total Student Enrollment	0.97	[0.90, 1.04]	0.96	[0.90, 1.03]
State Support	1.11**	[1.03, 1.19]	1.12**	[1.04, 1.21]
Model Fit				
AIC	557.82		378.19	

*p<.05, **p<.01, ***p<.001

Logistic regression results show that HSI grants have no effect on the institutions' Hispanic graduation rate for both the unmatched and matched samples. The type (2-year public, 4-year private and 4-year public) of institution also appears to have no impact on the institution's graduation rates of Hispanics. Similar findings are observed when examining the interaction of Non-Hispanic white students and Financial aid recipients as well as total student enrollment.

State financial support for all higher education remains the same between the matched and unmatched sample and increasing the likelihood of a higher graduation rate for Hispanics at HSIs by 11 or 12 percent. Similarly, the availability of graduate programs appears to be significant in the matched sample in increasing the likelihood of higher graduation rates for Hispanics at HSIs by more than 30 percent for both samples. The presence of Hispanic instructional staff is also significant in both samples, increasing the likelihood of higher institutional graduation rates for Hispanics between 7 and 9 percent.

The matched sample also offers additional findings. For instance, the matched sample availability of distance education programs is significant in lowering the likelihood of HSI institutions having a higher Hispanic graduation rate by 39 percent. The percentage of Pell grant recipients continues to be significant in the matched sample but loses significance by a few percent points. The same pattern is observed for non-Hispanic White graduation rates within HSI institutions which remain significant on both samples however, the matched sample shows a 10% drop in significance.

A comparison of the model fit between the matched and unmatched samples using Akaike information criterion (AIC) shows a much smaller number for the matched sample (AIC=378) than the unmatched sample (AIC=557). The new matched sample is thus a better fitting model to these data.

Finally, a fixed-effects ANOVA to test for the variation in the graduation rate of Hispanics at HSI institutions across states was conducted with only an intercept and the state level effects. A total of 16 states were represented in the sample. The model was significant with a p-value = 0.05, indicating variation between states and confirming the need to use a multi-level approach to explore this further. A regression model with all variables used in the PSM model and using the combined matched sample with 266 institutions was included to examine variation by state in the estimates. Results are summarized in Table 4.6 showing that once we account for differences by state, part-time enrollment at HSI institutions plays a significant factor in reducing the institutional graduation rates of Hispanic students.

Table 4.6 Linear Mixed Model with Random Intercept - Individual & Group Level Variables of Hispanic Graduation Rates at Hispanic Serving Institutions

Integrated Postsecondary Education Data System (IPEDS) 2017, State Higher Education Executive Officers Association (SHEEO) 2017 and U.S. Department of Education 2017			
	Combined Matched Sample of 2-Year and 4-Year Institutions, n=266		
	B	SE	pvalue
<i>Intercept</i>	0.93	0.37	0.01*
HSI grant	-0.05	0.05	0.39
Type of Institution (ref: private 4-year institutions)			
2-year public institution	-0.14	0.15	0.37
4-year public institution	-0.15	0.13	0.23
Distance education programs	-0.58	0.2	0.00**
Graduate education programs	0.36	0.13	0.01*
Hispanic Instructional Staff	0.06	0.03	0.05
White Non-Hispanic Graduation Rates	0.5	0.04	< 0.001***
White Non-Hispanic Graduation Rates x Financial Aid Recipients	0.06	0.03	0.07
Financial Aid Recipients	-0.10	0.05	0.04*
Pell Percent Recipients	0.06	0.05	0.20
Part-time Enrollment	-0.22	0.06	< 0.001***
Total Student Enrollment	-0.04	0.03	0.28
State Support	0.12	0.03	0.07
Random Effects	Variance	SD	
State	0.01	0.12	
Model Fit			
AIC	380		

* p < 0.05 | ** p < 0.01 | *** p < 0.001

The significance of the graduation rates of Non-Hispanic Whites (p-value= < 0.001) continues to be present in this model with a positive association. Finally, the availability of distance education shows significant findings (p-value=0.00) and a negative association with the graduation rates of Hispanics at an institutional level.

Discussion

The purpose of this chapter was to explore the relationship between HSI grants and the graduation rates of Hispanics at HSI designated institutions. Characteristics of institutions are controlled and incorporated into a model using PSM to generate a balanced treatment and control sample. This chapter was framed using the typology model developed by Núñez et al., (2016) and the multidimensional model developed by Garcia et al., (2019). Additional variables were included in the model for this chapter's analysis not included in the typology model of Núñez et al., (2016) such as distance education and HSI grants.

Through this framework, this chapter addresses the research question: What is the effect of HSI designated funds on the institutional level graduation rates of Hispanic students at HSIs compared to HSI institutions that lacked similar grant funds in the year 2017? Previous research on the outcomes of Hispanic students attending HSIs has identified a weak association between completion rates and post-graduate earnings for Hispanics when compared to non-Hispanic white students at HSIs (Contreras, et al., 2015; Park et al., 2018). Gaps in the acquisition of funds had also been found to be associated with the percentage of non-Hispanic White students enrolled (Vargas, 2018). Informed by the results of previous studies, this chapter extends the research on HSI institutions by exploring the effects of HSI grants at an institutional level. The original prediction that a non-significant relationship between HSI grants and the graduation rates of Hispanic students at HSIs would result, was confirmed.

Each statistical model in this chapter, including one that accounts for differences by states, shows no significant findings between the graduation rates of Hispanic students at HSIs with targeted grant funds compared to HSIs that did not receive any HSI grants as of the year 2017. Results also show that the probability is 3 times higher for a 4-year institution than that of a 2-year public institution in receiving an HSI grant, and this is likely the result of the additional resources often found in 4-year institutions versus 2-year institutions to submit competitive grant applications.

A consistent pattern across the analyses shows the positive relationship of institutional non-Hispanic White student graduation rates and Hispanic graduation rates at HSI institutions. The implementation of HSI grants is likely to improve support services, facilities, curriculum and structures that benefit all students regardless of ethnicity. Despite the fact that HSI grants are designed to improve the academic success of Hispanic students, the use of such funds is likely to impact all students including Non-Hispanic White students. This chapter focused on the institutional outcomes of HSIs and does not consider the student characteristics of Non-Hispanic White student within these institutions, absent their institutional graduation rates. Future research could explore the unique factors that may contribute to the increase in institutional graduation rates for this specific group at HSIs.

An additional key finding includes the negative associations of part-time enrollment, distance education and the institutional graduation rates of Hispanic students observed even after accounting for differences by state. Part-time enrollment has been associated with delays in graduation and higher dropout rates (Arbona et al., 2007; Nuñez, et al., 2011), which can explain the patterns among HSI institutions. An important factor that influences the decision to enroll part-time among Hispanics is family. Hispanics may value family obligations more so than White

students and are more likely to retain such obligations during college (Desmond, et al., 2009). Juggling multiple roles as students and family members is therefore an important consideration and one that is likely to have an impact at a larger scale in institutions with higher percentages of Hispanic enrollment. It is also an indication for the need of educational structures at HSIs to better support the needs of part-time Hispanic students that may be struggling to navigate an educational system created for traditional students.

In the case of distance education programs, a negative relationship with graduation rates among Hispanics at HSIs is also observed. The availability of distance education programs lowers the graduation rates of Hispanics by 40%. This is an important finding considering the spread and growth of online education in recent times. However, studies have shown that access to technology at home continues to be a challenge for many Hispanic college students (Huerta, et al., 2019), which places them at an academic disadvantage compared to students who have reliable technology and access to broadband internet at home. On average, minorities and low-income students have access to a shared electronic device at home or a smart phone (Moore, Vitale and Stawinoga, 2018). Both options are limiting for a college student who may need extended access to a reliable and efficient device to complete online coursework. The need for HSIs to examine their practices and policies regarding online education programs, courses and seminars is critical in order to create a system that fosters digital equity and provides an opportunity for Hispanic students to be academically successful.

A final key finding includes the influence of state financial support for all higher education, which appears as a significant factor when analyzing the matched sample leading to an 11 percent increase in institutional graduation rates among Hispanics. However, once differences by state are

accounted for, this variable loses significance pointing to the influence of other institutional characteristics, as well as the variability in financial appropriations between states.

CHAPTER FIVE: CONCLUSION

The purpose of this dissertation was to explore various inputs on the enrollment and completion of post-graduate education among Hispanics. Drawing upon multiple theoretical frameworks including Critical Race Theory, Social Capital Theory, Intersectionality Theory, as well as a multidimensional conceptual framework of Servingness, this dissertation was able to explore three social dimensions contributing to higher education access and success: social capital, immigration status, and institutional structures. Each of these dimensions provides a unique perspective to help identify areas of structural inequality but also shed light into the practices of academic institutions, educational policies, and systems that may be contributing to such inequality. Ultimately, this dissertation shows that Hispanics must have access to higher levels education is critical as the Hispanic population continues to grow and the job market continues to require more specialized and advanced training.

Social capital was operationalized through the use of high-impact activities that have been shown to have a strong relationship with the academic success of students. These activities include study abroad, research experience, internship/co-op/clinical assignment/student teaching/field experiences, community-based projects and a senior experience. Additional measures of social capital including voting and community service, as well as measures of socio-economic origins, were also included. Findings suggest that two specific high-impact activities were more likely to influence post-graduate education among Hispanics including participation in community service through volunteerism and an internship/co-op/clinical assignment/student teaching/field experience. Academic programs at higher education institutions can create the structure that allows the participation of Hispanic students in these engaged learning type of activities without forgetting that these students often juggle various roles and family responsibilities. Therefore adding

volunteering and internship requirements to academic curriculum would not be successful if necessary support mechanisms are not included as part of the pedagogical strategy.

The persistent effects of the socio-economic origins of Hispanic students on their expectations to earn a graduate degree were also noted in this dissertation. Family income during high school continues to influence the post-graduate expectations of Hispanics holding bachelor degrees years later. This dissertation also confirms findings from previous literature showing the persistent sex based difference in the academic expectation among Hispanics. Results of this work demonstrated that Hispanic women are more likely to hold post-graduate academic expectations regardless of socio-economic origins and participation in high-impact activities when compared to Hispanic men. This result may be driven by the cultural and traditional gender roles associated with the Hispanic community encouraging men to pursue jobs immediately after earning their bachelor's degree while being more supportive of Hispanic women pursuing a graduate degree. Higher education institutions therefore have the responsibility to be sources of social capital for Hispanic students who have often experienced limited access to information, limited professional and personal networks, and unfamiliarity with the higher education system including post-graduate education such that Hispanics can have equal opportunity to earn an advanced degree.

In addition to exploring the academic expectation of Hispanics, this dissertation also evaluated their post-graduate attainment while accounting for differences in citizenship status. The Hispanic population representing various backgrounds and nationalities. Findings of this dissertation suggest that Hispanics who are not citizens are less likely to have earned a graduate degree when compared to Hispanics who are citizens even after accounting for economic differences by state. Critical race theory explains that social categorizations based on race, sex and power create constraints and barriers to opportunities. Hispanic immigrants must juggle various

forms of social categorizations including that of being Hispanic or Latino and that of being an immigrant. Their college experience is therefore different than that of Hispanics who are citizens. This dissertation does not capture how these experiences vary however, it points to the need of graduate programs and higher education institutions to evaluate if these students are receiving the support needed including access to high-impact activities. An interesting finding however showed that more recent Hispanic immigrants are more likely to have earned a post-graduate degree than those who have been in the country longer. Future research can explore the characteristics of recent immigrants to determine if these differences are driven by changes in institutional policies or individual characteristics.

The socio-economic status of Hispanics as mentioned earlier is prone to influence their expectations to enroll in a post-graduate program but it also influences their post-graduate attainment. Drawing from the Theory of Intersectionality which emphasizes the interconnectedness of race and class, this dissertation was able to confirm that Hispanics with higher incomes were more likely to have earned a graduate degree than Hispanics from lower incomes. This was particularly evident for Hispanics earning over \$100,000 annually. This finding points at the structure of class privilege that provide an advantage to a limited group of Hispanics while failing to provide equal opportunity to Hispanics of lower social classes.

The last social dimension explored in this dissertation in addition to social capital and immigration status was the influence of institutional structures. More specifically, this dissertation looks at the relationship between grants and the graduation rates of Hispanics at HSI designated institutions. This designation defined by the Department of Education and the U.S. Government as non-profit institutions that enroll at least 25% Hispanic students represents a point of pride but also a responsibility to serve the needs of these students. The multidimensional conceptual

framework of Servingness developed by Garcia et al., (2019) helps operationalized the concept of Servingness in order to

Findings suggest that critical differences between HSI institutions exist in influencing the graduation rates of Hispanic students. For instance, receiving an HSI grant did not appear to provide an institutional advantage in increasing the graduation rates of Hispanics. Several reasons may explain this finding including the lack of strategic use of the funds by institutions or that other characteristics of institutions that may be more likely to influence the graduation rates of Hispanics. A limitation of this dissertation was the inability to find information on HSI grant funds prior to the year 2017, therefore this work only includes a single year of data. Furthermore, this dissertation did not account for the amount of grant funds allocated to institutions of the duration of each grant. These are critical pieces of information that future research can consider in their analytical strategy.

However, this dissertation provides information on the characteristics of HSI institutions and their connection to the graduation rates of Hispanics. For instance, HSI institutions with higher percentages of part-time students, online education programs and financial aid recipients appeared to have negative relationship with the graduation rates of Hispanic students. These findings are not surprising considering Hispanics students enrolled part-time are often less likely to participate in on-campus activities or in traditional college experiences prioritizing family obligations.

The finding of distance education was particularly interesting considering the growth of online programs over the past two decades. Previous research has suggested that Hispanic students are more likely to lack access to broadband internet and reliable devices to complete online assignments, courses or programs. Therefore, it is not surprising that HSI institutions with greater percent of online programs have a negative association with the graduation rates of Hispanics.

These findings point to the need for HSIs to re-examine their practices and policies regarding online education and support structures for part-time Hispanic students. These structures require an innovative approach by HSIs to be able to create college experiences through non-traditional methods that are still able to provide the validation as well as positive academic and non-academic outcomes for Hispanic students.

Lastly, this dissertation's findings noted the positive relationship of non-Hispanic White student graduation rates as well as state financial support and the graduation rates of Hispanics at HSI institutions. It is possible, that the implementation of HSI grants is improving support services, facilities, curriculum and structures that benefit all students regardless of ethnicity and that the positive effects from state financial support are also seen in the graduation rates of Non-Hispanic White students. Future research could explore this relationship further.

There are a few additional limitations to this dissertation including not having measures related to college debt, grade point average, and undergraduate discipline which have been known to be important factors in post-graduate education enrollment and attainment. Additional external conditions in addition to unemployment, poverty and state funding of higher education should be included to provide a more complete approach at measuring external conditions. For instance, the addition of other local, state and federal legislations could expand this research and provide a more accurate picture on the differences by state.

REFERENCES

- Akresh, I. R., & Frank, R. (2018). Differential Returns? Neighborhood Attainment among Hispanic and Non-Hispanic White New Legal Permanent Residents. *City and Community*, 17(3), 788–807. <https://doi.org/10.1111/cico.12313>
- Alexander, B. C., Garcia, V., Gonzalez, L., Grimes, G., & O'Brien, D. (2007). Barriers in the Transfer Process for Hispanic and Hispanic Immigrant Students. *Journal of Hispanic Higher Education*, 6(2), 174–184. <https://doi.org/10.1177/1538192706297440>
- Arbelo-Marrero, F., & Milacci, F. (2016). A Phenomenological Investigation of the Academic Persistence of Undergraduate Hispanic Nontraditional Students at Hispanic Serving Institutions. *Journal of Hispanic Higher Education*, 15(1), 22–40. <https://doi.org/10.1177/1538192715584192>
- Arbona, C., & Nora, A. (2007). The influence of academic and environmental factors on Hispanic college degree attainment. *Review of Higher Education*, 30(3), 247–269. <https://doi.org/10.1353/rhe.2007.0001>
- Ayala, M. I. (2012). The State of Research in Latino Academic Attainment. *Sociological Forum*, 27(4), 1037–1045. <https://doi.org/10.1111/j.1573-7861.2012.01367.x>
- Baca Zinn, M., & Thornton Dill, B. (1996). Theorizing Difference from Multiracial Feminism. *Feminist Studies*, 22(2), 321–331. <https://doi.org/10.1111/pan.12921>
- Barajas, H. L., & Pierce, J. L. (2001). The Significance of Race and Gender in School Success among Latinas and Latinos in College. *Gender & Society*, 15(6), 859–877.
- Barr, A., & Turner, S. (2015). Out of work and into school: Labor market policies and college enrollment during the Great Recession. *Journal of Public Economics*, 124, 63–73. <https://doi.org/10.1016/j.jpubeco.2014.12.009>
- Berg, M. T., Stewart, E. A., Stewart, E., & Simons, R. L. (2013). A Multilevel Examination of Neighborhood Social Processes and College Enrollment. *Social Problems*, 60(4), 513–534. <https://doi.org/10.1525/sp.2013.60.4.513>.This
- Bohon, S. A., Kirkpatrick, M. J., & Gorman, B. K. (2006). College Aspirations and Expectations among Latino Adolescents in the United States. *Social Problems*, 53(2), 207–225. <https://doi.org/10.1525/sp.2006.53.2.207>
- Bourdieu, P. 1986. "The Forms of Capital." Pp. 241 –58 in *Handbook of Theory and Research for the Sociology of Education*, edited by J.G. Richardson. New York: Greenwood Press.
- Burt, R. 1992. *Structural Holes: The Social Structure of Competition*. Cambridge, MA: Harvard University

- Burlutskaiia, M. G. (2014). Higher Education as a Means of Upward Social Mobility. *Russian Education & Society*, 56(4), 52–63. <https://doi.org/10.2753/RES1060-9393560404>
- Casas, J. M., & Cabrera, A. P. (2011). Latino/a immigration: Actions and outcomes based on perceptions and emotions or facts? *Hispanic Journal of Behavioral Sciences*, 33(3), 283–303. <https://doi.org/10.1177/0739986311416342>
- Coleman, J. S. (1988). Social Capital in the Creation of Human Capital. *American Journal of Sociology*, 94, 95–120.
- Contreras, F., & Contreras, G. J. (2015). Raising the Bar for Hispanic Serving Institutions: An Analysis of College Completion and Success Rates. *Journal of Hispanic Higher Education*, 14(2), 151–170. <https://doi.org/10.1177/1538192715572892>
- Covarrubias, A. (2011). Quantitative intersectionality: A critical race analysis of the Chicana/o educational pipeline. *Journal of Latinos and Education*, 10(2), 86–105. <https://doi.org/10.1080/15348431.2011.556519>
- Covarrubias, A., & Lara, A. (2014). The Undocumented (Im)Migrant Educational Pipeline: The Influence of Citizenship Status on Educational Attainment for People of Mexican Origin. *Urban Education*, 49(1), 75–110. <https://doi.org/10.1177/0042085912470468>
- Craft Defreitas, S., & Bravo, A. (2012). The influence of involvement with faculty and mentoring on the self- efficacy and academic achievement of African American and Latino college students. *Journal of the Scholarship of Teaching and Learning*, 12(4), 1–11.
- Crenshaw, K. (1989). Demarginalizing the intersection of race and sex: A black feminist critique of antidiscrimination doctrine. *The University of Chicago Legal Forum*, 1989(1), 139–167.
- De los Santos, A. G. J., & Cuamea, K. M. (2010). Challenges facing Hispanic- serving institutions in the first decade of the 21st century. *Journal of Latinos and Education*, 9, 90–107.
- Desmond, M., & Turley, R. N. L. (2009). The Role of Familism in Explaining the Hispanic- White College Application Gap. *Social Problems*, 56(2), 311–334. <https://doi.org/10.1525/sp.2009.56.2.311>
- Destin, M., & Oyserman, D. (2009). From Assets to School Outcomes. *Psychological Science*, 20(4), 414–418. <https://doi.org/10.1111/j.1467-9280.2009.02309.x>
- DiMaggio, P., & Mohr, J. (1985). Cultural Capital , Educational Attainment , and Marital Selection Author (s): Paul DiMaggio and John Mohr Source : American Journal of Sociology , Vol . 90 , No . 6 (May , 1985), pp . 1231-1261 Published by : The University of Chicago Press Stable URL. *American Journal of Sociology*, 90(6), 1231–1261

- Emmons, W. R., & Ricketts, L. R. (2017). College is not enough: Higher education does not eliminate racial and ethnic wealth gaps. *Federal Reserve Bank of St. Louis Review*, 99(1), 7–39. <https://doi.org/10.20955/r.2017.7-39>
- Engbers, T. A., Thompson, M. F., & Slaper, T. F. (2017). Theory and Measurement in Social Capital Research. *Social Indicators Research*, 132(2), 537–558. <https://doi.org/10.1007/s11205-016-1299-0>
- Flores, S. M., & Park, T. J. (2013). Race, Ethnicity, and College Success: Examining the Continued Significance of the Minority-Serving Institution. *Educational Researcher*, 42(3), 115–128. <https://doi.org/10.3102/0013189X13478978>
- Frost, M. B. (2007). Texas students' college expectations: Does high school racial composition matter? *Sociology of Education*, 80(1), 43–65. <https://doi.org/10.1177/003804070708000103>
- Fry, R. (2004). Latino youth finishing college: The role of selective pathways. *Pew Hispanic Center*, 23, 1–32. Retrieved from http://www.pewcenteronthestates.org/uploadedFiles/wwwpewtrustsorg/Reports/Hispanics_in_America/pew_hispanic_college062304.pdf
- García, G. A. (2012). Does Percentage of Latinas/os Affect Graduation Rates at 4-Year Hispanic Serving Institutions (HSIs), Emerging HSIs, and Non-HSIs? *Journal of Hispanic Higher Education*, 12(3), 256–268. <https://doi.org/10.1177/1538192712467203>
- García, G. A., Núñez, A. M., & Sansone, V. A. (2019). Toward a Multidimensional Conceptual Framework for Understanding “Servingness” in Hispanic-Serving Institutions: A Synthesis of the Research. *Review of Educational Research*, 89(5), 745–784. <https://doi.org/10.3102/0034654319864591>
- García, G. A., & Ramirez, J. J. (2018). Institutional Agents at a Hispanic Serving Institution: Using Social Capital to Empower Students. *Urban Education*, 53(3), 355–381. <https://doi.org/10.1177/0042085915623341>
- Gastic, B., & González Nieto, D. (2010). Latinos' economic recovery: Postsecondary participation and Hispanic-serving institutions. *Community College Journal of Research and Practice*, 34(10), 833–838. <https://doi.org/10.1080/10668921003781043>
- Gay, G. (2004). Navigating marginality en route to the professoriate: Graduate students of color learning and living in academia. *International Journal of Qualitative Studies in Education*, 17(2), 265–288. <https://doi.org/10.1080/09518390310001653907>
- Gonzales, R. G., Terriquez, V., & Ruszczyk, S. P. (2014). Becoming DACAmented: Assessing the Short-Term Benefits of Deferred Action for Childhood Arrivals (DACA). *American Behavioral Scientist*, 58(14), 1852–1872. <https://doi.org/10.1177/0002764214550288>

- Gonzalez, L. M., Stein, G. L., & Huq, N. (2013). The Influence of Cultural Identity and Perceived Barriers on College-Going Beliefs and Aspirations of Latino Youth in Emerging Immigrant Communities. *Hispanic Journal of Behavioral Sciences*, 35(1), 103–120. <https://doi.org/10.1177/0739986312463002>
- Goyette, K. A., & Mullen, A. L. (2006). Who Studies the Arts and Sciences? Social Background and the Choice and Consequences of Undergraduate Field of Study. *The Journal of Higher Education*, 77(3), 497–538. <https://doi.org/10.1080/00221546.2006.11778936>
- Hacker, K. L., & Steiner, R. (2002). The digital divide for hispanic americans. *Howard Journal of Communications*, 13(4), 267–283. <https://doi.org/10.1080/10646170216116>
- Hancock, A.-M. (2007). When Multiplication Doesn't Equal Quick Addition: Examining Intersectionality as a Research Paradigm. *Perspectives on Politics*, 5(1), 63–79. <https://doi.org/10.1017/Si537592707070065>
- Hanson, J. M., Paulsen, M. B., & Pascarella, E. T. (2016). Understanding graduate school aspirations: the effect of good teaching practices. *Higher Education*, 71(5), 735–752. <https://doi.org/10.1007/s10734-015-9934-2>
- Harris, A., & Tienda, M. (2010). Minority higher education pipeline: Consequences of changes in college admissions policy in texas. *Annals of the American Academy of Political and Social Science*, 627(1), 60–81. <https://doi.org/10.1177/0002716209348740>
- Hill, L. E., & Johnson, H. P. (2004). Fertility changes among immigrants: Generations, neighborhoods, and personal characteristics. *Social Science Quarterly*, 85(3), 811–827. <https://doi.org/10.1111/j.0038-4941.2004.00246.x>
- Hillman, N. W. (2016). Geography of College Opportunity: The Case of Education Deserts. *American Educational Research Journal*, 53(4), 987–1021. <https://doi.org/10.3102/0002831216653204>
- Hillman, N. W., & Orians, E. L. (2013). Community Colleges and Labor Market Conditions: How Does Enrollment Demand Change Relative to Local Unemployment Rates? *Research in Higher Education*, 54(7), 765–780. <https://doi.org/10.1007/s11162-013-9294-7>
- Hispanic Association of Colleges and Universities (HACU). (2018). Hispanic-Serving Institution (HSI) Fact Sheet. Retrieved March 21, 2020, from [https://www.hacu.net/images/hacu/OPAI/Updated Infographic.pdf](https://www.hacu.net/images/hacu/OPAI/Updated%20Infographic.pdf)
- Hispanic Association of Colleges and Universities (HACU). (2019). HSI Fact Sheet. Retrieved April 1, 2020, from https://www.hacu.net/hacu/HSI_Fact_Sheet.asp
- Ho, D. E., Imai, K., King, G., & Stuart, E. A. (2007). Matching as nonparametric preprocessing for reducing model dependence in parametric causal inference. *Political Analysis*, 15(3), 199–236. <https://doi.org/10.1093/pan/15mpl013>

- Hoening, K., Pollak, R., Schulz, B., & Stocke, V. (2016). Social Capital, Participation in Adult Education, and Labor Market Success: Constructing a New Instrument. *Methodological Issues of Longitudinal Surveys: The Example of the National Educational Panel Study*. https://doi.org/10.1007/978-3-658-11994-2_18
- Huerta, J., Winkel, M., & Eisenman, R. (2019). Access to the Internet by Hispanic College Students. *Journal of Information Ethics*, 28(2), 66–86.
- Hurtado, S., & Ruiz, A. (2012). Realizing the potential of Hispanic-Serving Institutions: Multiple dimensions of institutional diversity for advancing Hispanic higher education. *Hispanic Association of Colleges and Universities*, 1–38.
- Ingels, S. J., Pratt, D. J., Alexander, C. P., Jewell, D. M., Lauff, E., Mattox, T. L., & Wilson, D. (2014). Education Longitudinal Study of 2002 (ELS:2002) Third Follow-Up Data File Documentation, 2002, 1–157.
- Kao, G., & Tienda, M. (1998). Educational aspirations of minority youth. *American Journal of Education*, 106(3), 349–384. <https://doi.org/10.1086/444188>
- Kaushal, N. (2008). In-state tuition for the undocumented: Education effects on mexican young adults. *Journal of Policy Analysis and Management*, 27(4), 771–792. <https://doi.org/10.1002/pam.20366>
- Krogstad, J. M. (2014). Census Bureau Lowers Forecasts for Hispanic Population Growth. Retrieved April 11, 2020, from <https://www.pewresearch.org/fact-tank/2014/12/16/with-fewer-new-arrivals-census-lowers-hispanic-population-projections-2/>
- Krogstad, J. M., & Noe-Bustamante, L. (2019, October 14). Facts about U.S. Latinos for Hispanic Heritage Month | Pew Research Center. Retrieved March 21, 2020, from <https://www.pewresearch.org/fact-tank/2019/10/14/facts-for-national-hispanic-heritage-month/>
- Krogstad, J. M., & Radford, J. (2018). Education levels of U.S. immigrants on the rise | Pew Research Center. Retrieved April 4, 2020, from <https://www.pewresearch.org/fact-tank/2018/09/14/education-levels-of-u-s-immigrants-are-on-the-rise/>
- Larson, S., Measham, T. G., & Williams, L. J. (2006). National Survey of Student Engagement. Engaged Learning: Fostering Success for All Students, (17 January 2009), 33. Retrieved from http://nsse.iub.edu/NSSE_2006_Annual_Report/docs/NSSE_2006_Annual_Report.pdf
- Leyden, K. M. (2003). Social Capital and the Built Environment: The Importance of Walkable Neighborhoods. *American Journal of Public Health*, 93(9), 1546–1551. <https://doi.org/10.2105/AJPH.93.9.1546>

- Li, M. (2013). Using the Propensity Score Method to Estimate Causal Effects: A Review and Practical Guide. *Organizational Research Methods, 16*(2), 188–226. <https://doi.org/10.1177/1094428112447816>
- Lichter, D. T., Parisi, D., Taquino, M. C., & Grice, S. M. (2010). Residential segregation in new Hispanic destinations: Cities, suburbs, and rural communities compared. *Social Science Research, 39*(2), 215–230. <https://doi.org/10.1016/j.ssresearch.2009.08.006>
- Lloyd, K. M., Leicht, K. T., & Sullivan, T. A. (2008). Minority College Aspirations, Expectations and Applications under the Texas Top 10% Law. *Social Forces, 86*(3), 1105–1137. <https://doi.org/10.1353/sof.0.0012>
- Logan, J. R., Alba, R. D., McNulty, T., & Fisher, B. (1996). Making a place in the metropolis: Locational attainment in cities and suburbs. *Demography, 33*(4), 443–453. <https://doi.org/10.2307/2061779>
- Marin, P. (2019). Is “Business as Usual” Enough to Be Hispanic-Serving? Becoming a Hispanic-Serving Research Institution. *Journal of Hispanic Higher Education, 18*(2), 165–181. <https://doi.org/10.1177/1538192719832250>
- Massey, D. S. (1990). Social Structure , Household Strategies , and the Cumulative Causation of Migration. *Population Index, 56*(1), 3–26. <https://doi.org/10.1108/01409170110782496>
- May, E. M., & Witherspoon, D. P. (2019). Maintaining and Attaining Educational Expectations: A Two-Cohort Longitudinal Study of Hispanic Youth. *Developmental Psychology*. <https://doi.org/10.1037/dev0000820>
- Mendez, G., Astiz, M. F., & Beltran, Y. (2000). Hispanics: A problem of definition in higher education policies. *International Journal of Educational Research, 33*(6), 639–648. [https://doi.org/10.1016/S0883-0355\(00\)00042-2](https://doi.org/10.1016/S0883-0355(00)00042-2)
- Micheltore, K., & Musick, K. (2014). Fertility patterns of college graduates by field of study, US women born 1960-79. *Population Studies-a Journal of Demography, 68*(3), 359–374. <https://doi.org/10.1080/00324728.2013.847971>
- Moore, R., Vitale, D., & Stawinoga, N. (2018). The Digital Divide and Educational Equity: A Look at Students with Very Limited Access to Electronic Devices at Home. *ACT Research & Center for Equity in Learning*, (August). Retrieved from <https://www.act.org/>
- Morimoto, S. A., & Friedland, L. A. (2013). Cultivating success: Youth achievement, capital and civic engagement in the contemporary United States. *Sociological Perspectives, 56*(4), 523–546. <https://doi.org/10.1525/sop.2013.56.4.523>

- Mullen, A. L., Goyette, K. A., & Soares, J. A. (2003). Who Goes to Graduate School? Social and Academic Correlates of Educational Continuation After College. *Sociology of Education*, 76(April), 143–169.
- National Center for Education Statistics. (2016). Immigrant Generation, by Race/Ethnicity. Retrieved March 11, 2020, from <https://nces.ed.gov/Datalab/TablesLibrary/TableDetails/12694?keyword=immigrant&rst=true>
- National Center for Education Statistics. (2017). Number and percentage of students enrolled in degree-granting postsecondary institutions, by distance education participation, location of student, level of enrollment, and control and level of institution: Fall 2016 and fall 2017. Retrieved March 27, 2020, from https://nces.ed.gov/programs/digest/d18/tables/dt18_311.15.asp
- National Center for Education Statistics. (2018). Student Enrollment - How many students enroll in postsecondary institutions in the fall? Retrieved March 21, 2020, from <https://nces.ed.gov/ipeds/TrendGenerator/app/trend-table/2/3?trending=row&cid=47>
- National Center for Education Statistics. (2019a). Bachelor's degrees conferred by postsecondary institutions, by race/ethnicity and sex of student: Selected years, 1976-77 through 2016-17. (2019). Retrieved February 16, 2020, from https://nces.ed.gov/programs/digest/d18/tables/dt18_322.20.asp
- National Center for Education Statistics. (2019b). Master's degrees conferred by postsecondary institutions, by race/ethnicity and sex of student: Selected years, 1976-77 through 2016-17. Retrieved February 16, 2020, from https://nces.ed.gov/programs/digest/d18/tables/dt18_323.20.asp
- National Center for Education Statistics. (2019c). Doctor's degrees conferred by postsecondary institutions, by race/ethnicity and sex of student: Selected years, 1976-77 through 2016-17. Retrieved February 16, 2020, from https://nces.ed.gov/programs/digest/d18/tables/dt18_324.20.asp
- Niemeyer, A. E., Wong, M. M., & Westerhaus, K. J. (2009). Parental involvement, familismo, and academic performance in Hispanic and Caucasian adolescents. *North American Journal of Psychology*, 11(3), 613–632.
- Nunez, A. M. (2014). Employing Multilevel Intersectionality in Educational Research: Latino Identities, Contexts, and College Access. *Educational Researcher*, 43(2), 85–92. <https://doi.org/10.3102/0013189X14522320>
- Núñez, A. M., & Bowers, A. J. (2011). Exploring what leads high school students to enroll in hispanic-serving institutions: A multilevel analysis. *American Educational Research Journal*, 48(6), 1286–1313. <https://doi.org/10.3102/0002831211408061>

- Núñez, A. M., Crisp, G., & Elizondo, D. (2016). Mapping hispanic-serving institutions: A typology of institutional diversity. *Journal of Higher Education*, 87(1), 55–83. <https://doi.org/10.1353/jhe.2016.0001>
- Núñez, A. M. (2009). Latino Students' Transitions to College: A Social and Intercultural Capital Perspective. *Harvard Educational Review*, 79(1), 22–48. <https://doi.org/10.17763/haer.79.1.wh7164658k33w477>
- Núñez, A. M., Sparks, P. J., & Hernández, E. A. (2011). Latino access to community colleges and hispanic-serving institutions: A national study. *Journal of Hispanic Higher Education*, 10(1), 18–40. <https://doi.org/10.1177/1538192710391801>
- O'Brien, S., & Ó Fathaigh, M. (2005). Bringing in Bourdieu's theory of social capital: Renewing learning partnership approaches to social inclusion. *Irish Educational Studies*, 24(1), 65–76. <https://doi.org/10.1080/03323310500184509>
- O'Connor, N., Hammack, F. M., & Scott, M. A. (2010). Social capital, financial knowledge, and Hispanic student college choices. *Research in Higher Education*, 51(3), 195–219. <https://doi.org/10.1007/s11162-009-9153-8>
- Park, T. J., Flores, S. M., & Ryan, C. J. (2018). Labor Market Returns for Graduates of Hispanic-Serving Institutions. *Research in Higher Education*, 59(1), 29–53. <https://doi.org/10.1007/s11162-017-9457-z>
- Passel, J. S., & Cohn, D. (2008). U.S. Population Projections: 2005-2050 | Pew Research Center. Retrieved April 29, 2020, from <https://www.pewresearch.org/hispanic/2008/02/11/us-population-projections-2005-2050/>
- Perez-Brena, N. J., Delgado, M. Y., Rodríguez De Jesús, S. A., Updegraff, K. A., & Umaña-Taylor, A. J. (2017). Mexican-origin adolescents' educational expectation trajectories: Intersection of nativity, sex, and socioeconomic status. *Journal of Applied Developmental Psychology*, 48, 14–24. <https://doi.org/10.1016/j.appdev.2016.11.001>
- Pew Research Center. (2018) Education levels of U.S. immigrants on the rise . Retrieved March 11, 2020, from <https://www.pewresearch.org/fact-tank/2018/09/14/education-levels-of-u-s-immigrants-are-on-the-rise/>
- 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>
- Putnam, R. D. (1996). The Strange Disappearance of Social Capital in America. *P.S.: Political Science and Politics*, 28(4), 664–683. Retrieved from <http://www.apsanet.org/PS/>

- Ramirez, E. (2013). Examining Latinos/as' Graduate School Choice Process: An Intersectionality Perspective. *Journal of Hispanic Higher Education*, 12(1), 23–36. Retrieved from <http://10.0.4.153/1538192712452147>
- Ramirez, E. (2017). Unequal socialization: Interrogating the Chicano/Latino(a) doctoral education experience. *Journal of Diversity in Higher Education*, 10(1), 25–38. <https://doi.org/10.1037/dhe0000028>
- Randolph, J. J., Falbe, K., Manuel, A. K., & Balloun, J. L. (2014). A step-by-step guide to propensity score matching in R. *Practical Assessment, Research and Evaluation*, 19(18), 1–6.
- Reardon, S. F. (2013). The Widening Income Dispersion. *Educational Leadership*, 70(8), 10–16.
- Reynolds, C. L., & DesJardins, S. L. (2009). The Use of Matching Methods in Higher Education Research: Answering Whether Attendance at a 2-Year Institution Results in Differences in Educational Attainment. In J. C. Smart (Ed.), *Higher Education: Handbook of Theory and Research* (pp. 47–97). Springer Science + Business Media B.V. https://doi.org/10.1007/978-1-4020-9628-0_2
- Rindfuss, R. R., Morgan, S. P., & Offutt, K. (2016). Education and the Changing Age Pattern of American Fertility : 1963-1989. *Demography*, 33(3), 277–290.
- Rodriguez, T. D. (2009). The decline of Latino-male achievement in postsecondary education. *The Hispanic Outlook in Higher Education*, 19(22), 14–16.
- Sabogal, F., Marin, G., & Otero-Sabogal, R. (1987). Hispanic Familism and Acculturation: What Changes and What Doesn't? *Hispanic Journal of Behavioral Sciences*, 9(4), 397–412. Retrieved from <https://journals-sagepub-com.libweb.lib.utsa.edu/doi/pdf/10.1177/07399863870094003>
- Sablan, J. R. (2019). Can You Really Measure That? Combining Critical Race Theory and Quantitative Methods. *American Educational Research Journal*, 56(1), 178–203. <https://doi.org/10.3102/0002831218798325>
- Shang, Q., & Weinberg, B. A. (2013). Opting for families: Recent trends in the fertility of highly educated women. *Journal of Population Economics*, 26(1), 5–32. <https://doi.org/10.1007/s00148-012-0411-2>
- Solórzano, D. G. (1998). Critical race theory, race and gender microaggressions, and the experience of chicana and chicano scholars. *International Journal of Qualitative Studies in Education*, 11(1), 121–136. <https://doi.org/10.1080/095183998236926>
- Sólorzano, D. G., Villalpando, O., & Oseguera, L. (2005). Educational Inequities and Latina/o Undergraduate Students in the United States: A Critical Race Analysis of Their Educational

Progress. *Journal of Hispanic Higher Education*, 4(3), 272–294.
<https://doi.org/10.1177/1538192705276550>

- Soria, K. M., & Stebleton, M. J. (2011). Immigrant College Students' Academic Obstacles. *Learning Assistance Review*, 18(1), 1–24.
- Springer, K. W., Parker, B. K., & Leviten-Reid, C. (2009). Making Space for Graduate Student Parents. *Journal of Family Issues*, 30(4), 30. <https://doi.org/10.1097/00006205-200401000-00003>
- State Higher Education Executive Officers Association (SHEEO). (2019). State Higher Education Finance: FY 2017. Boulder, CO.
- Stolzenberg, R. M. (1994). Educational Continuation by College Graduates. *American Journal of Sociology*, 99(4), 1042–1077.
- Strayhorn, T. L. (2010). When Race and Gender Collide : Social and Cultural Capital ' s Influence on the Academic Achievement of African American and Latino Males, 33(3), 307–332.
- St-Hilaire, A. (2002). The social adaptation of children of Mexican immigrants: Educational aspirations beyond junior high school. *Social Science Quarterly*, 83(4), 1026–1043. <https://doi.org/10.1111/1540-6237.00131>
- The University of Minnesota. (2020). What is IPUMS? Retrieved March 14, 2020, from <https://ipums.org/what-is-ipums>
- Tilly, Charles. 1998. *Durable Inequality*. Berkeley: University of California Press. Tomaskovic-Devey, Donald. 1993. *Gender and Racial Inequality at Work: The Sources and Consequences of Job Segregation*. Ithaca, N.Y.: ILR 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. <https://doi.org/10.1086/661904>
- Toyokawa, N., & Toyokawa, T. (2019). Interaction effect of familism and socioeconomic status on academic outcomes of adolescent children of Latino immigrant families. *Journal of Adolescence*, 71(January), 138–149. <https://doi.org/10.1016/j.adolescence.2018.10.005>
- Tran, N., Jean-Marie, G., Powers, K., Bell, S., & Sanders, K. (2016). Using Institutional Resources and Agency to Support Graduate Students' Success at a Hispanic Serving Institution. *Education Sciences*, 6(4), 28. <https://doi.org/10.3390/educsci6030028>
- Turcios-Cotto, V. Y., & Milan, S. (2013). Racial/Ethnic Differences in the Educational Expectations of Adolescents: Does Pursuing Higher Education Mean Something Different

- to Latino Students Compared to White and Black Students? *Journal of Youth and Adolescence*, 42(9), 1399–1412. <https://doi.org/10.1007/s10964-012-9845-9>
- U.S. Census Bureau. (2017). *American Community Survey Information Guide*. Retrieved from <https://www.census.gov/programs-surveys/acs/about/information-guide.html>
- U.S. Census Bureau. (2018a). 5-Year Estimates, DP02 Selected Social Characteristics. Retrieved March 8, 2020, from [https://data.census.gov/cedsci/table?q=foreign born &tid=ACSDP5Y2018.DP02&t=Foreign born&vintage=2018&cid=DP02_0001E](https://data.census.gov/cedsci/table?q=foreign%20born&tid=ACSDP5Y2018.DP02&t=Foreign%20born&vintage=2018&cid=DP02_0001E)
- U.S. Census Bureau. (2018b). *Place of Birth by Year of Entry by Citizenship Status for the Foreign-Born Population, 2014-2018*. Retrieved March 11, 2020, from <https://data.census.gov/cedsci/table?q=mexican&tid=ACSDT5Y2018.B05007&vintage=2018>
- U.S. Census Bureau. (2018c). *Hispanic or Latino by Specific Origin, 2014-2018*. Retrieved March 21, 2020, from <https://data.census.gov/cedsci/table?q=hispanics&hidePreview=false&tid=ACSDT5Y2018.B03001&vintage=2018>
- U.S. Census Bureau. (2018d). *Presence of a Computer and Type of Internet Subscription in Households, 2014-2018*. Retrieved March 21, 2020, from <https://data.census.gov/cedsci/table?q=broadband%20&tid=ACSDT5Y2018.B28009I&vintage=2018>
- U.S. Census Bureau. (2019). About the Foreign-Born Population. Retrieved March 11, 2020, from https://www.census.gov/topics/population/foreign-born/about.html#par_textimage
- Van Tubergen, F., & Volker, B. (2015). Inequality in Access to Social Capital in the Netherlands. *Sociology*, 49(3), 521–538. <https://doi.org/10.1177/0038038514543294>
- Vargas, N. (2018). Racial Expropriation in Higher Education: Are Whiter Hispanic Serving Institutions More Likely to Receive Minority Serving Institution Funds? *Socius: Sociological Research for a Dynamic World*, 4, 237802311879407. <https://doi.org/10.1177/2378023118794077>
- Vargas, N., Villa-Palomino, J., & Davis, E. (2020). Latinx faculty representation and resource allocation at Hispanic Serving Institutions. *Race Ethnicity and Education*, 23(1), 39–54. <https://doi.org/10.1080/13613324.2019.1679749>
- Wallace, S. P., & De Trinidad Young, M. E. (2018). Immigration versus immigrant: The cycle of anti-immigrant policies. *American Journal of Public Health*, 108(4), 436–437. <https://doi.org/10.2105/AJPH.2018.304328>
- Winkle-Wagner, R., & McCoy, D. L. (2016). Entering the (Postgraduate) Field: Underrepresented Students' Acquisition of Cultural and Social Capital in Graduate School

Preparation Programs. *The Journal of Higher Education*, 87(2), 178–205.
<https://doi.org/10.1353/jhe.2016.0011>

Wladis, C., Hachey, A. C., & Conway, K. (2015). Which STEM majors enroll in online courses, and why should we care? The impact of ethnicity, gender, and non-traditional student characteristics. *Computers and Education*, 87, 285–308.
<https://doi.org/10.1016/j.compedu.2015.06.010>

Xu, Y. J. (2016). Aspirations and Application for Graduate Education: Sex Differences in Low-Participation STEM Disciplines. *Research in Higher Education*, 57(8), 913–942.
<https://doi.org/10.1007/s11162-016-9411-5>

Yosso, T. J. (2005). Why use critical race theory and counterstorytelling to analyze the chicana/o educational pipeline? *Critical Race Counterstories along the Chicana/Chicano Educational Pipeline: Teaching/Learning Social Justice*, 1–20.

VITA

Paulina Cano McCutcheon is from Chihuahua, Mexico. She studied psychology and sociology earning Bachelor's degrees from the University of Texas at El Paso (UTEP). She received a master's degree in business administration with a concentration in health systems from UTEP. As an undergraduate, she worked in community development and capacity building of non-profits while also, doing research in social cognition. During her masters, she continued working in research in the areas of human factors and neuromarketing. From the year 2012 to 2019, she worked in higher education where she developed and managed student support programs for Hispanic students. Her years working in higher education inspired her to join the Applied Demography program in the fall of 2017 to research the academic outcomes of Hispanics. During her doctoral studies, she was recipient of the G-TAP scholarship and a presenter at various academic conferences including: the Southern Demographic Association, Alliance of Hispanic Serving Institution Educators, National Neighborhood Indicators Partnership, Texas Association of Chicanos in Higher Education among other. While completing her doctoral studies, Paulina joined a local data intermediary as a research coordinator and continues to work in such role. She plans to continue to grow her career in the areas of research, data science and project management.