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LATINX HEALTH AND HEALTH CARE IN THE UNITED STATES: COMPARING RURAL AND URBAN ADULTS IN NEW VERSUS ESTABLISHED DESTINATIONS

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Raeven Faye Chandler

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The dissertation of Raeven Faye Chandler was reviewed and approved* by the following:

Leif Jensen
Distinguished Professor of Rural Sociology and Demography
Dissertation Adviser
Chair of Committee

Kathryn J. Brasier
Director of Graduate Studies in Rural Sociology
Professor of Rural Sociology

Brian C. Thiede
Assistant Professor of Rural Sociology, Sociology and Demography

Jennifer Van Hook
Roy C. Buck Professor of Sociology and Demography

Shannon M. Monnat
Associate Professor of Sociology, Lerner Chair for Public Health Promotion, Syracuse University
Special Member

*Signatures are on file in the Graduate School

ABSTRACT

Findings concerning health and healthcare access/use among the Latinx community in the U.S. are varied, with some studies suggesting better health than their white counterparts and others reporting far worse outcomes. Given increased internal migration and spatial dispersion of Latinxs within the U.S., it is imperative that rural/urban differences in health are explored. In this study I focus on variations in Latinx health care access, use, and satisfaction across different residential contexts, including between new versus established destinations and metropolitan and nonmetropolitan counties. I use restricted National Health Interview Survey data within Penn State's Federal Statistical Research Data Center to identify respondents' counties of residence and link individual-level data to contextual demographic, economic, health care, and policy data. This research aims to 1) Describe rural/urban differences in Latinx health and healthcare access, use, and satisfaction; 2) Identify the individual and contextual factors that contribute to the differences in these outcomes; and 3) Determine whether destination status moderates associations between county metropolitan status and outcomes of interest. I conduct analyses on four outcomes: self-rated health, number of emergency room visits, delaying care, and satisfaction with care. Several important findings emerge. Latinxs in metropolitan counties have higher odds of reporting fair or poor self-rated health, visiting an ER two or more times in the past year, reporting delays in care, and slightly higher odds of reporting satisfaction with care. County health professional supply, ethnic enclave characteristics, and economic factors were found to be significant in explaining some of these relationships. Significant differences in destination status were found for all outcomes of interest, although the odds ratios were quite small in most cases. Findings from this dissertation help to illuminate the growing body of research on spatial differentiations in Latinx health in the United States.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

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Chapter 1: Introduction

It is well accepted that the foundation of the United States (U.S.) is built on immigrants. Throughout the 17th and 18th centuries, European immigrants hailing largely from England, Germany, Scotland, and Ireland began to settle in the east (Dinnerstein and Reimers 2009). In addition, forced immigration by way of slavery contributed to a growing African population in the U.S. Dinnerstain and Reimers (2009) note that the next significant wave of immigration came during the mid to late 19th century, particularly during the gold rush and reconstruction era, when Chinese and Scandinavian immigrants began to arrive. A second wave of European immigration occurred during the late 1800s wherein we begin to see the arrival of many individuals from southern and eastern Europe (Glazer and Moynihan 1970).

This wave was followed by a dearth in immigration, largely due to The Great Depression and World War II, as well as the creation and implementation of immigration policies and quotas. One of the first policies directed at limiting immigration was the Chinese Exclusion Act of 1882, which specifically focused on Chinese laborers, banning their entry into the U.S. and allowing for the deportation of unauthorized Chinese immigrants. Quota policies were enacted in 1921 and then later revised in 1924 (known as The Immigration Act of 1924), which banned immigration from Asia and severely limited the number of visas provided to immigrants based on nationality and representation the 1890 Census. This greatly restricted new immigrant flows to northern and western European countries of origin. Until 1952, race could legally be used as grounds for exclusion to immigration. With the passage of The Immigration and Nationality Act that year formal racial discrimination, which barred much immigration

for Asians, ended, but instituted new quotas supposedly favoring human capital. The quota system remained in place until the enactment of The Immigration and Naturalization Act of 1965, which placed a preference on family reunification and human capital, eliminated the national origin quota system and replaced it with a much more equitable worldwide distribution of visas, and instituted limits on immigrants from the Western Hemisphere for the first time (Cohn 2015). These Western Hemisphere restrictions greatly impacted immigrants from Latin America and will be discussed more thoroughly in Chapter 2.

As of 2018, about 44 million U.S. residents were born in a foreign country, and this number is projected to grow by 25 million by 2060 (Vespa, Armstrong, and Medina 2018). The most recent wave of immigrants is arriving from Asia, Latin America, and the Caribbean (Alba et al., 1999). Of particular and often politically motivated concern is the growth amongst Latinxs[1]. Flores (2017:1) states, "[t]he Latinx population in the United States has reached nearly 58 million in 2016 and has been the principal driver of U.S. demographic growth, accounting for half of national population growth since 2000." In fact, Latinxs are projected to comprise just under a quarter of the U.S. overall population by 2045 (Frey 2018). A more comprehensive discussion of the history of Latinx immigration to the U.S. is presented in Chapter 2.

The current wave of immigration, however, is vastly different than those previous in the U.S., due to country of origin, racial/ethnic composition, and political climate and reception upon arrival. Thus, in order to understand the assimilation processes and prospects for new immigrants, the contexts in which new immigrants are arriving in

[1] Latinx/Latinxs is used in lieu of Latinos or Hispanics throughout this paper, unless using a direct quote.

contrast to those of the early twentieth century must be evaluated. Massey (1995) describes contemporary, large-scale immigration of non-Europeans as the new regime. Current immigration differs largely from that of the early twentieth century, as previous immigrants were mostly from Europe and thus white (Massey 1995). Moreover, this large influx of European immigrants was met by a 40-year ebb in immigration, which allowed these immigrants to successfully assimilate into the mainstream United States (Massey 1995). This was a "breathing period" of halted immigration that has not accompanied the new regime. Although evidence suggests that Latinx immigrants are following similar intergenerational patterns of assimilation of previous European immigrants, it may be possible that continuous waves of immigration without an ebb influence sentiment towards and treatment of new Latinx immigrants (Krogstad, Stepler, and Lopez 2015; Lopez, Gonzalez-Barrera, and Krogstad 2018; Smith 2003). Additionally, the U.S. experienced a great economic boom from 1940 to 1973, which allowed first and second generations of European Immigrants to obtain economic parity with U.S. natives (Massey 1995). As these same structural factors do not hold for new Asian and Latin immigrants, it is possible that some assimilation patterns and overall measures of wellbeing may differ from previous European immigrants. Finally, the nativist sentiment currently expressed towards immigration within the U.S. is not unique and may be following similar patterns as those which met generations of South Eastern European immigrants, eventually leading to the enactment of quota policies in 1921 and 1924.

In addition to policy, economic and structural differences, newly arriving immigrants are not adhering to the same residential settlement patterns. Although some European immigrants of the past did settle outside of traditional urban gateways (e.g.,

Scandinavians in the upper Midwest), this is a relatively new phenomenon for those from Latin America. Demographers and sociologists have previously documented the movement of Latinxs in the United States from established gateways to new destinations throughout the country (Gouveia and Saenz 2000; Kandel and Cormartie 2004; Lichter and Johnson 2006; Singer 2008; Suro and Singer 2002). Traditional Latinx settlements were mostly metropolitan (metro), located in New York City, Los Angeles, Chicago, Houston, and Miami (Park and Iceland 2011). However, non-metropolitan (non-metro)[2] locations have become home to new Latinx destinations[3]over the past few decades (Kandel and Parrado 2005). In some cases, these non-metro areas would have experienced overall population decline were it not for the migration of Latinx individuals and the subsequent natural increase from Latinx fertility (Johnson and Lichter 2008). These new destinations are heavily concentrated in Midwestern and Great Plains states (Jones, Kandel, and Parker 2007). Kandel and Parrado (2005) state that Latinxs are the fastest growing segment of the population within non-metro communities in the United States.

This unprecedented migration and growth of Latinxs across that country has understandably led to a large body of research examining the impacts of these changes on Latinx well-being (Atiles and Bohon 2002; Atiles and Bohon 2003; Dondero and Muller 2012; Fischer 2010; Hall 2013; Lichter, Johnson, Turner, and Churilla 2012; Oropesa 2012; Park and Iceland 2011; Parrado and Kandel 2010; Stamps and Bohon 2006). Additional research has explored the larger impact of these demographic shifts on the

[2] I use the terms rural and nonmetropolitan, as well as urban and metropolitan, throughout this paper interchangeably, it is important to note there are some differences in these definitions across studies.
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receiving communities (Singer 2004; Crowley and Lichter 2009; Johnson and Lichter 2008; Massey 2008). The current body of research has noted that, unlike traditional gateways, new Latinx destinations have a limited infrastructure to support the influx and meet the needs of new residents, especially those with limited English proficiency and tenuous legal status (Singer 2004; Stamps and Bohon 2006). Lastly, a growing number of scholars have explored the socioeconomic inequality experienced by Latinxs in these communities, finding rising levels of income inequality in non-metro locations, which subsequently impacts Latinx residents (Crowley, Lichter and Qian 2006, Kandel and Newman 2004; Lichter et al. 2012; Parrado and Kandel 2010).

Given that the Latinx population is the largest racial/ethnic group in the nation, now (2019) representing close to 17 percent of the population in the U.S., and is geographically dispersed throughout the country, it is imperative that we understand health and healthcare access and utilization patterns among Latinxs and the barriers that they may face. The research on Latinx health status varies. For instance, The Latinx Health Paradox refers to morbidity and mortality patterns among Latinxs (a group that experiences low socioeconomic status), which contradict previous research on the socioeconomic status and health gradient (Acevedo-Garcia and Bates 2008). Coarsely stated, the paradox is that Latinx are healthier than expected given their comparatively low socioeconomic wellbeing. At birth, Latinxs in the U.S. have a life expectancy of 82 years, as compared to the national average of 78 years (Vega, Rodriguez, and Gruskin 2009). Thus, despite stark differences in human capital and socioeconomic status, differences in life expectancy are quite marginal. However, this may be a function of immigrant status, rather that ethnicity, as Singh and Siahpush (2001) highlight. The

paradox may also be impacted by reverse health immigrant selection and positive selection (Markides and Rote 2018; Vega et al. 2009). With regard to infant low birth weight, immigrant status is only a protective effect for Latinxs and Blacks and not whites or Asian Pacific Islanders (Acevado-Garcia, Soobader, & Berkman 2005). Although exhibiting advantages for some health conditions, Latinxs also experience health disparities with regard to obesity, diabetes, work related injuries, and HIV/AIDS (Acevedo-Garcia and Bates 2008; Vega et al. 2009). It is possible that foreign-born status provides a protective effect for health behaviors, including nutrition, smoking and illicit substance use/abuse, whereas acculturation can lead to increased risky health behaviors (Abraido-Lanza, Chao, and Florez 2005; Lara et al. 2005). Acculturation is measured differently across studies, but refers to the adoption of new cultural beliefs, traditions and values by immigrants (Abraido-Lanza, White and Vasquez 2004). However, acculturation is found to have a positive effect on self-rated health and satisfaction with healthcare (Finch, Hummer, Reindl, and Vega 2002; Hu and Covell 1986; Mendoza 1989; Shetterly et al. 1996). Given the continued variation and unclear consensus on pathways explaining Latinx health in the U.S., it is important that research continue to be conducted to better understand this phenomenon of the health immigrant.

Though growing, research on differences in healthcare access, utilization, and health outcomes among Latinxs living in different destinations types remains limited. That which has been published has been largely qualitative (Blewett et al 2003; Casey, Blewett, and Call 2004), is geographically limited (Mason, Toney, and Cho 2011), or focuses on one particular group of Latinxs by country of origin (Gresenz et al. 2012). Additionally, there is even less discussion on how metropolitan status may play a

significant role in impacting the health status, as well as access to and use of healthcare services among Latinx residents in new and established destinations. Monnat (2017) makes great effort in addressing these gaps, finding Latinx health insurance rates are lowest in nonmetro new destinations. Similarly, the Kaiser Commission on Medicaid and the Uninsured find Latinxs in new destinations to have lower insurance rates, lower rates of a regular source of care, and higher use of emergency rooms (Cunningham, Banker, Artiga, and Tolbert 2006). Very little research addresses metropolitan and destination status differences in self-rated health, patient satisfaction, and healthcare use among Latinxs. This study seeks to address these gaps and add to the growing body of literature on the subject.

Barriers to Access & Utilization

Scholars have documented a number of barriers Latinxs face when attempting to access healthcare in the United States. Such barriers include communicating with health care providers, lack of insurance, lower socioeconomic status, and limited knowledge on healthcare services (Cristancho et al. 2008; Derose et al. 2009; Escarce 2007; Kapur and Escarce 2006; Leclere, Jensen, and Biddlecom 1994; Lee et al. 2002). However, these disparities in healthcare access and utilization are found to exist even after controlling for individual level characteristics (Derose and Baker 2000; Escarce 2007; Kirby, Taliaferro, and Zuvekas 2006; Weinick et al. 2004; Zuvekas and Taliaferro 2003). The existence of disparities that cannot be explained by individual characteristics has led to a body of research on the impact of contextual factors and health and healthcare access/use, largely finding protective effects of living in communities with larger shares of Latinxs (Gresenz, Rogowski, Escarce 2009; Haas et al. 2004; Kirby et al. 2006).

Destination Type Differences

Research focusing on Latinx health and healthcare use patterns in new destinations and/or comparing new and traditional destinations has been much more limited. Cunningham et al. (2006) find that compared to those in traditional gateways, Latinxs in new destinations were less likely to have insurance, less likely to have a regular provider, and less likely to have had a regular checkup. Mason, Toney, and Cho (2011) find that Latinxs in Utah, a new destination state, reported little difference in health status compared to their white counterparts. Qualitative research on rural Latinxs suggests that barriers are largely due to linguistic differences and lack of health insurance (Blewett et al. 2003; Casey, Blewett, and Call 2004; Vitale and Bailey 2012). The role of healthcare knowledge and healthcare perceptions also appear to be pivotal. Through in-depth interviews with Latinx migrants in southeast Michigan (a new destination), Harari, Davis, and Heisler (2008) found that new residents were often unaware of local public health programs and experienced feelings of not being welcome, perceived inferiority of health care for the uninsured, and isolation in their new neighborhoods. It is possible that immigrant status, rather than ethnicity may be a factor influencing differences in access and utilization by location. Gresenz et al. (2012) find healthcare outcomes for U.S.-born Mexicans in new destinations to be worse than those residing in traditional destinations, specifically in the areas of unmet need or delay in receipt of care. Conversely, these differences were not found for foreign-born Mexicans (Gresenz et al. 2012).

Metropolitan Status

Rurality may influence the effect of destination type and thus, metro status should be accounted for, rather than relying solely on Latinx growth patterns. That is, new

destinations may be rural, urban, and anywhere along the continuum and differences between the different types of locations may be lost without accounting for metro status (Hall 2013). Rural Latinxs face a number of healthcare access problems that are also representative of problems in the rural health care infrastructure in general, which include shortages of doctors, a lack of Spanish-speaking healthcare providers, and fewer doctors participating in Medicaid programs (Arcury and Quandt 2007; Ricketts, Hart, and Pirani 2000; Strickland and Strickland 1996). Physician shortages also put pressure on doctors to spend less time with patients and to avoid patients who need interpreters because those visits take longer (Casey, Blewett, and Call 2004). Latinxs in rural locations also often face transportation barriers that are less likely to be found among metropolitan Latinxs (Coronado et al. 2004). Lastly, compared to those in established and metro destinations, Monnat (2017) finds that Latinxs in non-metro, new destinations are more likely to be foreign-born and noncitizens, compounding the barriers to quality health and healthcare. Thus, Latinxs residing in rural new destinations may be facing a double jeopardy with regard to meeting their healthcare needs.

Research that focuses on metro differences in satisfaction with healthcare is quite limited. The majority of studies that have been conducted focus on populations outside of the U.S. (Aldana, Piechulek, Al-Sabir 2001), are not geographically representative (Davis et al. 2001; Knudtson 2000), and/or examine satisfaction in particular health settings, like emergency rooms (Davis and Duffy 1999). In general, language concordance and availability of translation services are found to be important factors with regard to Latinx patient satisfaction (Lee et al. 2002; Mazor et al. 2002). Patient satisfaction is an

important aspect of health and healthcare, as research suggests individuals are more likely to adhere to recommendations (Cleary, Keroy, Karapanos, McMullen 1989).

Ultimately, this research sheds light on whether or not the differences in Latinx health and healthcare, access, use, and satisfaction are functions of the characteristics of the individuals selecting these non-metro, new destinations or if spatial disparities are explained by the economic and healthcare supply characteristics of the counties. The results from this research contribute to the growing body of literature concerning spatial dispersions of Latinxs and group well-being across destinations and metropolitan status (Dondero and Muller 2012; Fischer 2010; Hall 2009, 2013; Lichter, Parisi, and Taquino 2015; Monnat 2017; Park and Iceland 2010; Stamps and Bohon 2006). Finally, to my knowledge this is the first study to focus on spatial and destination type differences in Latinx satisfaction with care.

Research Aims

The extent to which Latinxs can access and utilize high-quality health care and maintain good health is essential to overall U.S. population health due to the large and increasing size of the Latinx population and its dramatic dispersion across the U.S. Accordingly, the proposed research will expand on previous studies on rural/urban disparities in Latinx health and receipt of and satisfaction with health care services by:

1. Describing differences in healthcare access, healthcare use, satisfaction with care, and health status among Latinx adults (ages 18 to 64) living in new vs. established destinations along the rural-urban continuum; and
2. Identifying the individual and contextual factors contributing to differences in these outcomes.

Organization of Dissertation

This dissertation is organized as an assessment of destination and metro status differences in health and healthcare among Latinxs in the U.S. Accordingly, I first assess differences in having a usual source of care, delaying care for any reason, emergency room visits, and interval since last doctor's visit among Latinxs. I then follow with an analysis of factors contributing to differences in satisfaction with healthcare receipt among Latinx adults. Finally, I present results from analyses of differences in self-rated health between Latinxs living in new versus established destinations in metro and non-metro counties.

Chapter 2 summarizes the extant literature on Latinx health and healthcare, as well as Latinx destination types, and the theoretical foundations guiding this research. The major theoretical framework for this research is the Behavioral Model for Health Services Use, which points to the importance of various health need, predisposing, and individual and contextual enabling factors for health care use (Andersen 1995; Gelberg, Andersen, and Leake 2000). Chapter 3 provides an overview of the data and methods used within this study. I outline the data sources, variables, and statistical methods I use to examine differences in health status and healthcare access, use, and satisfaction among Latinxs in different destination types. Chapters 4, 5, and 6 present the results from each of these analyses. In Chapter 4, I assess differences in self-rated health. In Chapter 5, I explore differences in healthcare access and use. In Chapter 6, I focus on satisfaction with care. In Chapter 7, I summarize my key findings from within the contexts of Andersen's Behavioral Model of Health Services Utilization, health self-efficacy, and social determinants of health and discuss their contributions to the fields of rural sociology and

demography. I also describe the study's limitations and present implications of my findings for future research, policy, and practice.

Chapter 2: Literature Review and Theoretical Framework

In this chapter, I summarize and identify the gaps in the previous literature on Latinx health in the U.S., across destination and metropolitan statuses. I begin this chapter with a summary of the history of Latinx immigration and immigration policies enacted since 1965. I then discuss theories concerning immigration, acculturation, and race. I then summarize and discuss findings on rural/urban health differences and Latinx health. I conclude the chapter by describing the ways in which my study contributes to the body of literature on the topic.

History of Latinx Immigration

When discussing waves of Latinx immigration to the U.S., it is important to clarify that these patterns are quite disparate depending on country of origin. "Latinx" is an essentializing term used to group individuals from Latin America, but cultural differences, as well as political and economic histories of their countries of origin are often missed in doing so. Moreover, the push and pull factors creating these migrations streams also vary by country of origin. Currently, Mexicans comprise the largest share of the U.S. Latinx population, followed by Puerto Ricans, Cubans, Salvadorans, and Dominicans (Lopez and Dockterman 2011).

The history of Mexican immigration into the U.S. begins at the conclusion of the Mexican-America war (1848), with the Treaty of Guadalupe Hidalgo, wherein the U.S. gained the contemporary states of Arizona, California, Nevada, Utah, New Mexico, and Texas and up to 100,000 Mexicans were naturalized (Gutiérrez 2016). In the late 1800s and early 1900s, during the growth of railroads and subsequent immigration policies directed at the Japanese and Chinese, we begin to see an increase in immigration from

Mexico, which continues to grow until The Great Depression (Durand, Massey, and Charvet 2000). However, this flow of Mexican citizens was renewed during the 1940s to the 1960s with the enactment of the Bracero Accord in 1942; a guest worker program allotting six-month visas to work in the agricultural sector (Durand, Massey, and Zenteno 2001). Due World War II many farms experienced labor shortages and were assisted by Mexican guest workers through this program. Gutiérrez (2016) argues that increases in unauthorized migration from Mexico is largely attributed to the Bracero Program. This trend continued until the late 1980s with the passage of the Immigration Reform and Control Act of 1986, which granted amnesty to a vast number of farmworkers, but also increased funding for border patrol and instituted new and more stringent regulations on employers (Durand et al. 2000).

The second largest Latinx group in the country are Puerto Ricans, and as U.S. citizens, are not immigrants in the typical sense. Under the Jones Act of 1917, Puerto Ricans acquire U.S. citizenship and movement to the mainland begins (Siler and Vélez 2017). This is followed by a mass exodus from the 1940s-1960s, with Puerto Ricans moving to places like New York City and New Jersey in search of jobs (Vélez 2017). Vélez (2017) notes that this movement was largely due to a push from "operation bootstrap"; a modernization strategy emphasizing an export-based economy with tax exemption aimed at the U.S. Like Mexicans, the 21st century brought about internal migration amongst Puerto Ricans with dispersal into nontraditional locations outside of the Northeast.

Unlike most other Latinx groups in the U.S., Cubans have had a more favorable position with immigration provisions. The historic relationship between Cuba and the

U.S. during the Cold War plays large role in the acceptance and assimilation of Cubans in this country. Unlike Latinxs from other countries, the initial wave of Cuban refugees arrived in the late 1950s fleeing the revolution and rule of Fidel Castro, and are often referred to as the Golden Exile due to their privileged class status (Pedraza 1998; Woltman and Newbold 2009). Perez (1992) describes the second wave of refugees as coming in 1965 on "Freedom Flights." The following year, the Cuban Adjustment Act, a pathway to permanent residency, became federal law. A third wave occurred in 1980 with the Mariel boatlift, in which Castro allowed individuals to leave the country for a period of time (Woltman and Newbold 2009). The 1990s saw the final wave of Cuban immigration characterized by rafts filled with individuals seeking economic security after the fall of the Soviet Union and collapse of Cuba's economy.

As of 2019 the profile of the Latinx immigrant has changed dramatically. Previously, the vast majority of unauthorized immigrants in the U.S. hailed from Mexico. However, these numbers have been declining since 2007 with statistically significant increases in undocumented individuals from the Northern Triangle and Venezuela. Over half of all apprehensions made at the U.S.-Mexico border in the first half of fiscal year 2019 were families, largely hailing from El Salvador, Honduras, and Guatemala (Gramlich and Noe-Bustamante 2019). A large proportion of these individuals are seeking asylum due to fleeing extreme poverty in violence in their home country.

Theories of Assimilation and Acculturation

Theorists of assimilation and immigration are concerned with the processes of incorporating non-dominant group members into mainstream America. However, over time scholars have presented multiple models as to how this process of incorporation

occurs. The three major ideologies most frequently discussed in debates on assimilation are Anglo-conformity, the melting pot, and cultural pluralism (Glazer and Moynihan 1970; Gordon 1964; Hirschman 1983; Lieberson and Waters 1988; Steinberg 1989). The earliest discussions of immigrant assimilation mainly focused on white, European immigrants, and shifted over time to include Black Americans and new immigrants, who were and are largely of color. This is an important fact to consider, as new research is showing the lack of applicability of the classical assimilation model due to historical and individual skill and capital differences among these groups of new and old immigrants (Portes and Rumbaut 1990; Portes and Zhou 1993).

Classical Assimilation

Milton Gordon's (1964) model of assimilation has long been viewed as a way to conceptualize and measure immigrants' incorporation into the mainstream society. The seven basic sub-processes by which immigrants become members of the dominant group include, acculturation (cultural or behavioral assimilation), structural, amalgamation (marital assimilation), identification, attitude reception (absence of prejudice), behavior reception (absence of discrimination) and civil assimilation (Gordon 1964; Hirschman 1983). Acculturation in this sense refers to adopting the language, values, and norms of the new society, whereas structural refers to acceptance into clubs and other institutions. Identification and civic assimilation refer to the immigrant feeling connected to the host society and citizenship status, respectively. These indicators are distinct, yet form a continuum of assimilation. With regard to (mainly) European immigrants from the early 1900s, Gordon (1964) argues that acculturation has largely taken place in the U.S. However, aside from the 'triple melting pot' (referring to ethnic intermarriage, but within

religious grouping of Protestants, Catholics, and Jewish individuals) findings and among the intellectual class, structural assimilation has not widely occurred (Gordon 1964). It is structural assimilation that leads to the other sub-processes of assimilation. Gordon (1964) does not ignore the fact that class divisions exist among immigrant groups, arguing that these two factors merge to form ethclasses, which subsequently impacts their assimilation. Finally, Gordon (1964) argues that contemporary attitudes towards assimilation do not advocate for the encouragement of structural assimilation and adjustment policies should be employed. In order for the acculturation process to proceed the immigrant must be able to maintain a structural life, and the second generation of any immigrant group should be viewed as moving forward.

Gordon's views on assimilation have not been without their critiques. Researchers during the 1970s until now have debated the applicability, even with regard to European immigrants, of his model. Gordon's seven-point scale of assimilation assumes that assimilation is inevitable and one directional, but this has not been the case for all groups in the United States (Blauner 1972; Glazer and Moynihan 1970; Lee and Bean 2004; Portes and Zhou 1993; Portes and Rumbaut 1990). For instance, Zhou (1997) notes that much research finds differences in intergenerational mobility patterns when comparing white European immigrants to those of African, Asians, and Latin decent, even with similar levels of human capital. Additionally, Zhou (1997) argues the classical assimilation thesis fails to explain why certain minority groups, composed mostly of first-generation immigrants, have succeeded in U.S. society with limited acculturation. I discuss later how other critics believe this to be based on reception of the immigrant group by host society, influenced largely by race and ethnicity.

In contrast to Gordon (1964), Glazer and Moynihan (1970) directly acknowledge that the melting pot hypothesis is unrealistic. The authors argue that as people emigrate from their countries of origin, they become different than those of the same ethnic group that they have left behind (Glazer and Moynihan 1970). There is not a one size fits all model for assimilation, as the path varies for different ethnic groups (Glazer and Moynihan 1970). In looking at five predominant ethnic groups in New York City, the Jews, Italians, Blacks, Irish, and Puerto Ricans, the authors emphasize the role of education, family, socioeconomic status, and community structure/organization in the assimilation process (Glazer and Moynihan 1970). The focus for these authors is overwhelmingly on cultural differences and values. Although the indicators are the same for each of the groups, some, like the Jews, are considered to be much more upwardly mobile, due to their community and cultural emphasis on education, traditional family ties and clustering within particular occupations (Glazer and Moynihan 1970). The authors do not deny the role of discrimination, especially as it applies to member of the Black community (Glazer and Moynihan 1970). However, Glazer and Moynihan (1970) argue that cultural deficiencies, stemming from the strength of family ties, are the true impediment for upward mobility in these communities. Like Gordon (1964), the authors emphasize that assimilation is inevitable, as national origin would supposedly not survive the third generation, and that the pathway to assimilation is one directional.

Almost twenty years after Gordon's (1964) famous seven-point index of assimilation had been published, Hirschman (1983) indicated that class inequality, amalgamation, residential/educational segregation, and prejudice were the four main indicators of assimilation. The author also argued that his model was actually testable, as

compared to Gordon's (Hirschman 1983). Moreover, the four indicators are interrelated and not mutually exclusive (Hirschman 1983). Education is considered to be the foundational step into dominant society by outer group members, yet he acknowledged the lack of research on educational quality discrepancies (Hirschman 1983). Like Gordon (1964), the author fails to acknowledge that assimilation may not be one dimensional and that downward mobility over generations may be a possibility for some groups, especially those with darker skin and minimal social and human capital (Portes and Zhou 1993).

Assimilation and New (Non-European) Immigrants

In addition to the flawed one-dimensional approach and the assumed inevitability of the process, a number of scholars have questioned the applicability of the model to all types of immigrants (Gans 1979; Lee and Bean 2004). As Blauner (1972) attempted to show, straight-line assimilation theory does not apply to Black Americans. Steinberg (1989) argues that the path to assimilation and subsequently, upward mobility, have not been the same for all groups. Not all groups start in the same place and they have to face different opportunities and obstacles, depending on their time of arrival and under what circumstances they emigrated under (Steinberg 1989). Additionally, the historical accounts of European immigrants' experiences, as depicted by assimilation theorists have not been wholly factual (Gans 1979; Lee and Bean 2004). The relevance of a straight-line approach to assimilation has also been called into question, as ethnicity has not disappeared over multiple generations as it was originally expected (Gans 1979).

More challenges to Gordon's (1964) classical model have come in the wake of largescale immigration from Latin America, Asia, and the Caribbean since 1965.

Contemporary research is showing that ethnic differences continue to occur over multiple generations and can even worsen over generations (Lee and Bean 2004; Portes and Zhou 1993). Lee and Bean (2004) have noted that new immigrants, specifically Latinxs and Asians are choosing pathways that are not accounted for by straight-line assimilation theories. New assimilation models may need to be created and applied in order to account for the contemporary circumstances in the United States that new immigrants are arriving under. For instance, Alba and Nee (2003:270) claim, "[t]he American society in which the second and third generation find themselves in differs in numerous ways from that faced by the second and third generation of the past."

Residential concentration and segregation are strong markers of assimilation and a number of critiques to the classical assimilation model can be found when examining this topic. Alba and Nee (2003:252) argue, "within the metropolitan areas where they concentrate, immigrants and the second generation appear to be segregated from the majority population to a substantial extent, but no more so than were the immigrant groups of the early twentieth century." Moreover, Waters and Jimenez (2005) note that many studies have documented that new immigrant groups are segregated from white Americans, but to a much lesser degree than Blacks. This is not surprising given the magnitude of segregation experienced by Black Americans (Charles 2003; Massey and Denton 1993). Conversely, Logan, Stults, and Farley (2004) claim that residential segregation for Asians and Latinxs is on the rise, but is on the decline for Blacks. Charles (2003) supports this finding claiming that new immigrant groups' levels of segregation and isolation have been rising since the 1970s. Skin color may be a large factor in determining suburbanization and residential attainment, as immigrants with darker skin

or of African descent seem to follow patterns similar to Black Americans (Alba et al. 1999).

It is possible that the location may determine the extent to which these new groups experience segregation from whites. Lichter, Parisi, Taquino, and Grice (2010) argue that Latinx immigrants in new destinations are more highly segregated from white than those in established Latinx destinations, even though these communities feature structural characteristics that are linked to lower residential segregation. New immigrants differ from immigrants of the past, as many individuals are establishing themselves in suburbs immediately upon arrival, whereas early European immigrants first settled in ethnic enclaves for at least a generation before moving into suburban communities (Alba and Nee 2003; Singer 2008). Alba and Logan (1991) support the notion that region matters with regard to suburbanization, as there is more segregation in the Northern metro areas of the country and Latinx and Asians are more concentrated in the West and Southwest.

Using measures of socioeconomic status, intermarriage, spatial concentration, and language, there is evidence that new immigrants of Latin, Caribbean, and Asian descent have largely become incorporated into mainstream society (Waters and Jimenez 2005). With regard to socioeconomic status, immigrants have been found to reach economic parity with native-born individuals of the same ethnic background (Waters and Jimenez, 2005). Occupational position has also been found to improve generally for the second generation of immigrants and at times equals or exceeds the white job status average (Alba and Nee 2003). Location has been found to impact educational attainment, with immigrants in new destinations having higher average educational attainment, as

compared to immigrants in established gateways (Stamps and Bohon 2006). Alba and Nee (2003) claim that numerous studies find that children who belong to 1.5 or second-generation immigrant families have superior educational performances when compared to native-born children.[4] However, these socioeconomic status outcomes have also been linked to human capital prior to immigration, which ultimately impacts how immigrants fare in comparison to native residents (Alba and Nee 2003; Stamps and Bohon 2006; Waters and Jimenez 2005).

English language proficiency is viewed as being a strong predictor of cultural assimilation (acculturation). Findings concerning English language assimilation suggest there is reason to believe that although many people are speaking languages other than English, English language use is also on the rise (Waters and Jimenez, 2005). In their analysis of ethnic neighborhoods and communities, Logan, Alba and Zhang (2002) find that speaking only English is highest for all immigrant groups in suburban non-group neighborhoods. However, for ethnic group neighborhoods within cities, less than half of residents speak only English and two-thirds speak their native language (Logan et al. 2002). Interestingly, English speaking in suburban ethnic neighborhoods varies depending on ethnic group with Cubans and Dominicans having particularly low proportions of only English-speaking residents, and Koreans and Filipinos having high proportions (Logan et al., 2002). Like other assimilation sub-processes, language has been found to be associated with generational status, with the second generation being bilingual and subsequent generations speaking only English (Waters and Jimenez, 2005).

[4] 1st generation refers to original adult immigrants, whereas 1.5 generation refers to children or adolescents who immigrate with their parents. The 2nd generation refers to those who have immigrant parents, but were born in the host country.

Conversely, Massey (1995) argues that heavy concentration of Spanish-speakers in certain communities will ultimately change the economic and social costs associated with not speaking English and increase the benefits associated with speaking Spanish among natives.

Intermarriage is often considered the final step to full assimilation. For instance, Alba and Nee (2003:262) write, "[b]ecause the norm of endogamous marriage has served throughout the world as a regulative mechanism maintaining the social boundaries of ethnic groups, its diminishment can be interpreted as reflecting changes in ethnic identities and boundaries." Intermarriages have been found to be largely common between Asians and whites, followed by Latinxs and whites, with black-white unions being the least likely (Alba and Nee, 2003). Additionally, out-marriage rates have been linked to both generation status, with increases among second and third generation members, and education, with interracial marriages largely being educationally homogenous (Alba and Nee, 2003). Qian and Lichter (2007) support the impact of education for Asians and Latinxs, but note that education does not have the same implications for intermarriage for blacks and whites. That is, greater rates of intermarriages between Latinxs and whites, and Asians and whites are found among these ethnic groups as education increases. This pattern does not hold for native born blacks and whites. Lee and Bean (2007) claim that there are a greater proportion of young multiracial individuals in the country due to the increase in intermarriage among young, Latinx and Asian native born. Moreover, interracial children whose parents identified them as single race, were more likely to be identified as white if they were Asian-white or Latinx-white (Lee and Bean, 2007). Although this study does not specifically focus on

intermarriage among immigrants, it does provide evidence that supports the straight-line assimilation model. Asians and Latinxs may be becoming "whitened" like earlier European immigrants, with Asian and Latinx multi-racial individuals being the frontrunners (Lee and Bean, 2007). Findings for adult self-identification are similar with American-Indian-white and Asian-American-white individuals identifying solely as white (Qian and Lichter, 2007). Qian and Lichter (2007) also argue that growth in the mixed-race population more than likely promotes assimilation throughout interracial marriages and intra-group contact. The authors find that biracial American Indian and Asian Americans are much more likely to marry whites, compared to black-white individuals (Qian and Lichter, 2007). The current large influxes of immigrants may have the opposite impact on intermarriage assimilation, as marital populations of co-ethnics are constantly being renewed for natives and foreign-born populations (Qian and Lichter 2007).

However, there is also reason to believe that the children of new immigrants may be forced into pathways of segmented assimilation. The success of new immigrants is dependent not only on their own motivations and abilities, but also on the contextual circumstances under which they leave their former countries and under which they enter the United States. Zhou (1997:984) describes the theory in the following manner:

> Segmented assimilation can be viewed as a middle-range theory that concerns why different patterns of adaptation emerge among contemporary immigrants and how these patterns necessarily lead to the destinies of convergence or divergence. Drawing on the existing literature, this theory places the process of becoming American, in terms of both acculturation and economic adaptation, in the context of a society consisting of segregated and unequal segments and considers this process to be composed of at least three possible multidirectional patterns: the time-honored upward mobility pattern dictating the

> acculturation and economic integration into the normative structures of middle-class America; the downward-mobility pattern, in the opposite direction, dictates the acculturation and parallel integration into the underclass; and economic integration into middle-class America, with lagged acculturation and deliberate preservation of the immigrant community's values and solidarity.

Moreover, there is an emphasis on social networks as social capital and social control (Portes and Rumbaut 1990). This combination of many factors impacts the path of assimilation, which is not one dimensional or inevitable. Alba and Nee (2003) claim that the old model is out date and new immigrant assimilation is based on group membership, human capital, location, historical time period, and community adaptation. Economic and occupational adaptation of new immigrants is based largely on governmental response to the foreign group, reception in the labor market, and the composition of the ethnic community (Portes and Rumbaut 1990). Portes and Rumbaut (1990) also claim that the classical assimilation model only applies slightly to the children of new immigrants, as a number of these new Americans have found that fully assimilating would result in less success. Thus, more second-generation new immigrants are choosing selective rather than absolute acculturation, given the benefits of community business ties, and bilingualism (Portes and Rumbaut 1990). Portes and Zhou (1993) support these assertions, claiming that as contemporary immigrants do not have the same opportunities as those of the past, complete assimilation may not be the best option for mobility. Moreover, the authors suggest that the determinants of downward assimilation are color, location, and the absence of mobility ladders (Portes and Zhou 1993). Finally, perceptions of discriminations seem to greatly impact assimilation as it pertains to self-identity (Rumbaut 1994).

To some extent the concept of segmented assimilation overcomes the critiques to Gordon's (1964) classical, seven-point scale of assimilation. I believe that it is a beneficial framework for understanding the differential mobility of Latinxs and Asians currently. The segmented model is also an improvement, because it recognizes that assimilation is not always positive and universal. However, like the majority of classical assimilation models, the models for segmented assimilation do not seem to fully address the consequences of identifying as Black, or being identified as Black in the United States. Moreover, a holistic discussion or evaluation of racism or white privilege in and throughout the history of the United State is largely absent from this argument. Theoretical models concerning the color line and racial divisions in this country based on "pigmentocracy," which at their core concern racism, should be included in further evaluations of new immigrants. For instance, Lee and Bean (2007) argue that as more Asians and Latinxs immigrate to the country, the color makeup of the Unites States is changing. As more of these individuals identify as white, or more specifically not Black, an even deeper divide is created between the Black community, those who are perceived as Black (e.g., many Puerto Ricans and Dominicans), and the rest of the country. Yancey (2003) stresses the changing nature of whiteness, and that eventually this will pertain to Asians and Latinxs. Thus, even if new immigrants follow the path of downward assimilation, most will still benefit from being on the non-Black side of the color line. Those who are considered to be on the Black side of the line will continue to suffer the inability to assimilate. Conversely, Bonilla-Silva (2004) claims that the United States will soon feature a hierarchical system that resembles the tri-racial divide found in Latin America, wherein there are whites, honorary whites, and the collective Black. Most new

immigrants will be categorized into the first two categories and thus still prospering more than Black Americans, many the descendants of slaves.

Given the well documented relationships between race, ethnicity, and health, as well as between socioeconomic status and health, it is imperative that the health of Latinxs in the U.S. continue to be understood and explored. Moreover, there is a growing body of research suggesting that acculturation is a potential component in the discussion on health disparities (Fox, Thayer, and Wadhwa 2017).

Latinx Health

The social and structural position of Latinxs in the U.S. leads to the disproportionate health impacts via social determinants of health (Velasco-Mondragon et al. 2016). Compared to the rest of the U.S., Latinxs have lower rates of seeking and receiving healthcare (Vega, Rodriguez, and Gruskin 2009). Although often facing socioeconomic barriers that would prevent them from having optimum health, Latinxs in the United States tend to have greater life expectancy than their white counterparts (frequently referred to as the "Hispanic Paradox") (Arias 2010; Arias et al. 2010; Elo et al. 2004, Lariscy, Hummer, and Hayward 2015; Lariscy et al. 2016; Markides and Coreil 1986). Lariscy et al. (2016) also find lower lifespan variability for Latinxs compared to whites. Original hypotheses for this explanation include the "salmon bias," wherein unhealthy migrants return to their country of origin convoluting statistical analyses, and the healthy migrant idea that self-selection places the healthiest Latinxs in the U.S., but Abraido-Lanza et al. (1999) finds neither of these to be sufficient in explaining the paradox.

The findings concerning this epidemiological paradox benefitting Latinxs vary when exploring other health outcomes. In general, Latinxs are often found to have lower mortality rates, compared to whites (Elo et al. 2004; Franzini, Ribble, and Keddie 2001; Liao et al. 1998). Crimmins et al. (2007) find no paradox in biological risk factors (10 measurements of inflammation, blood pressure, and metabolic functioning) between foreign-born Latinxs and whites, once controlling for socioeconomic status. Conversely, Zhang, Hayward, and Lu (2012) find Latinxs to have comparable or better health among measures for high blood pressure, heart disease, cancer, arthritis, chronic lung disease, and stroke. The body of literature has consistently supported a Latinx disadvantage with regard to diabetes prevalence and self-rated health (Cho et al. 2004; Crimmins, Hayward, and Seeman 2004; Shetterly et. al. 1996).

Race, Ethnicity, Country of Origin

Nuances in health status among Latinx health are often lost to due to essentialization of this ethnic group, regardless of country of origin or racial phenotypical expressions. Palloni and Arias (2004) argue that the supposed "Hispanic health paradox" applies specifically to individuals from Mexico, and does not hold for Puerto Ricans and Cubans. Characteristics may also have differential impacts on health outcomes depending on one's country of origin. Kimbro, Gorman, and Schachter (2012) find co-ethnic ties to be important for Mexicans (not Cubans or Puerto Ricans) and remitting money to be positive for Cubans (not Mexicans or Puerto Ricans). Additionally, Latinxs of Mexican descent have lower odds of accessing and utilizing healthcare, compared to non-Mexicans, with region and insurance status being important factors in explaining these differences (Vargas Bustamante et al. 2012).

There is evidence to suggest that it is not only how one classifies their own race/ethnicity but also how their race/ethnicity is perceived by others that impacts their health. For instance, Lopez et al. (2017) find one's self perceived race is associated with self-reported physical health, but how one's race is perceived on the streets is associated with self-reported mental health.

Nativity Status & Acculturation

Among Latinxs there appears to be differences in health based on nativity status. Both Crimmins et al. (2007) and Zhang et al. (2012) find some evidence for worse health among native born Latinxs. Rodriguez, Ward, and Perez-Stable (2005) find foreign-born Latinas[5] to be less likely to adhere to recommend breast and cervical cancer screening procedures compared to their white counterparts, however, this is largely a function of socioeconomic status broadly, and insurance coverage specifically.

There is also some evidence to suggest that health outcomes among Latinxs may be influenced by level of acculturation. Using foreign-born status, ease of speaking English, and living in the U.S. for 20 years or more as proxies, O'Brien et al. (2014) find diabetes prevalence to increase with acculturation, which remained after accounting for BMI, physical activity, daily caloric intake, and demographic confounders (age, country of origin, sex, education, marital status, income, insurance status and usual source of care). Advantages among immigrants' health dissipates after 10 or more in the U.S. (Cho et al. 2004). Length of time in the U.S. is also associated with higher rates of hypertension and cardiovascular disease (Dey and Lucas 2006). Similarly, Daviglus et al. (2016) find lower acculturation among Latinx women is associated with lower

[5] Latina used specifically by the authors

cardiovascular risk behaviors. Language also plays a role in health disparities, as Latinxs that answer questions concerning self-rated health in Spanish are more likely to respond with "fair" or "poor" (Viruell-Fuentes et al. 2011). Similarly, Kimbro, Gorman, and Schachter (2012) find a negative relationship between native language dominance and self-rated health for Latinxs and Asians (except Mexicans), even after accounting for socioeconomic status, health behaviors, social networks, and discrimination.

Moreover, there is reason to believe that immigration status, above and beyond nativity, may influence health differentials. Through a comprehensive literature review of studies comparing physical health of Latinxs by authorization status, Hamilton, Hale, Savinar (2019) find mixed results, but overwhelming evidence for either no significant differences or a protective effect for unauthorized immigrants. Amongst Mexican-born farm workers unauthorized immigrants had lower incident rates for chronic conditions and pain prevalence compared to their authorized counterparts, and a health gradient exists with naturalized individuals reporting the worst health, followed by legal permanent residents, and undocumented persons reporting the best (Hamilton, Hale, Savinar (2019). Cavazos-Regh, Zayas, and Spitznagal (2007) find a relationship between concerns of deportation and heightened negative emotional states and poorer self-rated health, providing evidence that political and social context also influences health among Latinx immigrants. This is supported by Anderson and Finch (2014) finding a significant relationship between living under S.B. 1070 Act and poor self-rated health for Latinxs in Arizona with Spanish as their primary language.

The relationship between nativity status and acculturation may vary by country of origin among Latinxs. For example, Jerant, Arellanas, and Franks (2008) find U.S.-born

Mexicans have worse mental and physical health than those who were foreign-born, but found the opposite for Cubans, Dominicans, and Puerto Ricans. It is important to note that for Latinxs of Mexican descent it is not just length of time in the U.S. that has deleterious impacts on health, but rather changes in health behaviors (Carter-Pokras et al. 2008).

Metropolitan/Non-Metropolitan Differences

Health

An extensive body of research exists on the impact of neighborhood and community influences on individual health (Anderson et al. 1997; Boardman 2004; Bond Huie, Hummer, and Rogers 2002; Browning and Cagney 2002; Browning and Cagney 2003; Dubowitz et al. 2008; LeClere et al. 1997; Monnat and Beeler Pickett 2011; Robert 1999; Ross and Mirowsky 2001; Yen and Kaplan 1999). Rurality is associated with poorer individual health, health care use, and morbidity (Auchincloss and Hadden 2002; Larson and Correa-de-Araujo 2006; Monnat and Beeler Pickett 2011; Morton 2004). Non-metropolitan residents of all races are found to have higher prevalence rates of a number of health outcomes including obesity, diabetes, accidental injury mortality, and infant mortality (Galambos 2005; Hartley 2004; Patterson et al. 2004). Evidence from Mainous et al. (2004) highlight a potential double jeopardy among racial/ethnic minorities in non-metro contexts, finding rural Blacks having lower diabetic control compared to urban Blacks, and rural and urban Whites. Similar results are found for Pap testing comparing Blacks and Whites in rural and urban contexts (Duelberg 1992). Although limited, there is evidence in support of the double jeopardy hypothesis for Latinxs with rural Latinxs reporting worse self-rated health and having higher rates of

chronic diseases like asthma, diabetes, and heart disease (Albrecht, Clarke, and Miller 1998; Koopman, Mainous III, and Geesey 2006). However, literature focusing specifically on the health of non-metro Latinxs is sparse, highlighting the need for more research in this particular area.

Health Care

Unlike health status, research on healthcare access and use among Latinxs outside of metropolitan communities is more developed. Scholars have documented a number of barriers faced by Latinxs in general when attempting to access healthcare in the United States, relating to communication, insurance and quality of care (Derose et al. 2009; Escarce 2007; Kapur and Escarce 2006; Lee et al. 2002). These disparities continue to exist even after controlling for individual level characteristics like healthcare knowledge and health insurance coverage (Derose and Baker 2000; Escarce 2007; Kirby et al. 2006; Weinick et al. 2004; Zuvekas and Taliaferro 2003). In fact, Mueller, Patil, and Boilesen (1998) find a unique relationship between minority status and rurality, with Latinxs having significantly lower rates of use. Rural Latinxs face a number of healthcare access problems that are also representative of problems in the rural health care infrastructure in general, which include shortages of doctors, a lack of Spanish-speaking healthcare providers, and fewer doctors participating in Medicaid programs (Cristancho et al. 2008; Strickland and Strickland 1996). Physician shortages also put pressure on doctors to spend less time with patients and to avoid patients who need interpreters because those visits take longer (Casey, Blewett, and Call 2004). Like many of their white counterparts, Latinxs in rural locations also often face transportation barriers that are less likely to be found among metropolitan Latinxs (Coronado et al. 2004; Cristancho et al. 2008).

Satisfaction with Care

Satisfaction with care is an aspect of health and healthcare processes that is less addressed by sociologists and demographers. However, it an incredibly important aspect given the relationship between satisfaction and adherence to physician recommendations (Zolnierek and Dimatteo 2009). Fenton et al. (2012) find an association with high levels of patient satisfaction and higher odds ratios for an impatient admission, but lower odds ratios of an emergency room visit. Limited research has been conducted specifically on the Latinx satisfaction with care. Laveist and Nuru-Jeter (2002) find evidence suggesting physician and patient race concordance leads to an increase in patient satisfaction. Unsurprisingly, and similar to discussions on other elements of Latinx health, language may play an important role in satisfaction with care. Morales et al. (1999) find Latinxs who responded to their survey in Spanish were significantly more dissatisfied compared to both whites and Latinxs that responded in English. The role of interpreters also appears to play an important factor in increasing satisfaction among Latinxs (Moreno and Morales 2010).

New Vs. Established Destinations

The term "new destination" has been used by academics and public policy institutes for the past few decades to discuss locations with increased Latinx growth outside of traditional receiving residential contexts. Importantly, "destination" types do not pertain to one particular geographic unit. Previous research has used a multitude of residential contexts including, counties (Kandel and Cromartie 2004; Donato et al. 2007), states (Massey and Capoferro 2004), regions (Crowley, Lichter, and Turner 2015; Saenz 2004), metropolitan statistical areas (Stamps and Bohon 2006), and consolidated public

use microdata areas (Lichter and Johnson 2009). Destinations are largely considered "established" if 10 percent of the population identified as Latinx in 1990 (Lichter and Johnson 2006, 2009; Monnat 2017; Parrado and Kandel 2010). New destinations are those areas that experience a growth in the Latinx population of 150 percent and an increase of at least 1,000 individuals between 1990 and 2000 (Gresenz, Derose, Ruder, and Escarce 2012; Lichter and Johnson 2009). Existing research suggests that new destinations differ from established gateways in a number of important ways, including the availability of Latinx networks (Portes and Stepick 1993) and the response of the local community to the change in population (Singer 2004). More contextual differences include housing market characteristics (Atiles and Bohon 2002; Atiles and Bohon 2003), residential segregation (Hall 2013; Lichter el al. 2012; Park and Iceland 2011), the socioeconomic well-being of the community (Kandel et al. 2011; Lichter et al. 2012; Parrado and Kandel 2010), and the ability of the community to absorb the new Latinx residents, who may face barriers to acculturation like limited English proficiency and lower socioeconomic standing (Crowley and Lichter 2009; Dondero and Muller 2012; Singer 2004; Stamps and Bohon 2006). Qualitative research on rural Latinxs suggests that barriers are largely due to linguistic differences and lack of health insurance (Blewett et al. 2003; Casey et al. 2004; Vitale and Bailey 2012).

Destinations and Health

Research on Latinx health in new vs. established destinations is limited, but increasing. That which does exist focuses largely on healthcare access and factors that facilitate or inhibit access. For instance, Gresenz et al. (2012) find healthcare outcomes for U.S.-born Mexicans in new destinations to be worse than those residing in traditional

destinations, specifically in the areas of unmet need or delay in receipt of care. Conversely, these differences were not found for foreign-born Mexicans (Gresenz et al. 2012). Cunningham et al. (2006) find that compared to those in traditional gateways, Latinxs in new destinations were less likely to have insurance, less likely to have a regular provider, and less likely to have had a regular checkup. Monnat (2017) adds to this literature in finding that Latinxs in early new destinations (those that became destinations in the 1990s) having lower insurance rates is a function of Latinxs in these residential contexts largely being foreign-born noncitizens. Mason, Toney, and Cho (2011) find that Latinxs in Utah, a new destination state, reported little difference in health status compared to their white counterparts. The role of healthcare knowledge and healthcare perceptions also appear to be pivotal. Through in-depth interviews with new Latinx migrants in southeast Michigan, Harari et al. (2008) find that new residents were often unaware of local public health programs and experienced feelings of not being welcome, perceived inferiority of health care for the uninsured, and isolation in their new neighborhoods.

Theoretical Framework

This research is guided by a number of theoretical frameworks. The social determinants of health literature provides one framework grounding this research. The World Health Organization (2015) argues that social, physical, and economic environments and individual characteristics and behavior determine one's health. This includes the many contextual conditions within which individuals and their families live. Among epidemiologists, demographers, sociologists, and other health researchers, this framework is sometimes referred to as Fundamental Cause Theory (Link and Phelan

1995). According to Phelan and Link (2010; 106)

> A fundamental social cause of health inequalities has four essential features: First, it influences multiple disease outcomes, meaning that it is not limited to only one or a few diseases or health problems. Second, it affects these disease outcomes through multiple risk factors. Third, fundamental social causes involve access to resources that can be used to avoid risks or to minimize the consequences of disease once it occurs. Finally, the association between a fundamental cause and health is reproduced over time via the replacement of intervening mechanisms. It is their persistent effect on overall health in the face of dramatic changes in mechanisms that led us to call them "fundamental."

In the United States, socioeconomic status is often seen as a primary cause as it translates to resources for individuals, which is translated into disease avoidance and protection. These resources operate on both the individual and contextual level. Having resources allows one to access better neighborhoods, which also allows for health-protective factors like quality grocery stores, limited violence, and healthcare infrastructure. Above and beyond the direct use of resources and the contextual impacts that follow, SES impacts health through the development of norms, behaviors and preferences, which can be deleterious to health (Cockerham 2005; Freese and Lutfey 2010). These differences can easily be found in high verses low class food and leisure activity tastes. Freese and Lutfey (2010) add a final component to the mechanisms (which they refer to as metamechanisms) through which SES acts as a fundamental cause, which refers to the differential treatment of individuals by healthcare institutions and professionals, based on the individual's SES. That is, health inequalities can be perpetuated by institutions depending on the clientele being treated. More recently, Phelan and Link (2015) have concluded that racism largely contributes to health

inequalities by way of racial socioeconomic differences, but there is evidence that racism has a "fundamental association with health outcomes independent of SES" (325). Given this, there is reason to believe that Latinxs may have worse health. Moreover, SES may serve as a fundamental cause explaining rural/urban health differences. As mentioned before the potential for "double jeopardy" with regard to inequalities is present for rural residents of color (Brown and Schafft 2019). Other scholars have argued that legal status, especially when in the context of non-white immigrants, may serve as a fundamental cause of health as well (Asad and Clair 2018; Hamilton, Hale, and Savinar 2018, Viruell-Fuentes 2007; Viruell-Fuentes, Miranda, and Abdulrahim 2012). Torres and Young (2016) also applied this concept to a life course perspective, arguing that legal stratification (via stress, fear, and unequal access to care) has long term and potential intergenerational impacts on the health of racialized immigrants.

The social determinants of health framework/Fundamental Cause Theory is used in conjunction with the subnational development theory emphasized by Linda Lobao, highlighting the importance and influence of local actors and policies in influencing inequality (Lobao, Hooks, and Tickamyer 2007, 2008). These two frameworks will be useful in understanding the ways in which the contexts of Latinx residential locations vary between new and established destinations along the rural-urban continuum, how those differences are associated with differences in health care access, use, and outcomes, and how the individual characteristics of Latinxs, including immigrant status, mediate and/or moderate these differences.

Similar to Fundamental Cause Theory is The Behavioral Model of Health Care Access and Utilization (; Andersen and Newman 1973; Andersen 1995; Davidson et al.

2004). The Andersen model focuses on the importance of individual-level health need factors (e.g., self-rated health, diseases, functional limitations), predisposing factors associated with individuals' healthcare preferences and/or attitudes toward seeking care from health professionals (e.g., age, gender, family status, race/ethnicity), and enabling factors that contribute to or impede an individual's use of care. Such factors include socioeconomic status characteristics, health insurance coverage, and English language proficiency. More recent iterations of the model have incorporated contextual enabling characteristics, such as health care supply, which may especially influence use in rural communities, and socioeconomic, demographic, and public policy environments where individuals live. Fundamental Cause Theory finds some predisposing and enabling factors to be fundamentally associated with health (SES and race), whereas contextual factors are spillover from SES as a form of means (The Behavioral Model sees the contextual characteristics as enabling). It is important to note that although both frameworks focus on similar measures, there outcomes of interest are different. Fundamental Cause Theory is focused on individual health and mortality, whereas Andersen's (1995) model describes the pathways for healthcare access and use. Thus, Link and Phelan's (1995) model is used for hypothesizing self-rated health, whereas Andersen's (1995) model is used for models predicting delays in care and emergency room usage.

The final theoretical model used to guide my methodological modeling is a modification of Penchansky and Thomas' (1981) healthcare access framework used by Abraido-Lanza et al. (2011) to theorize satisfaction with care. Unlike Andersen's (1995) model, satisfaction data was used in the original conception of the model due to what the

author's believed to be a lack of definition for "healthcare access" (Penchansky and Thomas 1981). The original model includes five dimensions of healthcare access: availability, accessibility, accommodation, affordability, acceptability. Availability refers to healthcare infrastructure available (amount and type) in relation to a client's needs. Accessibility is the location of healthcare supply in relation to the location of the client and accounts for transportation resources available to the client. Accommodation refers to the ways in which the healthcare infrastructure is organized for accepting clientele, such as walk in services, appointment making availability, and open hours. This mechanism also accounts for the client's ability to comply with the organizational structure and their perceptions of whether or not it appropriately meets their needs. Affordability refers to the prices for services and insurance accepted in relation to the client's ability to pay, personal insurance plan, and perceptions of cost versus worth of services. The final mechanism, acceptability, refers to the client's perceptions of provider and practice characteristics versus the actual characteristics of their providers. This component also accounts for providers' attitude towards acceptable and preferred patient characteristics. Abraido-Lanza et al. (2011) tailor this framework to specifically apply to Latinxs, focusing on affordability, accessibility, accommodation, and acceptability. Like the original model, acceptability is measured through satisfaction with care. However, accommodation is also updated to account for specific needs for Latinx communities, such as availability of services that meet the needs of community members with limited English proficiency. Moreover, they update the model to include quality of patient-provider relationship and medical mistrust as potential mediators.

My work adds to the gaps in literature on Latinx health status in non-metro contexts, as well as the moderating role of metro status on healthcare access, use, and satisfaction in different destination types. At this time (2019) limited focus has been given to discussions of healthcare access and use by Latinxs, specifically residing in new destinations. Based on the previous literature and the guiding theoretical frameworks discussed above, I test my hypotheses using the following modeling strategy. I begin my analyses by identifying differences in healthcare access and use, satisfaction with care, and health status across categories of residential contexts. I then determine the importance of individual-level factors using four sets of characteristics (socioeconomic status, acculturation, healthcare access/use, and health behaviors status) in contributing to metropolitan differences along the rural urban continuum. Finally, three sets of characteristics (healthcare infrastructure, reduced community investment, and Latinx population demographics) are used to account for contextual differences among respondents. A general conceptual model for this paper is presented in chapter 3 and a more specific model for each outcome of interest is presented and discussed in the corresponding results chapter.

Chapter 3: Data and Methodology

Data

I use data from the 2011-2014 restricted-use files of the National Health Interview Survey (NHIS) to assess differences in healthcare access and use (delaying care for any reason and number of Emergency Room (E.R.) visits), satisfaction with care (satisfied/very satisfied with care in past year), and health status (self-rated health) among adult Latinxs (18-64) living in varied residential contexts across the U.S.

The NHIS is conducted annually by the U.S. Centers for Disease Control and Prevention (CDC) of the National Center for Health Statistics (NCHS). These are the primary source of nationally representative data on the health of the civilian, non-institutionalized population residing within the United States. The NCHS collects data via in-person household interviews by the U.S. Census Bureau using a multistage area probability design (NHIS 2016). All analyses account for the NHIS's stratified sampling design by using appropriate procedures in SAS (proc surveyfreq, proc surveymeans, and proc glimmix) and utilizing the appropriate individual and household weights included in the NHIS to account for unequal sample selection.

Since 1997 annual NHIS questionnaires have featured both core questions and supplements. There are four core components: household, family, sample adult, and sample child. The household component focuses on demographic information on all individuals within the household. The family component collects data on health status, injuries, healthcare access and use, health insurance, and socioeconomic status of each family within the household. One adult and one child (if children present) are then sampled from each family within the household to answer additional core questions on

health status, services, and behaviors. In this study, I use information from the household, family and sample adult files.

The NHIS is widely used to document national trends in health and illness, and to monitor progress towards national health goals (Blackwell, Lucas, and Clarke 2014; Nahin et al.2007; Simpson and Cohen 2017). Public health researchers, sociologists, and epidemiologists also use NHIS data to evaluate health disparities, public policy and programs, and healthcare utilization and health behaviors (Arroyo-Johnson et al. 2016; Hidalgo et al. 2015; Larsen, Martin, and Strong 2015; Martinez, Ward, and Adams 2015; Schneiderman et al. 2014).

The public NHIS data do not include geographic identifiers, prohibiting my ability to match individual-, family-, and household-level data to contextual information about respondent place of residence. I can only assess differences in Latinx health outcomes by destination type and metro status with access to respondent geographic identifiers. Additionally, research has shown the importance of contextual factors when studying health and healthcare access and use (Anderson et al. 1997; Boardman 2004; Bond Huie et al. 2002; Browning and Cagney 2002; Browning and Cagney 2003; Dubowitz et al. 2008; LeClere et al. 1997; Monnat and Beeler Pickett 2011; Robert 1998; Ross and Mirowsky 2001; Yen and Kaplan 1999).

In order to account for potential contextual explanations in differences in Latinx health and healthcare, I utilize a restricted version of the NHIS through the Penn State Federal Statistical Research Data Center (PSU FSDRS). Through the PSU FSRDC I am able to obtain an analyze microdata on individuals and families, including geographic information and more thorough question responses, not available in the public use

version of the dataset. Were it not for the PSU FSDRS, I would not have had the ability to classify respondents based on county metro or destination status.

I merged the individual-, family-, and household-level data with state and county data from 1) USDA Economic Research Service (ERS) 2013 rural-urban continuum codes (RUCC); 2) county-level health care supply indicators from the 2010 Area Health Resource File (AHRF); 3) the 2009-2013 American Community Survey (ACS); and 4) the 1990, 2000, and 2010 Decennial U.S. Census.

The 2013 RUCC is a 9-point classification scheme characterizing counties by population size and adjacency to metro area for non-metro counties. There are 3 types of metro counties: counties with less than 250,000 population, counties with 250,000 to 1 million population, and counties with populations of 1 million or more. There are 6 types of non-metro counties, which are distinguished by both population and metro adjacency. These counties range from those with an urban population of 20,000 or more and are metro adjacent (largest non-metro counties) to counties with an urban population of less than 2,500 and not metro adjacent (most remote non-metro counties). The other population compositions for non-metro counties include urban populations of 2,500 to 19,999. This allows for a more detailed residential classification than a simple dichotomous measure of metropolitan or non-metropolitan. More information on the methodology can be obtained by visiting http://www.ers.usda.gov/data-products/rural-urban-continuum-codes.aspx.

County-level health care supply measures come from the 2010 Area Health Resource File (AHRF). The AHRF compiles county and state information from variety of sources, including the American Hospital Association Annual Survey of Hospitals, the

American Medical Association Physician Masterfiles and the Health Resources and Services Administration (HRSA), (AHRF 2015).

The American Community Survey (ACS) is a nationally representative survey conducted by the United States Census Bureau to collect demographic, economic, housing, and social information from approximately 3.5 million U.S. households annually. The ACS is used to collect detailed information that was once collected decennially through the Census long form. This information is now collected continuously and released annually. Although annual estimates are available for places with populations of 65,000 or more, I utilize 5-year estimates (2009-2013) in order to account for contextual information of individuals residing in counties with fewer than 20,000 residents, which are only available in this format (ACS 2016). County-level data on Latinx population size come from the 1990, 2000, and 2010 U.S. Decennial Census.

Variables

There are three broad categories of dependent variables: healthcare access and use, health status, and satisfaction with care. All are measured through the respondents' self-reports.

Dependent Variables: Healthcare Access & Use

I use two variables to measure healthcare access and use. 1) *Delay in Care* (for any reason) is measured with a binary indicator of respondents who reported delaying care for any reason over the past 12 months versus those who reported no delay in seeking healthcare. Respondents were asked by survey takers, "During the past 12 months have you delayed seeking medical care/has medical care been delayed for anyone in the family because of." In order to create this variable, I code any respondents who

answered “yes” to delaying care for any of the following reasons: cost, doctor’s office closure, lack of transportation, waiting too long in care facility, could not get an appointment soon enough and unable to get through to facility on telephone. It is important to note that there is not a preceding question asking respondents if they needed care but delayed without stating a particular reason. Due to this, some respondents that needed care and delayed may be coded as “0” for not delaying care, when in fact they did. 2) *Emergency Room Visits* is a count variable that reports the number of times respondents visited a hospital emergency room for their own health in the past 12 months. Survey takers asked respondents, “During the past 12 months, how many times have you gone to a hospital emergency room about your own health (This includes emergency room visits that resulted in a hospital admission)? I examine this outcome as a binary variable categorizing adults who visited the E.R. two or more times in the past year, compared to those that did not visit an emergency room or sought care in such a facility only once in the past year. Reasons for E.R. visits vary and potentially upwards of 30 percent of those visits can be classified as non-urgent visits (Uscher-Pines et al. 2013). Allen and Cummings (2016) find Latinxs use the E.R. slightly less than their white counterparts with individuals with the lowest levels of acculturation being the least likely to utilize the resource. There is no information collected about why respondents visited the E.R. and therefore I cannot distinguish if this is capturing sickness or lack of alternative access. I do attempt to account for these potential confounders with measures of illness and other factors that may inhibit access and promote the use of an E.R. for non-emergency related reasons.

Dependent Variables: Satisfaction with Care

The NHIS includes one measure of healthcare satisfaction. Respondents are asked "how satisfied were you with healthcare in the past 12 months," with answers ranging from very satisfied, somewhat satisfied, somewhat dissatisfied, and very dissatisfied. I dichotomized the variable into very satisfied/somewhat satisfied vs. somewhat dissatisfied/very dissatisfied.

Dependent Variables: Health Status

I use one measure for health status. *Self-Rated Health* is a measure of the respondent's reported health. Per the NHIS codebook, "HEALTH rates an individual's general health (as self-reported by the person in question or evaluated by a family member] on a five-point (1982 forward) Likert scale, ranging from "excellent" to "poor" (along with an unrated "unknown" category)" (NHIS 2019). I recoded the original variable into binary indicator of excellent/very good/good coded as "1" and respondents' who report fair/poor coded as "0."

Independent Variables

Metropolitan Status

I measure rurality (rural-urban continuum status) at the county level using the USDA ERS 2013 rural-urban continuum codes (RUCCs). To be considered metropolitan, counties must have a city of at least 50,000 people or a total urbanized area of 100,000 people and have close economic ties with the surrounding counties, designated by economic commuting data. County RUCCs classify counties into 1 of 9 categories of metropolitan status (three metro and six non-metro), based on population size and

adjacency to metro counties. Due to small sample sizes in the most rural counties, I collapsed counties into a dichotomous measure of metropolitan vs. non-metropolitan.

Destination Type

Due to small sample sizes across counties, I categorized destinations into three types: established, new, and non-destination. Consistent with the literature in this area, established destinations are those with a Latinx population of at least 10 percent in 1990 (Lichter and Johnson 2006, 2009; Monnat 2017; Parrado and Kandel 2010). New destinations are those counties with Latinx population growth of 150 percent and at least 1,000 Latinxs between 1990 and 2000 or between 2000 and 2010. It is important to note that previous research indicates that there are significant and substantial differences in Latinx health care access, utilization, and outcomes in mature new vs. recently new destinations (Monnat 2017). These terms refer to counties that experienced large growth in the 1990s versus those that experienced the same shift in the first decade of the 2000s. Due to small sample size across destination types, I have collapsed both types of new destination counties into one destination of "new destination." Thus, some nuances may be ultimately missed with the collapse of new destinations in this research.

Control Variables

Individual and Family

I include a number of demographic factors as controls. At the individual level, I control for respondent age, sex, and marital status. At the household/family level, I control for total number of people and number of children in the household.

Community Disadvantage

I measure county disadvantage using a six-item concentrated disadvantage scale similar to Sampson, Raudenbush, and Earls (1997), which includes the percent of households in poverty, percent receiving public assistance, percent unemployed, percent female-headed households, percent non-Latinx black, and percent of individuals with less than a high school diploma.

Latinx Enclave Status

As my study specifically focuses on Latinx adults, I include a scale which accounts for factors that may characterize residing in a Latinx enclave. This scale is measured combining the standardized scores of: percentage Latinx in the county and percentage foreign born. The role of the ethnic enclave is present throughout literature on assimilation and acculturation, but research on segmented assimilation theory suggests these communities may not have the protective effects seen in previous groups of immigrants (Portes and Zhou 1993; Zhou 1997). That is, living in a county with more people of the same ethnic background and more people who were born outside of the U.S. might actually have deleterious impacts on one's health.[6]

Residential Segregation

I measure Latinx/non-Latinx white segregation by utilizing the dissimilarity index for each county. The Index of dissimilarity (D) is generally a measure of evenness of the between a non-white group and white populations across the census tract within the larger metropolitan/non-metropolitan area. Dissimilarity measurements can range from 0 (complete integration between the two groups) to 1 (complete segregation) and represents the percentage of Latinxs that would need to move to match the group's percentage of the

[6] Although variables in the community disadvantage and Latinx enclave indices may be correlated with destination status, results from correlation matrices do not indicate issues of multicollinearity

larger area (Lichter, Parisi, Taquino 2015). For instance, if the Index of Dissimilarity for a respondent's residence is .73, 73 percent of Latinxs would need to relocate for complete integration among non-whites in the same geographic area specified. For the purposes of this study, I use dissimilarity measured at the county level, specifically looking at non-white Latinxs and whites.

Mediators

Socioeconomic Status

I account for individual socioeconomic status (SES) through measurements of educational attainment. I recode education into four categories: less than a high school degree, high school degree up to an associate's degree, a bachelor's degree, and graduate or professional degree (referent). There are two family and household SES measures, including income to poverty threshold and receipt of income from safety-net sources. Income to Poverty threshold categories are based on the ratio of family income to the poverty threshold including imputed values for missing data. I have recoded the variable into 4 categories: under 50 percent of the poverty threshold, 100 to 149 percent, 150 to 199 percent, and 200 percent or greater (referent). I construct the receipt of safety net income from a set of variables asking, "At any time during the past 12 months, did you or anyone in your family receive benefits from: Temporary Aid for Needy Families, Social Security, Supplemental Security Income, WIC, and Social Security Disability Insurance." A yes response to any of the aforementioned programs is coded as "1," whereas a no is coded as "0."

Healthcare Access & Use Measures

Healthcare access measures for the individual for all outcomes include having any form of insurance, having no source of preventive care, delaying care for any reason, and number of emergency room visits in the past year. As noted above, the two latter variables are also utilized as outcome measures. Thus, not all healthcare access and use variables are utilized as predictors in all models. All variables are dichotomous. Insurance status codes individuals with either public or private insurance as having insurance, as compared to those with no form of insurance. Having no source of preventive care is a dichotomous variable based on a question indicating if, "individuals have a place (or more than one place) that they usually go when they are sick or need advice about their health." This variable is recoded into those saying they have no source of preventive care verses those that report having one or more sources of care.

As mention, I utilize both delaying care and visiting an E.R. room two or more times as predictors for other outcomes of interest, such as self-rated health. These variables might be important proxies for SES and/or illness. That is, someone who visits the E.R. may be sicker than someone who does not and thus, may be more likely to rate their health as poor. Similarly, SES is related to self-rated health as well, and delaying care could be a function of lower SES.

Acculturation

A crude construction for Latinx acculturation is measured through self-reported citizenship (U.S. citizen vs, non-citizen), nativity status (U.S. born vs. native born), and language of interview (English vs. non-English). Citizenship and nativity status variables are combined for three variables: foreign-born citizens, foreign born non-citizens, and native born (referent). A dichotomous variable for survey language is constructed by

coding individuals who took the interview in any other language than English as "0" (referent) and those who took the entirety of the survey in English as "1".

Health Behaviors & Status

Health status and health behaviors are operationalized through body mass index (BMI), smoking status, and reporting either a functional limitation or a chronic condition. Following the CDC guidelines, I construct 3 weight status variables based on BMI: Obese (BMI of 30.0 and above), Overweight (BMI of 25.0 to 29.9), and Not Overweight (BMI below 25.0; referent). Smoking status is a dichotomous variable that codes current smokers as "1" and former and never smokers as "0." The functional limitation and chronic condition variable is constructed based on positive responses to a series of questions identifying individuals who have been diagnosed by a doctor or health professional with any of the following: asthma, coronary heart disease, high cholesterol, congenital heart disease, hypertension, and diabetes. This variable is used as a proxy for one's health status, with the assumption that individuals who have been diagnosed with any of these problems may be sicker and need healthcare services more frequently.

Healthcare Environment.

I control for county availability of health care services with the number of health care professionals per 10,000 capita, which is subsequently divided into quartiles. Counties in quartile 4 (those with the most professionals) are the referent category.

Conceptual Model

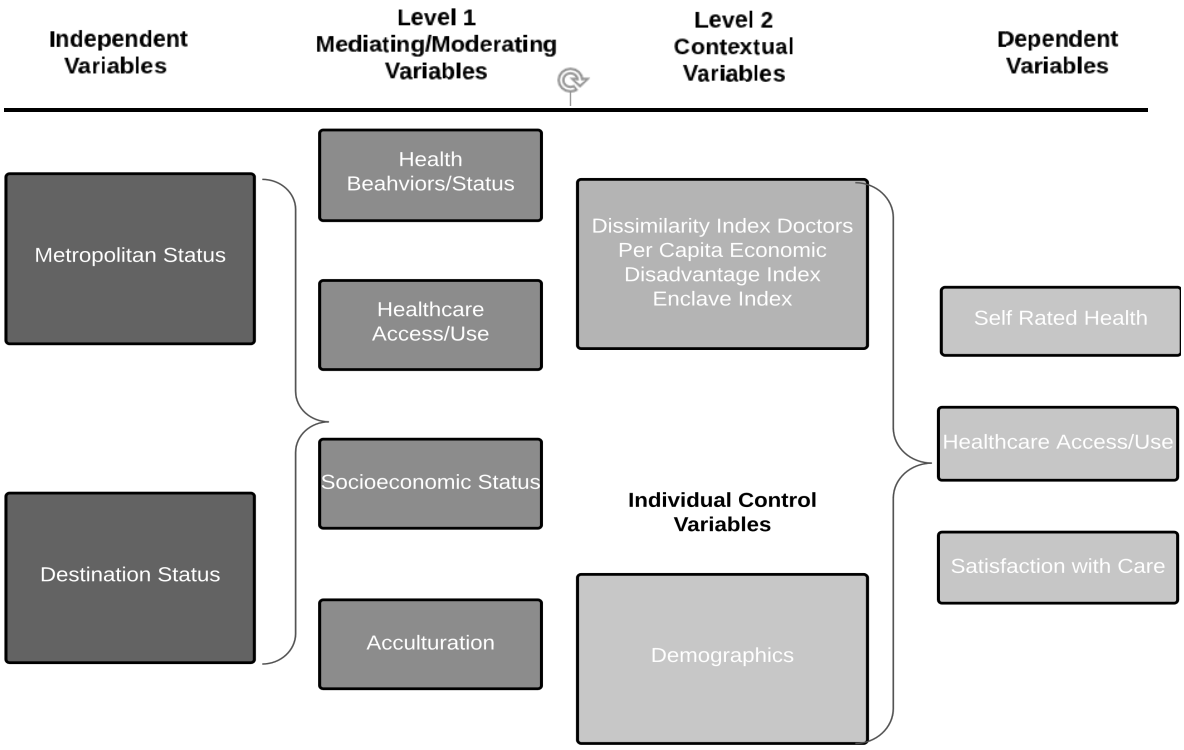

Figure 1 Generalized Conceptual Model

Based on previous research focusing on healthcare access health status, and patient satisfaction (Abraido-Lanza et al. 2005; Andersen 1995, Gresenz et al. 2012; Morales et al. 1999), Figure 1 outlines the generalized conceptual modeling for all outcomes of interest. The two main independent variables of interest are at county level variables: metro and destination status. There are four sets of individual independent level variables of interest, which may serve as mediating or moderating variables, between the independent and dependent variables. Individual and county demographic variables and serve as control variables. Conceptual models for each specific outcome of interest are presented in their respective chapters.

Statistical Analysis

Two different samples are used within this study. Questions concerning self-rated health and healthcare use were asked of respondents in all four years (2011-2014). However, the question used for satisfaction with care was only in 2017 and 2018. Thus, comparisons across these samples cannot be made. Descriptive statistics (proportions, means, and standard errors), and difference in means/proportions tests (t-tests) across metro status for the larger sample, used for health status and healthcare access and use outcomes, are presented in Table 1. The same descriptive statistics for the smaller sample, used for modeling "satisfaction with care" are presented in Chapter 6. Within each chapter I then estimate the relationship between metro status and destination type and Latinx health care access, utilization, satisfaction, and health status using appropriate regression models depending upon the level of measurement of the outcome. I estimate multiple models for each outcome of interest. Based on my aforementioned research questions of interest, separate models are run to account for the potential impact of each set of mediating factors.

All of my dependent variables are binary. The regression analyses estimate two-level hierarchical models in which adults (Level 1) are nested within counties (Level 2). Although all states are represented in this sample, state fixed effects are used to account for the high clustering of respondents in a few states. This is the approach used most in research on contextual effects on health. Level 1 (individual) coefficients may vary randomly by county. The process of listwise deletion is used to account for missing responses on all variables included for analysis. Prior to running regression analyses, I

conducted tests to check for multicollinearity, which influenced the following modeling structures. No other problems were detected.

Descriptive Statistics

Table 3 presents variable means across each metropolitan status category and the results from difference of means/ proportions (t-test) comparing respondents in metro vs. non-metro counties for the sample used for chapters 4 and 5. Descriptive statistics for the reduced sample used for predicting odds of satisfaction with care are presented in Chapter 6. The larger sample includes 18,131 respondents residing in 648 counties. 509 of these counties are designated metropolitan (RUCC 1-3) and 139 counties are non-metropolitan (RUCC 4-9). The geographic distribution of the sample is shown in Figures 2 through 4. Figure 2 shows all counties represented within the sample, followed by Figure 3 highlighting the location of Metropolitan counties represented in the sample, and Figure 4 which displays the counties where non-Metropolitan sample respondents reside. Metropolitan counties are predominantly located in California, Florida, and New England. The majority of the non-metropolitan counties are dispersed throughout mid-western states.

Table 1 displays a cross-tabulation showing the number of respondents by county metropolitan and destination status. The number of non-metro respondents is limited in comparison to metro (975 compared to 17165). The smallest residential group within the sample is Latinxs that live in non-metro counties that became new destinations between 1990 and 2000. The largest group of respondents can be found living in metropolitan counties that became new destinations between 2000 and 2010. Interestingly the most represented destination type for non-metro respondents is new destinations.

In Table 3, we see there is a slightly lower percentage of Latinxs in rural places who report their health as being fair or poor, but no significant differences are found between the two groups. Overall, less than 13 percent of the sample reported their health as being fair or poor. This is a somewhat lower prevalence than expected, as it is widely reported that Latinxs tend to report their health as being poorer when compared to non-Latinx whites (Hummer, Benjamins, and Rogers 2004; Shetterly et al. 1996). That is, Latinxs in the U.S. are more apt to self-report "fair" or "poor" health.

In terms of health status factors, significant differences were found for some weight (BMI) categories and smoking status. Latinxs in rural counties were significantly more likely to be obese, 45.3 percent compared with 38.7 percent. About 39 percent of the study sample was characterized as being obese. Rural Latinxs were also significantly more likely to report being current smokers, about 19 percent compared to 13.6 percent in urban areas. Roughly 14 percent of the study sample reported being current smokers. These findings are consistent with other research which denotes higher levels of obesity and smoking in non-metropolitan locations within the United States (Befort, Nazir, and Perri, 2012; Weaver et al. 2013). Of the healthcare access and use factors, significant differences were only found for having any form of health insurance. Surprisingly, Latinxs in non-metro counties reported higher levels of having a form of health insurance, 45.8 percent as compared to 37.0 percent among metro Latinxs. Latinxs in urban counties were also significantly more likely to report being foreign born and non-citizens, 20.7 percent compared to 13.6. With regard to socioeconomic status factors, significant differences in education were found. Latinxs in non-metro counties were significantly more likely to report having less than a high school degree (39.1 percent vs.

31.8 percent) and significantly less likely to report having a bachelor's degree (6.2 percent vs 10.8 percent) compared to their metro counterparts. Non-metro Latinxs were also significantly more likely to report an income to poverty ratio of 100 – 149 percent (18.7 vs. 15.7). Finally, significant differences were found for the demographic factors of marital status and age. Rural Latinxs were less likely to report never having been married (21.8 percent vs. 28.4 percent) and are slightly younger than their urban counterparts.

Some significant differences were found between county contextual variables. For instance, metropolitan counties had significantly higher dissimilarity indices, compared to non-metro (.35 compared to .24). However, both indices are lower than the overall average of .45 for Latinxs in the U.S. based on data from the 2010 Census (Frey 2010). Non-metropolitan counties also have significantly lower average scores on the Latinx enclave index than metropolitan counties. Lastly, non-metro counties had significantly lower medical professionals per capita; being more likely to score in the first two quartiles. No significant differences were found among destination types.

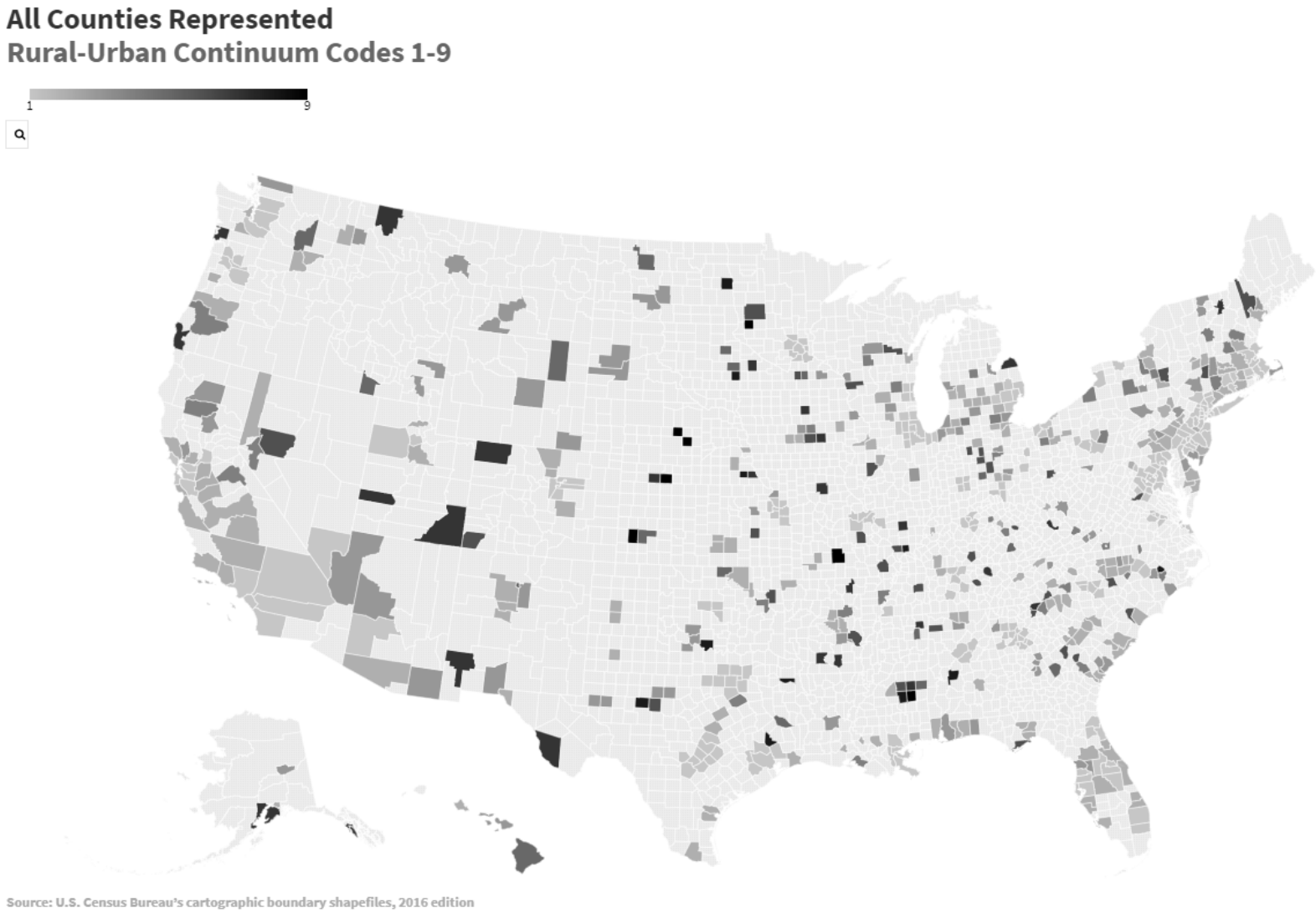

Figure 2 Geographic Dispersion of Respondents by County

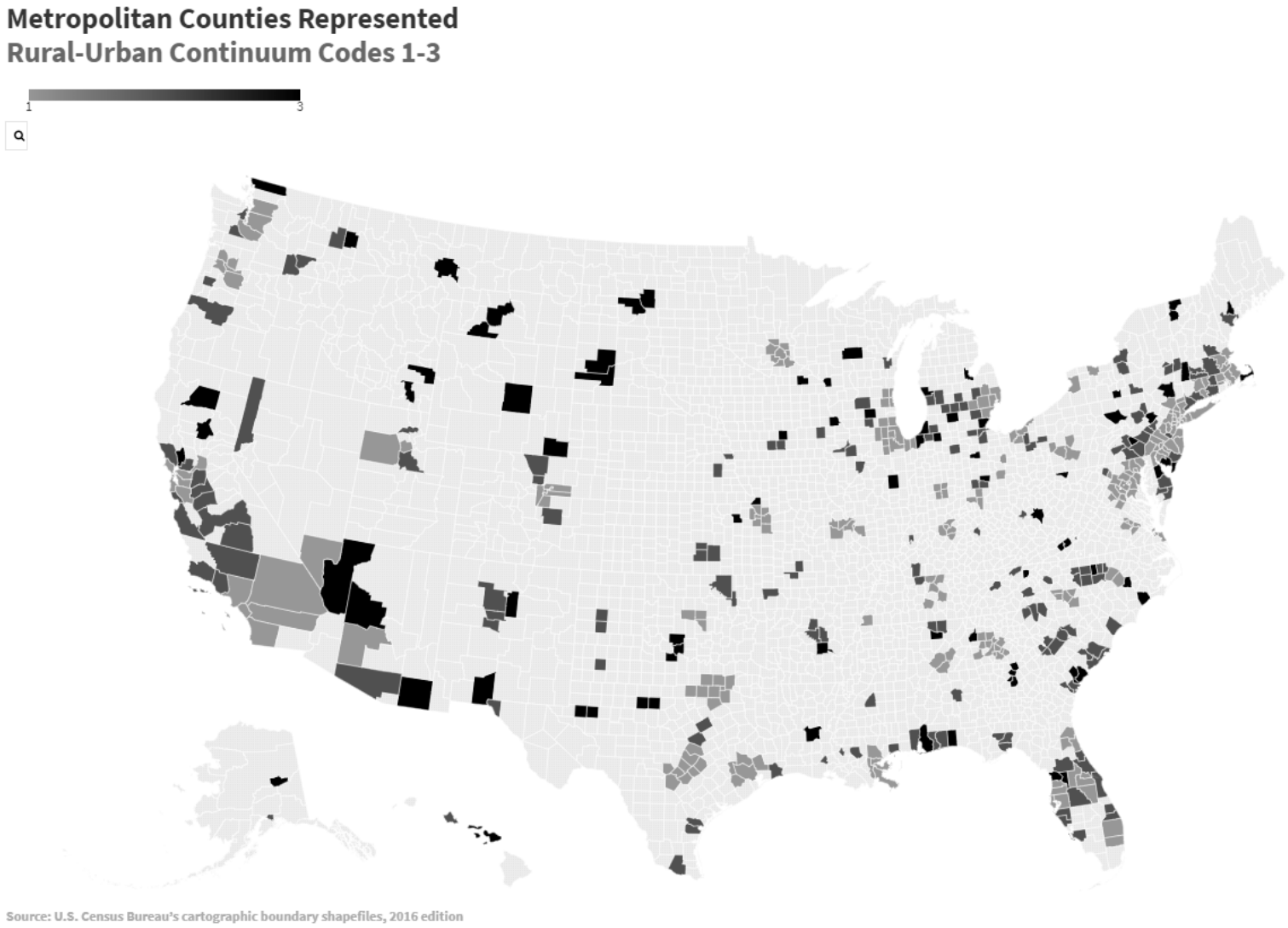

Figure 3 Geographic Dispersion of Respondents Residing in Metropolitan Counties

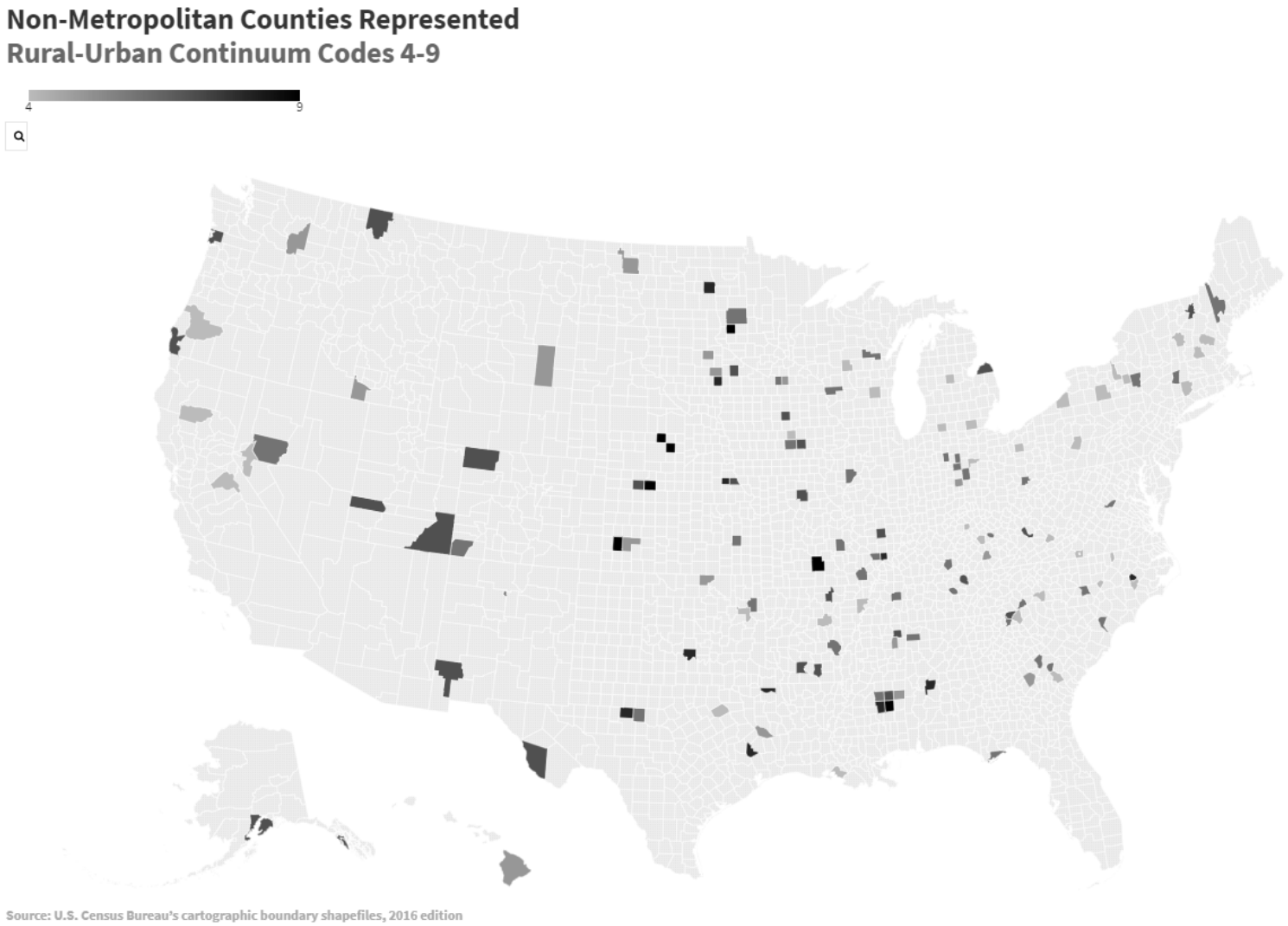

Figure 4 Geographic Dispersion of Respondents Residing in Non-Metropolitan Counties

Table 1 Number of Respondents by Metropolitan and Destination County Status

	Metropolitan	Non-Metropolitan	Total
Non-Destination	227	1223	**1450**
Established Destination	371	11592	**11963**
1990s New Destination	156	1652	**1808**
2000s New Destination	221	2689	**2910**
Total	**975**	**17156**	**18,131**

Table 2 Average Respondent Characteristics by Metropolitan Status

			Metro		Non-Metro		
	Mean	S.E.	Mean	S.E.	Mean	S.E.	Significance
Health Status							
Chronic Condition	31.36	0.0042	31.18	0.0042	34.18	0.0202	
Not Overweight (Ref)							
Obese	39.1	0.0045	38.7	0.0045	45.28	0.0217	**
Overweight	37.43	0.0042	37.49	0.0044	36.47	0.0126	
Current Smoker	14	0.0030	13.66	0.0030	19.1	0.0176	**
Food Insecure	7.67	0.0025	7.64	0.0024	8.18	0.0174	
Health Access/Use							
Any Form of Insurance	37.54	0.0060	37	0.0060	45.75	0.0329	**
Care Delayed	12.48	0.0031	12.46	0.0031	12.84	0.0153	
Visited Doctor in Past Year	69.82	0.0047	70.01	0.0047	67.03	0.0247	
No Preventive Care Access	21.11	0.0041	21.05	0.0043	22.04	0.0156	
Two or More E.R. Visits in Past Year	6.71	0.0021	6.79	0.0022	5.47	0.0078	
Fair/Poor health	12.86	0.0029	12.94	0.0029	11.71	0.0118	
Acculturation							
Survey Language English	67.71	0.0069	67.43	0.0071	72	0.0281	
Native Born (Ref)							
Foreign Born – Non-Citizen	34.85	0.0073	34.54	0.0074	39.56	0.0327	
Foreign Born - Citizen	20.3	0.0042	20.74	0.0043	13.63	0.0189	***
Socioeconomic Status							
Receipt of Government Program	5.16	0.0019	5.15	0.0019	5.3	0.0084	
Graduate/Professional Degree (Ref)							
Bachelor's Degree	10.5	0.0032	10.79	0.0032	6.16	0.0102	***
High School/Associate's Degree	52.76	0.0050	52.8	0.0052	52.01	0.0141	
Less Then High School Degree	32.24	0.0057	31.78	0.0059	39.13	0.0181	***
Income to Poverty Ratio - 200percent (Ref)							
Income to Poverty Ratio - Under 50 percent	9.86	0.0031	9.81	0.0032	10.65	0.0127	
Income to Poverty Ratio - 50 – 99 percent	17.25	0.0032	17.19	0.0038	18.09	0.0182	
Income to Poverty Ratio - 100 – 149 percent	15.92	0.0032	15.74	0.0033	18.65	0.0131	**

			Metro		Non-Metro		
	Mean	S.E.	Mean	S.E.	Mean	S.E.	Significance
Income to Poverty Ratio - 150 – 199 percent	12.44	0.0027	12.32	0.0028	14.27	0.0109	
Demographics							
Married (Ref)							
Never Married	27.99	0.0042	28.4	0.0042	21.78	0.0162	**
Spouse Absent	19.01	0.0034	18.93	0.0035	20.24	0.0134	
Kids Present in Household	54.90	0.0053	54.52	0.0052			
Individual Household (Ref)							
Family Size	3.19	0.0208	3.19	0.0209	3.30	0.0956	
2-3 Person Household	36.84	0.0042	36.84	0.0043	36.73	0.0175	
4-5 Person Household	33.07	0.0045	32.96	0.0046	34.71	0.0153	
6 or More Person Household	9.21	0.0027	9.19	0.0027	9.47	0.0128	
Female	51.21	0.0042	51.30	0.0043	49.87	0.0177	
Age	37.81	0.1203	37.88	0.1228	36.79	0.4881	*
Contextual Variables							
Destination Status							
Established Destination (Ref)							
Non-Destination	28.27	0.017	21.99	0.018	57.09	0.043	
1990s New Destination	20.01	0.016	22.37	0.019	9.87	0.026	
2000s New Destination	36.55	0.019	39.20	0.022	25.43	0.038	
Dissimilarity Index	0.331	0.0054	0.35	0.0058	0.24	0.0103	***
Standardized Disadvantage Index	0.006	0.0389	-0.02	0.0424	0.12	0.0980	
Standardized Enclave Index	0.057	0.0417	0.17	0.0472	-0.50	0.0610	***
Medical Professionals Per Capita - Quartile 1	22.01	0.0159	19.83	0.0173	32.29	0.0399	**
Medical Professionals Per Capita - Quartile 2	21.34	0.0161	17.78	0.0170	35.59	0.0416	***
Medical Professionals Per Capita - Quartile 3	24.56	0.0172	25.88	0.0196	19.16	0.0340	
Medical Professionals Per Capital - Quartile 4 (Ref)							
Individual N=	18131		17156		975		
County N=	648		509		139		

*=p<.05, **=p<.01, ***=p<.001; two tailed tests; metropolitan=reference

Data: NHIS (2011, 2012, 2013, 2014), AHRF (2010), ACS (2009-2013)

Chapter 4: Metropolitan Differences in Self-Rated Health

Self-rated health is considered to be a reliable predictor of individual morbidity and mortality, above and beyond other assessments performed by medical professionals (Baum and Posluszny 1999; Finch et al. 2002; Idler and Benyamini 1997). Consistent with previous studies (Finch and Vega 2003; Idler and Benyamini 1997) self-rated health is dichotomized here into "fair/poor health" and "very excellent/excellent/good health." Latinxs are repeatedly found to report their health as being poorer than their white counterparts (Benjamins et al. 2012; Borell and Dallo 2008; Cho et al. 2004). Additional differences among Latinxs have also been found, with immigrants reporting poorer health than their native-born counterparts (Finch, Kolody, and Vega 2000; Shetterly et al. 1996; Vega and Amaro 1994). Moreover, when looking at rural/urban differences in self-rated health, Monnat and Beeler Pickett (2011) find greater odds of reporting fair/poor health among rural residents and subsequent increases in odds ratios with degree of rurality. Some of these metro differences in health may be explained by economic reliance on natural resource extraction, particularly non-metro counties supported by coal mining (Zullig and Hendryx 2010).

Conceptual Model for Self-Rated Health

Figure 5 describes what I believe to be the most proximal pathways explaining the relationship between the independent variables of interest (metro and destination status) and fair/poor self-rated health. I am hypothesizing that individual health status and socioeconomic status measures will explain any potential relationship between metro status and self-rated health, should one exist.

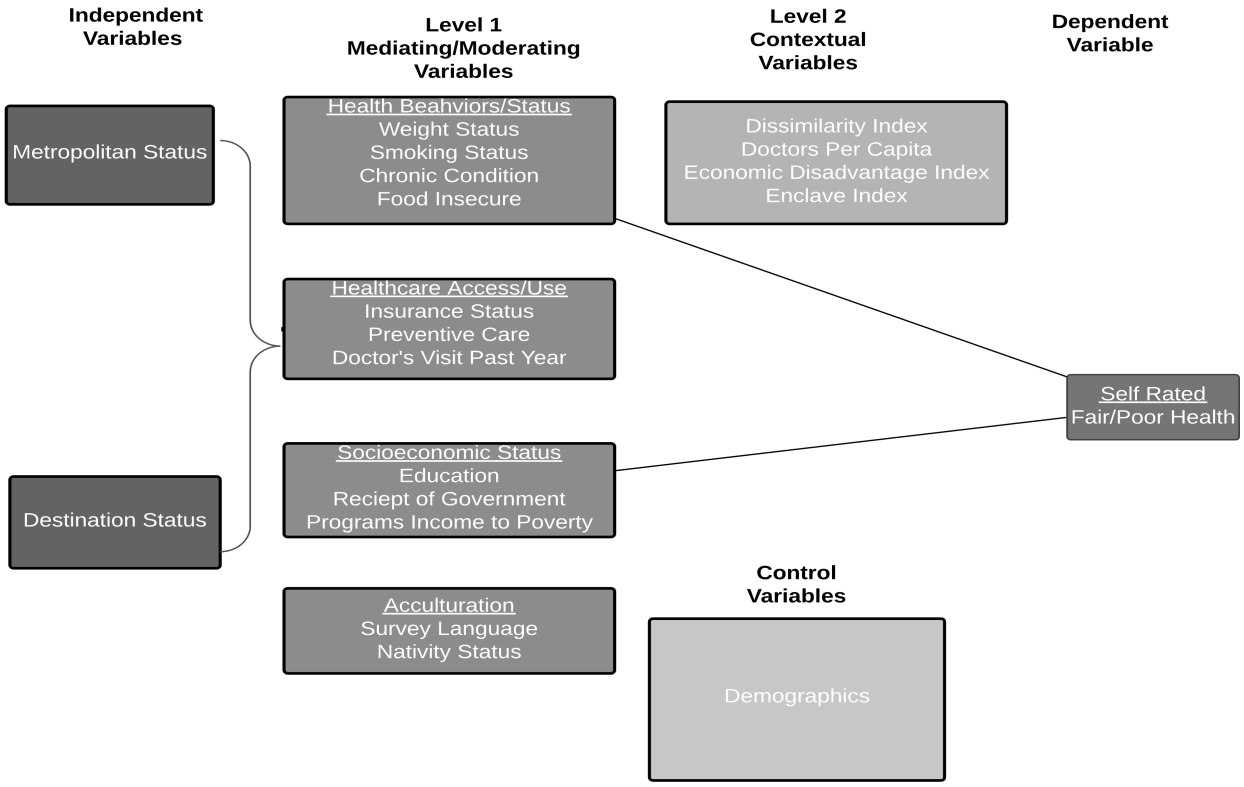

Figure 5 Conceptual Model for Self-Rated Health

Results of Multilevel Models

Prior to presenting results from regression models, I calculate the estimated pseudo-Intraclass Correlation Coefficient (ICC). Following Snijders and Bosker (1999), I use the null model to determine the amount of variation in the probability of self-reporting fair or poor health due to county-level differences versus individual-level differences. This method uses the following calculation:

$$\text{ICC}= \frac{\tau 00}{\tau 00+3.29} \qquad \text{ICC}= \frac{46.6471}{46.6471+3.29} = .934$$

where $\tau 00$ represents the covariance estimate provided in the null model and 3.29 represents the assumption of a level 1 residual (error variance) following a logistic distribution with a mean of 0 and variance of 3.29 (Snijders & Bosker 1999). The estimated pseudo-ICC for this study is 0.934, meaning roughly 93 percent of the variation

in self-reports of fair or poor health is accounted for by county-level differences and about 7 percent of the variation is due to individual-level differences or unknown factors.

Tables 2 and 3 present the estimates, odds ratios, and significance levels for associations between fair and poor self-rated health and the main individual- and contextual- level predictors. Model 1 includes only metropolitan status. Model 2 introduces destination status. Model 3 integrates individual health status variables. Model 4 adds individual health care status variables. Model 5 includes socioeconomic status variables and Model 6 introduces nativity. Models 7 and 8 incorporate all individual and contextual variables.

In Model 1, when only including metropolitan status, I find significant differences between metropolitan status and self-rated health. Latinxs in metropolitan counties have about thirty times greater odds of reporting their health as being fair/poor (P<.0001) compared to those in non-metro counties. Significant metropolitan differences remain, after accounting for destination status in Model 2. However, the odds of reporting fair/poor health are reduced to about nine times greater odds (P<.0001). Although a significant relationship is found between destination status and health, the odds ratios are only .001 for both non- destination and new destinations, as compared to established destinations.

Model 3 incorporates health status variables (one of the proximal pathways hypothesized), and significant metropolitan differences remain, but the odds ratios are again reduced (to roughly 5 times greater odds of fair/poor health in metro vs. non-metro counties; *P*<.0001). Those who report having a chronic condition, are obese, are food insecure, and currently smoke all report significantly greater odds of reporting fair/poor

health. Those with a chronic condition have about 4.4 times greater odds of reporting fair/poor health ($P<0001$) than those without a chronic condition. Those who report food insecurity have about 3.8 times greater ($P<.0001$) odds of reporting fair/poor health than those who did not report being food insecure. Those who were obese have 65 percent greater odds ($P<.0001$) compared to those who are neither obese nor overweight, whereas current smokers had about 56 percent greater ($P<.0001$), compared to nonsmokers and individuals who previously smoked. Interestingly, being overweight did not result in greater odds, but the odds are only lower by less than 1 percent ($P<0001$).

The inclusion of healthcare status variables in Model 4 eliminates the significant relationship between metropolitan status and self-rated health. Those who reported having any form of insurance, visiting the ER two or more times in the past year, and having visited a doctor in the past year all have significantly greater odds of reporting their health as fair/poor (20 percent, 3 times, and 49 percent respectively; all <.0001). It is important to note that these are exceptionally large odds ratios and that this is likely explained by the small (12.86 percent) of respondents that rated their health as fair or poor. Those who reported having no source of preventive care reported about 8 percent lower odds of fair/poor health ($P<.0001$). In this model we also see a change in the relationship for those who are overweight, compared to those who are not obese or overweight. In the previous three models, overweight respondents had significantly lower odds of fair/poor health, but in this model they have about 3 percent greater odds ($P<.0001$). It should be noted, once again, this is not a large difference.

Significant differences in metro status remain throughout Models 5-7, which incrementally add SES, acculturation, and individual demographic variables. In all

models, Latinxs in metro counties have significantly greater odds of reporting fair/poor health ($P<.0001$). In Model 5 we see that those who have received any form of government support in the past year have about 25 percent lower odds of fair/poor health ($P<.0001$). Unsurprisingly, those with less education and those who are poorer had significantly greater odds of reporting fair/poor health (Kennedy et al. 1998). Compared to those with a graduate degree or more, respondents with less than a high school education had almost 3 times greater odds ($P<.0001$), whereas those with a high school degree have about 24 percent greater odds ($P<.0001$). Conversely, those with a bachelor's degree have roughly 20 percent lower odds of having fair/poor health ($P<.0001$). With regard to income, odds of poor health increase with increasing levels of poverty. Compared to those at or above 200 percent of the poverty line, those at under 50 percent and those between 50 and 99 percent each report about 2 times greater odds of poor health ($P<.0001$). Those at a poverty ratio of 100 to 149 percent reported about 41 percent greater odds, and those at 150 to 199 percent had roughly 30 percent greater odds ($P<.0001$). Finally, we find a direction reversal with the relationship between insurance status and health once SES is accounted for, with those having any form of insurance reporting about 8 percent lower odds of being in poor health ($P<.0001$). This suggests that the previous relationship is actually a function of individual socioeconomic factors.

Similar to other studies, Model 6 shows that those who are foreign born, regardless of citizenship status, have significantly greater odds of reporting fair/poor health compared to native born Latinxs (Finch et al. 2002; White and Scarinci 2015). Although the odds are higher for non-citizens vs. citizens (40 percent vs. 7 percent; <.0001), this relationship between nativity status and fair/poor health reverses once

individual demographic variables are accounted for in Model 7. In this model foreign born citizens report about 8 percent lower odds and non-citizens report about 3.5 percent lower, compared to native born respondents ($P<.0001$). The relationship between receipt of government support also changes with those who had received government support now had about 4 percent greater odds of being in fair/poor health ($P<.0001$). Additionally, all demographic variables of interest were found to be significantly associated with self-rated health. Those with kids in the household had about 30 times lower odds of having fair/poor health ($P<.0001$). Compared to males, females had about 8 percent lower odds. Household size is also related to self-rated health. Compared to single person households, those with 2 to 3 persons, 4 to 5 people, and 6 or more people all report poorer health (27 percent, 23 percent, and 18 percent respectively). Finally, the odds of reporting fair/poor health increases with increases in each age category. Compared to the reference category (ages 18 to 27), age categories 2 through 5 report 73 percent, 2.5 times, 4 times, and 5 times greater odds, respectively ($P<.0001$).

It is in Model 8, which introduces the socioeconomic and healthcare control variables, that we see a reversal in the relationship between metro status and fair/poor health. Once accounting for structural disadvantage, Latinxs in metropolitan counties have roughly 46 percent lower odds of reporting fair poor health, compared to those in non-metro counties. The contextual disadvantage scale, doctors per capita, and Latinx enclave measure are all significantly associated with self-rated health. Surprisingly, residing in a county with increased levels of structural disadvantage results in significantly lower odds of reporting fair/poor health, but residing in an immigrant enclave resulted in roughly 9 times greater odds of reporting fair/poor health.

Additionally, greater numbers of doctors per capita resulted in Latinxs reporting greater odds of being in fair/poor health. This finding is supported by other studies, which find that spatial economic inequality is an explanatory factor in differences in fair/poor health, above and beyond individual socioeconomic status (Kennedy et al. 1998; Monnat and Beeler Pickett 2011).

This chapter explored metropolitan and destination status differences in self-rated health. A significant relationship between both indictors and health is found. Accounting for individual health status and healthcare status, eliminates the significance of the relationship for metro status, but not for destination status. Upon introducing individual SES variables, the significant relationship for metro status reappears and we find that insurance status is really a function of SES. In the final model, there is a direction reversal for metro status, highlighting support for previous research that suggests geographic economic inequality affects health, above and beyond individual economic status.

The pseudo-ICC declined from .932 in the null model to .919 in the final model. This indicates that the variables in the final model explained only about 2 percent of the original 93 percent of between-county variation in self-rated health. Thus, my models are explaining very little of the variation between counties. Future research may benefit from including more contextual explanatory factors that focus on occupation and industry, as well as additional information on services for Spanish speaking individuals.

Tables 4 and 5 highlight the odds ratios and corresponding 95 percent confidence intervals for models 1 through 8. Although statistically significant, many of the predictors

of interest also have wide confidence intervals. Large confidence intervals indicate instability around the estimate and indicate the potential for variation among samples.

It is possible that controlling for smoking and weight status may be accounting for a significant proportion of the variation in self-rated health, particularly among Latinxs. For comparisons sake, I conduct models 1 through 8 in the same sequence again, but omitting these variables resulting in one's subjective health becoming more of a proxy for health. To recap, Model 1 includes only county metropolitan status and results in protective effect for rural Latinx adults. Respondents in metro counties had roughly 30 times greater odds ($P<.0001$). Model 2 accounts for county metropolitan and destination status. Destination status appears to explain some of the relationship between metro status and health as this relationship is reduced to about 9 times greater odds ($P<.0001$). There is a statistically significant relationship between destination status and health, but the odds ratios for both new and non-destinations are 0.001 ($P<.0001$).

Model 3 accounts for health status variables, but this now only includes a measure for food insecurity and chronic conditions. Significant metropolitan differences remain, but the odds are reduced to about 8 times greater ($P<.0001$). This is larger than the odds in the original Model 3, which included weight and smoking status. Including these additional measures resulted in metro Latinxs having about 5 times greater odds than their non-metro counterparts ($P<.0001$). The odds ratios and significance for destinations does not change. Additionally, the odds ratios for chronic conditions and food insecurity are slightly larger in the reduced health status modeling; 4.8 times greater odds for those with chronic conditions and 4 times greater for food insecure respondents compared to 3.9 and 3.6 respectively ($P<.0001$).

Model 4 incorporates healthcare status variables (insurance status, doctor's visit in past year, source of preventive care, and E.R. visits). In the first set of models (Table 2) the relationship between metropolitan status and health is no longer significant once these variables are added. However, significant metropolitan differences are found in the second set of models. Latinxs in metro counties, compared to those in non-metro areas, have roughly 1.9 times greater odds of reporting fair/poor health ($P<.001$). Significant differences remain for destination status ($P<.0001$). All of the indicators for health care status are statistically significant ($P<.001$). There appears to be a pattern (similar to the first set of models) wherein having access to medical care results in greater odds of reporting fair/poor health. Being insured, having visited a doctor in the past year, and having visited an E.R. two or more times in the past year all resulted in 1.2, 1.5 and 3.4 times greater odds, respectively ($P<.0001$). Conversely, Latinxs without a source of preventive care had roughly 5 percent lower odds of reporting fair/poor health ($P<.0001$). The indicators for chronic conditions and food insecurity remain significant but decrease to 4.2 to 3.7 times greater odds, respectively.

Socioeconomic status variables are introduced in Model 5. Metropolitan status remains positive and significant ($P<.001$). The odds do increase from 1.9 times greater in Model 4 to 2.2 times greater in this model. New and non-destination indicators also continue to be significant ($P<.0001$). All other variables remain significant. There are no differences in patterns between the first set of models and the second. That is, the omission of weight and smoking status does not change the direction or significance of the relationship between socioeconomic status predictors and self-rated health with all being significant ($P<.0001$). For most variables, a pattern emerges suggesting being

poorer results in poorer health. All income to poverty ratios below 200 percent result in greater odds of having fair/poor health. Having both less than a high school education and less than a bachelor's degree result in greater odds, but having a bachelor's degree results in lower odds of fair/poor health, compared to those with a graduate or professional degree. However, having received government support in the past year results in 24 percent lower odds of adult Latinxs reporting worse health. No change is found in the directionality or significance of any of the health status and healthcare status characteristics.

The pattern between the two sets of models continues in Model 6, which accounts for nativity and citizenship status. Metropolitan and destination status differences remain ($P<.001$). The odds ratio for metro status does increase from 2.2 times greater to 2.3 times greater. Compared to native born Latinxs, foreign born individuals, regardless of citizenship status, reported significantly greater odds of fair/poor health ($P<.0001$). Following the same sequence from the first set of models conducted, there are no changes in significance or direction between any other sets of variables of interest. All remain significant ($P<.0001$).

Model 7 includes all individual characteristics of interest. Non-metropolitan Latinxs continue to have an advantage with their metro counterparts having 1.3 times greater odds of having fair/poor health. Significant differences between county destination types continue ($P<.0001$). Again, patterns from the first set of models continue to appear. Being married provides an advantage, with those with an absentee spouse and those who had never been married had roughly 11 and 13 percent greater odds of poor health, respectively ($P<.0001$). All household sizes larger than one person

have significantly greater odds of reporting one's health as fair or poor ($P<.0001$). However, having kids in the household results in about 30 percent lower odds ($P<.0001$). Compared to males, females have about 10 percent lower odds ($P<.0001$). Increases in age result in greater odds of reporting poor health, ranging from 1.8 times greater for those aged 28 to 37 to 5.4 times greater for those aged 58 to 65. Accounting for these demographic characteristics results in a directional change for nativity status. Compared to native born Latinxs, foreign born non-citizens and foreign born citizens report 15 percent and 9 percent lower odds of having poor health, respectively ($P<.0001$). This pattern is also found in the same model in the first set of analyses. All other variables of interest remain significant ($P<.0001$). The only variable that changes direction with the inclusion of demographic characteristics is receipt of government support. Individuals who received support in the past year now have roughly 5 percent greater odds of being in poor health ($P<.0001$).

The final model includes county contextual characteristics, in addition to the aforementioned individual predictors. Just as in Model 8 in the first set of analyzes, there is still a significant relationship between metro status and self-rated health, but there is a reversal in directionality. Latinxs in metro counties now have roughly 58 percent lower odds of reporting their health as being fair or poor ($P<.0001$). There are some differences that occur when comparing Model 8 that includes smoking and weight status and the Model 8 that omits these conditions. For instance, the disadvantage scale resulted in a significantly negative relationship in Table 3 (66 percent lower odds; $P<.0001$), but is positively significant in the second set of analyses (32 percent greater odds; $P<.0001$). Doctors per capita and the Latinx enclave measure are both significantly associated with

self-rated health (P<.0001). However, unlike in the original final model, only quartile 1 of doctor's per capita is significant instead of both quartile 1 and 3.

Overwhelmingly the patterns from the analyses which included smoking and weight status, hold, even after they are removed from the models. There does appear to be a relationship between one or more of the healthcare status variables, smoking and/or weight status, and metro status. In the original set of analyses the relationship between metro status and health lose significant upon inclusion of healthcare status, but this does not occur in the second set of analyses. Interestingly, there are differences in the final pseudo-ICC between the two sets of analyses. In the original set of analyses, the final model explained only about 2 percent of the original 93 percent of between-county variation in self-rated health. However, in the second set of analyses the final model explained about 11 percent of the between-county variation in self-rated health, as the final pseudo-ICC was 82 percent.

The findings from both sets of analyses indicate that geographic economic inequality affects health, above and beyond individual economic status. When only accounting for individual level characteristics Latinxs have lower odds of reporting their health as fair or poor, but accounting for community disadvantage and healthcare infrastructure reverses this relationship, resulting in a disadvantage to living in rural counties. This suggests that there is something about the types of non-metro counties that Latinxs are living in that explains the relationship between metropolitan status and health, above and beyond the characteristics of the people themselves.

Table 3 Estimates and Odds Ratios Predicting Fair/Poor Health

	Model 1			Model 2			Model 3			Model 4		
	B (S.E.)	**O.R.**	**Sig.**	**B (S.E.)**	**O.R.**	**Sig.**	**B (S.E.)**	**O.R.**	**Sig.**	**B (S.E.)**	**O.R.**	**Sig.**
Intercept	-10.442		***	-4.457		***	-5.868		***	-7.907		***
	(0.219)			(0.312)			(0.311)			(0.355)		
Metropolitan	3.421	30.600	***	2.251	9.494	***	1.641	5.162	***	0.307	1.359	
	(0.213)			(0.242)			(0.245)			(0.259)		
Destination Status												
Established (Ref)												
Non-Destination				-6.526	0.001	***	-6.117	0.002	***	-4.574	0.010	***
				(0.383)			(0.364)			(0.326)		
New Destination				-6.769	0.001	***	-5.950	0.003	***	-4.227	0.015	***
				(0.359)			(0.343)			(0.302)		
Health Status												
Chronic Condition							1.485	4.414	***	1.349	3.854	***
							(0.001)			(0.001)		
Obese							0.505	1.657	***	0.501	1.650	***
							(0.001)			(0.001)		
Overweight							-0.002	0.998	**	0.029	1.030	***
							(0.001)			(0.001)		
Current Smoker							0.446	1.562	***	0.418	1.519	***
							(0.001)			(0.001)		

	Model 1	Model 2	Model 3			Model 4		
Food Insecure			1.342	3.826	***	1.267	3.552	***
			(0.001)			(0.001)		
Healthcare Status								
Any form of Insurance						0.190	1.209	***
						(0.001)		
Visited Doctor Past Year						0.397	1.487	***
						(0.001)		
No Source of Preventive Care						-0.087	0.917	***
						(0.001)		
Two or More ER Visits						1.168	3.214	***
						(0.001)		
ICC	0.932	0.939	0.941			0.956		

Significance tests *=p<.05, **=p<.01, ***=p<.001; two tailed tests
Data: NHIS (2011, 2012, 2013, 2014), American Community Survey 5 year estimates 2006-2010, and the Area Health Resource File 2010

Table 4 Estimates and Odds Ratios Predicting Fair/Poor Health Continued

	Model 5			Model 6			Model 7			Model 8		
	B (S.E.)	**O.R.**	**Sig.**	**B (S.E.)**	**O.R.**	**Sig.**	**B (S.E.)**	**O.R.**	**Sig.**	**B (S.E.)**	**O.R.**	**Sig.**
Intercept	-8.201		***	-8.403		***	-8.709		***	-8.243		***
	(0.340)			(0.341)			(0.357)			(0.415)		
Metropolitan	0.689	1.991	**	0.743	2.101	**	0.805	2.237	**	-0.621	0.537	**
	(0.262)			(0.257)			(0.272)			(0.231)		
Destination Status												
Established (Ref)												
Non-Destination	-4.314	0.013	***	-4.474	0.011	***	-4.158	0.016	***	-1.440	0.237	***
	(0.313)			(0.314)			(0.348)			(0.322)		
New Destination	-4.019	0.018	***	-4.200	0.015	***	-3.778	0.023	***	-2.006	0.134	***
	(0.281)			(0.286)			(0.313)			(0.275)		
Health Status												
Chronic Condition	1.357	3.883	***	1.346	3.842	***	1.039	2.825	***	1.029	2.797	***
	(0.001)			(0.001)			(0.001)			(0.001)		
Obese	0.461	1.585	***	0.461	1.586	***	0.373	1.453	***	0.375	1.455	***
	(0.001)			(0.001)			(0.001)			(0.001)		
Overweight	-0.007	0.993	***	-0.022	0.978	***	-0.127	0.881	***	-0.125	0.882	***
	(0.001)			(0.001)			(0.001)			(0.001)		
Current Smoker	0.387	1.473	***	0.405	1.499	***	0.340	1.405	***	0.330	1.391	***
	(0.001)			(0.001)			(0.001)			(0.001)		
Food Insecure	1.086	2.963	***	1.094	2.987	***	1.033	2.810	***	0.984	2.675	***
	(0.001)			(0.001)			(0.001)			(0.001)		
Health Care												
Any form of Insurance	-0.082	0.921	***	-0.078	0.925	***	-0.006	0.994	***	-0.007	0.993	***

	Model 5			Model 6			Model 7			Model 8		
	(0.001)			(0.001)			(0.001)			(0.001)		
Visited Doctor Past Year	0.450	1.569	***	0.438	1.550	***	0.429	1.535	***	0.458	1.582	***
	(0.001)			(0.001)			(0.001)			(0.001)		
No Source of Preventive Care	-0.113	0.893	***	-0.114	0.893	***	-0.050	0.952	***	-0.016	0.985	***
	(0.001)			(0.001)			(0.001)			(0.001)		
Two or More ER Visits	1.067	2.906	***	1.074	2.928	***	1.162	3.197	***	1.119	3.061	***
	(0.001)			(0.001)			(0.001)			(0.001)		
Socioeconomic Status												
Receipt Government Support	-0.285	0.752	***	-0.259	0.772	***	0.035	1.036	***	0.019	1.019	***
	(0.001)			(0.001)			(0.001)			(0.001)		
Education												
Grad/Professional Degree (Ref)												
B.A.	-0.223	0.801	***	-0.201	0.818	***	-0.069	0.933	***	-0.062	0.940	***
	(0.002)			(0.002)			(0.002)			(0.002)		
High School to A.A.	0.214	1.238	***	0.239	1.270	***	0.406	1.500	***	0.409	1.506	***
	(0.002)			(0.001)			(0.002)					
Less Than H.S.	0.831	2.297	***	0.834	2.303	***	0.865	2.375	***	(0.002)	2.396	***
	(0.002)			(0.001)			(0.002)					
Income to Poverty												
200 Plus (Ref)												
Under 50	0.693	2.000	***	0.715	2.045	***	1.018	2.767	***	0.999	2.716	***
	(0.001)			(0.001)			(0.001)			(0.001)		
50 to 99	0.763	2.144	***	0.770	2.159	***	0.977	2.657	***	0.955	2.599	***
	(0.002)			(0.001)			(0.001)			(0.001)		
100 to 149	0.554	1.740	***	0.561	1.752	***	0.767	2.152	***	0.746	2.109	***
	(0.001)			(0.001)			(0.001)			(0.001)		
150 to 199	0.254	1.289	***	0.249	1.282	***	0.373	1.451	***	0.366	1.442	***

	Model 5			Model 6			Model 7			Model 8		
	(0.001)			(0.001)			(0.001)			(0.001)		
Citizenship												
Native Born (Ref)												
Foreign Born Non-Citizen				0.070	1.072	***	-0.085	0.918	***	-0.094	0.910	***
				(0.001)			(0.001)			(0.001)		
Foreign Born Citizen				0.336	1.399	***	-0.035	0.966	***	-0.040	0.961	***
				(0.001)			(0.001)			(0.001)		
Demographics												
Married (Ref)												
Never Married							0.129	1.138	***	0.133	1.142	***
							(0.001)			(0.001)		
Spouse Absent							0.102	1.107	***	0.101	1.106	***
							(0.001)			(0.001)		
Kids Present in Household							-0.366	0.694	***	-0.341	0.711	***
							(0.001)			(0.001)		
Single Households (Ref)												
2-3 Person Households							0.237	1.268	***	0.235	1.265	***
							(0.001)			(0.001)		
4 to 5 Person Households							0.206	1.229	***	0.201	1.222	***
							(0.001)			(0.001)		
6 Plus Households							0.161	1.175	***	0.162	1.176	***
							(0.001)			(0.002)		
Male (Ref)												
Female							-0.088	0.916	***	-0.106	0.900	***
							(0.001)			(0.001)		
Age 18-27 (Ref)												

	Model 5	Model 6	Model 7			Model 8		
Age 28-37			0.547	1.729	***	0.543	1.722	***
			(0.001)			(0.001)		
Age 38-47			0.931	2.538	***	0.941	2.561	***
			(0.001)			(0.001)		
Age 48-57			1.407	4.083	***	1.407	4.084	***
			(0.001)			(0.001)		
Age 58-65			1.664	5.279	***	1.684	5.388	***
			(0.001)			(0.001)		
Contextual Characteristics								
Dissimilarity Index						-0.039	0.961	
						(0.753)		
Standardized Disadvantage Scale						-0.825	0.438	***
						(0.082)		
Standardized Hispanic Context						2.227	9.271	***
						(0.121)		
Doctors per Capita Quartile 4 (Ref)								
Doctors per Capita Quartile 1						-1.880	0.153	***
						(0.222)		
Doctors per Capita Quartile 2						-0.216	0.806	
						(0.242)		
Doctors per Capita Quartile 3						1.008	2.741	**
						(0.214)		
ICC	0.949	0.951	0.942			0.919		

Table 5 Odds Ratios and 95% Confidence Intervals Predicting Fair/Poor Self Rated Health

	Model 1		Model 2		Model 3		Model 4	
	O.R.	**95% C.I.**	**O.R.**	**95% C.I.**	**O.R.**	**95% C.I.**	**O.R.**	**95% C.I.**
Metropolitan	30.600	20.156 - 46.455	9.494	5.908 - 15.257	5.162	3.193 -8.344	1.359	0.818 - 2.259
Destination Status								
Established (Ref)								
Non-Destination			0.0015	0.001 - 0.003	0.002	0.001 - 0.005	0.010	0.005 - 0.020
New Destination			0.0011	0.001 - 0.002	0.003	0.001 - 0.005	0.015	0.008 - 0.026
Health Status								
Chronic Condition					4.414	4.405 - 4.422	3.854	3.847 - 3.862
Obese					1.657	1.654 - 1.661	1.650	1.646 - 1.653
Overweight					0.998	0.996 - 1.00	1.030	1.028 - 1.032
Current Smoker					1.562	1.559 - 1.565	1.519	1.516 - 1.522
Food Insecure					3.826	3.818 - 3.833	3.552	3.545 - 3.559

	Model 1	Model 2	Model 3	Model 4	
Health Care					
Any form of Insurance				1.209	1.207 - 1.212
Visited Doctor Past Year				1.487	1.484 - 1.490
No Source of Preventive Care				0.917	0.915 - 0.918
Two or More ER Visits				3.214	3.208 - 3.220

Table 6 Odds Ratios and 95% Confidence Intervals Predicting Fair/Poor Self Rated Health Continued

	Model 5		Model 6		Model 7		Model 8	
	O.R.	**95% C.I.**	**O.R.**	**95% C.I.**	**O.R.**	**95% C.I.**	**O.R.**	**95% C.I.**
Metropolitan	1.991	1.191 - 3.327	2.101	1.270 - 3.477	2.237	1.313 - 3.813	0.537	0.342 - 0.845
Destination Status								
Established (Ref)								
Non Destination	0.013	0.007 - 0.025	0.011	0.006 - 0.021	0.016	0.008 - 0.031	0.237	0.126 - 0.445
New Destination	0.018	0.010 - 0.031	0.015	0.009 - 0.026	0.023	0.012 -0.042	0.134	0.078 - 0.231
Health Status								
Chronic Condition	3.883	3.875 - 3.890	3.842	3.834 - 3.849	2.825	2.819 - 2.831	2.797	2.791 - 2.802
Obese	1.585	1.582 - 1.588	1.586	1.583 - 1.589	1.453	1.450 - 1.456	1.455	1.452 - 1.458
Overweight	0.993	0.991 - 0.995	0.978	0.976 - 0.980	0.881	0.879 - 0.883	0.882	0.881 - 0.884
Current Smoker	1.473	1.470 - 1.476	1.499	1.496 - 1.502	1.405	1.403 - 1.408	1.391	1.389 - 1.394
Food Insecure	2.963	2.957 - 2.969	2.987	2.981 - 2.993	2.810	2.805 - 2.816	2.675	2.670 - 2.680
Health Care								
Any form of Insurance	0.921	0.920 - 0.923	0.925	0.924 - 0.927	0.994	0.992 - 0.996	0.993	0.991 - 0.995
Visited Doctor Past Year	1.569	1.566 - 1.572	1.550	1.547 - 1.553	1.535	1.532 - 1.538	1.582	1.578 - 1.585
No Source of Preventive Care	0.893	0.891 - 0.895	0.893	0.891 - 0.894	0.952	0.950 - 0.953	0.985	0.983 - 0.987

	Model 5		Model 6		Model 7		Model 8	
Two or More ER Visits	2.906	2.901 - 2.912	2.928	2.922 - 2.934	3.197	3.190 - 3.203	3.061	3.055 - 3.067
Socioeconomic Status								
Receipt Government Support	0.752	0.751 - 0.754	0.772	0.770 - 0.773	1.036	1.033 - 1.038	1.019	1.017 - 1.021
Education								
Grad/Professional Degree (Ref)								
B.A.	0.801	0.797 - 0.804	0.818	0.815 - 0.821	0.933	0.930 - 0.937	0.940	0.936 - 0.943
High School to A.A.	1.238	1.233 - 1.243	1.270	1.268 - 1.273	1.500	1.494 - 1.506	1.506	1.500 - 1.512
Less Than H.S.	2.297	2.288 - 2.306	2.303	2.299 - 2.308	2.375	2.366 - 2.385	2.396	2.387 - 2.406
Income to Poverty								
200 Plus (Ref)								
Under 50	2.000	1.996 - 2.004	2.045	2.041 - 2.049	2.767	2.762 - 2.773	2.716	2.711 - 2.722
50 to 99	2.144	2.135 - 2.152	2.159	2.155 - 2.163	2.657	2.652 - 2.662	2.599	2.594 - 2.604
100 to 149	1.740	1.736 - 1.743	1.752	1.749 - 1.756	2.152	2.148 - 2.157	2.109	2.105 - 2.114
150 to 199	1.289	1.286 - 1.291	1.282	1.280 - 1.285	1.451	1.449 - 1.454	1.442	1.439 - 1.444
Citizenship								
Native Born (Ref)								
Foreign Born Non-Citizen			1.072	1.070 - 1.074	0.918	0.917 - 0.920	0.910	0.909 - 0.912
Foreign Born Citizen			1.399	1.397 - 1.402	0.966	0.964 - 0.968	0.961	0.959 - 0.963

	Model 5	Model 6	Model 7		Model 8	
Demographics						
Married (Ref)						
Never Married			1.138	1.136 - 1.140	1.142	1.140 - 1.144
Spouse Absent			1.107	1.105 - 1.109	1.106	1.104 - 1.109
Kids Present in Household			0.694	0.692 - 0.695	0.711	0.710 - 0.713
Single Households (Ref)						
2-3 Person Households			1.268	1.265 - 1.270	1.265	1.263 - 1.268
4 to 5 Person Households			1.229	1.226 - 1.231	1.222	1.220 - 1.224
6 Plus Households			1.175	1.172 - 1.177	1.176	1.171 - 1.180
Male (Ref)						
Female			0.916	0.914 - 0.917	0.900	0.898 - 0.901
Age 18-27 (Ref)						
Age 28-37			1.729	1.725 - 1.732	1.722	1.718 - 1.725
Age 38-47			2.538	2.533 - 2.543	2.561	2.556 - 2.566
Age 48-57			4.083	4.075 - 4.091	4.084	4.076 - 4.092
Age 58-65			5.279	5.268 - 5.289	5.388	5.377 - 5.398.

	Model 5	Model 6	Model 7	Model 8	
Contextual Characteristics					
Dissimilarity Index				0.961	0.220 - 4.206
Standardized Disadvantage Scale				0.438	0.373 - 0.514
Standardized Hispanic Context				9.271	7.314 - 11.752
Doctors per Capita Quartile 4 (Ref)					
Doctors per Capita Quartile 1				0.153	0.099 - 0.236
Doctors per Capita Quartile 2				0.806	0.502 - 1.295
Doctors per Capita Quartile 3				2.741	1.802 - 4.169

Table 7 Estimates and Odds Ratios Predicting Fair/Poor Health with Restricted Health Status Indicators

	Model 1			Model 2			Model 3			Model 4		
	B (S.E.)	**O.R.**	**Sig.**	**B (S.E.)**	**O.R.**	**Sig.**	**B (S.E.)**	**O.R.**	**Sig.**	**B (S.E.)**	**O.R.**	**Sig.**
Intercept	-10.442		***	-4.457		***	-5.400		***	-7.6341		***
	(0.219)			(0.312)			-0.310			(0.345)		
Metropolitan	3.421	30.600	***	2.251	9.494	***	2.078	7.988	***	0.675	1.964	**
	(0.213)			(0.242)			-0.240			(0.250)		
Destination Status												
Established (Ref)												
Non-Destination				-6.526	0.001	***	-6.562	0.001	***	-4.865	0.008	***
				(0.383)			(0.375)			(0.321)		
New Destination				-6.769	0.001	***	-6.634	0.001	***	-4.447	0.012	***
				(0.359)			(0.354)			(0.297)		
Health Status												
Chronic Condition							1.563	4.773	***	1.428	4.170	***
							(0.001)			(0.001)		
Food Insecure							1.379	3.971	***	1.299	3.666	***
							(0.001)			(0.001)		
Health Care												
Any form of Insurance										0.175	1.191	***
										(0.001)		
Visited Doctor Past Year										0.390	1.477	***
										(0.001)		
No Source of Preventive Care										-0.056	0.946	***

				(0.001)		
Two or More ER Visits				1.210	3.353	***
				(0.001)		
ICC	0.932	0.939	0.941	0.955		

Significance tests *=p<.05, **=p<.01, ***=p<.001; two tailed tests
Data: NHIS (2011, 2012, 2013, 2014), American Community Survey 5 year estimates 2006-2010, and the Area Health Resource File 2010

Table 8 Estimates and Odds Ratios Predicting Fair/Poor Health with Restricted Health Status Indicators (Cont.)

	Model 5			Model 6			Model 7			Model 8		
	B (S.E.)	**O.R.**	**Sig.**	**B (S.E.)**	**O.R.**	**Sig.**	**B (S.E.)**	**O.R.**	**Sig.**	**B (S.E.)**	**O.R.**	**Sig.**
Intercept	-8.284		***	-8.369		***	-8.85		***	-7.2551		***
	(0.344)			(0.343)			(0.346)			(0.293)		
Metropolitan	0.797	2.219	**	0.830	2.293	**	0.271	1.311	***	-0.861	0.423	***
	(0.253)			(0.251)			(0.269)			(0.166)		
Destination Status												
Established (Ref)												
Non Destination	-4.680	0.009	***	-4.738	0.009	***	-4.018	0.018	***	-1.037	0.355	***
	(0.320)			(0.320)			(0.318)			(0.224)		
New Destination	-4.414	0.012	***	-4.487	0.011	***	-3.897	0.020	***	-1.639	0.194	***
	(0.293)			(0.294)			(0.282)			(0.190)		
Health Status												
Chronic Condition	1.426	4.162	***	1.414	4.112	***	1.092	2.980	***	1.082	2.951	***
	(0.001)			(0.001)			(0.001)			(0.001)		
Food Insecure	1.111	3.037	***	1.117	3.056	***	1.052	2.863	***	1.002	2.724	***
	(0.001)			(0.001)			(0.001)			(0.001)		
Health Care												
Any form of Insurance	-0.103	0.902	***	-0.088	0.916	***	-0.009	0.991	***	-0.008	0.992	***
	(0.001)			(0.001)			(0.001)			(0.001)		
Visited Doctor Past Year	-0.269	0.764	***	0.435	1.545	***	0.433	1.542	***	0.4020	1.495	***
	(0.001)			(0.001)			(0.001)			(0.001)		
No Source of Preventive Care	-0.233	0.792	***	-0.084	0.919	***	-0.030	0.970	***	0.003	1.003	***
	(0.002)			(0.001)			(0.001)			(0.001)		
Two or More ER Visits	0.2551	1.291	***	1.106	3.022	***	1.196	3.307	***	1.152	3.165	***

	Model 5			Model 6			Model 7			Model 8		
	(0.002)			(0.001)			(0.001)			(0.001)		
Socioeconomic Status												
Receipt Government Support	-0.269	0.764	***	-0.250	0.779	***	0.050	1.051	***	0.035	1.036	***
Education	(0.001)			(0.001)			(0.001)			(0.001)		
Grad/Professional Degree (Ref)												
B.A.	-0.233	0.792	***	-0.217	0.805	***	-0.091	0.913	***	-0.084	0.919	***
	(0.002)			(0.002)			(0.002)			(0.001)		
High School to A.A.	0.255	1.290	***	0.275	1.317	***	0.436	1.547	***	0.439	1.551	***
	(0.002)			(0.002)			(0.002)			(0.001)		
Less Than H.S.	0.872	2.392	***	0.886	2.425	***	0.900	2.460	***	0.908	2.479	***
	(0.002)			(0.002)			(0.002)			(0.001)		
Income to Poverty												
200 Plus (Ref)												
Under 50	0.703	2.020	***	0.731	2.077	***	1.052	2.863	***	1.032	2.807	***
	(0.001)			(0.001)			(0.001)			(0.001)		
50 to 99	0.769	2.158	***	0.784	2.190	***	1.004	2.729	***	0.980	2.664	***
	(0.001)			(0.001)			(0.001)			(0.001)		
100 to 149	0.555	1.742	***	0.569	1.766	***	0.783	2.188	***	0.764	2.147	***
	(0.001)			(0.001)			(0.001)			(0.001)		
150 to 199	0.248	1.281	***	0.248	1.281	***	0.379	1.461	***	0.372	1.451	***
	(0.001)			(0.001)			(0.001)			(0.001)		
Citizenship												
Native Born (Ref)												
Foreign Born Non-Citizen				0.006	1.006	***	-0.159	0.853	***	-0.167	0.846	***
				(0.001)			(0.001)			(0.001)		
Foreign Born Citizen				0.286	1.331	***	-0.098	0.907	***	-0.104	0.901	***

	Model 5		Model 6		Model 7			Model 8		
Demographics		(0.001)			(0.001)			(0.001)		
Married (Ref)										
Never Married					0.119	1.126	***	0.121	1.129	***
					(0.001)			(0.001)		
Spouse Absent					0.105	1.111	***	0.103	1.108	***
					(0.001)			(0.001)		
Kids Present in Household					-0.366	0.694	***	-0.342	0.710	***
					(0.001)			(0.001)		
Single Households (Ref)										
2-3 Person Households					0.234	1.264	***	0.234	1.264	***
					(0.001)			(0.001)		
4 to 5 Person Households					0.203	1.225	***	0.200	1.221	***
					(0.001)			(0.001		
6 Plus Households					0.159	1.172	***	0.162	1.176	***
					(0.001)			(0.002)		
Male (Ref)										
Female					-0.106	0.899	***	-0.123	0.884	***
					(0.001)			(0.002)		
Age 18-27 (Ref)										
Age 28-37					0.607	1.835	***	0.602	1.826	***
					(0.001)			(0.001)		
Age 38-47					0.994	2.702	***	1.002	2.724	***
					(0.001)			(0.001)		
Age 48-57					1.477	4.380	***	1.478	4.384	***
					(0.001)			(0.001)		
Age 58-65					1.689	5.414	***	1.711	5.534	***
					(0.001)			(0.001)		

	Model 5	Model 6	Model 7	Model 8		
Contextual Characteristics						
Dissimilarity Index				-0.029	0.971	
				(0.533)		
Standardized Disadvantage Scale				0.276	1.318	***
				(0.061)		
Standardized Hispanic Context				2.887	17.939	***
				(0.088)		
Doctors per Capita Quartile 4 (Ref)						
Doctors per Capita Quartile 1				-0.938	0.391	***
				(0.165)		
Doctors per Capita Quartile 2				-0.283	0.754	
				(0.165)		
Doctors per Capita Quartile 3				0.213	1.237	
				(0.147)		
ICC	0.954	0.954	0.950	0.824		

Significance tests *=p<.05, **=p<.01, ***=p<.001; two tailed tests
Data: NHIS (2011, 2012, 2013, 2014), American Community Survey 5 year estimates 2006-2010, and the Area Health Resource File 2010

Table 9 Odds Ratios and 95% Confidence Intervals Predicting Fair/Poor Health with Restricted Health Status Indicators

	Model 1		Model 2		Model 3		Model 4	
	O.R.	**95% C.I.**	**O.R.**	**95% C.I.**	**O.R.**	**95% C.I.**	**O.R.**	**95% C.I.**
Metropolitan	30.600	20.156 - 46.455	9.494	5.908 - 15.257	7.988	4.991 - 12.787	1.964	1.203 - 3.206
Destination Status								
Established (Ref)								
Non Destination			0.0015	0.0007 - 0.003	0.0014	0.0007 - 0.0029	0.008	0.004 - 0.014
New Destination			0.0011	0.0006 - 0.002	0.0013	0.0007 - 0.0026	0.012	0.007 - 0.021
Health Status								
Chronic Condition					4.773	4.764 - 4.782	4.170	4.162 - 4.179
Food Insecure					3.971	3.963 - 3.979	3.666	3.658 - 3.673
Health Care								
Any form of Insurance							1.191	1.189 - 1.194
Visited Doctor Past Year							1.477	1.474 - 1.480
No Source of Preventive Care							0.946	0.944 - 0.947
Two or More ER Visits							3.353	3.347 - 3.360

Table 10 Odds Ratios and 95% Confidence Intervals Predicting Fair/Poor Health with Restricted Health Status Indicators

	Model 5		Model 6		Model 7		Model 8	
	O.R.	**95% C.I.**	**O.R.**	**95% C.I.**	**O.R.**	**95% C.I.**	**O.R.**	**95% C.I.**
Metropolitan	2.219	1.351 - 3.643	2.293	1.402 - 3.751	1.311	0.774 - 2.222	0.423	0.305 - 0.585
Destination Status								
Established (Ref)								
Non Destination	0.009	0.005 - 0.017	0.009	0.005 - 0.016	0.018	0.010 - 0.034	0.355	0.229 - 0.550
New Destination	0.012	0.007 - 0.021	0.011	0.006 - 0.020	0.020	0.012 - 0.035	0.194	0.134 - 0.282
Health Status								
Chronic Condition	4.162	4.154 - 4.170	4.112	4.104 - 4.120	2.980	2.974 - 2.986	2.951	2.945 - 2.956
Food Insecure	3.037	3.031 - 3.043	3.056	3.050 - 3.062	2.863	2.858 - 2.869	2.724	2.718 - 2.729
Health Care								
Any form of Insurance	0.902	0.900 - 0.904	0.916	0.914 - 0.918	0.991	0.989 - 0.993	0.992	0.990 - 0.994
Visited Doctor Past Year	0.764	0.763 - 0.766	1.545	1.542 - 1.548	1.542	1.539 - 1.545	1.495	1.492 - 1.498
No Source of Preventive Care	0.792	0.789 - 0.795	0.919	0.918 - 0.921	0.970	0.969 - 0.972	1.003	1.001 - 1.005
Two or More ER Visits	1.291	1.286 - 1.296	3.022	3.016 - 3.028	3.307	3.300 - 3.313	3.165	3.158 - 3.171
Socioeconomic Status								
Receipt Government Support	0.764	0.763 - 0.766	0.779	0.777 - 0.780	1.051	1.049 - 1.053	1.036	1.034 - 1.038
Education								
Grad/Professional Degree (Ref)								
B.A.	0.792	0.789 - 0.795	0.805	0.802 - 0.808	0.913	0.909 - 0.917	0.919	0.918 - 0.921

High School to A.A.	1.290	1.285 - 1.296	1.317	1.311 - 1.322	1.547	1.540 - 1.553	1.551	1.548 - 1.554
Less Than H.S.	2.392	2.382 - 2.401	2.425	2.416 - 2.435	2.460	2.450 - 2.469	2.479	2.475 - 2.484
Income to Poverty								
200 Plus (Ref)								
Under 50	2.020	2.016 - 2.024	2.077	2.073 - 2.081	2.863	2.858 - 2.869	2.807	2.801 - 2.812
50 to 99	2.158	2.153 - 2.162	2.190	2.186 - 2.195	2.729	2.724 - 2.735	2.664	2.659 - 2.670
100 to 149	1.742	1.739 - 1.745	1.766	1.763 - 1.770	2.188	2.184 - 2.192	2.147	2.143 - 2.151
150 to 199	1.281	1.279 - 1.284	1.281	1.279 - 1.284	1.461	1.458 - 1.464	1.451	1.448 - 1.453
Citizenship								
Native Born (Ref)								
Foreign Born Non-Citizen			1.006	1.004 - 1.008	0.853	0.851 - 0.855	0.846	0.845 - 0.848
Foreign Born Citizen			1.331	1.328 - 1.334	0.907	0.905 - 0.908	0.901	0.899 - 0.903
Demographics								
Married (Ref)								
Never Married					1.126	1.124 - 1.129	1.129	1.126 - 1.131
Spouse Absent					1.111	1.109 - 1.113	1.108	1.106 - 1.111
Kids Present in Household					0.694	0.692 - 0.695	0.710	0.709 - 0.712
Single Households (Ref)								
2-3 Person Households					1.264	1.261 - 1.266	1.264	1.261 - 1.266

4 to 5 Person Households	1.225	1.223 - 1.227	1.221	1.219 - 1.224
6 Plus Households	1.172	1.170 - 1.175	1.176	1.171 - 1.180
Male (Ref)				
Female	0.899	0.898 - 0.901	0.884	0.881 - 0.888
Age 18-27 (Ref)				
Age 28-37	1.835	1.831 - 1.839	1.826	1.822 - 1.829
Age 38-47	2.702	2.697 - 2.707	2.724	2.718 - 2.729
Age 48-57	4.380	4.371 - 4.3888	4.384	4.376 - 4.393
Age 58-65	5.414	5.403 - 5.425	5.534	5.524 - 5.545
Contextual Characteristics				
Dissimilarity Index			0.971	0.342 - 2.761
Standardized Disadvantage Scale			1.318	1.169 - 1.485
Standardized Hispanic Context			17.939	15.097 - 21.316
Doctors per Capita Quartile 4 (Ref)				
Doctors per Capita Quartile 1			0.391	0.283 - 0.541
Doctors per Capita Quartile 2			0.754	0.545 - 1.041
Doctors per Capita Quartile 3			1.237	0.928 - 1.651

Chapter 5: Metropolitan Differences in Healthcare Access and Use

The Behavioral Model for Health Services Use provides a useful framework for understanding variation in health care utilization. Originally proposed by Andersen in 1968 (updated in 1995), The Behavioral Model for Health Services Use includes both individual and contextual factors. This framework accounts for health needs, predisposing factors, and individual and contextual enabling factors related to health care use (Andersen 1995). For the purposes of this study, health care utilization is operationalized through two variables: needing but delaying care and utilizing the emergency room two or more times in the past 12 months.

The health need factors in the case of these two outcomes include having a chronic condition, self-rated health, weight status, smoking status and food insecurity, predisposing factors related to individuals' preferences for health care or attitudes toward seeking care (e.g., age, gender, family status), and enabling/disabling factors that facilitate or inhibit use of care (e.g., SES, health insurance coverage, health care supply, and access to care). Although this is a modified version, Andersen's framework (1995) guides my modeling for testing the relationship between both dependent variables for this chapter.

Conceptual Model for Delays in Care

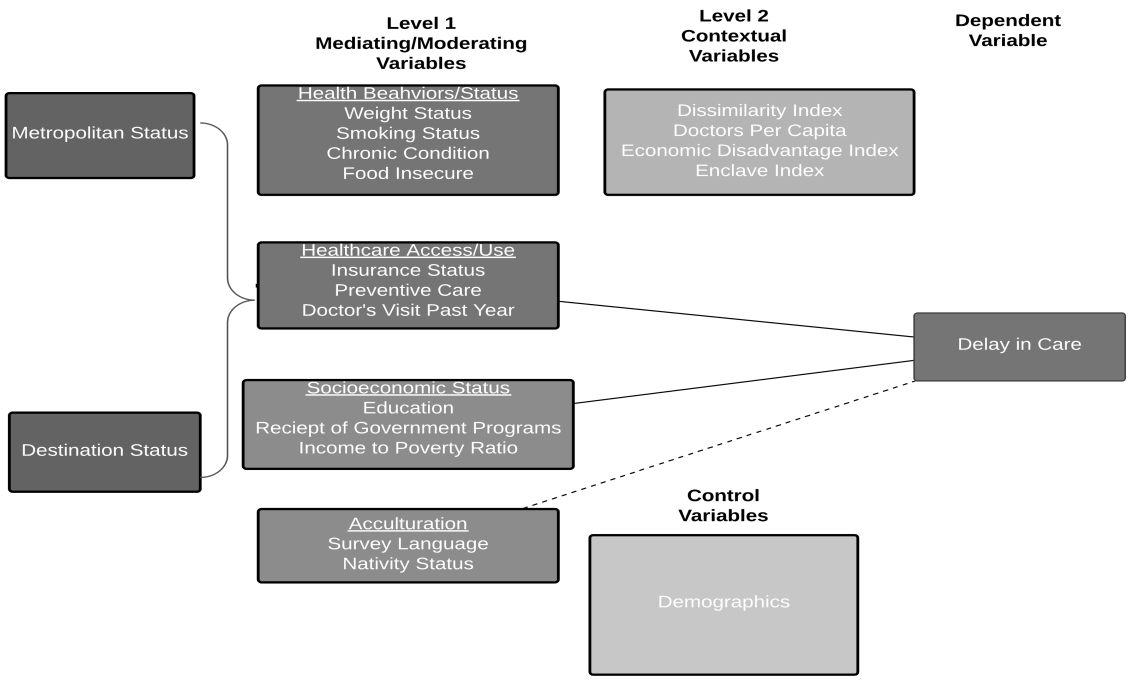

Figure 6 Conceptual Model for Delays in Care

Figure 6 describes the pathways believed to be the most proximal in explaining the relationship between the independent variables of interest (metro and destination status) and delaying seeking care for any of the aforementioned reasons provided in Chapter 3. Based on The Behavioral Model for Health Services Use (Andersen 1995), I am hypothesizing that two different sets of enabling factors (socioeconomic status and access to care) will explain the relationship between metro status and delaying care, should a relationship exist. SES is measured through individual level of education, receipt of income-based government support in the past year, and individual income to poverty ratio. Healthcare access enabling factors include insurance status, having any form of preventive care and having visited a doctor in the past year. Based on previous literature suggesting barriers to care for both non-metro residents and Latinxs, I am hypothesizing

that non-metro Latinxs will have greater odds of reporting delays in care, but this will largely be explained by the aforementioned set of enabling factors.

Results of Multilevel Models for Delays in Care

The estimated pseudo-ICC for this study is 0.926, meaning roughly 93 percent of the variation in self-reported delays in care are accounted for by county-level differences and about 8 percent of the variation is due to individual-level differences or unknown factors. That is, the majority of differences in reporting a delay in seeking care, for any of the asked reasons, is due to place, rather than the person.

Tables 10 and 11 present the estimates, odds ratios, and significance levels for associations between delays in seeking healthcare and the main individual- and contextual-level predictors. Tables 12 and 13 present the odds ratios and 95 percent confidence intervals for all predictors. In accordance with the aforementioned conceptual map, the tables display the following additive modeling. Model 1 includes only metropolitan status. Model 2 introduces destination status. Model 3 integrates individual healthcare status variables. Model 4 adds socioeconomic status variables. Model 5 includes acculturation variables and Model 6 introduces individual health status variables.[7] Models 7 and 8 incorporate all individual and contextual variables respectively.

Similar to the previous chapter, a very small proportion of the sample reported delaying care for any reason (12.48 percent). This is again, likely an explanatory factor in finding just dramatically large odds ratios (presented in tables 13 and 14). In Model 1 (Table 11), which accounts for only county metropolitan status, I find a significant

[7] Model 5 includes a set of variables referred to as acculturation. Unlike the nativity status model in Chapter 4, this set of variables includes a measure of survey language, in addition to nativity status.

relationship in delaying care. Latinxs in metro counties have 27 times greater odds of delaying care, compared to their non-metro counterparts ($P<.001$). This relationship persists after the introduction of destination status variables in Model 2, however, the odds ratio is reduced (10 times greater; $P<.001$). The relationship between destination status and delaying care is also significant ($P<.001$), but the higher odds for both non- and new established destinations (compared to established) are negligible (0.005 and 0.009 respectively).

Model 3 accounts for healthcare status variables (having insurance, having visited a doctor in the past year, and having no source of preventive care), which partially explains the relationship between metro status and delaying care, with metropolitan Latinxs now having about 9 times greater odds ($P<.001$).[8] Compared to those who had not been seen by a health professional and respondents without insurance, those who had visited a doctor in the past year and those that had any form of insurance had significantly higher odds of delaying care (2 times and 21 percent respectively; <.001). Conversely, those with no source of preventive care had about 46 percent lower odds of reporting delays in care ($P<.001$) compared to those with one or more locations for care.

In Model 4 I introduce socioeconomic status (SES) variables (education, receipt of government support in past year, and income to poverty ratios). Once accounting for SES, Latinxs in metro counties have only have about 66 percent greater odds of reporting delays in care ($P<.05$). All measures of SES were found to have a statistically significant relationship with delays in care. Those who had received government assistance had

[8] It must be noted that I am not conducting formal mediation analyses and therefore mediation effects cannot be interpreted in the same manner for any of the models within this dissertation, as they could be in Ordinary Least Squares regression analyses

about 20 times greater odds (*P*<.001), but surprisingly those with less education had significantly lower odds of delaying care. Compared to those with graduate degrees, those with a bachelor's had 10 percent lower, whereas those with a high school degree or associate's and those with less than a high school degree had 13 and 11 percent lower odds respectively (*P*<.001). Conversely, compared to Latinxs with an income to poverty ratio of 200 percent or greater, all individuals under this level had significantly greater odds of reporting delays in care. Individuals at less than 50 percent had 71 percent greater and those between 50 and 99 percent had 79 percent greater odds (*P*<.001). Individuals between 100 and 149 percent reported 43 percent greater odds, followed by those at 150 to 199 percent at 22 percent greater (*P*<.001). This model also helped to explain some of the relationship between having insurance and delaying care, as the odds decreased by half (9 percent; *P*<.001).

Results of Multilevel Models for Delays in Care

Table 12 displays the results for Models 5-8. In Model 5, acculturation measures (survey language and citizenship status) are added to the aforementioned sets of variables. It is here that the relationship between metro status and delays in care is found to no longer be significant. This model also finds that those who completed the survey in English and those that are foreign born, regardless of citizenship status, have greater odds of delaying care. Taking the survey in English, as compared to any other language results in roughly 21 percent lower odds of reporting delays in care for any reason (*P*<.001). Compared to native born Latinxs, foreign born non-citizens reported 15 percent lower odds and citizens reported about 8 percent lower odds (*P*<.001). The relationship between destination status and delaying care remains significant, but the odds grow slightly, with

those in non-destinations having about 2 percent greater odds and those in new destination about 9 percent greater, compared to Latinxs in established destinations ($P<.001$).

In Models 6 and 7, we see that the relationship between metro status and delays in care does not change, and remains non-significant. We do see in Model 6, however, that those with health vulnerabilities such as being a smoker, food insecure, having a chronic condition, or rating their health as fair or poor, all result in greater odds of delaying care. In contrast, those who are obese or overweight have significantly lower odds of delaying their care for any reason. Compared to respondents who rate their health as good, very good or excellent and individuals who do not report food insecurities, those with poorer self-rated health report have about 70 percent greater odds and those who are food insecure have about 2 times greater odds ($P<.001$). Smokers and those with a chronic condition each have around 20 percent greater odds of reporting delays in care ($P<.001$), compared to nonsmokers and those without any diagnosed conditions. Those who are obese and those who are overweight have about 6 percent and 13 percent lower odds, respectively, as compared to those who belong to neither weight category ($P<.001$).

All of the individual demographic variables introduced in Model 7 are statistically significant. Latinxs that have never married and those who report absentee spouses have 12 and 10 percent lower odds compared to those who are married ($P<.001$). Moreover, respondents with children report about 39 percent lower odds ($P<.001$) compared to those that are childless. Compared to single person households, all household sizes have lower odds of delaying care, but the proportions are quite small. Those with 2 to 3 households have about 3 percent lower odds, followed by 1 percent lower odds for households of 4 to

5, and 6 percent lower odds for those living in households of 6 or more individuals (P<.001). Females were more likely to report delays in care and had about 45 percent greater odds, compared to males (P<.001). Interestingly, the pattern for age categories and delaying care is not the same directionally, although all categories have a significant relationship with the outcome (P<.001). For instance, those who are 28 to 37 report about 6 percent greater odds in delaying care, compared to the reference category of Latinxs aged 18 to 27. However, all of the other age categories have lower odds of reporting delays in care (15 percent for ages 38-47, 9 percent for ages 48 to 57, and 30 percent for ages 58 to 65).

In Model 8, I account for contextual factors that may enable or inhibit the care seeking behaviors. It is in this model that a significant relationship between metro status and delaying care reemerges. I find that Latinxs in metro counties have roughly 60 percent lower odds of delaying care, as compared to their counterparts in non-metro counties (P<.001). Additionally, the odds associated with destination status increase again, resulting in both non and new destinations having roughly 75 percent lower odds of reporting delays in care, as compared to their counterparts in established destinations. With regard to contextual controls, doctors per capita, the standardized disadvantage scale, and the standardized enclave index were all significantly associated with delaying care for any reason. One of the most intriguing findings of this model suggests that residing in Latinx enclave dramatically increases the odds of delaying care. Each standardized unit increase in enclave variables, results in about 20 times greater odds of reporting delays in care for any reason (P<.001).

In the first half of this chapter I have analyzed the relationship between county metro and destination statuses and delaying care for any of the following reasons: cost, doctor's office closure, lack of transportation, waiting too long in care facility, could not get an appointment soon enough and unable to get through to facility on telephone. A significant relationship between destination status and delaying care was present throughout all models of the analysis. A significant relationship between metro status and delaying care was also found. However, much of this relationship was explained by individual SES factors, and the relationship failed to remain significant after accounting for the acculturation predictors of survey language and citizenship status. Although I did hypothesize SES enabling factors to be critical in explaining the relationship between metro status and delays in care, these findings highlight the importance of acculturation in accessing care. With the inclusion of county economic and health factors, a significant relationship between metro status and delays in care reemerges. Thus, the characteristics of the counties in which respondents live in, once again, impact their health seeking behaviors above and beyond their individual enabling characteristics. The pseudo-ICC decreased from .926 in the null model to .843 in the final model. This indicates that the variables in the final model explained roughly 8 percent of the original 92 percent of between-county variation in delays in care. Although this is more variation than I was able to explain with self-rated health. There is still quite a bit left unexplained.

Table 11 Estimates and Odds Ratios Predicting Delays in Care

	Model 1			Model 2			Model 3			Model 4		
	B (S.E.)	O.R.	Sig.	B (S.E.)	O.R.	Sig.	B (S.E.)	O.R.	Sig.	B (S.E.)	O.R.	Sig.
Intercept	-9.859		***	-5.101		***	-5.645		***	-5.964		***
	(0.237)			(0.291)			(0.287)			(0.321)		
Metropolitan	3.317	27.569	***	2.331	10.283	***	2.249	9.474	***	0.508	1.661	*
	(0.227)			(0.230)			(0.227)			(0.256)		
Destination Status												
Established (Ref)												
Non-Destination				-5.386	0.005	***	-5.428	0.004	***	-4.133	0.016	***
				(0.292)			(0.287)			(0.298)		
New Destination				-4.726	0.009	***	-4.529	0.011	***	-2.429	0.088	***
				(0.251)			(0.2439)			(0.241)		
HealthCare Status												
No Source of Preventive Care							-0.623	0.537	***	-0.658	0.518	***
							(0.001)			(0.001)		
Visited Doctor in Past Year							0.810	2.249	***	0.808	2.244	***
							(0.001)			(0.001)		
Any form of Insurance							0.197	1.218	***	0.086	1.090	***
							(0.001)			(0.001)		
Socioeconomic Status												
Receipt Government Support										0.190	1.209	***
										(0.001)		
Education												
Grad/Professional Degree (Ref)												
B.A.										-0.103	0.902	***

Model 1	Model 2	Model 3	Model 4		
			(0.002)		
High School to A.A.			-0.137	0.872	***
			(0.001)		
Less Than H.S.			-0.114	0.893	***
			(0.014)		
Income to Poverty					
200 Plus (Ref)					
Under 50			0.534	1.706	***
			(0.001)		
50 to 99			0.581	1.788	***
			(0.001)		
100 to 149			0.357	1.428	***
			(0.001)		
150 to 199			0.198	1.218	***
			(0.001)		
ICC	0.926	0.927	0.926	0.932	

Significance tests *=p<.05, **=p<.01, ***=p<.001; two tailed tests

Data: NHIS (2011, 2012, 2013, 2014), American Community Survey 5 year estimates 2006-2010, and the Area Health Resource File 2010

Table 12 Estimates and Odds Ratios Predicting Delays in Care (Cont.)

	Model 5			Model 6			Model 7			Model 8		
	B (S.E.)	O.R.	Sig.	B (S.E.)	O.R.	Sig.	B (S.E.)	O.R.	Sig.	B (S.E.)	O.R.	Sig.
Intercept	-5.681		***	-5.545		***	-5.274		***	-4.111		***
	(0.319)			(0.319)			(0.320)			(0.290)		
Metropolitan	0.462	1.587		0.270	1.309		0.038	1.039		-0.886	0.412	***
	(0.257)			(0.258)			(0.263)			(0.162)		
Destination Status												
Established (Ref)												
Non-Destination	-4.041	0.018	***	-3.797	0.022	***	-3.484	0.031	***	-1.388	0.250	***
	(0.295)			(0.290)			(0.289)			(0.220)		
New Destination	-2.392	0.091	***	-2.296	0.101	***	-2.237	0.107	***	-1.399	0.247	***
	(0.239)			(0.237)			(0.236)			(0.187)		
Health Care												
No Source of Preventive Care	-0.658	0.518	***	-0.680	0.507	***	-0.674	0.510	***	-0.674	0.510	***
	(0.001)			(0.001)			(0.001)			(0.001)		
Visited Doctor in Past Year	0.809	2.245	***	0.722	2.059	***	0.666	1.946	***	0.666	1.946	***
	(0.0008)			(0.001)			(0.001)			(0.001)		
Any form of Insurance	0.088	1.092	***	0.101	1.106	***	0.067	1.069	***	0.067	1.070	***
	(0.001)			(0.001)			(0.001)			(0.001)		
Socioeconomic Status												
Receipt Government Support	0.197	1.218	***	0.244	1.276	***	0.227	1.255	***	0.228	1.255	***
	(0.001)			(0.001)			(0.001)			(0.001)		
Education												
Grad/Professional Degree (Ref)												
B.A.	-0.112	0.894	***	-0.131	0.877	***	-0.159	0.853	***	-0.160	0.852	***
	(0.002)			(0.002)			(0.002)			(0.002)		
High School to A.A.	-0.153	0.858	***	-0.215	0.807	***	-0.192	0.826	***	-0.192	0.825	***
	(0.001)			(0.001)			(0.001)			(0.001)		

	Model 5			Model 6			Model 7			Model 8		
Less Than H.S.	-0.154	0.857	***	-0.301	0.740	***	-0.243	0.784	***	-0.243	0.784	***
	(0.001)			(0.002)			(0.002)			(0.002)		
Income to Poverty												
200 Plus (Ref)												
Under 50	0.516	1.675	***	0.313	1.368	***	0.365	1.440	***	0.364	1.439	***
	(0.001)			(0.001)			(0.001)			(0.001)		
50 to 99	0.560	1.750	***	0.352	1.422	***	0.413	1.512	***	0.413	1.511	***
	(0.001)			(0.001)			(0.001)			(0.001)		
100 to 149	0.340	1.405	***	0.213	1.238	***	0.272	1.313	***	0.272	1.312	***
	(0.001)			(0.001)			(0.001)			(0.001)		
150 to 199	0.184	1.202	***	0.115	1.122	***	0.162	1.176	***	0.162	1.176	***
	(0.001)			(0.001)			(0.001)			(0.001)		
Acculturation												
Survey in English	-0.238	0.788	***	-0.231	0.794	***	-0.256	0.774	***	-0.257	0.774	***
	(0.001)			(0.001)			(0.001)			(0.001)		
Native Born (Ref)												
Foreign Born Non-Citizen	-0.167	0.846	***	-0.065	0.938	***	-0.029	0.972	***	-0.029	0.972	***
	(0.001)			(0.001)			(0.001)			(0.001)		
Foreign Born Citizen	-0.087	0.917	***	-0.070	0.933	***	-0.043	0.958	***	-0.043	0.958	***
	(0.001)			(0.001)			(0.001)			(0.001)		
Health Status												
Fair/Poor Self Rated Health				0.529	1.698	***	0.515	1.673	***	0.515	1.673	***
				(0.001)			(0.001)			(0.001)		
Chronic Condition				0.189	1.208	***	0.666	1.946	***	0.206	1.229	***
				(0.001)			(0.001)			(0.001)		
Obese				-0.058	0.944	***	-0.019	0.981	***	-0.019	0.981	***
				(0.001)			(0.001)			(0.001)		
Overweight				-0.142	0.868	***	-0.087	0.917	***	-0.087	0.917	***
				(0.001)			(0.001)			(0.001)		

	Model 5			Model 6			Model 7			Model 8		
Current Smoker				0.183	1.201	***	0.201	1.222	***	0.201	1.223	***
				(0.001)			(0.001)			(0.001)		
Food Insecure				0.823	2.278	***	0.801	2.227	***	0.801	2.227	***
Demographics												
Married (Ref)												
Never Married							-0.130	0.878	***	-0.130	0.878	***
							(0.001)			(0.001)		
Spouse Absent							-0.109	0.897	***	-0.109	0.897	***
							(0.001)			(0.001)		
Kids Present in Household							-0.496	0.609	***	-0.496	0.609	***
							(0.001)			(0.001)		
Single Households (Ref)												
Households of 2 or 3							-0.030	0.970	***	-0.031	0.970	***
							(0.001)			(0.001)		
Households of 4 or 5							-0.008	0.992	***	-0.008	0.992	***
							(0.001)			(0.001)		
Households of 6 or more							-0.111	0.895	***	-0.111	0.895	***
							(0.002)			(0.002)		
Male (Ref)												
Female							0.371	1.449	***	0.371	1.449	***
							(0.001)			(0.001)		
Age 18-27 (Ref)												
Age 28-37							0.058	1.060	***	0.058	1.060	***
							(0.001)			(0.001)		
Age 38-47							-0.168	0.845	***	-0.168	0.845	***
							(0.001)			(0.001)		
Age 48-57							-0.096	0.908	***	-0.096	0.908	***
							(0.001)			(0.001)		
Age 58-65							-0.359	0.699	***	-0.359	0.698	***

	Model 5	Model 6	Model 7	Model 8		
			(0.001)	(0.001)		
Contextual Characteristics						
Dissimilarity Index				-0.592	0.553	
				(0.517)		
Standardized Disadvantage Scale				-0.182	0.834	**
				(0.060)		
Standardized Latinx Enclave				2.999	20.063	***
				(0.084)		
Doctors per Capita Quartile 4 (Ref)						
Doctors per Capita Quartile 1				-0.824	0.439	***
				(0.163)		
Doctors per Capita Quartile 2				-0.633	0.531	***
				(0.162)		
Doctors per Capita Quartile 3				0.269	1.309	
				(0.143)		
ICC	0.931	0.930	0.929	0.843		

Significance tests *=p<.05, **=p<.01, ***=p<.001; two tailed tests

Data: NHIS (2011, 2012, 2013, 2014), American Community Survey 5 year estimates 2006-2010, and the Area Health Resource File 2010

Table 13 Odds Ratios and 95% Confidence Intervals Predicting Delays in Care

	Model 1		Model 2		Model 3		Model 4	
	O.R.	**95% C.I.**	**O.R.**	**95% C.I.**	**O.R.**	**95% C.I.**	**O.R.**	**95% C.I.**
Metropolitan	27.569	17.658 - 43.043	10.283	6.546 - 16.153	9.474	6.074 - 14.776	1.661	1.001-2.757
Destination Status								
Established (Ref)								
Non Destination			0.005	0.003 - 0.008	0.004	0.003 - 0.008	0.016	0.009 - 0.029
New Destination			0.009	0.005 - 0.014	0.011	0.007 - 0.017	0.088	0.055 - 0.141
Health Care								
No Source of Preventive Care					0.537	0.536 - 0.537	0.518	0.517 - 0.519
Visited Doctor in Past Year					2.249	2.245 - 2.252	2.244	2.240 - 2.247
Any form of Insurance					1.218	1.217 - 1.220	1.090	1.088 - 1.091
Socioeconomic Status								
Receipt Government Support							1.209	1.207 - 1.212
Education								
Grad/Professional Degree (Ref)								
B.A.							0.902	0.900 - 0.905
High School to A.A.							0.872	0.870 - 0.874
Less Than H.S.							0.893	0.890 - 0.895
Income to Poverty								
200 Plus (Ref)								
Under 50							1.706	1.703 - 1.709

50 to 99	1.788	1.785 - 1.791
100 to 149	1.428	1.426 - 1.431
150 to 199	1.218	1.216 - 1.221

Table 14 Odds Ratios and 95% Confidence Intervals Predicting Delays in Care (Cont.)

	Model 5		Model 6		Model 7		Model 8	
	O.R.	**95% C.I.**	**O.R.**	**95% C.I.**	**O.R.**	**95% C.I.**	**O.R.**	**95% C.I.**
Metropolitan	1.587	.959 - 2.68	1.309	0.790 - 2.171	1.039	0.621 - 1.737	0.412	0.300 - 0.567
Destination Status								
Established (Ref)								
Non Destination	0.018	0.010 - 0.031	0.022	0.013 - 0.040	0.031	0.017 - 0.054	0.250	0.162 - 0.384
New Destination	0.091	0.057 - 0.146	0.101	0.063 - 0.0160	0.107	0.067 - 0.170	0.247	0.171 - 0.356
Health Care								
No Source of Preventive Care	0.518	0.517 - 0.519	0.507	0.506 - 0.508	0.510	0.509 - 0.511	0.510	0.509 - 0.511
Visited Doctor in Past Year	2.245	2.241 - 2.248	2.059	2.055 - 2.062	1.946	1.943 - 1.949	1.946	1.943 - 1.949
Any form of Insurance	1.092	1.090 - 1.093	1.106	1.105 - 1.108	1.069	1.068 - 1.071	1.070	1.068 - 1.071
Socioeconomic Status								
Receipt Government Support	1.218	1.215 - 1.221	1.276	1.273 - 1.279	1.255	1.252 - 1.258	1.255	1.253 - 1.258
Education Grad/Professional Degree (Ref)								
B.A.	0.894	0.892 - 0.897	0.877	0.875 - 0.880	0.853	0.850 - 0.855	0.852	0.850 - 0.855
High School to A.A.	0.858	0.856 - 0.860	0.807	0.804 - 0.809	0.826	0.823 - 0.828	0.825	0.823 - 0.827
Less Than H.S.	0.857	0.855 - 0.860	0.740	0.738 - 0.743	0.784	0.782 - 0.787	0.784	0.782 - 0.786
Income to Poverty								
200 Plus (Ref)								
Under 50	1.675	1.672 - 1.678	1.368	1.365 - 1.370	1.440	1.437 - 1.443	1.439	1436 - 1.442
50 to 99	1.750	1.748 - 1.753	1.422	1.420 - 1.425	1.512	1.509 - 1.515	1.511	1.509 - 1.514
100 to 149	1.405	1.403 - 1.407	1.238	1.236 - 1.240	1.313	1.311 - 1.315	1.312	1.310 - 1.315
150 to 199	1.202	1.199 - 1.204	1.122	1.120 - 1.124	1.176	1.174 - 1.179	1.176	1.174 - 1.178
Acculturation								
Survey in English	0.788	0.787 - 0.789	0.794	0.793 - 0.795	0.774	0.773 - 0.775	0.774	0.773 - 0.775
Native Born (Ref)								

Foreign Born Non-Citizen	0.846	0.845 - 0.847	0.938	0.936 - 0.939	0.972	0.970 - 0.973	0.972	0.970 - 0.973
Foreign Born Citizen	0.917	0.915 - 0.918	0.933	0.931 - 0.934	0.958	0.956 - 0.959	0.958	0.956 - 0.959
Health Status								
Fair/Poor Self Rated Health			1.698	1.695 - 1.700	1.673	1.670 - 1.675	1.673	1.670 - 1.675
Chronic Condition			1.208	1.207 - 1.210	1.946	1.943 - 1.948	1.229	1.227 - 1.231
Obese			0.944	0.942 - 0.945	0.981	0.980 - 0.983	0.981	0.980 -0.983
Overweight			0.868	0.867 - 0.869	0.917	0.915 - 0.918	0.917	0.916 - 0.918
Current Smoker			1.201	1.199 - 1.203	1.222	1.220 - 1.224	1.223	1.221 - 1.224
Food Insecure			2.278	2.274 - 2.282	2.227	2.223 - 2.230	2.227	2.223 - 2.231
Demographics								
Married (Ref)								
Never Married					0.878	0.877 - 0.880	0.878	0.877 -0.880
Spouse Absent					0.897	0.896 - 0.899	0.897	0.896 - 0.880
Kids Present in Household					0.609	0.608 - 0.610	0.609	0.608 - 0.610
Single Households (Ref)								
Households of 2 or 3					0.970	0.968 - 0.972	0.970	0.968 - 0.972
Households of 4 or 5					0.992	0.990 - 0.995	0.992	0.990 - 0.994
Households of 6 or more					0.895	0.892 - 0.897	0.895	0.892 - 0.897
Male (Ref)								
Female					1.449	1.448 - 1.451	1.449	1.448 - 1.451
Age category 1 (Ref)								
Age Category 2					1.060	1.058 - 1.062	1.060	1.058 - 1.061
Age Category 3					0.845	0.844 - 0.847	0.845	0.844 - 0.847
Age Category 4					0.908	0.907 - 0.910	0.908	0.906 - 0.910
Age Category 5					0.699	0.697 - 0.700	0.698	0.696 - 0.700
Contextual Characteristics								
Dissimilarity Index							0.553	0.201 -1.523
Standardized Disadvantage Scale							0.834	0.741 - 0.938

Standardized Hispanic Context	20.063	17.007 - 23.699
Doctors per Capita Quartile 4 (Ref)		
Doctors per Capita Quartile 1	0.439	0.319 - 0.603
Doctors per Capita Quartile 2	0.531	0.387 - 0.729
Doctors per Capita Quartile 3	1.309	0.990 - 1.731

Conceptual Model for Emergency Room Visits

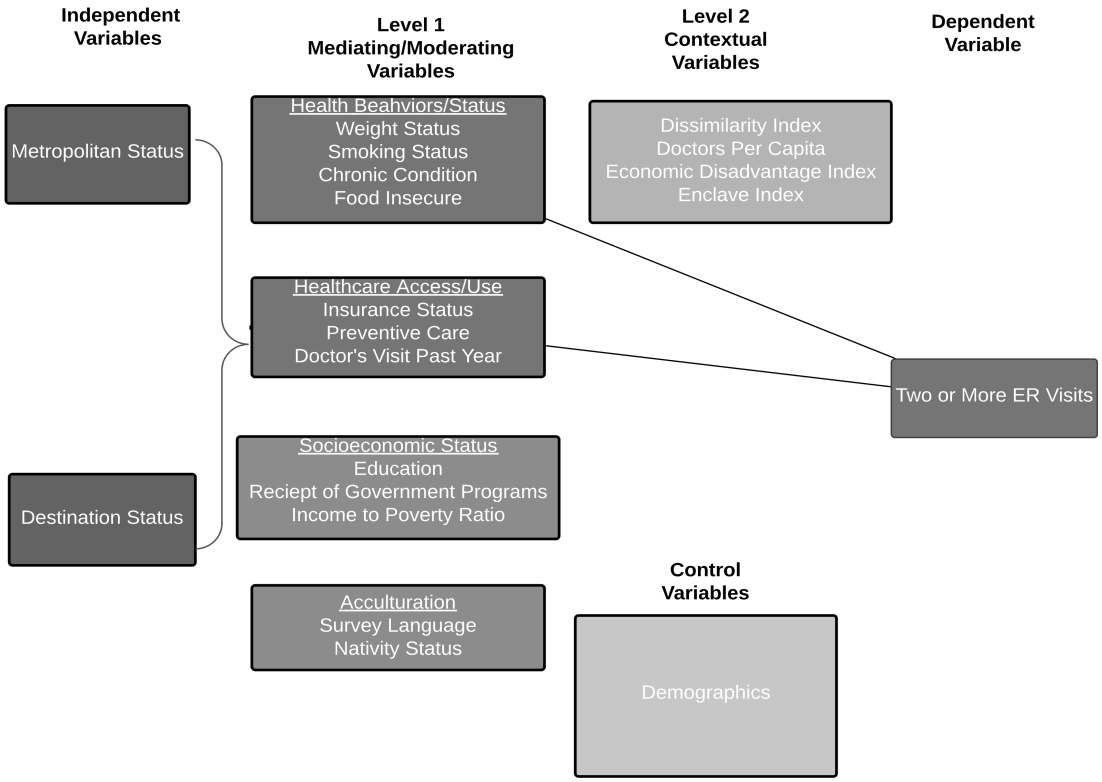

Figure 7 Conceptual Model for Emergency Room Visits

Based on The Behavioral Model for Health Services Use (Andersen 1995), I am hypothesizing that both need (health behavior and status) and enabling factors will explain the relationship between county metro and destination designations and E.R. visits, should a relationship exist. Health behavior/status predictors include weight and smoking status, having a chronic condition, and being food insecure. The enabling factors include socioeconomic status, as well as acculturation (based on Allen and Cumming 2016 and Coffman et al. 2007). Figure 7 provides a visual representation of my theoretically driven decisions, highlighting these pathways and the additional sets of predictor and control variables accounted for throughout the additive modeling sequence.

Results of Multilevel Models for Emergency Room Visits

As with my other predictors of interest, the modeling for this outcome accounts for individuals nested within counties and therefore I must calculate how much of the

differences in E.R. visits in the past year is accounted for by variation at each level. The estimated pseudo-ICC for this study is 0.971, meaning roughly 97 percent of the variation in visiting an E.R. two or more times in the past year are accounted for by county-level differences and about 3 percent of the variation is due to individual-level differences or unknown factors. Once again, this is a lot of contextual variation to be explained.

Tables 15 and 16 present the estimates, odds ratios, and significance levels for associations between visiting an emergency room two or more times in the past year and the main individual- and contextual-level predictors. Tables 17 and 18 present the odds ratios and 95 percent confidence intervals for Models 1 through 8. In accordance with the aforementioned conceptual map, the tables display the following additive modeling. Model 1 includes only metropolitan status. Model 2 introduces destination status. Model 3 integrates individual health care status variables. Model 4 adds socioeconomic status variables. Model 5 includes acculturation variables and Model 6 introduces individual health status variables. Models 7 and 8 incorporate all individual and contextual variables respectively.

In Model 1, I find that Latinxs in metro counties have over 8 times greater odds of having been seen two or more times in an E.R. in the past year, compared to their non-metro counterparts ($P<.001$). Once accounting for destination status, those odds remain significant and increase to about 10 times greater ($P<.001$). Those in new and non-destinations had significantly lower odds, compared to those living in established destination counties, but they are so small they are undetectable until past a ten thousandth of a point ($P<.001$).

Model 3 introduces healthcare status variables. Once again, metropolitan status remains significant and increases, with respondents in metro counties reporting 11 times greater odds ($P<.001$) compared to non-metro Latinxs. There are no changes in the relationship between destination status and E.R. visits. Interestingly, those with no source of preventive care reported lower odds of being seen in an E.R. two or more times in the past year ($P<.001$), but those who had delayed care reported almost 3 times greater odds ($P<.001$).

This pattern continues with Model 4, showing that Latinxs in metro counties have 14 times greater odds ($P<.001$) compared to their rural counterparts. Destination status remains significant and grows slightly, but the greater odds remain quite small with non-destinations have 0.03 greater odds and 0.002 greater odds for new destinations ($P<.001$). Model 4 includes measures of SES and, once again, I find that those who are more economically vulnerable have greater odds of E.R. visit frequency. Those who have received income-based government aid, all levels of education compared to those with graduate degrees, and all those who are under 200 percent of the income to poverty threshold report greater odds of using an E.R. two or more times in the past year. Those who have received government assistance report 97 percent greater odds of visiting the E.R. two or more times ($P<.001$). Lower levels of education result in higher odds of using the E.R. more frequently with those with less than a high school degree having 90 percent greater, those with a high school degree having 83 percent, and those with a bachelor's degree having 42 percent, compared to Latinxs with a graduate or professional degree ($P<.001$ respectively). Similarly, the greater the poverty, the greater the odds. Compared to those at poverty thresholds of 200 percent or greater, those under 50 percent

reported 3 times greater odds, with those at 100 to 150 having 2.3 times. Individuals at 100 or 149 percent income to poverty ratios and those at 150 to 199 percent have 1.6 times and 1.4 times greater odds. Conversely, those with any form of insurance report about 29 percent lower odds of doing so ($P<.001$).

Significance between county metropolitan status and E.R. visits remains significant in Models 5 and 6, which account for health status and acculturation consecutively. In Model 5, I find that those in metro counties have over 16 times greater odds of seeking treatment in an E.R. two or more times in the past year. The odds for new and non-destinations remain significant and greater than those for established destinations, but do not grow ($P<.001$). Similar to the findings for previous dependent variables, health status vulnerability appears to influence the relationship, as all factors are statistically significant. Those with fair or poor self-rated health, a chronic condition, current smokers, and those who are food insecure all report greater odds in E.R. usage ($P<.001$). Latinxs with poorer self-rated health have almost 3 times greater odds, whereas those with chronic conditions report almost 2 times greater odds. Smoking increases the odds of having two or more ER visits by about 46 percent and being food insecure results in roughly 70 percent greater odds. There are mixed findings with weight status. Compared to those who are neither overweight or obese, individuals who are obese have about 8 percent greater odds of reporting visiting an E.R. two or more times in the past year, but those who are overweight have about 17 percent lower odds. All other predictors remain significant and do not change direction, but there is some small movement in odds ($P<.001$). A slight decrease is found in odds for those with a bachelor's degrees (compared to respondents with a graduate or professional degree) and

those who reported delaying care for any reason. There is an increase in odds ratios for all other variables. For instance, in Model 4 those who had received financial support from government programs had roughly 97 percent greater odds of increased E.R. visits, but in Model 5 these individuals report about 2.1 times greater odds. A similar pattern is found for Latinxs with no source of preventive care, who had about 46 percent lower odds of being treated in an E.R. 2 or more times in the past year in Model 4, but have about 37 percent lower odds in Model 5.

Metro status remains significant and the odds ratios slightly increase to 16.3 times greater for metro Latinxs, as compared to non-metro, after accounting for acculturation proxies. Significance for destination status remains. In Model 6, we see that those who took their survey in English have greater odds of increased E.R. usage, but those who are foreign born, regardless of citizenship status, report lower odds of having visited an E.R. two or more times in the past year. Respondents who completed the survey in English have about 20 percent greater odds of reporting 2 or more ER visits compared to those who completed the survey in any other language ($P<.001$). Compared to native born Latinxs, foreign born non-citizens have roughly 41 percent lower odds of using an E.R. two or more times in the past 12 months, whereas foreign born citizens have about 14 percent lower odds. All other predictors remain significant, and although there is some movement, there is no shift in the direction of the odds ($P<.001$).

Once demographic variables are accounted for in Model 7, the odds for metro residents increase again to almost 18 times. Destination status remains significant, but again the odds ratios do not change. Again, a statistically significant relationship is found between all demographic variables and E.R. visits ($P<.001$). Those who have absentee

spouses, those with kids in the household, and females report significantly greater odds of visiting an E.R 2 or more times in the past year. Having never been married and being older, decreases the odds in E.R. usage. Being female increases one's odds of visiting the E.R. two or more times by 64 percent. Having children in the household only marginally increases the odds of E.R. usage by 3 percent. Compared to being married, having never been married slightly decreases the odds by 2 percent, but having a spouse that is now absent results in 29 percent greater odds. I also find an inverse relationship with age; as age increases, the odds of utilizing an E.R. frequently, decreases. Compared to those who are 18 to 27, those who are 28 to 37 have about 33 percent lower odds, followed by 38 to 47 year olds with 30 percent lower odds, 48 to 57 year olds with 53 percent lower, and 58 to 65 year olds 55 percent lower. As with all aforementioned models, all other predictors remain significant without the odds ratios changing noticeably ($P<.001$).

Model 8 adds contextual controls. In this model, the relationship between metro status and E.R. visits remains significant, however, the odds are reduced to 2 times greater ($P<.001$). The odds ratios for destination status also increase, with individuals in non-destination reporting about 41 percent lower odds, and those in new destinations 94 percent lower odds of using the E.R. two or more times in the past year, compared to Latinxs in established destinations ($P<.001$). All contextual variables are significantly related to E.R. visits, except for the dissimilarity index. I find that a standardized unit increase in Latinx enclave variables (percent foreign born and percent non-citizens) results in an increase of 8 times greater odds of visiting an E.R. two or more times in the past year. There is also a pattern found among the doctor's per capita quartile. Compared to Latinxs living in counties with the highest number of doctors per capita (quartile 4),

those living in counties with the lowest supply of doctors (quartile 1) have about 93 percent lower odds, followed by 78 percent lower odds for quartile 2 counties, and 59 percent greater odds for quartile 3 counties. Thus, it is possible that having more services available in the county results in residents using the E.R. less frequently. That is, less likelihood of using an E.R. as a primary or preventive care option when there are more health care professionals available in the area. All other previously included predictors remain statistically significant and the odds ratios do not vary noticeably ($P<.001$).

The second half of this chapter used Andersen's (1995) Behavioral Model for Health Services Use to understand county and metro and destination status differences in E.R. usage. Given the increase in odds ratios for metro status throughout Models 1-7 it appears that there are a number of confounding relationships between county metropolitan status and the individual characteristics of interest. However, the inclusion of the contextual economic and healthcare variables the odds ratios are reduced dramatically (17.8 times to 2.2 times). Therefore, these factors seem to be important in understanding this relationship. Moreover, the findings in the final model suggest there is something contextually different about counties of varying destination status, which impacts E.R. use, above and beyond individual characteristics. Evidence on Latinx E.R. use is mixed with Guendelman and Wagner (2000) finding no differences between this population and whites, but Allen and Cummings (2016) find Latinxs less likely to utilize these services, particularly among individuals who are foreign born and have been in the U.S. for shorter periods of time.

The pseudo-ICC decreased from .965 in the null model to .898 in the final model. This indicates that the final model explained around 6 percent in the variation in

emergency room visits. Again, a significant number of factors are not being accounted for given the amount of unexplained variation remaining. Potential additions are discussed in further detail in chapter 7. It should be noted that there may be some issues of reverse causality or endogeneity between a number of the health status and health care access and use variables and emergency room visits.

Table 15 Estimates and Odds Ratios Predicting Two or More Emergency Room Visits

	Model 1			Model 2			Model 3			Model 4		
	B (S.E.)	O.R.	Sig.	B (S.E.)	O.R.	Sig.	B (S.E.)	O.R.	Sig.	B (S.E.)	O.R.	Sig.
Intercept	-13.882		***	-6.559		***	-6.394		***	-9.867		***
	(0.212)			(0.342)			(0.3462)			(0.3764)		
Metropolitan	2.097	8.141	***	2.378	10.781	***	2.429	11.351	***	2.650	14.153	***
	(0.235)			(0.235)			(0.2438)			(0.2782)		
Destination Status												
Established (Ref)												
Non-Destination				-6.467	0.002	***	-6.401	0.002	***	-3.509	0.030	***
				(0.365)			(0.3796)			(0.3856)		
New Destination				-8.054	0.000	***	-8.338	0.000	***	-6.209	0.002	***
				(0.313)			(0.3188)			(0.3095)		
Health Care												
No Source of Preventive Care							-0.615	0.540	***	-0.611	0.543	***
							(0.001)			(0.001)		
Delayed Care for Any Reason							1.060	2.886	***	0.975	2.650	***
							(0.001)			(0.001)		
Socioeconomic Status												
Any form of Insurance										-0.345	0.708	***
										(0.001)		
Receipt Government Support										0.678	1.970	***

	Model 1	Model 2	Model 3	Model 4		
				(0.001)		
Education						
Grad/Professional Degree (Ref)						
B.A.				0.353	1.424	***
				(0.003)		
High School to A.A.				0.603	1.828	***
				(0.002)		
Less Than H.S.				0.643	1.902	***
				(0.002512)		
Income to Poverty						
200 Plus (Ref)						
Under 50				1.124	3.076	***
				(0.001)		
50 to 99				0.858	2.359	***
				(0.001)		
100 to 149				0.503	1.653	***
				(0.001)		
150 to 199				0.303	1.353	***
				(0.001)		
ICC	0.965	0.957	0.957	0.961		

Significance tests *=p<.05, **=p<.01, ***=p<.001; two tailed tests
Data: NHIS (2011, 2012, 2013, 2014), American Community Survey 5 year estimates 2006-2010, and the Area Health Resource File 2010

Table 16 Estimates and Odds Ratios Predicting Two or More Emergency Room Visits (Cont.)

	Model 5			Model 6			Model 7			Model 8		
	B (S.E.)	O.R.	Sig.	B (S.E.)	O.R.	Sig.	B (S.E.)	O.R.	Sig.	B (S.E.)	O.R.	Sig.
Intercept	-10.030		***	-10.060		***	-10.006		***	-7.868		***
	(0.357)			(0.357)			(0.352)			(0.395)		
Metropolitan	2.779	16.100	***	2.797	16.389	***	2.881	17.832	***	0.796	2.217	**
	(0.270)			(0.271)			(0.267)			(0.213)		
Destination Status												
Established (Ref)												
Non-Destination	-3.507	0.030	***	-3.572	0.028	***	-3.503	0.030	***	-0.523	0.593	***
	(0.372)			(0.373)			(0.368)			(0.314)		
New Destination	-6.032	0.002	***	-6.007	0.002	***	-6.045	0.002	***	-2.885	0.056	***
	(0.300)			(0.301)			(0.300)			(0.272)		
Health Care												
No Source of Preventive Care	-0.518	0.596	***	-0.505	0.603	***	-0.472	0.624	***	-0.470	0.625	***
	(0.001)			(0.001)			(0.001)			(0.001)		
Delayed Care for Any Reason	0.733	2.081	***	0.741	2.098	***	0.715	2.044	***	0.714	2.041	***
	(0.001)			(0.001)			(0.001)			(0.001)		
Socioeconomic Status												
Any form of Insurance	-0.177	0.838	***	-0.037	0.964	***	-0.049	0.952	***	-0.050	0.951	***

	Model 5			Model 6			Model 7			Model 8		
	(0.001)			(0.001)			(0.001)			(0.001)		
Receipt Government Support	0.760	2.138	***	0.714	2.043	***	0.499	1.647	***	0.503	1.653	***
	(0.001)			(0.001)			(0.001)			(0.001)		
Education												
Grad/Professional Degree (Ref)												
B.A.	0.398	1.488	***	0.348	1.417	***	0.283	1.327	***	0.285	1.330	***
	(0.003)			(0.003)			(0.003)			(0.003)		
High School to A.A.	0.521	1.684	***	0.472	1.602	***	0.394	1.483	***	0.393	1.481	***
	(0.003)			(0.003)			(0.003)			(0.003)		
Less Than H.S.	0.405	1.499	***	0.528	1.695	***	0.526	1.692	***	0.521	1.683	***
	(0.003)			(0.003)			(0.003)			(0.003)		
Income to Poverty												
200 Plus (Ref)												
Under 50	0.857	2.356	***	0.920	2.508	***	0.716	2.047	***	0.711	2.036	***
	(0.001)			(0.001)			(0.001)			(0.001)		
50 to 99	0.558	1.747	***	0.635	1.888	***	0.487	1.628	***	0.482	1.619	***
	(0.001)			(0.001)			(0.001)			(0.001)		
100 to 149	0.331	1.393	***	0.396	1.486	***	0.267	1.306	***	0.263	1.301	***
	(0.001)			(0.001)			(0.001)			(0.001)		
150 to 199	0.212	1.236	***	0.266	1.305	***	0.189	1.208	***	0.263	1.301	***

	Model 5			Model 6			Model 7			Model 8		
	(0.001)			(0.001)			(0.001)			(0.001)		
Health Status												
Fair/Poor Self Rated Health	1.082	2.951	***	1.097	2.994	***	1.208	3.346	***	1.208	3.347	***
	(0.001)			(0.001)			(0.001)			(0.001)		
Chronic Condition	0.660	1.934	***	0.624	1.866	***	0.735	2.086	***	0.736	2.087	***
	(0.001)			(0.001)			(0.001)			(0.001)		
Obese	0.073	1.076	***	0.068	1.070	***	0.135	1.145	***	0.134	1.143	***
	(0.001)			(0.001)			(0.001)			(0.001)		
Overweight	-0.183	0.833	***	-0.161	0.851	***	-0.067	0.935	***	-0.067	0.936	***
	(0.009)			(0.001)			(0.001)			(0.001)		
Current Smoker	0.381	1.463	***	0.305	1.356	***	0.398	1.489	***	0.403	1.496	***
	(0.001)			(0.001)			(0.001)			(0.001)		
Food Insecure	0.535	1.707	***	0.503	1.654	***	0.486	1.625	***	0.490	1.632	***
	(0.001)			(0.001)			(0.001)			(0.001)		
Acculturation												
Survey in English				0.181	1.198	***	0.157	1.170	***	0.162	1.175	***
				(0.001)			(0.001)			(0.001)		
Native Born (Ref)												
Foreign Born Non-Citizen				-0.532	0.588	***	-0.460	0.632	***	-0.463	0.630	***

	Model 5			Model 6			Model 7			Model 8		
				(0.001)			(0.001)			(0.001)		
Foreign Born Citizen				-0.153	0.858	***	-0.032	0.968	***	-0.033	0.968	***
				(0.001)			(0.001)			(0.001)		
Demographics												
Married (Ref)												
Never Married							-0.017	0.983	***	-0.007	0.993	***
							(0.001)			(0.001)		
Spouse Absent							0.253	1.287	***	0.271	1.311	***
							(0.001)			(0.001)		
Kids Present in Household							0.033	1.034	***	-0.023	0.977	***
							(0.001)			(0.001)		
Male (Ref)												
Female							0.496	1.642	***	0.501	1.651	***
							(0.001)			(0.001)		
Age 18-27 (Ref)												
Age 28-37							-0.403	0.668	***	-0.404	0.668	***
							(0.001)			(0.001)		
Age 38-47							-0.369	0.691	***	-0.368	0.692	***
							(0.001)			(0.001)		
Age 48-57							-0.756	0.470	***	-0.749	0.473	***
							(0.001)			(0.001)		
Age 58-65							-0.803	0.448	***	-0.799	0.450	***

	Model 5	Model 6	Model 7	Model 8		
			(0.001)	(0.002)		
Contextual Characteristics						
Dissimilarity Index				-0.061	0.941	
				(0.701)		
Standardized Disadvantage Scale				-1.191	0.304	***
				(0.084)		
Standardized Latinx Context				2.150	8.587	***
Doctors per Capita Quartile 4 (Ref)				(0.115)		
Doctors per Capita Quartile 1				-2.630	0.072	***
				(0.214)		
Doctors per Capita Quartile 2				-1.515	0.220	***
				(0.217)		
Doctors per Capita Quartile 3				0.462	1.587	*
				(0.207)		
ICC	0.957	0.957	0.956	0.898		

Significance tests *=p<.05, **=p<.01, ***=p<.001; two tailed tests

Data: NHIS (2011, 2012, 2013, 2014), American Community Survey 5 year estimates 2006-2010, and the Area Health Resource File 2010

Table 17 Odds Ratios and 95% Confidence Intervals Predicting Emergency Room Visits

	Model 1		Model 2		Model 3		Model 4	
	O.R.	**95% C.I.**	**O.R.**	**95% C.I.**	**O.R.**	**95% C.I.**	**O.R.**	**95% C.I.**
Metropolitan	8.141	5.135 - 10.299	10.781	6.802 - 13.510	11.351	7.039 - 18.305	14.153	8.204 - 24.414
Destination Status								
Established (Ref)								
Non Destination			0.002	0.0008 - 0.0022	0.002	0.001-0.003	0.030	0.014 - 0.064
New Destination			0.0003	0.0002 - 0.0004	0.0002	0.0001 - 0.0004	0.002	0.001 - 0.004
Health Care								
No Source of Preventive Care					0.540	0.539 - 0.542	0.543	0.542 - 0.544
Delayed Care for Any Reason					2.886	2.881 - 2.891	2.650	2.646 - 2.655
Socioeconomic Status								
Any form of Insurance							0.708	0.707 - 0.709
Receipt Government Support							1.970	1.965 - 1.974
Education								
Grad/Professional Degree (Ref)								
B.A.							1.424	1.416 - 1.431
High School to A.A.							1.828	1.819 - 1.837
Less Than H.S.							1.902	1.893 - 1.911
Income to Poverty								
200 Plus (Ref)								
Under 50							3.076	3.068 - 3.083
50 to 99							2.359	2.354 - 2.364
100 to 149							1.653	1.649 - 1.657

150 to 199	1.353	1.350 - 1.357

Table 18 Odds Ratios and 95% Confidence Intervals Predicting Emergency Room Visits (Cont.)

	Model 5		Model 6		Model 7		Model 8	
	O.R.	**95% C.I.**	**O.R.**	**95% C.I.**	**O.R.**	**95% C.I.**	**O.R.**	**95% C.I.**
Metropolitan	16.100	9.488 - 27.320	16.389	9.635 - 21.490	17.832	10.575 - 30.070	2.217	1.461 - 3.366
Destination Status								
Established (Ref)								
Non Destination	0.030	0.014 - 0.062	0.028	0.014 - 0.041	0.030	0.015 - 0.062	0.593	0.321 - 1.097
New Destination	0.002	0.001 - 0.004	0.002	0.001 - 0.003	0.002	0.001 - 0.004	0.056	0.033 - 0.095
Health Care								
No Source of Preventive Care	0.596	0.594 - 0.597	0.603	0.602 - 0.604	0.624	0.622 - 0.625	0.625	0.623 - 0.626
Delayed Care for Any Reason	2.081	2.077 - 2.085	2.098	2.094 - 2.100	2.044	2.040 - 2.048	2.041	2.037 - 2.045
Socioeconomic Status								
Any form of Insurance	0.838	0.837 - 0.840	0.964	0.962 - 0.965	0.952	0.950 - 0.954	0.951	0.949 - 0.953
Receipt Government Support	2.138	2.133 - 2.144	2.043	2.038 - 2.045	1.647	1.643 - 1.651	1.653	1.649 - 1.657
Education								
Grad/Professional Degree (Ref)								
B.A.	1.488	1.480 - 1.496	1.417	1.409 - 1.421	1.327	1.320 - 1.334	1.330	1.323 - 1.337
High School to A.A.	1.684	1.676 - 1.692	1.602	1.595 - 1.606	1.483	1.476 - 1.491	1.481	1.473 - 1.488
Less Than H.S.	1.499	1.492 - 1.507	1.695	1.686 - 1.699	1.692	1.683 - 1.700	1.683	1.675 - 1.692
Income to Poverty								
200 Plus (Ref)								
Under 50	2.356	2.350 - 2.362	2.508	2.502 - 2.511	2.047	2.041 - 2.052	2.036	2.030 - 2.041
50 to 99	1.747	1.743 - 1.751	1.888	1.883 - 1.890	1.628	1.624 - 1.631	1.619	1.616 - 1.623
100 to 149	1.393	1.389 - 1.396	1.486	1.483 - 1.488	1.306	1.303 - 1.309	1.301	1.297 - 1.304
150 to 199	1.236	1.232 - 1.239	1.305	1.301 - 1.307	1.208	1.25 - 1.212	1.203	1.200 - 1.207

Health Status								
Fair/Poor Self Rated Health	2.951	2.946 - 2.957	2.994	2.989 - 2.997	3.346	3.340 - 3.353	3.347	3.341 - 3.353
Chronic Condition	1.934	1.931 - 1.937	1.866	1.863 - 1.868	2.086	2.082 - 2.089	2.087	2.084 - 2.091
Obese	1.076	1.074 - 1.078	1.070	1.068 - 1.071	1.145	1.143 -1.146	1.143	1.141 - 1.145
Overweight	0.833	0.831 - 0.834	0.851	0.850 - 0.852	0.935	0.934 - 0.937	0.936	0.934 - 0.937
Current Smoker	1.463	1.461 - 1.466	1.356	1.354 - 1.358	1.489	1.486 - 1.492	1.496	1.493 - 1.499
Food Insecure	1.707	1.704 - 1.711	1.654	1.650 - 1.655	1.625	1.622 - 1.629	1.632	1.628 - 1.636
Acculturation								
Survey in English			1.198	1.196 - 1.200	1.170	1.168 - 1.173	1.175	1.173 - 1.178
Native Born (Ref)								
Foreign Born Non-Citizen			0.588	0.586 - 0.588	0.632	0.630 - 0.633	0.630	0.628 - 0.631
Foreign Born Citizen			0.858	0.857 - 0.859	0.968	0.966 - 0.970	0.968	0.966 - 0.970
Demographics								
Married (Ref)								
Never Married					0.983	0.981 - 0.985	0.993	0.990 - 0.995
Spouse Absent					1.287	1.285 - 1.290	1.311	1.308 - 1.314
Kids Present in Household					1.034	1.032 - 1.036	0.977	0.974 - 0.979
Male (Ref)								
Female					1.642	1.639 - 1.645	1.651	1.648 - 1.654
Age category 1 (Ref)								
Age Category 2					0.668	0.667 - 0.670	0.668	0.666 - 0.669
Age Category 3					0.691	0.690 - 0.693	0.692	0.690 - 0.694
Age Category 4					0.470	0.468 - 0.471	0.473	0.471 - 0.474
Age Category 5					0.448	0.447 - 0.450	0.450	0.448 - 0.451
Contextual Characteristics								
Dissimilarity Index							0.941	0.238 - 3.721

Standardized Disadvantage Scale	0.304	0.258 - 0.359
Standardized Hispanic Context	8.587	6.858 - 10.752
Doctors per Capita Quartile 4 (Ref)		
Doctors per Capita Quartile 1	0.072	0.047-0.110
Doctors per Capita Quartile 2	0.220	0.144 - 0.336
Doctors per Capita Quartile 3	1.587	1.058 - 2.380

Chapter 6: Metropolitan Differences in Satisfaction with Care

This chapter 6 examines the relationship between county metropolitan status and satisfaction with health care received in the past year. Satisfied with care is a dichotomous variable collapsing "satisfied" and "very satisfied" vs. "somewhat dissatisfied" and "very dissatisfied." It should be noted that only individuals who had received some form of care in the past 12 months are included in this sample.

Satisfaction with care is an important element to explore due to the implications for the healthcare system and general health overall, as there is evidence that patient satisfaction and engagement is associated with better health (James 2013). A number of factors are associated with satisfaction with healthcare including, socioeconomic status, race/ethnicity, and language (Abraido et al. 2011; Haviland, Morales, Dial, and Pincus 2005; Morales et al. 1999; Moreno and Morales 2010; O'Brien and Shea 2011). However, a large proportion of the body literature exploring Latinx patient satisfaction focuses on individuals with certain ailments such as cancer (Moreno et al. 2018) or in certain types of facilities, hand surgery clinic (Menendez, Loeffler, and Ring 2015), pediatric units (Dunlap et al. 2015), and free clinics (Platanova et al. 2016).

Studies examining place of residence and rural patient satisfaction have predominantly been conducted with samples located outside of the U.S. (Levinton et al. 2011; Weinhold and Gurtner 2018; Yan, Wan, and Li 2011). These studies do, however, find rural/urban differences in satisfaction with healthcare among their respondents. Thus, the need to further explore potential metropolitan status differences in satisfaction with care among residents of the U.S.

Even less attention has been directed towards satisfaction among Latinxs in rural areas of the U.S. Lopez-Cevallos, Harvey, and Warren (2014) do find associations between lower satisfaction and medical mistrust and perceived discrimination among young adult Latinxs in rural Oregon. To the author's knowledge, no other research focusing on satisfaction among non-metro Latinx residents exists. Given the growth and dispersion in the Latinx population within the U.S. and the lack of research on the spatial differences in patient satisfaction, this remains an important, under researched, topic

Conceptual Model for Satisfaction with Care

Figure 8 is a visual representation of the pathways believed to explain the relationship between the independent variables of interest (metro and destination status) and being satisfied with care. I am hypothesizing that three different sets of factors (healthcare access, SES, and acculturation) will explain the relationship between metro status and satisfaction with care, should a relationship exist. This modeling is derived from previous work on healthcare access frameworks and subsequent application to Latinxs.

In their study focusing specifically on satisfaction among Latinas in New York City, Abraido-Lanza et al. (2011) borrow from Penchansky and Thomas' (1981) healthcare access framework focusing on: affordability, accessibility, accommodation, and acceptability. I include aspects of this framework in the forthcoming models. For example, insurance status is used as a proxy for affordability, having a source for preventive care, as well as delaying care for any number of reasons is used as measurements of accessibility, language and enclave residence represent accommodation factors and satisfaction is used to test healthcare accessibility.

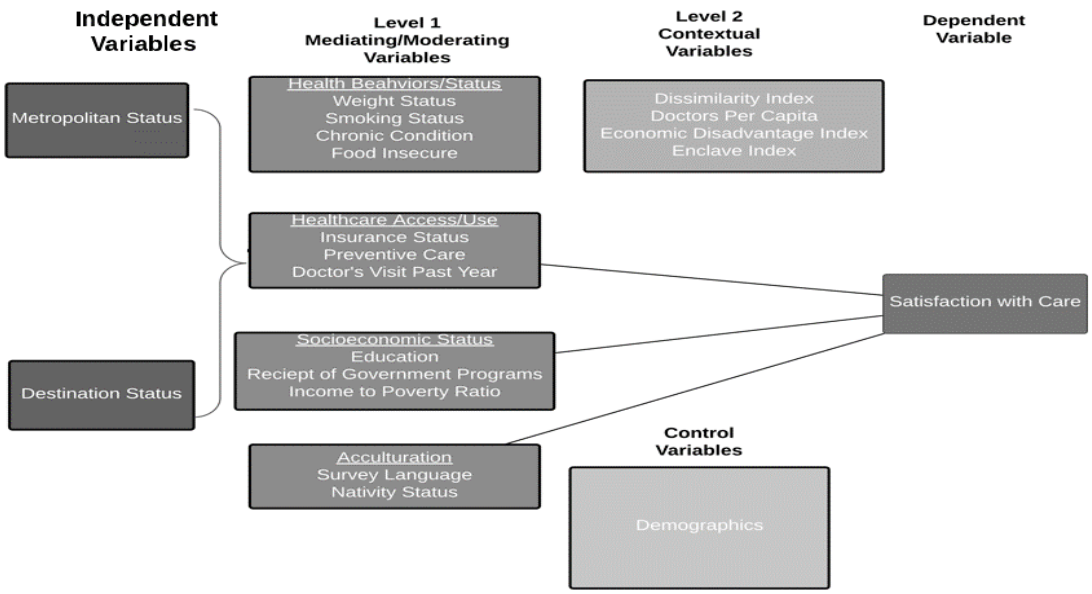

Figure 8 Conceptual Framework for Satisfaction with Care

Descriptive Statistics

Table 7 presents variable means across each metropolitan status category and the results from difference of means/ proportions (t-test) comparing respondents in metro vs. non-metro counties. In general, most of the sample reported being satisfied with the care they received in the past year (over 90 percent). However, no significant differences were found between metro and non-metro counties.

In terms of health status factors, significant differences were found for one of the weight categories. Latinxs in rural counties were significantly more likely to be obese, 48.9 percent compared with 39.3 percent. Of the healthcare access and use factors, significant differences were only found for having any form of health insurance. Surprisingly, Latinxs in non-metro counties reported higher levels of having a form of health insurance, 32.4 percent as compared to 23.9 percent. Latinxs in urban counties were also significantly more likely to report being foreign born, non-citizens, 38.9 percent compared to 28.7 percent. With regard to socioeconomic status factors,

significant differences in education were found. Latinxs in non-metro counties were significantly more likely to report having less than a high school degree (31.5 percent vs. 28.6 percent) and significantly less likely to report having a bachelor's degree (7.3 percent vs 12.2 percent). Non-metro Latinxs were also significantly more likely to report and income to poverty ratio of 100-149 percent (17.4 vs. 14.2) compared to 200 percent or more. Finally, significant differences were found for the demographic factors of marital status and age. Rural Latinxs were less likely to report never having been married (21.4 percent vs. 27.8 percent) and are slightly younger than their urban counterparts. Finally, they are significantly more likely to have kids present in the household (53.8 vs. 62.1 percent). Many of these findings are consistent with previous research on non-metro Latinxs, finding they tend to be poorer, less educated, and younger (Monnat 2017).

Some significant differences were found between county contextual variables. For instance, metropolitan counties had significantly higher dissimilarity indices, compared to non-metro (.36 compared to .25). However, consistent with the aforementioned sample used in Chapters 4 and 5, both indices are lower than the overall average of .45 for Latinxs in the U.S. based on data from the 2010 Census (Frey 2010). Non-metropolitan counties also have significantly lower average scores on the Latinx enclave index than metropolitan counties. That is the standardized scores for the percent of Latinxs and the percent of foreign-born individuals at the county level. Non-metro counties were also significantly less likely to be 1990s new destination (9.87 percent compared to 22.85 percent). These findings are unsurprising, given previous research on non-metro new destinations growth and isolation (Kandel et al. 2011; Lichter and Johnson 2009; Parrado and Kandel 2010; Monnat 2017).

Results of Multilevel Models for Satisfaction with Care

The estimated pseudo-ICC is used to explain variation in satisfaction with care for Latinx adults in the U.S. The calculation for this outcome is 0.980, meaning roughly 98 percent of the variation in self-reports of satisfaction with care is accounted for by county-level differences and about 2 percent of the variation is due to individual-level differences or unknown factors. Like all other outcomes of interest, a great deal of variation is due to county-level differences. Thus, place matters greatly in explaining differences in patient satisfaction with care.

Tables 8 and 9 present the estimates, odds ratios, and significance levels for associations between satisfaction with care and the main individual- and contextual-level predictors. Model 1 includes only metropolitan status. Models 2 introduces destination status. Model 3 integrates individual SES and healthcare variables. Model 4 introduces acculturation. Models 6 and 7 incorporate all individual and contextual variables respectively.

In Model 1 the relationship between metro status and satisfaction is not significant. The addition of destination status in Model 2 does not change this relationship, and metro status remains non- significant. Latinxs in new and non-destinations have significantly greater odds of being satisfied with care, compared to those in established destinations; over 1,000 and 900 times greater respectively ($P<.001$). Again, these are very large odds ratios and the limited cell size is likely a large factor in explaining the large estimates.

Once accounting for individual SES and healthcare status variables, which are treated as proxies for SES in this framework, I find significant metropolitan differences.

In Model 3, metro Latinxs are have about 75 percent lower odds of being satisfied with their care ($P<.001$), as compared to their urban counterparts. Destination status remains significant, but the odds ratios diminish dramatically, with non-destination residents reporting just under 600 times greater odds in satisfaction with care, and about 460 greater odds for new destination residents ($P<.001$), as compared to respondents in established destinations.

All SES and healthcare status variables have a significant relationship with patient satisfaction. As in previous chapters, individuals who are more economically vulnerable also have lower odds of reporting satisfaction with care, including those who received government aid and those who have an income to poverty ratio of less than 200 percent. Compared to those with no form of insurance, those who had some form had about 65 percent lower odds ($P<.001$). Additionally, those who had received any type of government assistance based on income had about 15 percent lower odds ($P<.001$). However, those with lower education than a graduate degree had greater odds of being satisfied with care received in the past 12 months. Those with a bachelor's degree and those with a high school diploma or an associate's degree both had about 17 percent greater odds, whereas those with less than a high school degree reported about 8 percent greater odds in satisfaction ($P<.001$). Unsurprisingly, those who had delayed care, those with no source of preventive care and those who had gone to the E.R. two or more times in the past year, all had significantly lower odds of being satisfied with their care. Having delayed care for any reason results in about 65 percent lower odds, whereas not having a source of preventive care results in roughly 43 percent lower odds ($P<.001$). Those who visited an E.R. two or more times in the past year had roughly 32 percent lower odds

(*P*<.001). Compared to those with an income to poverty ratio of 200 percent or more, all individuals in the sample under this threshold reported lower odds of patient satisfaction. Those under 50 percent had about 28 percent lower, followed by about 31 percent for those between 50 to 99 percent. Respondents between 100 and 149 percent had 26 percent lower odds, whereas those with between 150 and 199 percent had roughly 17 percent lower odds.

In Model 4 I introduce acculturation variables. The odds ratio for metro status increases and remains significant. Latinxs in metro counties now have about 60 percent lower odds of reporting satisfaction with care compared to those in non-metro counties (*P*<.001). Destination status remains significant, but the odds slightly decrease, with those in non-destinations having about 400 times greater odds and those in new destinations having about 430 greater odds (*P*<.001), compared to Latinxs in established destination counties. I find that taking the survey in English and being foreign born result in significantly lower odds of being satisfied, but compared to native born Latinxs, foreign born non-citizens and foreign-born citizens have minor differences in odds ratios (0.99 respectively). Respondents who completed a survey in English have about 13 percent lower odds of reporting satisfaction (*P*<.001). All other predictors included in the model remain significant and do not change direction.

Metro status remains significant in Model 5 with the inclusion of health status variables, and shift to about 57 lower odds (*P*<.01). Destination status also remains significant, but slightly decreases again (non-destination 340 times greater and new destination 420 times greater). All health status variables result in significantly lower odds of being satisfied with care, except for individual with a chronic condition, who

have about 10 percent greater odds in being satisfied (P<.001). Smokers have about 20 percent lower odds, whereas those who are food insecure have about 45 percent lower odds and those with poorer self-rated health have about 43 percent lower odds. Weight status also influences satisfaction with those who are obese having about 3 percent lower odds and those who are overweight having 13 percent lower odds. All other predictors continue to be significant in this model, but there is some change in odds ratios. Receipt of government aid decreases resulting in these Latinxs having about 18 percent lower odds now. However, the odds of being satisfied with care received in past year increases for all education groups, poverty threshold groups, and those who had visited an E.R. two or more times, those with no source of preventive care and those who delayed care for any reason. An increase in satisfaction is found among English survey takers and foreign-born citizens, but a decrease in odds occurs for non-citizens.

Model 6 introduces all of the final demographic variables of interest. In doing so, the odds for metro status increase, resulting in about 39 percent lower odds in being satisfied, but the significance level drops to exactly .05, which does not meet most criteria for being considered statistically significant.[9] Destination status is once again significant and decreases. Latinxs in non- and new destinations have about 300 and 350 times greater odds of being satisfied with care (P<.001), compared to those in established destinations. All demographic variables (marriage, household size, presence of kids, sex and age) are significantly associated with patient satisfaction. Compared to those who are married, those who have never been married and those who report having a spouse absent for any reason, report lower odds of satisfaction (10 percent and 11 percent respectively;

[9] This is denoted on Table 10 with the symbol †

<.001). Kids being present in the household result in about 6 percent lower odds of being satisfied with care (*P*<.001). Conversely, the odds of satisfaction increase about .09 percent with each increase in household size. Females have slightly lower odds of patient satisfaction, compared to males (2 percent; <.001). Finally, an interesting pattern among age categories emerges, with those in ages 28 to 37, ages 38 to 47 and ages 48 to 57 all reporting lower odds of satisfaction (*P*<.001), but ages 58 to 65 report about 11 percent greater odds (*P*<.001). The significance and direction do not change for any of the previously discussed predictors of interest, nor do the odds ratios shift greatly.

Once contextual controls are accounted for in Model 7, the relationship between metro status and satisfaction becomes significantly positive with Latinxs in metro counties having 5 times greater odds of being satisfied with care (*P*<.001). Destination status also remains significant, but the odds are dramatically reduced to roughly 3.5 times greater for individuals in non-destinations and 7 times greater for those in new destinations, compared to Latinxs in established destinations (*P*<.001). All contextual variables added in the model have a significant relationship with patient satisfaction, aside from the dissimilarity index. Interestingly, standardized unit increase county disadvantage variables results in almost 6 times greater odds of being satisfied with care. It is contradictory to previous literature that living in an economically disadvantaged county would result in greater satisfaction. Similarly, those that live in counties with fewer health professionals results in greater odds of being satisfied. The odds diminish with an increase in health professionals with quartile 1 counties having almost 7 times greater odds, followed by quartile 2 counties having almost 3 times greater odds (*P*<.001), compared to counties with the most health professionals per capita. However,

residing in a quartile 2 county results in roughly 78 percent lower odds. All other predictors remain significant, do not change direction and, due to rounding, do not change.

This final chapter of results analyzed the relationship between metropolitan and Latinx destination status and patient satisfaction. An initial relationship between metro status and satisfaction is not found. However, a significant relationship for destination status is found throughout the entirety of the modeling. Upon including individual SES and health status variables, a significant relationship between metro status and satisfaction emerges. Thus, there is a confounding relationship between health status and/or SES and metro status. The pseudo-ICC increased from .980 in the null model to .932 in the final model. This indicates that the final model explains only about 5 percent in the variation in satisfaction with care.

Table 19 Average Respondent Characteristics by Metropolitan Status

			Metro		Non-Metro		
	Mean	S.E.	Mean	S.E	Mean	S.E.	Significance
Satisfied with Care	90.91	0.0004	90.90	0.004	90.96	0.017	
Health Status							
Chronic Condition	34.88	0.007	34.64	0.007	39.30	0.027	
Not Overweight (Ref)							
Obese	39.85	0.007	39.34	0.007	48.90	0.038	*
Overweight	36.19	0.006	36.21	0.007	35.86	0.015	
Current Smoker	13.02	0.005	12.85	0.005	15.95	0.013	
Food Insecure	6.27	0.003	6.28	0.003	6.17	0.015	
Health Access/Use							
Any Form of Insurance	24.37	0.007	23.92	0.007	32.42	0.037	*
Visited Doctor in Past Year	87.61	0.005	87.82	0.005	83.87	0.027	
No Preventive Care Access	9.94	0.004	9.89	0.004	22.04	0.0156	
Two or More E.R. Visits in Past Year	7.77	0.004	7.79	0.004	7.24	0.025	
Fair/Poor health	13.68	0.005	13.77	0.005	12.06	0.022	
Acculturation							
Survey Language English	71.49	0.008	71.43	0.009	72.42	0.025	
Native Born (Ref)							
Foreign Born – Non-Citizen	29.31	0.008	28.76	0.008	38.95	0.029	**
Foreign Born - Citizen	22.46	0.006	22.88	0.006	15.05	0.026	**
Socioeconomic Status							
Receipt of Government Program	5.39	0.007	5.71	0.003	5.34	0.010	
Graduate/Professional Degree (Ref)							
Bachelor's Degree	12	0.005	12.27	0.005	7.31	0.015	**
High School/Associate's Degree	53.88	0.007	53.72	0.007	56.68	0.02	
Less Then High School Degree	28.82	0.007	28.67	0.007	31.50	0.021	***
Income to Poverty Ratio - 200percent (Ref)							
Income to Poverty Ratio - Under 50percent	9.23	0.004	9.33	0.004	7.35	0.012	
Income to Poverty Ratio - 50 - 99percent	15.19	0.005	15.17	0.005	15.62	0.028	
Income to Poverty Ratio - 100 - 149percent	14.41	0.005	14.23	0.005	17.47	0.021	**
Income to Poverty Ratio - 150 - 199percent	11.82	0.004	11.93	0.005	9.81	0.008	
Demographics							
Married (Ref)							

Never Married	27.47	0.006	27.81	0.006	21.40	0.025	*
Spouse Absent	18.31	0.005	18.32	0.005	18.19	0.019	
Kids Present in Household	54.23	0.007	53.79	0.007	62.09	0.030	*
Individual Household (Ref)							
Family Size	3.15	0.026	3.14	0.026	3.32	0.093	
Female	56.63	0.007	56.72	0.007	54.98	0.030	
Age	38.12	0.176	38.64	0.176	37.39	0.488	*
Contextual Variables							
Destination Status							
Established Destination (Ref)							
Non-Destination	23.92	0.019	20,42	0.020	42.71	0.051	
1990s New Destination	21.11	0.018	22.85	0.021	9.87	0.034	**
2000s New Destination	34.48	0.021	38.20	0.024	32.71	0.049	
Dissimilarity Index	0.348	0.006	0.363	0.006	0.246	0.013	***
Standardized Disadvantage Index	0.013	0.044	-0.004	0.048	0.104	0.116	
Standardized Enclave Index	0.058	0.046	0.150	0.051	-0.434	0.084	***
Medical Professionals Per Capita - Quartile 1	24.26	0.018	20.69	0.019	46.71	0.051	
Medical Professionals Per Capita - Quartile 2	21.68	0.018	21.07	0.020	24.86	0.045	*
Medical Professionals Per Capita - Quartile 3	24.11	0.019	25.71	0.021	15.53	0.037	
Medical Professionals Per Capital - Quartile 4 (Ref)							
Individual N=	7024		6528		496		
County N=	517		421		96		

*=p<.05, **=p<.01, ***=p<.001; two tailed tests; metropolitan=reference

Data: NHIS (2011, 2012, 2013, 2014), AHRF (2010), ACS (2009-2013)

Table 20 Estimates and Odds Ratios Predicting Satisfaction with Care

	Model 1			Model 2			Model 3			Model 4		
	B (S.E.)	O.R.	Sig.	B (S.E.)	O.R.	Sig.	B (S.E.)	O.R.	Sig.	B (S.E.)	O.R.	Sig.
Intercept	14.278		***	6.742		***	9.239		***	9.303		***
	(0.246)			(0.460)			(0.480)			(0.492)		
Metropolitan	0.100	1.105		-0.014	0.986		-1.382	0.251	***	-0.907	0.404	**
	(0.251)			(0.254)			(0.308)			(0.288)		
Destination Status												
Established (Ref)												
Non Destination				6.900	992.27	***	6.382	590.872	***	5.992	400.374	***
				(0.427)			(0.409)			(0.431)		
New Destination				7.404	1642.05	***	6.133	460.770	***	6.063	429.834	***
				(0.402)			(0.377)			(0.403)		
Socioeconomic Status												
Any form of Insurance							-1.018	0.361	***	-1.036	0.355	***
							(0.001)			(0.001)		
Receipt Government Support							-0.160	0.852	***	-0.147	0.863	***
							(0.002)			(0.002)		
Education												
Grad/Professional Degree (Ref)												
B.A.							0.161	1.175	***	0.161	1.175	***
							(0.003)			(0.003)		
High School to A.A.							0.159	1.173	***	0.155	1.167	***
							(0.003)			(0.003)		
Less Than H.S.							0.084	1.087	***	0.041	1.042	***
							(0.003)			(0.003)		
Income to Poverty												
200 Plus (Ref)							-0.330	0.719	***	-0.347	0.707	***
Under 50							(0.002)			(0.002)		

	Model 1	Model 2	Model 3			Model 4		
			-0.374	0.688	***	-0.395	0.674	***
50 to 99			(0.002)			(0.002)		
			-0.304	0.738	***	-0.324	0.724	***
100 to 149			(0.002)			(0.002)		
			-0.189	0.828	***	-0.204	0.815	***
150 to 199			(0.002)			(0.002)		
Health Care								
Delayed Care for Any Reason			-1.036	0.355	***	-1.041	0.353	***
			(0.001)			(0.002)		
No Source of Preventive Care			-0.556	0.574	***	-0.553	0.575	***
			(0.001)			(0.001)		
Two or More ER Visits			-0.380	0.684	***	-0.368	0.692	***
			(0.002)			(0.002)		
Acculturation								
Survey in English						-0.139	0.870	***
						(0.001)		
Native Born (Ref)								
Foreign Born Non-Citizen						-0.016	0.985	***
						(0.002)		
Foreign Born Citizen						-0.013	0.987	***
						(0.001)		
ICC	0.980	0.973	0.969			0.971		

Significance tests *=p<.05, **=p<.01, ***=p<.001; two tailed tests
Data: NHIS (2011, 2012, 2013, 2014), American Community Survey 5 year estimates 2006-2010, and the Area Health Resource File 2010

Table 21 Estimates and Odds Ratios Predicting Satisfaction with Care (Cont.)

	Model 5			Model 6			Model 7		
	B (S.E.)	**O.R.**	**Sig.**	**B (S.E.)**	**O.R.**	**Sig.**	**B (S.E.)**	**O.R.**	**Sig.**
Intercept	9.356		***	9.286		***	7.278		***
	(0.495)			(0.506)			(0.483)		
Metropolitan	-0.841	0.431	**	-0.489	0.613	†	1.759	5.804	***
	(0.285)			(0.276)			(0.277)		
Destination Status									
Established (Ref)									
Non-Destination	5.828	339.815	***	5.702	299.586	***	1.297	3.656	***
	(0.436)			(0.451)			(0.381)		
New Destination	6.051	424.495	***	5.866	352.694	***	1.972	7.186	***
	(0.407)			(0.424)			(0.322)		
Socioeconomic Status									
Any form of Insurance	-1.051	0.350	***	-1.060	0.346	***	-1.060	0.346	***
	(0.001)			(0.001)			(0.001)		
Receipt Government Support	-0.198	0.820	***	-0.225	0.799	***	-0.225	0.799	***
	(0.002)			(0.002)			(0.002)		
Education									
Grad/Professional Degree (Ref)									
B.A.	0.173	1.188	***	0.156	1.169	***	0.156	1.169	***
	(0.003)			(0.003)			(0.003)		
High School to A.A.	0.217	1.243	***	0.161	1.174	***	0.161	1.174	***
	(0.003)			(0.003)			(0.003)		
Less Than H.S.	0.188	1.207	***	0.105	1.111	***	0.105	1.111	***
	(0.003)			(0.003)			(0.003)		
Income to Poverty									
200 Plus (Ref)									

	Model 5			Model 6			Model 7		
Under 50	-0.271	0.763	***	-0.2600	0.771	***	-0.260	0.771	***
	(0.002)			(0.001)			(0.002)		
50 to 99	-0.266	0.767	***	-0.275	0.760	***	-0.275	0.760	***
	(0.002)			(0.002)			(0.002)		
100 to 149	-0.221	0.802	***	-0.238	0.789	***	-0.238	0.789	***
	(0.002)			(0.002)			(0.002)		
150 to 199	-0.125	0.882	***	-0.119	0.887	***	-0.119	0.887	***
	(0.002)			(0.002)			(0.002)		
Health Care									
Delayed Care for Any Reason	-0.976	0.377	***	-0.959	0.383	***	-0.959	0.383	***
	(0.001)			(0.001)			(0.001)		
No Source of Preventive Care	-0.535	0.586	***	-0.514	0.598	***	-0.514	0.598	***
	(0.002)			(0.002)			(0.002)		
Two or More ER Visits	-0.145	0.865	***	-0.143	0.866	***	-0.143	0.866	***
	(0.002)			(0.002)			(0.002)		
Acculturation									
Survey in English	-0.135	0.874	***	-0.113	0.893	***	-0.113	0.893	***
	(0.001)			(0.001)			(0.001)		
Native Born (Ref)									
Foreign Born Non-Citizen	-0.065	0.937	***	-0.073	0.929	***	-0.073	0.929	***
	(0.002)			(0.002)			(0.002)		
Foreign Born Citizen	0.007	1.007	***	0.007	1.007	***	0.007	1.007	***
	(0.002)			(0.002)			(0.002)		
Health Status									
Fair/Poor Self Rated Health	-0.565	0.568	***	-0.561	0.571	***	-0.561	0.571	***
	(0.002)			(0.001)			(0.001)		
Obese	-0.034	0.966	***	-0.035	0.965	***	-0.035	0.966	***
	(0.001)			(0.001)			(0.001)		

	Model 5			Model 6			Model 7		
Overweight	-0.135	0.874	***	-0.145	0.865	***	-0.145	0.865	***
	(0.001)			(0.001)			(0.001)		
Current Smoker	-0.232	0.793	***	-0.182	0.834	***	-0.182	0.834	***
	(0.002)			(0.002)			(0.002)		
Chronic Condition	0.095	1.100	***	0.099	1.104	***	0.099	1.104	***
	(0.001)			(0.001)			(0.001)		
Food Insecure	-0.595	0.552	***	-0.559	0.572	***	-0.559	0.572	***
	(0.002)			(0.002)			(0.002)		
Demographics									
Married (Ref)									
Never Married				-0.103	0.902	***	-0.103	0.902	***
				(0.001)			(0.001)		
Spouse Absent				-0.116	0.891	***	-0.116	0.891	***
				(0.002)			(0.002)		
Kids Present in Household				-0.066	0.936	***	-0.066	0.936	***
				(0.002)			(0.002)		
Family Size				0.082	1.086	***	0.082	1.086	***
				(0.0005)			(0.0005)		
Male (Ref)									
Female				-0.025	0.975	***	-0.025	0.975	***
				(0.001)			(0.001)		
Age 18-27 (Ref)									
Age 28-37				-0.182	0.834	***	-0.182	0.834	***
				(0.002)			(0.002)		
Age 38-47				-0.143	0.867	***	-0.143	0.867	***
				(0.002)			(0.002)		
Age 48-57				-0.146	0.864	***	-0.146	0.864	***
				(0.002)			(0.002)		

	Model 5			Model 6			Model 7		
Age 58-65				0.107	1.113	***	0.108	1.114	***
				(0.003)			(0.003)		
Contextual Characteristics									
Dissimilarity Index							1.125	3.081	
							(0.883)		
Standardized Disadvantage Scale							1.774	5.896	***
							(0.115)		
Standardized Hispanic Context							-3.606	0.027	***
							(0.142)		
Doctors per Capita Quartile 4 (Ref)									
Doctors per Capita Quartile 1							1.933	6.907	***
							(0.275)		
Doctors per Capita Quartile 2							1.059	2.884	***
							(0.256)		
Doctors per Capita Quartile 3							-1.503	0.222	***
							(0.256)		
ICC	0.971			0.972			0.932		

Table 22 Odds Ratios and 95% Confidence Intervals Predicting Satisfaction with Care

	Model 1		Model 2		Model 3		Model 4	
	O.R.	**95% C.I.**	**O.R.**	**95% C.I.**	**O.R.**	**95% C.I.**	**O.R.**	**95% C.I.**
Metropolitan	1.105	0.676 - 1.420	0.986	0.600 - 1.623	0.251	0.137 - 0.459	0.404	0.230 - 0.710
Destination Status								
Established (Ref)								
Non Destination			992.275	429.697 - 2291.404	590.872	265.061 - 1317.169	400.374	172.025 - 931.839
New Destination			1642.049	746.787 - 3610.567	460.770	220.078 - 964.703	429.834	195.102 - 946.982
Socioeconomic Status								
Any form of Insurance					0.361	0.361 - 0.362	0.355	0.354 - 0.356
Receipt Government Support					0.852	0.849 - 0.855	0.863	0.860 - 0.867
Education								
Grad/Professional Degree (Ref)								
B.A.					1.175	1.168 - 1.181	1.175	1.168 - 1.182
High School to A.A.					1.173	1.166 - 1.180	1.167	1.160 - 1.174
Less Than H.S.					1.087	1.081 - 1.094	1.042	1.035 - 1.048

Income to Poverty				
200 Plus (Ref)	0.719	0.716 - 0.722	0.707	0.704 - 0.710
Under 50	0.688	0.685 - 0.691	0.674	0.671 - 0.676
50 to 99	0.738	0.735 - 0.741	0.724	0.721 - 0.726
100 to 149	0.828	0.824 - 0.831	0.815	0.812 - 0.819
150 to 199	0.355	0.354 - 0.356	0.353	0.352 - 0.354
Health Care				
Delayed Care for Any Reason	0.574	0.572 - 0.575	0.575	0.574 - 0.576
No Source of Preventive Care	0.684	0.681 - 0.686	0.692	0.689 - 0.695
Two or More ER Visits				
Acculturation				
Survey in English			0.870	0.869 - 0.872
Native Born (Ref)				
Foreign Born Non-Citizen			0.985	0.981 - 0.988
Foreign Born Citizen			0.987	0.985 - 0.989

Table 23 Odds Ratios and 95% Confidence Intervals Predicting Satisfaction with Care (Cont.)

	Model 5		Model 6		Model 7	
	O.R.	**95% C.I.**	**O.R.**	**95% C.I.**	**O.R.**	**95% C.I.**
Metropolitan	0.431	0.880 - 0.754	0.613	0.357 - 1.054	5.804	3.372 - 9.988
Destination Status						
Established (Ref)						
Non Destination	339.815	144.581 - 798.680	299.586	123.772 - 725.137	3.656	1.733 - 7.716
New Destination	424.495	191.173 - 942.579	352.694	153.632 - 809.681	7.186	3.823 - 13.509
Socioeconomic Status						
Any form of Insurance	0.350	0.349 - 0.350	0.346	0.346 - 0.347	0.346	0.346 - 0.347
Receipt Government Support	0.820	0.817 - 0.823	0.799	0.796 - 0.802	0.799	0.796 - 0.802
Education						
Grad/Professional Degree (Ref)						
B.A.	1.188	1.181 - 1.195	1.169	1.162 - 1.176	1.169	1.162 - 1.176
High School to A.A.	1.243	1.235 - 1.250	1.174	1.168 - 1.181	1.174	1.168 - 1.181
Less Than H.S.	1.207	1.200 - 1.214	1.111	1.105 - 1.118	1.111	1.104 - 1.117
Income to Poverty						
200 Plus (Ref)	0.763	0.760 - 0.766	0.771	0.770 - 0.773	0.771	0.768 - 0.774
Under 50	0.767	0.764 - 0.770	0.760	0.757 - 0.763	0.760	0.757 - 0.763
50 to 99						

	0.802	0.799 - 0.805	0.789	0.785 - 0.792	0.789	0.786 - 0.792
100 to 149						
	0.882	0.879 - 0.886	0.887	0.884 - 0.891	0.887	0.884 - 0.891
150 to 199						
Health Care	0.377	0.376 - 0.378	0.383	0.383 - 0.384	0.383	0.383 - 0.384
Delayed Care for Any Reason						
	0.586	0.583 - 0.588	0.598	0.596 - 0.601	0.598	0.896 - 0.601
No Source of Preventive Care						
	0.865	0.862 - 0.869	0.866	0.863 - 0.870	0.866	0.863 - 0.870
Two or More ER Visits						
Acculturation						
Survey in English	0.874	0.872 - 0.875	0.893	0.891 - 0.895	0.893	0.891 - 0.895
Native Born (Ref)						
Foreign Born Non-Citizen	0.937	0.933 - 0.941	0.929	0.926 - 0.933	0.929	0.926 - 0.933
Foreign Born Citizen	1.007	1.004 - 1.011	1.007	1.003 - 1.011	1.007	1.003 - 1.011
Health Status						
Fair/Poor Self Rated Health	0.568	0.566 - 0.571	0.571	0.570 - 0.572	0.571	0.570 - 0.572
Obese	0.966	0.965 - 0.968	0.965	0.964 - 0.967	0.966	0.964 - 0.967
Overweight	0.874	0.872 - 0.876	0.865	0.863 - 0.867	0.865	0.863 - 0.867
Current Smoker	0.793	0.790 - 0.796	0.834	0.830 - 0.837	0.834	0.830 - 0.837
Chronic Condition	1.100	1.098 - 1.102	1.104	1.102 - 1.106	1.104	1.102 - 1.106

Food Insecure	0.552	0.549 - 0.554	0.572	0.570 - 0.574	0.572	0.570 - 0.574
Demographics						
Married (Ref)						
Never Married						
			0.902	0.901 - 0.904	0.902	0.901 - 0.904
Spouse Absent						
			0.891	0.887 - 0.894	0.891	0.887 - 0.894
Kids Present in Household						
			0.936	0.932 - 0.940	0.936	0.932 - 0.940
Family Size						
			1.086	1.083 - 1.088	1.086	1.084 - 1.088
Male (Ref)						
Female						
			0.975	0.973 - 0.977	0.975	0.973 - 0.977
Age 18-27 (Ref)						
Age 28-37						
			0.834	0.831 - 0.837	0.834	0.831 - 0.837
Age 38-47						
			0.867	0.864 - 0.871	0.867	0.864 - 0.871
Age 48-57						
			0.864	0.861 - 0.867	0.864	0.861 - 0.867
Age 58-65						
			1.113	1.107 - 1.120	1.114	1.107 - 1.120
Contextual Characteristics						
Dissimilarity Index						
					3.081	0.546 - 78.291
Standardized Disadvantage Scale						

	5.896	4.706 - 7.386
Standardized Hispanic Context		
	0.027	0.021 - 0.036
Doctors per Capita Quartile 4 (Ref)		
Doctors per Capita Quartile 1		
	6.907	4.029 - 11.841
Doctors per Capita Quartile 2		
	2.884	1.746 - 4.764
Doctors per Capita Quartile 3		
	0.222	0.135 - 0.367

Chapter 7: Discussion, Implications, and Conclusion

Latinxs are just behind Asians, as the fastest growing racial/ethnic group in the U.S. (Brown 2014) and since 1990 have doubled and sometimes tripled in size throughout non-traditional, rural places in the U.S. (Brown and Schafft 2019). Although research has focused on Latinx growth throughout the country, including in rural areas, less focus has been directed towards health outcomes of Latinxs in rural areas. In general, rural places are characterized by higher health care need and lower access (Berry 2014; Brown and Schafft 2019). Rural residents smoke more, weigh more, exercise less, and are more likely to die from the top 5 causes of death according to the Centers for Disease Control (Hartley 2004; Warshaw 2017). Similarly, Latinxs throughout the U.S. have lower rates of health insurance (Monnat 2017) and although they often have lower mortality rates than their white peers, are more likely to suffer from some chronic conditions like diabetes (Schneiderman et al. 2014). Given this, there is potential that Latinxs in non-metro areas may suffer a double jeopardy with regard to their health and healthcare needs. In order to address these issues and gaps in the literature I utilized a number of theoretical frameworks, including Link and Phelan's (1995) Fundamental Cause Theory, Andersen's (1995) Behavioral Model of Health Services Utilization, the literature on the social determinants of health, and Pechansky and Thomas's (1981) accessibility framework, as utilized by Abraido-Lanza et al. (2011). In doing so, I addressed the following objectives:

1. Describe differences in healthcare access, healthcare use, satisfaction with care, and health status among Latinx adults (ages 18 to 64) living in new vs. established destinations along the rural-urban continuum; and
2. Identify the individual and contextual factors contributing to differences in these outcomes.

In this chapter, I summarize my findings, discuss the implications and limitations of the research, and discuss future directions for improving Latinx health and healthcare in metropolitan and nonmetropolitan areas.

Summary of Overall Findings

In this dissertation, I presented findings from multilevel analyses that examined county level metropolitan differences, as well as destination status differences in Latinxs self-rated health, satisfaction with healthcare and healthcare access and utilization (delaying care for any reason and visiting the E.R. two or more times in the past 12 months). I also identified the importance of specific individual- and contextual-level factors on health and healthcare among Latinxs living in these different contexts.

This is one of few studies that describes and aims to explain metropolitan and destination status differences in Latinxs healthcare utilization, patient satisfaction, and self-rated health in the United States, and is unique in its examination of the roles of both individual-level and contextual-level factors in explaining differences in these elements. My findings both corroborate and extend previous research on Latinx health. Specifically, I found that Latinxs in metropolitan counties are more likely than those in nonmetropolitan counties to have visited the E.R. two or more times in the past year, to delay care for any reason, and to report their health as being fair or poor. An initial relationship between metro status and patient satisfaction was not found. However, once individual SES was controlled, this relationship was significant. This indicates a confounding relationship between one or more of the SES variables and metro status. A number of the individual level factors included in each of the previously detailed models helped to explain some of the variation in health and healthcare. Below I discuss my findings in

the context of existing literature in the field, noting areas of convergence and departure along with potential explanations when my findings diverge from those of previous studies. Destination status differences are significant throughout all of the models.

Exploring metropolitan status differences in Latinx health and healthcare assists in expanding previous research in this area. The body of literature focusing on health and healthcare needs and barriers of rural Latinxs is still limited. An exhaustive review of literature examining the impact of the built environment on rural Latinx physical, behavioral, and mental wellbeing included a final sample of only 146 texts (Stone, Fernandez, and DeSantiago 2019). In their review Stone et al. (2019) did find a number of factors that inhibit good health, including transportation, healthcare services, and high-speed internet access. Additional studies are often geographically limited or qualitative in nature and thus, are not nationally representative, nor generalizable (Casey et al. 2004; Lopez-Cevallos et al. 2014). To the author's knowledge, this is the first study to use a geocoded version of the National Health Interview Survey to explore metropolitan differences in health and healthcare among Latinxs in the U.S. In using this restricted version of the data, I was able to account for both individual and contextual factors that might influence these outcomes. Differences in Latinx health and healthcare access/utilization, as well as patient satisfaction in comparison to non-Latinx whites have been documented to various degrees, but to the author's knowledge they have not been conducted using a large, nationally representative dataset.

Throughout all of the results chapters, and subsequent models, a theme of vulnerability at both individual and contextual level appears. With regard to self-rated health, metro Latinxs have higher rates of reporting their health as poorer throughout the models, until contextual variables are controlled. However, many of the individual-level variables helped explain some of this

relationship. Simply including destination status variables reduced the odds of fair/poor health for metro residents from 30 to 9.4 times greater. This highlights the importance of continuing to study the differences in established and high Latinx growth counties. Accounting for health status also reduces the odds from 9.4 times to 5.1. I find that Latinxs who utilizes medical services more, who are poorer, have poorer health behaviors, and are less educated, all are more likely to rate their health as poorer. However, these findings reverse and non-metro Latinxs are more likely to rate their health as fair or poor, once contextual controls are added in the final model. This highlights the impact of community socioeconomic disadvantage, above and beyond the impact of individual economic inequality. All of these findings are consistent with previous research (Subramanian, Kwachi, and Kenndy 2001).

In looking at delays in care, a pattern emerges similar to that for self-rated health. Accounting for county destination status reduced odds by over half, from 27 times to 10 times. There are also some similar patterns among economic vulnerability and delaying care, but they are not as clearly defined as the findings for self-rated health. For instance, those with no source of preventive care have lower odds of delaying care. This may potentially be related to the way in which these questions are worded. This is discussed further below in the limitations section. Perhaps, individuals with no source of care do not seek care and therefore have no delays in care seeking to report. A similar pattern is found with education, with Latinxs with the lowest levels of education reporting lower odds of delaying care. However, those who had received any form of government assistance in the past 12 months had higher odds of reporting delays in care. Perhaps this is actually a function of accessibility, with those may qualify for medical assistance being able to seek care, individuals with any form of insurance had greater odds in reporting delaying care. Those who would be considered sicker, for the most part, were more likely to

report delays. This does not hold true for individuals who are overweight or obese. Again, this could be linked to individual choice to not seek care due to personal concerns over treatment by medical staff (National Taskforce on the Prevention and Treatment of Obesity 2002). Similarly, foreign-born status resulted in lower odds of reporting delays in care, but there are no measurements for other socio-cultural factors that have been previously associated with Latinx delays in care, like preferences for Latinx doctors or used alternative medicine (Insaf and Jurkowski 2008). Once I accounted for contextual controls the metro status relationship remained significant, but it reversed with Latinxs in metro counties not being less likely to report delays in care. This highlighting the impact of county factors.

Throughout all models of analyses for the E.R. visits in past year, metro status is significant and results in greater odds. These differences continue to increase, with the addition of each set of individual level factors. However, once contextual factors are accounted, the odds are reduced to 2.2 times from 17.8 times. Thus, characteristics of the counties in which individuals reside in are driving the differential use of E.R. rooms more than the characteristics of the individuals themselves.

The relationship between metro status and satisfaction with care is not significant in the original model or in the second model that includes destination status. It is not until the SES and healthcare variables are introduced that the relationship becomes statistically significant. Thus, there is a confounding relationship between one or more of these variables and metro status. The odds ratios of reporting satisfaction with care are lower for metro Latinxs, until I account for contextual factors, at which point metro Latinxs have 5 times greater odds ratios of reporting satisfaction. It appears that community disadvantage and doctors per capita are largely driving this shift.

Policy Implications

The findings from my dissertation have several important implications for research, policy, and practice. The extent to which Latinxs can access and utilize high-quality health care and maintain good health is essential to overall U.S. population health due to the large and increasing size of the Latinx population and its dramatic dispersion across the U.S. Latinxs are projected to compose about a quarter of the population by 2050 and will thus make up a substantial portion of Americans in need of health care. It is clear from this research that both individual-and community-level interventions are necessary to assist in providing good healthcare, in order for Latinxs to obtain optimal health.

As contextual factors are associated with all of the outcomes studied within this dissertation, the need to local program interventions are necessary. Although I originally predicted a rural disadvantage for Latinxs, this was not the case. Once accounting for county level differences, metro Latinxs have lower odds of rating their health as fair/poor, lower odds of delaying care for any reasons, greater odds of using an E.R. two more times in the past 12 months, and greater odds of being satisfied care. Programs that specifically address socioeconomic issues in the community, such as those that increase high school graduation rates, unemployment, and poverty rates, will address a number of the underlying issues impacting Latinx health differences.

Many factors associated with individual and community vulnerability, significantly influence health and healthcare. Thus, intervention approaches need not be only with regard to health infrastructure. A multi-pronged approach must be encouraged. It is essential that programs are developed to focus on the upward mobility of Latinxs. For instance, programs that specifically focus on educational attainment, might be able to assist with growth individual SES

and diminish the likelihood for poverty. Free or reduced access to higher education would be beneficial to diminishing barriers to education. Increases in income and education are both associated with increases in health. Programs tailored to English language proficiency and literacy may be beneficial to health education and health efficacy. However, it is important to note that the current political climate is likely not interested in extending funding for many of the aforementioned programs, especially those that might benefit immigrants with diverse documentation statuses. Thus, it would behoove community members and members of the medical community to provide direct community intervention to assist with health comfort and knowledge.

Caveats and Limitations

There are several limitations I must recognize regarding data, units of analysis, variables, and specific limitations related to the dependent variables in this dissertation. Due to sample size and disclosure concerns, the publishable analyses available are limited. For instance, I am only able to account for differences between metropolitan and nonmetropolitan counties and potential differences among the most rural counties could be lost with this dichotomization. Previous research has noted increased disadvantage with increases in rurality (Brown and Schafft 2019). Moreover, there is an underrepresentation of non-metro counties and Latinxs residing in said counties. It is possible that larger disparities may occur, were there a larger representation for comparison within my sample. A similar note must be made with the collapse of new destinations. County variation likely exists between areas with high Latinx growth up until 1990 and those that experienced these changes after (Monnat 2017).

With regard to variables and measurements, I must address a number of shortcomings. Although self-rated health has been considered a reliable instrument for measuring mortality,

there have been documented issues when using it with Latinxs. Although I account for language of survey, previous research does note translation issues of this question, with Spanish interviewees rating their health as worse (Kandula, Lauderdale, and Baker 2007; Viruell-Fuentes et al. 2011). With regard to delays in care, I have collapsed the questions into a dichotomous measure of "delaying care for any reason." It is possible that one reason may be much more prevalent than the others, and thus differences in reasoning are missed. Moreover, there is not a preceding question in the NHIS asking respondents if they had delayed care. It is possible that a respondent may have needed care and delayed doing so for a different reason not provided within the survey. An increase in emergency room visits by rural residents has been noted within the literature, highlighting an increase in use of these likely due to physician shortages (Greenwood-Erickson and Kocher 2019). However, there is no measurement of distance to or presence of emergency department facilities in my models. It is possible that rural residents in closest proximity are more likely to utilize these facilities for more basic care needs, as compared to those who live in more remote locations. Furthermore, there is no measurement for language or translation services available in the medical facilities, which may be an important factor in enabling or inhibiting use among Latinxs. Lastly, the sample for satisfaction with care is more limited than that used for the previous dependent variables, as this question started being asked in 2013. There are some potential limitations with this question as it asks about satisfaction with care in the past 12 months. Thus, individuals had to acknowledge being seen by a medical professional in the past year, which could influence SES or illness bias. That is, those with higher SES may be more likely to have been seen and conversely those who might be sicker also may be more likely to seek care. Additionally, there may be elements of recall bias if the respondent had not seen a medical professional in almost a year. It is possible that an interaction

that was not dramatically positive or negative might not illicit an accurate response. Finally, despite collapsing counties by metropolitan and destination statuses, I still have extremely small cell counts, which results in large odds ratios. This is problematic for analyzing outcomes and the error in analyzing outcomes with little variation is increased.

Future Research

This dissertation provides a useful framework and method for examining the relationship between individual and contextual factors and health and healthcare access/use and satisfaction amongst native and foreign born Latinxs. My findings indicate that there are spatial differences with regard to Latinx health in this country that should be further explored. Additional research should be conducted to examine potential metropolitan status differences in other chronic conditions known to afflict Latinxs, such as diabetes and asthma. Both of these conditions tend to be present in higher levels among rural whites as well, which may potentially influence even higher prevalence rates in rural Latinxs. As the Latinx population continues to grow throughout the U.S. and sample sizes available from datasets like the NHIS increase, the potential for exploring more nuanced differences along the rural-urban continuum may be available. Similarly, with larger samples more variation in destination status, with regard to the speed and timing of Latinx population growth may be examined. Future studies might also look to utilize datasets that include information on generation status, migration history, and familial health backgrounds. Moreover, there is a need for longitudinal studies, preferably looking at multiple generations within the same family, focusing on Latinx health. Acculturation occurs over time and throughout generations. Thus, repeat measures are needed.

In addition to the need for continued research on spatial differences in Latinx health, I believe this dissertation highlights the need for continued focus on rural healthcare in general.

The concerns of rural Latinxs are not unique to rural areas, but rather exacerbated because of racial tensions, political climate, and language barriers. A renewed interest in rural health is needed to address both the issues of long-term, aging, largely white populations, and the incoming, and future generations of Latinxs. Researchers must continue to emphasize to federal and state agencies and legislatures the importance of gathering this information and building policy which directly addresses the findings and provides pathways for implementing meaningful change in these communities.

References

Abraído-Lanza, A. F., Céspedes, A., Daya, S., Flórez, K. R., & White, K. (2011). Satisfaction with health care among Latinas. *Journal of health care for the poor and underserved*, *22*(2), 491–505.

Abraído-Lanza, A. F., Chao, M. T., & Flórez, K. R. (2005). Do healthy behaviors decline with greater acculturation? Implications for the Latino mortality paradox. *Social Science & Medicine (1982)*, *61*(6), 1243–1255.

Abraído-Lanza, A. F, Dohrenwend, B. P., Ng-Mak, D. S., & Turner, J. B. (1999). The Latino mortality paradox: a test of the "salmon bias" and healthy migrant hypotheses. *American Journal of Public Health*, *89*(10), 1543–1548.

Abraído-Lanza, A.F., White K., Vásquez, E. (2004). Immigrant populations and health. In Anderson, N. (Eds.), *Encyclopedia of Health and Behavior* (pp. 533–537). Newbury Park, CA: Russell Sage Foundation.

Acevedo-Garcia D., Bates L.M. (2008) Latino Health Paradoxes: Empirical Evidence, Explanations, Future Research, and Implications. In: Rodríguez H., Sáenz R., Menjívar C. (eds) Latinas/os in the United States: Changing the Face of América. Springer, Boston, MA

Acevedo-Garcia, D., Soobader, M.-J., & Berkman, L. F. (2005). The Differential Effect of Foreign-Born Status on Low Birth Weight by Race/Ethnicity and Education. *Pediatrics*, *115*(1), e20.

Alba, R. and Logan, J. (1991). Variations of Two Themes: Racial and Ethnic Patterns in the Attainment of Suburban Residence. *Demography* 28:431-453.

Alba, R. D., Logan, J. R., Stults, B. J., Marzan, G., & Zhang, W. (1999). Immigrant groups in the suburbs: A reexamination of suburbanization and spatial assimilation. *American Sociological Review; Washington*, *64*(3), 446–460.

Alba, R. & Nee, V. (2003). *Remaking the American Mainstream: Assimilation and Contemporary Immigration*. Cambridge: Harvard University Press.

Albrecht, S., L. Clarke, L., & K. Miller, M. (1998). *Community, Family, and Race/Ethnic Differences in Health Status in Rural Areas1* (Vol. 63).

Aldana, J. M., Piechulek, H., & al-Sabir, A. (2001). Client satisfaction and quality of health care in rural Bangladesh. *Bulletin of the World Health Organization*, *79*(6), 512–517.

Allen, L., & Cummings, J. (2016). Emergency Department Use Among Hispanic Adults: The Role of Acculturation. *Medical care*, *54*(5), 449–456.

Andersen, R. M. (1995). Revisting the Behavioral Model and Access to Medical Care: Does it Matter? *Journal of Health and Social Behavior*, 36(1), 1-10.

Andersen R, & Newman JF. (1973). Societal and individual determinants of medical care utilization in the United States. Milbank Mem Fund Q Health Soc, 51(1):95–124.

Anderson, RT & Sorlie, P., Backlund, E, Johnson, N., & Kaplan, George. (1997). Mortality Effects of Community Socioeconomic Status. *Epidemiology*, 8(1): 42-7.

Anderson, K. & Finch, J. (2014). Racially Charged Legislation and Latino Health Disparities: The Case of Arizona's S.B. 1070. *Sociological Spectrum*. 34.

Arcury, T. A., & Quandt, S. A. (2007). Delivery of Health Services to Migrant and Seasonal Farmworkers. *Annual Review of Public Health*, *28*(1), 345–363.

Arias E. (2010). United States life tables by Hispanic origin. *Vital Health Stat 2,* (152): 1- 33.

Arias, E., Eschbach, K., Schauman, W. S., Backlund, E. L., & Sorlie, P. D. (2010). The Hispanic mortality advantage and ethnic misclassification on US death certificates. *American Journal of Public Health*, *100 Suppl 1*(Suppl 1), S171–S177.

Arroyo-Johnson C, Mincey KD, Ackermann N, Milam L, Goodman MS, Colditz GA. Racial and Ethnic Heterogeneity in Self-Reported Diabetes Prevalence Trends Across Hispanic Subgroups, National Health Interview Survey, 1997–2012. Preventing Chronic Disease, 13(10).

Asad, A L. & Clair, M. (2018). Racialized Legal Status as a Social Determinant of Health. Social Science Medicine, 199:19-28.

Atiles, J. H., & Bohon, S. A. (2002). The needs of Georgia 's new Latinos: A policy agenda for the decade ahead. Athens, GA: The Carl Vinson Institute

Atiles, J. H., & Bohon, S. A. (2003). Camas Calientes: Housing Adjustments and Barriers to Social and Economic Adaptation among Georgia's Rural Latinos. *Southern Rural Sociology*, 19(1), 97-122.

Auchincloss, A. H., & Hadden, W. (2002). The Health Effects of Rural-Urban Residence and Concentrated Poverty. *The Journal of Rural Health*, *18*(2), 319–336.

Babitsch, B., Gohl, D., & von Lengerke, T. (2012). Re-revisiting Andersen's Behavioral Model of Health Services Use: a systematic review of studies from 1998-2011. *Psycho-Social Medicine*, *9*, Doc11–Doc11.

Baum, A., & Posluszny, D. M. (1999). HEALTH PSYCHOLOGY: Mapping Biobehavioral Contributions to Health and Illness. *Annual Review of Psychology*, *50*(1), 137–163.

Befort, C. A., Nazir, N., & Perri, M. G. (2012). Prevalence of obesity among adults from rural and urban areas of the United States: findings from NHANES (2005-2008). *The Journal of rural health: official journal of the American Rural Health Association and the National Rural Health Care Association*, *28*(4), 392–397.

Berry, E. H. "Thinking about Rural Health" In L. Jensen, C. Bailey, and E. Ransom (eds.) *Rural America in a Globalizing World: Problems and Prospects for the 2010s.*Morgantown, WV: U of West Virginia Press. Pp 661-676.

Benjamins, M. R., Hirschman, J., Hirschtick, J., & Whitman, S. (2012). Exploring differences in self-rated health among Blacks, Whites, Mexicans, and Puerto Ricans. *Ethnicity & Health*, *17*(5), 463–476.

Blackwell, D.L., Lucas, J.W. & Clarke, T.C. (2014). Summary Health Statistics for U.s. Adults: National health Interview Survey, 2012. Vital Health Statistics, 10.

Blauner, R. (1972). *Racial oppression in America.* New York, NY: Harper & Row Publishers.

Blewett, L.A., Smaida, S. A., Fuentes, C., & Ulrich Zuehlke, E. U. (2003). Health Care Needs of the Growing Latino Population in Rural America: Focus Group Findings in One Midwestern State. *Journal of Rural Health*, 19(1), 33-41.

Boardman, J.D., Saint Onge, J.M. Rogers, R.G, and Denney, J.T. (2005). Race Differentials in Obesity: The Impact of Place. *Journal of Health and Social Behavior* 46(3):229-243.

Bond Huie, S.A., Hummer, R.A, & Rogers, R.G. (2002). Individual and Contextual Risks of Death among Race and Ethnic Groups in the United States. *Journal of Health and Social Behavior* 43(3):359-381.

Bonilla-Silva, E. (2004). From bi-racial to tri-racial: Towards a new system of racial stratification in the USA. Ethnic and Racial Studies, 27(6), 931-950.

Borrell, L., & Dallo, F. (2008). Self-Rated Health and Race Among Hispanic and Non-Hispanic Adults. *Journal of Immigrant and Minority Health / Center for Minority Public Health*, *10*, 229–238.

Brown, A. (2014). U.S. Hispanic and Asian populations growing, but for different reasons. Retrieved from https://www.pewresearch.org/fact-tank/2014/06/26/u-s-hispanic-and-asian-populations-growing-but-for-different-reasons/

Brown, D.L. & Schafft, K.A. (2019). *Rural People and Communities in the 21st Century: Resilience and Transformation*. Cambridge: Polity Press.

Browning, C. & Cagney, K. (2003). Neighborhood Structural Disadvantage, Collective Efficacy, and Self-Rated Physical Health in an Urban Setting. *Journal of Health and Social Behavior*, 43(4): 383-99.

Browning, C., & Cagney, K. (2003). Moving beyond Poverty: Neighborhood Structure, Social Processes, and Health. *Journal of Health and Social Behavior, 44*(4), 552-571.

Carter-Pokras, O., Zambrana, R.E., Yankelvich, G., Estrada, M., Castillo-Salgado, C., Ortega, A.N. (2008). *Journal of Immigrant Minority Health*, 10: 475.

Casey, M. M., Blewett, L.A., & Call, K. T. (2004). Providing Health Care to Latino Immigrants: Community-Based Efforts in the Rural Midwest. *American Journal of Public Health*, 94(10), 1709-1711.

Cavazos-Rehg, P. A., Zayas, L. H., & Spitznagel, E. L. (2007). Legal status, emotional well-being and subjective health status of Latino immigrants. *Journal of the National Medical Association*, *99*(10), 1126–1131.

Charles, C. Z. (2003). The Dynamics of Racial Residential Segregation. *Annual Review of Sociology,* 29:167-207.

Cho, Y., Frisbie, W. P., Hummer, R. A., & Rogers, R. G. (2004). Nativity, Duration of Residence, and the Health of Hispanic Adults in the United States1. *International Migration Review*, *38*(1), 184–211.

Cisneros, H. (2008). *Twenty-First Century Gateways: Immigrant Incorporation in Suburban America* (Singer A., Hardwick S., & Brettell C., Eds.). Brookings Institution Press.

Cleary, P.D., Keroy, L., Karapanos, G. & Mcmullen, W. (1989). Patient Assessments of Hospital Care. *Quality Review Bulletin*, 15(6), 172-179.

Cockerham, WC. (2005). Health lifestyle theory and the convergence of agency and structure. *Journal of Health and Social Behavior*, 46(1): 51-67.

Cohn, D. (2015). How U.S. Immigration Laws and Rules have changed through History. Retrieved from: https://www.pewresearch.org/fact-tank/2015/09/30/how-u-s-immigration-laws-and-rules-have-changed-through-history/

Coronado, G. D., Thompson, B., Strong, L., Griffith, W. C., & Islas, I. (2004). Agricultural task and exposure to organophosphate pesticides among farmworkers. *Environmental health perspectives*, *112*(2), 142–147.

Crimmins, E., Hayward, M., & Seeman, T. E. (2004). Race/ethnicity, socioeconomic status, and health. In N. B. Anderson, R. A. Bulatao, & B. Cohen (Eds.). In *Critical perspectives on racial and ethnic differences in health in late life (pp. 310-352). Washington* (pp. 310–352).

Crimmins, E. M., Kim, J. K., Alley, D. E., Karlamangla, A., & Seeman, T. (2007). Hispanic paradox in biological risk profiles. *American Journal of Public Health*, *97*(7), 1305–1310.

Cristancho, S., Garces, D. M., Peters, K. E., & Mueller, B. C. (2008). Listening to Rural Hispanic Immigrants in the Midwest: A Community-Based Participatory Assessment of Major Barriers to Health Care Access and Use. *Qualitative Health Research*, *18*(5), 633–646.

Crowley, M. & Lichter, D. T. (2009). Social Disorganization in New Latino Destinations? *Rural Sociology*, 74(4), 573–604.

Crowley, M., Lichter, D. T., & Turner, R. (2015). Diverging fortunes? Economic well-being of Latinos and African Americans in new rural destinations, *Social Science Research*, 51: 77-92.).

Crowley, M., Lichter, D. T. and Qian, Z. (2006). Beyond Gateway Cities: Economic Restructuring and Poverty Among Mexican Immigrant Families and Children. *Family Relations*, 55: 345-360.

Cunningham, P., Banker, M., Artiga, S., & Tolbert, J. (2006). Health coverage and access to care for Hispanics in "new growth communities" and "major Hispanic centers." Washington, DC: The Henry J. Kaiser Family Foundation

Davidson PL, Andersen RM, Wyn R, Brown ER. (2004). A framework for evaluating safety-net and other community-level factors on access for low-income populations. *Inquiry*, 41(1):21–38.

Daviglus, M. L., Talavera, G. A., Avilés-Santa, M. L., Allison, M., Cai, J., Criqui, M. H.,Stamler, J. (2012). Prevalence of Major Cardiovascular Risk Factors and Cardiovascular Diseases Among Hispanic/Latino Individuals of Diverse Backgrounds in the United States.*JAMA*, *308*(17), 1775–1784.

Davis, B.A. & Duffy, E. (1999). Patient Satisfaction with nursing Care in a Rural and an Urban Emergency Department. Patient satisfaction with nursing care in a rural and an urban emergency department. Aust J Rural Health, 7(2), 97-103.

Davis, K., Koch, K., Harvey, J.K., Wilson, R., Englert, J. & Gerard, P. (2000). Effects of hospitalists on cost, outcomes, and patient satisfaction in a rural health system. *The American Journal of Medicine*. 108(8), 621-6.

Derose, K., Bahney, B. W., Lurie, N., & Escarce, J. J. (2009). Review: Immigrants and Health Care Access, Quality, and Cost. *Medical Care Research and Review*, *66*(4), 355–408.

Derose, K. P., & Baker, D. W. (2000). Limited English Proficiency and Latinos' Use of Physician Services. *Medical Care Research and Review*, *57*(1), 76–91.

Dey, A., & Lucas, J. (2006). *Physical and Mental Health Characteristics of U.S. and Foreign-Born Adults: United States, 1998–2003* (Vol. 369).

Dinnerstein, L., & Reimers, D. M. (2009). *Ethnic Americans: A History of Immigration*. New York: Columbia University Press.

Donato, K., Tolbert, C., Nucci, A., Kawano, Y. (2009). Recent Immigrant Settlement in the Nonmetropolitan United States: Evidence from Internal Census Data. Rural Sociology. 72(4). 537 - 559.

Dondero, M., & Muller, C. (2012). School stratification in new and established Latino destinations. *Social Forces; a Scientific Medium of Social Study and Interpretation*, *91*(2), 477–502.

Dubowitz, T., Subramanian, S. V., Acevedo-Garcia, D., Osypuk, T. L., & Peterson, K. E. (2008). Individual and neighborhood differences in diet among low-income foreign and U.S.-born women. *Women's health issues: official publication of the Jacobs Institute of Women's Health*, *18*(3), 181–190.

Duelberg, S. I. (1992). Preventive health behavior among Black and White women in urban and rural areas. *Social Science & Medicine*, *34*(2), 191–198.

Dunlap, J. L., Jaramillo, J. D., Koppolu, R., Wright, R., Mendoza, F., & Bruzoni, M. (2015). The effects of language concordant care on patient satisfaction and clinical understanding for Hispanic pediatric surgery patients. *Journal of Pediatric Surgery*, *50*(9), 1586–1589.

Durand J, Massey DS, Charvet F. (2000). The changing geography of Mexican immigration to the United States: 1910–1996. Social Science Quarterly, 81(1):1–15.

Durand, J., Massey, D. S., & Zenteno, R. M. (2001). Mexican Immigration to the United States: Continuities and Changes. *Latin American Research Review*, *36*(1), 107–127.

Elo, I. T., Turra, C. M., Kestenbaum, B., & Ferguson, B. R. (2004). Mortality among elderly hispanics in the United States: Past evidence and new results. *Demography*, *41*(1), 109–128.

Escarce, J. J. (2007). Racial and ethnic disparities in access to and quality of health care (Research Synthesis Report No. 12). Princeton, NJ: Robert Wood Johnson Foundation.

Fenton JJ, Jerant AF, Bertakis KD, Franks P. (2012). The Cost of Satisfaction: A National Study of Patient Satisfaction, Health Care Utilization, Expenditures, and Mortality. *Arch Intern Med,* 172(5):405–411.

Finch, B. K., Hummer, R. A., Reindl, M., & Vega, W. A. (2002). Validity of Self-rated Health among Latino(a)s. *American Journal of Epidemiology*, *155*(8), 755–759.

Finch, B.K., Kolody, B., & Vega, W.A. (2000). Perceived discrimination and depression among Mexican-origin adults in California. *Journal of health and social behavior,* 41(3), 295-313.

Finch, B. K., & Vega, W. A. (2003). Acculturation Stress, Social Support, and Self-Rated Health Among Latinos in California. *Journal of Immigrant Health*, *5*, 109–117.

Fischer, M. J. (2010). Immigrant educational outcomes in new destinations: An exploration of high school attrition. *Social Science Research*, *39*(4), 627–641.

Flores, A. (2017). How the U.S. Hispanic Population is changing. Retrieved from: https://www.pewresearch.org/fact-tank/2017/09/18/how-the-u-s-hispanic-population-is-changing/

Fox, M., Thayer, Z., & Wadhwa, P. D. (2017). Acculturation and health: the moderating role of socio-cultural context. *American Anthropologist*, *119*(3): 405–421.

Franzini, L., C. Ribble, J., & Keddie, A. (2001). Understanding the Hispanic Health Paradox. *Ethnicity and Disease*, 11:496-518.

Freese, Jeremy & Spencer, Karen. (2011). Fundamental Causality: Challenges of an Animating Concept for Medical Sociology. In B.A. Pescolido, Jack K. Martin, J. Mcleod, and A. Rogers (Eds.) *The Handbook of the Sociology of Health, Illness, and Healing*. New York, NY: Springer.

Frey, W. H. (2018, March 14). The US will become 'minority white' in 2045, Census projects. Retrieved from: https://www.brookings.edu/blog/the-avenue/2018/03/14/the-us-will-become-minority-white-in-2045-census-projects/

Galambos, C. M. (2005). Health Care Disparities among Rural Populations: A Neglected Frontier. *Health & Social Work*, *30*(3), 179–181.

Gans, H. J. (1979). Symbolic ethnicity: The future of ethnic groups and cultures in America. *Ethnic and Racial Studies*, *2*(1), 1–20.

Gelberg, L., Andersen, R.M., Leake, B.D. (2000). The Behavioral Model for Vulnerable Population: application to medical care use and outcomes for homeless people. *Health Services Research*, 34(6), 1273-1302.

Glazer, N. & Moynihan D.P. (1970). *Beyond the melting pot: the Negroes, Puerto Ricans, Jews, Italians, and Irish of New York City*. Cambridge, MA: MIT Press

Gordon, M. (1964). *Assimilation in American Life: The Role of Race, Religion, and National Origins*. New York, NY: Oxford University Press.

Gouveia, L., & Saenz, R. (2000). Global Forces and Latino Population Growth in the Midwest: A Regional and Subregional Analysis. *Great Plains Research*. *10*, 305-328.

Gramlich, J. & Noe-Bustamante, L. (2019). What's happening at the U.S.-Mexico Border in 5 Charts. Retrieved from https://www.pewresearch.org/fact-tank/2019/11/01/whats-happening-at-the-u-s-mexico-border-in-5-charts/

Greenwood-Ericksen, M. B., & Kocher, K. (2019). Trends in Emergency Department Use by Rural and Urban Populations in the United *JAMA Network Open*, *2*(4), e191919–e191919.

Gresenz, C. R., Derose, K. P., Ruder, T., & Escarce, J. J. (2012). Health Care Experiences of Hispanics in New and Traditional U.S. Destinations. *Medical Care Research and Review*, 69(6), 663–678.

Gresenz, C.R., Rogowski, J., & Escarce, J.J. (2009). Community Demographics and Access to Health Care among U.S. Hispanics. *Health Services Research*, 44(5p1), 1542-1562.

Guendelman, S., & Wagner, T.H. (2000). Health Services Utilization Among Latinos and White Non-Latinos: Results from a National Survey. *Journal of Health Care for the Poor and Underserved 11*(2), 179-194.

Gutiérrez, D. G. (2016). A historic overview of Latino immigration and the demographic transformation of the United States. In *The New Latino Studies Reader: A Twenty-First-Century Perspective* (pp. 108–125).

Haas J.S., Phillips K.A., Sonneborn D., McCulloch C.E., Baker L.C., Kaplan C.P., Perez-Stable, E.J., & Liang S.Y. (2004). Variation in access to health care for different racial/ethnic groups by the racial/ethnic composition of an individual's county of residence. *Medical Care*, 42, 707–714.

Hall, M. (2009). Interstate migration, spatial assimilation, and the incorporation of US immigrants. *Population, Space and Place*, *15*(1), 57–77.

Hall, M. (2013). Residential Integration on the New Frontier: Immigrant Segregation in Established and New Destinations. *Demography*, *50*(5), 1873–1896.

Hamilton, E.R., Hale, J.M., & Savinar, R. (2019). Immigrant Legal Status and Health: Legal Status Disparities in Chronic Conditions and Musculoskeletal Pain among Mexican-Born Farm Workers in the United States. *Demography*, 56(1):1-24.

Harari, N., Davis, M. & Heisler, M. (2008). Strangers in a Strange Land: Health Care Experiences for Recent Latino Immigrants in Midwest Communities. *Journal of Health Care for the Poor and Underserved*, 19(4), 1350-1367.

Hartley, D. (2004). Rural health disparities, population health, and rural culture. *American journal of public health*, *94*(10), 1675–1678.

Haviland, M. G., Morales, L. S., Dial, T. H., & Pincus, H. A. (2005). Race/ethnicity, socioeconomic status, and satisfaction with health care. *American journal of medical quality : the official journal of the American College of Medical Quality*, *20*(4), 195–203.

Hidalgo B., Bajwa, P., Gennarelli, R., & Arroyo Johnson, C. (2015). Abstract P284: Exploring Differences in Self-Reported Moderate and Vigorous Physical Activity Among Hispanic Subgroups, Non-Hispanic Black, and Non-Hispanic White: National Health Interview Survey (NHIS), 1997-2012. *Circulation*, *131*(suppl_1), AP284–AP284.

Hirschman, C. (1983). America's Melting Pot Reconsidered. *Annual Review of Sociology* 9:397-423.

Hu, D. J., & Covell, R. M. (1986). Health care usage by Hispanic outpatients as function of primary language. *The Western Journal of Medicine*, *144*(4), 490–493.

Hummer, R.A., Benjamins, M. R., & Rogers, R. G. (2004). Racial and Ethnic Disparities in Health and Mortality among the U.S. Elderly Population. In Anderson, Norman B.; Bulatao, Rodolfo A.; & Cohen, Barney (Eds.), *Critical Perspectives on Racial and Ethnic Differences in Health in Late Life* (pp. 53-94). Washington: National Academies Press.

Idler, E., & Benyamini, Y. (1997). Self-Rated Health and Mortality: A Review of Twenty-Seven Community Studies. *Journal of Health and Social Behavior*, *38*, 21–37.

Insaf, T. Z. & Jurkowski, J. M. (2008). Socio-Cultural Factors Influencing Delay in Seeking Routine Health Care Among Latino Women. *Annals of Epidemiology*, *18*(9), 714–715.

Jerant, A. Arellanas, R., & Franks, P. (2008). Health Status among US Hispanic: Ethnic Variation, Nativity, and Language Moderation. *Medical Care*, 46(7): 709-717.

Johnson, K. M., & Lichter, D. T. (2008). Natural Increase: A New Source of Population Growth in Emerging Hispanic Destinations in the United States. *Population and Development Review*, *34*(2), 327–346.

Jones, C. A., Kandel, W., & Parker, T. (2007). Population dynamics are changing the profile of rural areas. *Journal of Rural Mental Health, 31*(3), 46–53.

Kandel, W. & Cromartie, J. (2004) New Patterns of Hispanic Settlement in Rural America. Economic Research Service, United States Department of Agriculture; Washington, DC. Rural Development Research Report No. 99.

Kandel, W., Henderson, J., Koball, H., & Capps, R. (2011). Moving Up in Rural America: Economic Attainment of Nonmetro Latino Immigrants. *Rural Sociology*, *76*(1), 101–128.

Kandel, W. & and Newman, C. (2004), Rural Hispanics: Employment and Residential Trends. Economic Research Service, United States Department of Agriculture; Washington, DC. Report No. 129607.

Kandel, W., & Parrado, E. A. (2005). Restructuring of the US Meat Processing Industry and New Hispanic Migrant Destinations. *Population and Development Review*, *31*(3), 447–471.

Kandula, N. R., Lauderdale, D. S., & Baker, D. W. (2007). Differences in Self-Reported Health among Asians, Latinos, and Non-Hispanic Whites: The Role of Language and Nativity. *Annals of Epidemiology*, *17*(3), 191–198.

Kapur, K., & Escarce, J. (2006). Access to and quality of health care. In Tienda, M., Mitchell, F. (Eds.), Hispanics and the future of America (pp. 410-446). Chichester, England: National Academies Press.

Kennedy, B. P., Kawachi, I., Glass, R., & Prothrow-Stith, D. (1998). Income distribution, socioeconomic status, and self rated health in the United States: multilevel analysis. *BMJ (Clinical research ed.)*, *317*(7163), 917–921.

Kimbro, R.T., Gorman, B. K., Schachter, A. (2012). Acculturation and Self-rated Health among Latino and Asian Immigrants to the United States. *Social Problems* 59(3):341–63.

Kirby, J. B., Taliaferro, G., & Zuvekas, S. H. (2006). Explaining Racial and Ethnic Disparities in Health Care. *Medical Care*, *44*(5), I64–I72.

Knudston, N. (2000). Patient Satisfaction with Nurse Practitioner Service in a Rural Setting. Journal of American Academy of Nurse Practitioners, 12(10), 405-412.

Koopman, R. J., Mainous III, A. G. Diaz, V. A., & Geesey, M. E. (2005). Changes in age at diagnosis of type 2 diabetes mellitus in the United States, 1988 to 2000. *Annals of family medicine*, *3*(1), 60–63.

Krogstad, J.M, Stepler, R. & Lopez, M.H. (2015). English Proficiency on the Rise among Latinos. Retrieved from: https://www.pewresearch.org/hispanic/2015/05/12/english-proficiency-on-the-rise-among-latinos/

Lara, M., Gamboa, C., Kahramanian, M. I., Morales, L. S., & Bautista, D. E. H. (2005). Acculturation and Latino health in the United States: a review of the literature and its sociopolitical context. *Annual Review of Public Health*, *26*, 367–397.

Lariscy, J.T., Hummer, R.A., & Hayward, M.D. (2015). Hispanic Older Adult Mortality in the United States: New Estimates and Assessment of Factors Shaping the Hispanic Paradox. *Demography*, 52(1): 1-14.

Lariscy, J.T., Nau, C., Firebaugh, G., & Hummer, R.A. (2016). Hispanic-White Differences in Lifespan Variability in the United States. *Demography*, 53(1), 215-239.

Larsen BA, Strong D, Linke SE. The association between family and friend integration and physical activity: results from the NHIS. Int J Behav Med. 2014 Jun; 21(3):529-36

Larson, S., & Correa-de-Araujo, R. (2006). Preventive health examinations: A comparison along the rural–urban continuum. *Women's Health Issues*, *16*(2), 80–88.

Laveist, Thomas & Nuru-Jeter, Amani. (2002). Is Doctor-Patient Race Concordance Associated with Greater Satisfaction with Care? Journal of Health and Social Behavior. 43(3): 296-306.

Leclere, F. B., Jensen, L., & Biddlecom, A. E. (1994). Health Care Utilization, Family Context, and Adaptation among Immigrants to the United States. *Journal of Health and Social Behavior*, *35*(4), 370–384.

LeClere, F., Rogers, R., and Peters, K. (1997). Ethnicity and Mortality in the United States: Individual and Community Correlates. *Social Forces* 76: 169-198.

Lee, J., & Bean, F. D. (2004). America's Changing Color Lines: Immigration, Race/Ethnicity, and Multiracial Identification. *Annual Review of Sociology*, *30*(1), 221–242.

Lee, J. & Bean, F. D. (2007). Reinventing the Color Line: Immigration and America's New Racial/Ethnic Divide. *Social Forces,* 86:2:561-86.

Lee, L. J., Batal, H. A., Maselli, J. H., & Kutner, J. S. (2002). Effect of Spanish interpretation method on patient satisfaction in an urban walk-in clinic. *Journal of General Internal Medicine*, *17*(8), 641–645.

Levinton, C., Veillard, J., Slutsky, A., & Brown, A. (2011). The importance of place of residence in patient satisfaction. *International Journal for Quality in Health Care*, *23*(5), 495–502. https://doi.org/10.1093/intqhc/mzr048

Lewis, M. (2017). *Rural Healthcare Access for Hispanics in the United States: Barriers and Possible Solutions Acceso a la salud rural para los hispanos en los Estados Unidos: barreras y posibles soluciones* (Vol. 71).

Liao, Y., Cooper, R. S., Cao, G., Durazo-Arvizu, R., Kaufman, J. S., Luke, A., & McGee, D. L. (1998). Mortality patterns among adult Hispanics: findings from the NHIS, 1986 to 1990. *American Journal of Public Health*, *88*(2), 227–232.

Lichter, D. T., & Johnson, K. M. (2009). Immigrant Gateways and Hispanic Migration to New Destinations. *The International Migration Review*, *43*(3), 496–518.

Lichter, D. T., Johnson, K. M., Turner, R. N., & Churilla, A. (2012). Hispanic Assimilation and Fertility in New U.S. Destinations. *International Migration Review*. *46*(4): 767–791.

Lichter, D. T., Parisi, D., & Taquino, M. C. (2015). Toward a New Macro-Segregation? Decomposing Segregation within and between Metropolitan Cities and Suburbs. *American Sociological Review*, *80*(4), 843–873.

Lieberson, S., & Waters, M. C. (1988). *From Many Strands*. New York: Russell Sage Foundation.

Link, B., & Phelan, J. (1995). Social Conditions as Fundamental Causes of Disease. *Journal of Health and Social Behavior,* Special*:* 80-94.

Lobao L., Hooks G., Tickamyer A. R. (2007). *The Sociology of Spatial Inequality*. Albany, NY: State University of New York Press.

Lobao L. M., Hooks G., Tickamyer A. R. Poverty and Inequality across Space: Sociological Reflections on the Missing-Middle Subnational Scale. *Cambridge Journal of Regions, Economy and Society*, 1(1):89–113.

Logan, J. R., Alba, R.D. and Zhang, W. (2002). Immigrant Enclaves and Ethnic Communities in New York and Los Angeles. *American Sociological Review,* 67(2): 299-322.

Logan, J. R., Stults, B.J. & Farley, R. (2004). "Segregation of Minorities in the Metropolis: Two Decades of Change." *Demography*, 41(1): 1-22.

Lopez-Cevallos, C.F., Harvey, S.M., and Warren, J.T. (2014). Medical Mistrust, Perceived Discrimination, and Satisfaction with Health Care Among Young-Adult Rural Latinos. The Journal of Rural Health, 30(4): 344-351.

Lopez, M.H. & Dockterman, D. (2011). *U.S. Hispanic Country of Origin Counts for Nation. Top 30 Metropolitan Areas.* Washington, CD: Pew Hispanic Center. Retrieved from https://www.pewresearch.org/hispanic/2011/05/26/us-hispanic-country-of-origin-counts-for-nation-top-30-metropolitan-areas/

Lopez, M. H., Gonzalez-Barrera, A., & Krogstad J.M. (2018). Latinos are more likely to believe in the American dream, but most say it is hard to achieve. Retrieved from: https://www.pewresearch.org/fact-tank/2018/09/11/latinos-are-more-likely-to-believe-in-the-american-dream-but-most-say-it-is-hard-to-achieve/

López, N., Vargas, E. D., Juarez, M., Cacari-Stone, L., & Bettez, S. (2018). What's Your "Street Race"? Leveraging Multidimensional Measures of Race and Intersectionality for Examining Physical and Mental Health Status among Latinxs. *Sociology of race and ethnicity (Thousand Oaks, Calif.)*, *4*(1), 49–66.

Mainous, A. G., 3rd, King, D. E., Garr, D. R., & Pearson, W. S. (2004). Race, rural residence, and control of diabetes and hypertension. *Annals of Family Medicine*, *2*(6), 563–568.

Markides, K S, & Coreil, J. (1986). The health of Hispanics in the southwestern United States: an epidemiologic paradox. *Public Health Reports (Washington, D.C.: 1974)*, *101*(3), 253–265.

Markides, Kyriakos S, & Rote, S. (2018). The Healthy Immigrant Effect and Aging in the United States and Other Western Countries. *The Gerontologist*, *59*(2), 205–214.

Martinez ME, Ward BW, Adams PF. 2015. Health care access and utilization among adults aged 18–64, by race and Hispanic origin: United States, 2013 and 2014. NCHS data brief, no 208. Hyattsville, MD: National Center for Health Statistics.

Mason, P. B., Toney, M. B., & Cho, Y. (2011). Religious affiliation and Hispanic health in Utah. *The Social Science Journal*, *48*(1), 175–192.

Massey. D. S. (1995). The New Immigration and Ethnicity in the United States. *Population and Development Review,* 21(3), 631-652.

Massey, D. S. (2008). New Faces in New Places: The Changing Geography of American Immigration. New York: Russell Sage Foundation.

Massey, D. S., & Capoferro, C. (2004). Measuring Undocumented Migration. *International Migration Review*, *38*(3), 1075–1102.

Massey, D. S. and Denton, N.A. (1993). *American Apartheid: Segregation and the Making of the Underclass*. Cambridge, MA: Harvard University Press.

Mazor, K., Clauser, B., Field, T. Yood, R. & Gurwitz, J. (2002). A Demonstration of the Impact of Response Bias on the Results of Patient Satisfaction Surveys. *Health Services Research*, 37(5), 1403-13.

Mendoza, R. H. (1989). An Empirical Scale to Measure Type and Degree of Acculturation in Mexican American Adolescents and Adults. *Journal of Cross-Cultural Psychology*, *20*(4), 372–385.

Menendez, M.E., Loeffler, M., & Ring, D. (2015). Patient Satisfaction in an Outpatient Hand Surgery Office: A Comparison of English- and Spanish-Speaking Patients. *Quality management in health care,* 24 (4), 183-9.

Monnat, S. M. (2017). The New Destination Disadvantage: Disparities in Hispanic Health Insurance Coverage Rates in Metropolitan and Nonmetropolitan New and Established Destinations. *Rural Sociology*, *82*(1), 3–43.

Monnat, S. M., & Beeler Pickett, C. (2011). Rural/urban differences in self-rated health: Examining the roles of county size and metropolitan adjacency. *Health Geographies of Voluntarism*, *17*(1), 311–319.

Morales, L. S., Cunningham, W. E., Brown, J. A., Liu, H., & Hays, R. D. (1999). Are Latinos less satisfied with communication by health care providers?.*Journal of general internal medicine*, *14*(7), 409–417.

Moreno, P. I., Ramirez, A. G., San Miguel-Majors, S. L., Castillo, L., Fox, R. S., Gallion, K. J., … Penedo, F. J. (2019). Unmet supportive care needs in Hispanic/Latino cancer survivors: prevalence and associations with patient-provider communication, satisfaction with cancer care, and symptom burden. *Supportive Care in Cancer*, *27*(4), 1383–1394.

Moreno, G., & Morales, L. S. (2010). Hablamos Juntos (Together We Speak): interpreters, provider communication, and satisfaction with care. *Journal of general internal medicine*, *25*(12), 1282–1288.

Morton, L.W. (2004). Spatial Patterns of Rural Mortality. In N.Glasgow, L.W. Morton & N.E.Johnson (Eds.), Critical Issues in Rural Health. (pp. 37-45). Ames: Blackwell Publishing.

Mueller, K. J., Patil, K., & Boilesen, E. (1998). The role of uninsurance and race in healthcare utilization by rural minorities. *Health Services Research*, *33*(3 Pt 1), 597–610.

Nahin, R. L., Dahlhamer, J. M., Taylor, B. L., Barnes, P. M., Stussman, B. J., Simile, C. M., … McFann, K. K. (2007). Health behaviors and risk factors in those who use complementary and alternative medicine. *BMC public health*, *7*, 217.

National Health Interview Survey, Restricted Files, 2014-2017.

National Task Force on the Prevention and Treatment of Obesity. (2002). *Am Fam Physician.* 2002 Jan 1;65(1):81-88.

O'Brien, M. J., Alos, V. A., Davey, A., Bueno, A., & Whitaker, R. C. (2014). Acculturation and the prevalence of diabetes in US Latino Adults, National Health and Nutrition Examination Survey 2007-2010. *Preventing Chronic Disease*, *11*, E176–E176.

Oropesa, R. S. (2012). Neighborhood Disorder and Social Cohesiveness among Immigrants in a New Destination: Dominicans in Reading, PA. *Urban Studies,* 49(1), 112-129.

Palloni, A. & Arias, E. (2004). Paradox Lost: Explaining the Hispanic Adult Mortality Advantage. Demography, 41(3), 385-415.

Park J. & Iceland, J. 2011. Residential segregation in metropolitan established immigrant gateways and new destinations, 1990-2000. *Social Science Research,* 40 (3), 811-21.

Parrado, E. & Kandel, W. (2010). Hispanic Population Growth and Rural Income Inequality. *Social Forces,* 88(3), 1421–1450.

Patterson, P., G Moore, C., Probst, J., & Ann Shinogle, J. (2004). *Obesity and Physical Inactivity in Rural America* (Vol. 20).

Penchansky, R. and Thomas, J.W. (1981) The Concept of Access: Definition and Relationship to Consumer Satisfaction. *Medical Care*, 19, 127-140.

Phelan, Jo & Link, Bruce. (2015). Is Racism a Fundamental Cause of Inequalities in Health?. Annual Review of Sociology. 41(1):311-330.

Phelan, J. C., Link, B. G., & Tehranifar, P. (2010). Social Conditions as Fundamental Causes of Health Inequalities: Theory, Evidence, and Policy Implications. *Journal of Health and Social Behavior*, *51*(1_suppl), S28–S40.

Platonova, E., Warren-Findlow, J., Saunders, W., Hutchison, J., & Coffman, M. (2016). Hispanics' Satisfaction with Free Clinic Providers: An Analysis of Patient-Centered Medical Home Characteristics. *Journal of Community Health*, *41*.

Portes, A. & Rumbaut, R. (1990). *Immigrant America: A Portrait*. Berkeley, CA: University of California Press.

Portes, A. & Stepick, A. (1993). *City on the Edge: The Transformation of Miami*. Berkeley, CA: University of California Press.

Portes, A. & Zhou, M. (1993). The New Second Generation: Segmented Assimilation and its Variants. *The Annals* 503:74-96.

Qian, Z. & Lichter, D.T. (2004). Social Boundaries and Marital Assimilation: Interpreting Trends in Racial and Ethnic Intermarriage. *American Sociological Review,* 72:68-94.

Ricketts, T. C., Hart, L. G., & Pirani, M. (2000). How Many Rural Doctors Do We Have? *The Journal of Rural Health*, *16*(3), 198–207.

Robert, S. (2003). Socioeconomic position and health: The independent contribution of community socioeconomic context. *Annual Review of Sociology*. 25: 489-516.

Rodríguez, M. A., Ward, L. M., & Pérez-Stable, E. J. (2005). Breast and cervical cancer screening: impact of health insurance status, ethnicity, and nativity of Latinas. *Annals of Family Medicine*, *3*(3), 235–241.

Ross, C. & Mirowsky, J. (1995). Does Employment Affect Health? Journal of Health and Social Behavior. 36(3): 230-43.

Rumbaut, R. C. (1994). The Crucible Within: Ethnic Identity, Self-Esteem, and Segmented Assimilation among Children of Immigrants. *International Migration Review* 28:748-793.

Saenz, R. (2004). Latinos and the changing face of America. In *The American People: Census 2000* (pp. 352–379).

Sampson, R. J., Raudenbush, S. W., & Earls, F. (1997). Neighborhoods and Violent Crime: A Multilevel Study of Collective Efficacy. *Science*, *277*(5328), 918-924.

Schneiderman, N., Llabre, M., Cowie, C. C., Barnhart, J., Carnethon, M., Gallo, L. C., … Avilés-Santa, M. L. (2014). Prevalence of diabetes among Hispanics/Latinos from diverse backgrounds: the Hispanic Community Health Study/Study of Latinos (HCHS/SOL). *Diabetes care*, *37*(8), 2233–2239.

Shetterly, S. M., Baxter, J., Mason, L. D., & Hamman, R. F. (1996). Self-rated health among Hispanic vs non-Hispanic white adults: the San Luis Valley Health and Aging Study. *American Journal of Public Health*, *86*(12), 1798–1801.

Simpson, J.L. & Cohen, R.A. (2017). The Association of Marital Status and offers of Employer-based Health Insurance for employed Women Aged 27-64: United States, 2014-2015. NCHS Data Brief, 268.

Singer, A. (2004). The Rise of New Immigrant Gateways. Washington, DC: Brookings Institution.

Singer, A. (2008). Twenty-First-Century Gateways: An Introduction. In Singer A., Hardwick S., & Brettell C. (Eds.), *Twenty-First Century Gateways: Immigrant Incorporation in Suburban America* (pp. 3-30). Brookings Institution Press.

Singh, G. K., & Siahpush, M. (2001). All-cause and cause-specific mortality of immigrants and native born in the United States. *American Journal of Public Health*, *91*(3), 392–399.

Smith, R. M. (2003). *Stories of Peoplehood: The Politics and Morals of Political Membership* (Contemporary Political Theory). Cambridge: Cambridge University Press.

Snijders, T., & Bosker, R. (1999). Multilevel Analysis: An Introduction to Basic and Advanced Multilevel Modeling. Thousand Oaks, CA: Sage Publications.

Stamps, K. & Bohon, S. A. (2006). Educational Attainment in New and Established Latino Metropolitan Destinations. *Social Science Quarterly*, 87(5), 1225–1240.

Steinberg, S. (1989). *The Ethnic Myth: Race, Ethnicity, and Class in America*. Boston, MA: Beacon Press.

Stone, G. A., Fernandez, M., & DeSantiago, A. (2019). Rural Latino health and the built environment: a systematic review. *Ethnicity & Health*, 1–26.

Strickland, J., & Strickland, D. (1996). *Barriers to preventive health services for minority households in the rural south*, 12(3), 206-217.

Subramanian, S., Kawachi, I., & Kennedy, B. P. (2001). Does the state you live in make a difference? Multilevel analysis of self-rated health in the US. *Social Science & Medicine*, *53*(1), 9–19.

Suro, R. & Singer, A. (2002). Latino Growth in Metropolitan America. Retrieved from: https://www.pewresearch.org/hispanic/2002/07/30/latino-growth-in-metropolitan-america/

Torres, J. M., & Young, M. D. (2016). A life-course perspective on legal status stratification and health. *SSM - population health*, *2*, 141–148.

United States Census Bureau, American Community Survey. 5 Year Estimates, 2007-2013.

United States Department of Agriculture. Rural Urban Continuum Codes, 2013.

United States Department of Health and Human Services. Area Health Resource File, 2010.

Uscher-Pines, L., Pines, J., Kellermann, A., Gillen, E., & Mehrotra, A. (2013). Emergency department visits for nonurgent conditions: systematic literature review. *The American journal of managed care*, *19*(1), 47–59.

Vargas-Bustamante, A. Fang, H., Garza, J. Carter-Pokras, O., Wallace, S.P., Rizzo, J.A. & Ortega, A.N. (2012). Variations in Healthcare Access and Utilization among Mexican Immigrants: The role of documentation status. Journal of Immigrant and Minority Health, 14(1), 146-155.

Vitale, M. and Bailey, C. (2012). Assessing Barriers to Health Care Services for Hispanic Residents in Rural Georgia. *Journal of Rural Social Sciences*, 27(3), 17-45.

Vega, W. A., & Amaro, H. (1994). Latino Outlook: Good Health, Uncertain Prognosis. *Annual Review of Public Health*, *15*(1), 39–67.

Vega, W. A., Rodriguez, M. A., & Gruskin, E. (2009). Health Disparities in the Latino Population. *Epidemiologic Reviews*, *31*(1), 99–112.

Velasco-Mondragon, E., Jimenez, A., Palladino-Davis, A.G., Escamilla-Cejudo, J.A. (2016). Hispanic Health in the USA: A Scoping Review of the Literature. *Public Health Review*, 37(31).

Vespa, J., Armstrong D.M., & L. Medina. (2018). Demographic Turning Points for the United States: Population Projections for 2020 to 2060. *Current Population Reports*, P25– 1144. Washington, DC: US Census Bureau; 2018.

Viruell-Fuentes, E. A. (2007). Beyond acculturation: Immigration, discrimination, and health research among Mexicans in the United States. *Social Science and Medicine*, 65(7): 1524-35.

Viruell-Fuentes, E. A. & Miranda, P. & Abdulrahim, S. (2012). More than culture: Structural racism, intersectionality theory, and immigrant health. Social Science and Medicine, 75(12):2099-2106.

Viruell-Fuentes, E. A., Morenoff, J. D., Williams, D. R., & House, J. S. (2011). Language of interview, self-rated health, and the other Latino health puzzle. *American Journal of Public Health*, *101*(7), 1306–1313.

Waters, M. C. and Jimenez, T. J. (2005). Assessing Immigrant Assimilation: New Empirical and Theoretical Challenges. *Annual Review of Sociology,* 31:105-25.

Weaver, K. E., Palmer, N., Lu, L., Case, L. D., & Geiger, A. M. (2013). Rural-urban differences in health behaviors and implications for health status among US cancer survivors. *Cancer causes & control : CCC*, *24*(8), 1481–1490.

Weinhold, I., & Gurtner, S. (2014). Understanding Shortages of Sufficient Health Care in Rural Areas. *Health Policy*, *118*.

Weinick, R. M., Jacobs E. A., Stone, L.C., Ortega, A. N., & Burstin, H. (2004). Hispanic Healthcare Disparities: Challenging the Myth of a Monolithic Hispanic Population. *Medical Care*, *42*(4), 313–320. \

White, K., & Scarinci, I. C. (2015). Comparison of Self-Rated Health among Latina Immigrants in a Southern U.S. City and a National Sample. *The American Journal of the Medical Sciences*, *350*(4), 290–295.

Woltman, K., & Newbold, K. B. (2009). Of Flights and Flotillas: Assimilation and Race in the Cuban Diaspora. *The Professional Geographer*, *61*(1), 70–86.

Warshaw, R. (2017). Health Disparities Affect Millions in Rural U.S. Communities. Retrieved from https://www.aamc.org/news-insights/health-disparities-affect-millions-rural-us-communities

Yan, Z., Wan, D., & Li, L. (2011). Patient satisfaction in two Chinese provinces: rural and urban differences. *International Journal for Quality in Health Care*, *23*(4), 384–389.

Yancey, G. (2003). *Who is White? Latinos, Asians and the New Black/Nonblack Divide*. Lynne Rienner Publishers, Boulder, CO.

Yen, Irene & Kaplan, George. (1999). Neighborhood Social Environment and Risk of Death: Multilevel Evidence from the Alameda County Study. American Journal of Epidemiology. 149(10): 898-907.

Zhang, Z., Hayward, M. D., & Lu, C. (2012). Is There a Hispanic Epidemiologic Paradox in Later Life? A Closer Look at Chronic Morbidity. *Research on Aging*, *34*(5), 548–571.

Zhou, M. (1997). "Segmented Assimilation: Issues, Controversies, and Recent Research on the New Second Generation." *International Migration Review* 31:975-1008.

Zolnierek, K. B., & Dimatteo, M. R. (2009). Physician communication and patient adherence to treatment: a meta-analysis. *Medical care*, *47*(8), 826–834.

Zullig, K. J., & Hendryx, M. (2010). A comparative analysis of health-related quality of life for residents of U.S. counties with and without coal mining. *Public health reports (Washington, D.C.: 1974)*, *125*(4), 548–555.

Zuvekas, S. H., & Taliaferro, G. S. (2003). Pathways to Access: Health Insurance, The Health Care Delivery System, And Racial/Ethnic Disparities, 1996–1999. *Health Affairs*, *22*(2), 139–153.

Curriculum Vitae
Raeven Faye Chandler

Earned Degrees:
2019. Ph.D. Rural Sociology and Demography. The Pennsylvania State University
2011. M.A. Sociological Practice. California State University, San Marcos.
2007. B.A. Sociology. California State University, San Marcos.

Publications (Articles, Book Chapters, and Reports to Sponsors)
Chandler, Raeven Faye and Shannon M. Monnat. "Racial/Ethnic Differences in Use of Health Care Services for Diabetes Management." *Health Education & Behavior.* 42(6) 783-792.

Monnat, Shannon M. and Raeven Faye Chandler. "Long-Term Physical Health Consequences of Adverse Childhood Experiences." *The Sociological Quarterly.* 56(4) 723-752.

Monnat, Shannon M. and Raeven Faye Chandler. "Immigration Trends and Immigrant Poverty in the Rural U.S." In Rural Poverty in the U.S.A., edited by Jennifer Sherman, Ann Tickamyer, and Jennifer Warlick. New York, NY: Columbia University Press.

Monnat, Shannon M., Monica A.F. Lounsbery, Thomas L. McKenzie, and Raeven Faye Chandler. "Associations between Demographic Characteristics and Physical Activity Practices in Nevada Schools." *Preventive Medicine.* 95(S) S4-S9

Honors: Grants, Awards, and Fellowships
Outstanding Dissertation Award. College of Agricultural Sciences.

Alumni Association Dissertation Award. The Graduate School.

Kenneth P. Wilkinson Memorial Scholarship in Rural Sociology. Department of Agricultural Economics, Sociology, and Education.

Paul Hand Award for Graduate Student Teaching Achievement. Competitive Scholarship Award. College of Agricultural Sciences.

Francena L. Miller and Michael F. Nolan Graduate Scholarship. Competitive Scholarship Award.
Department of Agricultural Economics, Sociology, and Education.

Research Experience
2013 - 2016 Research Assistant, The Department of Agricultural Economics, Sociology, and Education, The Pennsylvania State University.

Teaching Experience
2017 - 2019 Autonomous Teaching Graduate Assistant, The Department of Agricultural Economics, Sociology, and Education, The Pennsylvania State University.