PAA Submission

Title: Race Stratification in Health among Mexican Americans: Asthma and Liver Disease

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Abstract:

In this study, I analyzed two health outcomes, asthma and liver disease, among NH Whites, NH Blacks, White Mexicans, Black Mexicans and Other Mexicans taking into consideration acculturation-related and sociodemographic covariates. I developed my hypotheses on prior research on the Latino Paradox and the racial health disparities literature. In the analyses, using Integrated Health Interview Survey Data, both White Mexicans and Other Mexicans were reported to have a health advantage consistent with the Latino Paradox but Black Mexicans did not. The results suggest that not all Mexicans are equally advantaged in terms of health as we have come to expect based on the Latino Paradox. Black Mexicans seem to be particularly disadvantaged compared to NH Whites and to a lesser extent vis-à-vis White Mexicans and NH Blacks. Thus, the micro and macro mechanisms of race (and racism) that produce health inequalities are apparently having an effect on this population.

Race Stratification in Health among Mexican Americans: Asthma and Liver Disease

The study of race based health inequalities in the United States has for the most part focused on the disparities between Whites and non-Whites (Centers for Disease Control and Prevention 2013; Heron et al. 2009; Williams and Collins 2001). Among Latinos/as, especially Mexican Americans, the health literature has emphasized the "Latino Epidemiological Paradox," the counterintuitive finding that Latinos/as have better or comparable health and mortality outcomes relative to non-Hispanic Whites (hereafter, called NH Whites) despite their significant socioeconomic disadvantages (Acevedo-Garcia and Bates 2008; Franzini et al. 2001; Markides and Coreil 1986; Markides and Eschbach 2005). Latinos/as/as may be of any race yet their experiences, including their health outcomes, have almost always been analyzed assuming racial homogeneity.

The sociological literature argues that racial categorizations are arbitrary and based on ideology, power and stratification (Omi and Winant 1994). However, the racial categories do capture unmeasured biological factors associated with ancestry and geographic origins as well as environmental factors including the psychological, social, physical and chemical environments that individuals are exposed to throughout their life course and also across generations (Williams 2001). These unmeasured biological factors, determined in large part by the current system of racial stratification, have a strong effect on the health outcomes of populations. Therefore I ask in this study whether racial categorizations within the Mexican American population generate disparities among this population. Is there a system of racial stratification in health among Mexicans in the United States? In order to address these questions, I will systematically examine the health outcomes of Mexicans who self-identify racially as White, Black or Other.

Before discussing this topic in greater detail, it is worthwhile to consider how this line of inquiry developed. In Latin America, the historical racial discourse has revolved around the idea of mestizaje, the notion that everyone is a mestizo. A mestizo is an individual of "mixed" heritage, the byproduct of white, indigenous and black ancestry (Knight 1990; Mallon 1992; Skidmore 1976; Whitten 2004). The mestizo ideology deliberately erased the question of race in Latin America by creating a metarace, the mestizo (Knight 1990; Telles 2004; Telles 2014; Wade 1993). In recent years, there has developed a renewed interest among scholars in exploring racial identity in Latin American countries (Sue 2013; Telles 2014; Telles and Paschel 2014).

In Mexico, the National Institute of Statistics and Geography (hereafter INEGI, by its Spanish acronym), the Mexican counterpart of the U.S. Census Bureau, counted the Afro descendant population for the very first time in its mid-census survey in 2015 (INEGI 2015). In the same year, the INEGI surveyed individuals in the Mexico City metropolitan area and asked them to self-identify themselves in an eleven-category skin tone gradient (INEGI 2017). The data from this project revealed a clear system of socioeconomic inequality in which Mexicans of darker skin tone tend to occupy the lower echelons of the occupational and economic distributions, while light-skinned Mexicans were shown for the most part to have higher levels of education, more prestigious occupations and therefore, higher incomes (INEGI 2017). This was the first time Mexico collected data on race-related issues and documented racial inequality empirically. This represents a significant shift in the race discourse that has prevailed in Mexico and follows empirical advances undertaken in Brazil (Barber et al. 2018; Telles 2002; Telles 2004; Telles 2014; Valente 2017), Colombia (Wade 1993; Williams Castro 2013), Peru (Golash-Boza 2011; Valdivia Vargas 2014), and in other Latin American countries who have begun to recognize racial identity and race effects in various outcomes across the life course. It also

represents a change in the study of Black Mexicans, an ethnoracial population, which has been studied mostly from an anthropological and historical perspective (Hoffman 2006; Hoffman and Rinaudo 2014; Phillips 2009).

Along the same lines, in the United States, Latinos/as have been treated as one large homogeneous population. Starting in the 1980s, many scholars have called attention to the flaws of employing such panethnic terms such as Hispanic or Latino. Instead, they have called for a greater recognition of the fact that Latinos/as from different countries of origin (and their descendants born in the United States) tend to display different patterns of socioeconomic stratification and integration to the United States (Gimenez 1989). Since socioeconomic status has been shown to be the strongest predictor of health outcomes (Adler 1994), scholars have also argued that lumping together groups with divergent socioeconomic statuses should be avoided when possible in epidemiological and health services research. They have suggested the use of place of birth, country of origin, length of residency in the United States and language proficiency as more relevant substitutes (Yankauer 1987). In subsequent years, health related research in the social sciences moved somewhat towards disaggregating the Latino subpopulations (Abraido-Lanza et al. 1999; Acevedo-Garcia et al. 2007; Hummer et al. 2000). Even though this is clearly an important step forward, the analysis of race dynamics within Latino subgroups are still frequently ignored, especially in health research, despite acknowledging the heterogeneous socioeconomic and health profiles of the Latino subpopulations (Borrell 2005). In recent years, scholars have started to grapple with the definition and meaning of race for specific Latino subgroups. For instance, Dowling (2014) investigated how Mexican Americans identified racially and what motivates individuals to racially identify one way or another.

Since the disaggregation of Latino subgroups is relatively recent and since the study of race within these groups is in developing stages, few researchers have explored whether race and ethnicity have synchronous or independent effects on life outcomes. Health outcomes are not an exception; there is very limited research pieces that has explored the health outcomes of Afro Latinos/as (or Black Latinos/as; both terms are used interchangeably) (Bediako et al. 2015; Borrell and Dallo 2008; LaVeist-Ramos et al. 2011; Ramos et al., 2003). These pieces have aggregated all Afro Latino subgroups. Research on the health of Black Mexicans is scarce (Saucedo et al. 2008). One reason scholars have understudied health outcomes among Black Mexicans is that they are perceived to share similar health profiles as other Afro Latino groups (e.g. Puerto Ricans) (see Hummer et al. 2007; Turra and Goldman 2007). However, the literature on Latino health documents a clear difference in health outcomes among the different Latino subgroups (Lara et al. 2005). Therefore, there is no clear rationale for neglecting the study of health inequalities within Mexicans of distinct racial backgrounds.

Based on the above rationale, I examined the health outcomes of Mexicans in the U.S., both native and foreign-born, who self-identify racially as White, Black or Other. In order to do so, I plan to bridge the bodies of literature dealing with race and health and the epidemiological paradox.The literature on race and health highlights the race-related mechanisms that determine health outcomes (Williams et al. 1994; Williams and Sternthal 2010). The epidemiological paradox literature informs us about the past and present health patterns of the Mexican American population in the United States (Markides and Coreil 1986; Markides and Eschbach 2005). Now, I will briefly outline these two bodies of literature before discussing the overall contributions of this research project.

Race and Health

Racial disparities in health emerge via multiple mechanisms. The sociological literature has tended to emphasize the psychosocial stress model to explain health inequalities taking into account the racialized experience and the stressors associated with interpersonal and institutional racism (Dressler et al. 2005). There are three main approaches with the psychosocial stress model. The first approach draws a distinction between institutional and perceived racism. Institutional racism or structural racial inequality results in reduced access to resources that make it possible to achieve a good health status, such as limited employment and educational opportunities and residential segregation. Interpersonal racism treats experiences of discrimination as stressors with deleterious health outcomes (Dressler et al. 2005; Williams and Sternthal 2010). The second approach uses the stress model more broadly and labels stress as a negative affect that will produce poor health outcomes. The third approach applies the stress model to the everyday experiences of racial minorities (Dressler et al. 2005). The psychosocial stress model has been largely employed to explain why NH Blacks have the worst health and mortality profile of all the racial and ethnic groups in the United States. There is growing evidence that, similarly, Black Latinos/as are disadvantaged when compared to White Latinos/as and NH Whites in measures such as self-rated health (Borrell and Dallo 2008) and depressive symptomatology (Ramos et al., 2003). Also the research literature has documented differences in fertility patterns among White and non-White Latinas (Ayala 2017). However, race and its deleterious impacts on health within the Latino community have for the most part been unacknowledged; the bulk of the literature has been devoted to the Latino epidemiological paradox.

Latino Epidemiological Paradox

Latinos/as in the United States have lower socioeconomic standing than non-Hispanic (NH) Whites. However, they have comparable or more favorable health outcomes, along with similar or lower mortality rates than NH Whites. These counterintuitive findings constitute the Latino Epidemiological Paradox (Franzini et al. 2001). Forty years of empirical research of the paradox suggests that the health profile of Latinos/as is similar to that of NH Whites despite the fact that Latinos/as are closer socioeconomically to NH Blacks (Hummer et al. 2007; Markides and Eschbach 2005). Latinos/as then, have health and mortality advantages despite their low levels of education, high levels of poverty and lack of access to health care (Douglas and Saenz 2008; Saenz 2010; Saenz and Morales 2012). Research findings dealing with this paradox are clearer with regard to the Mexican American population and less consistent with respect to Cubans and Puerto Ricans (Abraido-Lanza et al. 1999; Hummer et al. 2000; Sorlie et al. 1993). The question addressed in this research is whether the health advantage is applicable to Mexicans of all races.

There are three major hypotheses that aim to explain why Latinos/as, and especially, Mexican Americans, have lower mortality rates and better health outcomes than NH Whites. The three hypotheses are 1) migration selectivity (including the healthy immigrant effect and return migration or salmon bias), 2) protective culture, and 3) statistical artifacts (Abraido-Lanza et al. 1999; Franzini et al. 2001; Markides and Eschbach 2005; Palloni and Arias 2004; Saenz and Morales 2012). These explanations partially explain some of the mortality and health advantages of Mexican-Americans but none explain them fully (Markides and Eschbach 2005).

There are two main drawbacks in this body of literature. One, a large portion of the empirical research aggregates all Latinos/as despite the clear evidence that Latino subgroups have different health profiles (Abraido-Lanza et al. 1999; Hummer et al. 2000; Sorlie et al.

1993). Second, it tends to focus on ethnicity and mostly assumes racial homogeneity. It does not consider how Latinos/as' experiences vary based on how they self-classify racially and the social processes at play in determining that racial identity (Roth 2016). Thus, it also neglects the fact that based on racial identification, Latinos/as, especially non-whites, are also subjected to the distinct mechanisms of race and racism that affect health outcomes among other minorities. In this work, I aim to build on the Latino paradox scholarship and plan to examine how race plays a significant role in determining health outcomes among Mexicans.

Main Contributions

I aim to contribute to the sociological literature in two major ways: 1) I will assess if there are race-based health disparities within the Mexican American population; 2) I will build on the epidemiological paradox literature by highlighting the role of race and its effects on the health outcomes of Mexican Americans in the United States.

This research is especially relevant and important given that the Mexican origin group continues to grow from 13.5 million in 1990 to 31.8 million in 2010 (Ennis, Rios-Vargas, and Albert 2011; U.S. Census Bureau 1990). The increase in the size of this population means that more empirical attention should be placed in the role race mechanisms play in health disparities among Latinos/as. As previously mentioned, prior studies comparing the health outcomes among Black and White Latinos/as (as an aggregate group) have suggested that there are indeed health inequalities among these two groups. I hypothesize that a similar phenomenon occurs within the Mexican American population, the largest of the Latino subgroups. The following research questions will guide this study:

- Is there a system of racial stratification in health among Mexicans in the United States?

- Where do White Mexicans, Black Mexicans and Other Mexicans fit in the health stratification system in the US? How do their health outcomes fare in comparison with NH Whites and NH Blacks?

- Does the Latino epidemiological paradox extend to all Mexican Americans?

I examine various health outcomes among Mexican Americans who identify racially as White, Black or Other and compare their trends and patterns with those of monoracial groups. The data I use is drawn from the integrated version of the National Health Interview Survey (NHIS) as presented and developed generated by the Minnesota Population Center. I examine a subsample comprised of White Mexicans, Black Mexicans and Other Mexicans. White Mexicans are individuals who ethnically self-identify as Hispanic or Latino of Mexican origin and also racially self-identify as White. Black Mexicans are individuals who ethnically self-identify as Hispanic or Latino of Mexican descent and racially self-identify as Black. Other Mexicans are respondents who self-identify as Hispanic or Latino of Mexican origin and racially identify as Other. The last category has been included because a growing number of Mexican Americans are choosing to racially identify with this label and outside of the White-Black binary. To illustrate, in the 2010 Census, 37% of Latinos/as identified as "some other race" (Gonzalez-Barrera and Lopez 2015).

Hypotheses, Methods and Data

First, I outline the hypotheses tested in this study, the data and sample. I will also describe the independent and dependent variables as well as the statistical methods employed in the study.

Hypotheses

I investigate the synchronous effects of race and ethnicity on two health outcomes for Mexican respondents who identify racially as White, Black or Other. Bridging the literature on racial health disparities and the Latino epidemiological paradox, my major hypotheses are as follows:

H1: White Mexicans have better health outcomes than Non-Hispanic (NH) Whites.

H2: White Mexicans have better health outcomes than NH Blacks.

H3: Black Mexicans have poorer health outcomes than NH Whites.

H4: Black Mexicans have better health outcomes than NH Blacks.

H5: Black Mexicans have poorer health outcomes than White Mexicans.

H6: Other Mexicans have better health outcomes than NH Whites.

H7: Other Mexicans have better health outcomes than NH Blacks.

Data and sample

I use data from the 2000 to the 2016 waves of the National Health Interview Survey (NHIS). The main purpose of the NHIS is to collect data on a broad range of health topics in order to monitor the health trends of the U.S. population. It is a cross-sectional household interview survey administered by the National Center for Health Statistics (NCHS) which is part of the Centers for Control Disease and Prevention (CDC). The survey began in 1957 after the passing of the National Health Survey Act of 1956. The contents of the NHIS are updated every ten to fifteen years. A major revision was field tested in 1996 and implemented in 1997 (Center for Disease Control and Prevention 2017).

The sampling and interviewing for the NHIS are continuous throughout each year. It follows a multistage area probability design that allows for the selection of a representative sample of households and noninstitutionalized group quarters. The sampling plan undergoes revisions every ten years after the decennial census. The current sample design and the one before (from 2006-2015) are very similar, and both consist of a sample of clusters of addresses in a primary sampling unit (PSU). A PSU is either a county, a small group of contiguous counties, or a metropolitan statistical area (MSA). The current household sample design does not oversample any race or ethnic groups. But in the adult sample, Blacks, Latinos/as and Asian Americans over 65 years old have a higher probability of selection. The sample size each year is approximately 35,000 households and 87,500 individuals. The data are collected through interviews conducted by approximately 600 individuals employed and trained by the U.S. Census Bureau and also through computer assisted personal interviewing (Center for Disease Control and Prevention 2017). Waves from 2000 to 2016 are used in order to increase the size of my subsample of Mexican Americans. The final sample is 1,002,351 adult respondents, and the subsample consists of 146,009 Mexican American adults.

The redesigns of the NHIS include changes in variable names and question wording. In order to provide consistency across years, I specifically use the Integrated Public Use Microdata Series (IPUMS) Health Surveys, formerly known as the Integrated Health Interview Survey (IHIS), a harmonized version of the NHIS prepared by the Minnesota Population Center (Blewett et al. 2016).

Variables of Interest

Outcome variables

I have two distinct dependent variables. The first one is asthma, coded 0 for no and 1 for yes. This variable identifies respondents who have been diagnosed with any type of asthma, including smoker's asthma, bronchial asthma, and allergic asthma. The original survey question reads, "Have you ever been told by a doctor or other health professional that you had asthma?" The second outcome variable is liver disease, coded 0 for no and 1 for yes. The liver disease variable identified respondents who have been diagnosed with any kind of liver disease.

Independent variables

For the main independent variable of race/ethnicity, I classify individuals into mutually exclusive racial and ethnic groups where the non-Hispanic racial groups are Whites (N= 700,510) and NH Blacks (N= 155,832). Those who "ethnically" identify as Hispanic or Latino of Mexican origin are divided into three racial groups, White Mexicans (N= 137,688), Black Mexicans (N= 1,913), and Other Mexicans (N= 6,408). These five groups are entered into the regression models as dichotomous variables, leaving one of them out as a reference category. Sequential models will first be estimated using NH Whites as reference category. Then, full models with all predictors will be estimated using the other four groups as reference.

Control variables

Furthermore, I control for nativity and length of residency and classify them in four categories, 1) US born, 2) foreign-born who have been in the US for less than five years, 3) foreign-born who have resided in the US for five to fourteen years and 4) foreign-born who have lived in the US for fifteen years or more. These are entered into the regression models as dichotomous variables using US born as the reference category. The next control variable is language of interview classified as 1) English (reference), 2) Spanish and 3) Bilingual in English

and Spanish. Gender (or female) is coded 0 for males and 1 for females. Age is a continuous variable ranging from 18 to 85. Educational attainment is measured using four dummy variables: less than high school, high school, some college, and bachelor's degree and above (reference group). Employment is measured as 0 for unemployed and 1 for employed. Marital status is coded 0 for non-married and 1 for married. Family size is a continuous variable ranging from 1 to 25. I also include in the models a measure of health behavior, current smoking, coded 0 for no and 1 for yes. The last control variable is year of interview.

Statistical analysis and software

Owing to the dichotomous nature of each of the two dependent variables, I estimate binomial logistic regression models. This procedure predicts the log odds that respondents will be in one of the two categories of the dichotomous dependent variable (Treiman 2009:302). In logistic regression, the coefficients for the independent variables "are analogous to OLS regression coefficients, and the dependent variable is the natural log of the expected odds of being in category 1 of the dependent variable rather than in category 2, conditional on the values of the independent variables" (Treiman 2009:303). Logistic regression is another case of the general linear model, and it uses maximum likelihood estimation with the main principle being to "maximize the likelihood of observing the sample data" (Treiman 2009:303).

I estimated a set of regression models for each of the outcome variables using non-Hispanic whites as reference category of the independent variable of race/ethnicity. I estimate successive models adding one predictor at a time (tables 2 and 4). Then, I estimated full models, with all predictors, alternating the reference group (tables 3 and 5). The results will be discussed in the next section.

In terms of software, I used StataIC 15 logit and logistic commands (StataCorp 2017). The logistic command generates outputs providing odds ratios rather than coefficients. The odds ratios or antilogs of the coefficients allow for a more intuitive interpretation. Using odds ratios, a one unit change in the independent variable results in an increase or decrease in the relative odds of the outcome, net of all other variables (Treiman 2009:311). Prior to estimating the models, I used the survey (svy) estimation procedures in Stata to account for the multistage probability design of the sample that was used to collect the NHIS data. Regular Stata procedures assume that survey data were collected through a random sampling procedure where every member of the population has an equal chance of being selected. However, in a multistage probability sample, the units and subunits are randomly sampled, hence the observations are clustered. Within-cluster variances tend to be smaller than the variances across the population because subunits tend to be fairly homogeneous in terms of social and demographic characteristics. Any estimations undertaken under the assumption that the data were collected through a random sample tend to produce smaller standard errors. Therefore, I accounted for variance within and between clusters using the survey estimation procedures in Stata (Treiman 2009:207). Then, I used the post-estimation command svylogitgof developed by Archer et al. (2007) to assess model fit.

Results

I estimated a series of regression models for each of the outcome variables. My major focus is the effect of my principal independent variable (race/ethnicity) on the outcome variables, and first I used non-Hispanic whites as the reference group. For these models, I used binary logistic regression to estimate my models, adding one independent variable at a time. Then, I estimated the full models, with all predictors, alternating the reference group. Table 1 presents

the percentage distributions, means and standard deviations of the sample respondents by monoracial and ethnoracial groups across predictors.

All binary logistic regression models were assessed for goodness of fit and there was no evidence of lack of fit in any of the estimations. Before examining the results of the several binomial logistic regression models, I will discuss the percentage distributions of the variables of interest. I present these in Table 1 divided by monoracial and ethnoracial groups. The monoracial groups are Non-Hispanic (NH) Whites (N= 700,510), and Non-Hispanic (NH) NH Blacks (N= 155,832). The ethnoracial groups are White Mexicans (N= 137,688), Black Mexicans (N= 1,913), and Other Mexicans (N= 6,408).

NH Blacks have the highest proportion of individuals with asthma (13.01%) while Black Mexicans have the highest proportion of liver disease (2.09%). The vast majority of NH Whites and Blacks were born in the U.S., 95.23% and 89.14% respectively. Among Mexicans, Other Mexicans have the highest proportion of immigrants in the less than 5 and 5-14 years of residency in the U.S., 12.36% and 21.85%. White Mexicans have the highest proportion of long term immigrants with 31.08% of respondents in the 15 years and over category. A larger share of Black Mexicans answered the NHIS questionnaire in English, 70.26%, compared to 58.06 to 58.21% for White and Other Mexicans. A quarter of White and Other Mexicans answered the survey in Spanish. NH Blacks and Black Mexicans had the highest proportions of females with 55.24% and 52.84%, respectively. The youngest group is Black Mexicans with a mean age of 35.49 and the oldest is NH Whites with a mean age of 47.98. The Mexican groups' average age is in the mid to late thirties, while NH Whites and Blacks are in their mid to late 40s. Other Mexicans have the highest proportion of individuals with less than a high school education (50.82%), while NH Blacks have the highest proportions of individuals with completed high

school and some college (30.93% and 32.64%). NH Whites have the largest percentage of respondents with a bachelor's degree and more (30.32%). Interestingly, among Mexicans, Black Mexicans have the largest percentage of respondents with some college (30.02%) while White Mexicans have the largest share of those with completed college degrees among the Mexican ethnoracial groups (8.08%). Black and Other Mexicans have the largest shares of employed respondents, 68.83% and 71.01%. Only 42.29% of the NH Blacks are married compared to 62 to 71% in all the other groups. NH Whites have the smallest families of all groups with an average size of 2.61, while the average family size of the Mexican groups ranges from 3.68 to 4.09. All Mexican groups, but particularly White Mexicans (13.31%), smoke at a lower rate than NH Whites and Blacks.

Asthma

In Table 2, I present the sequential models for asthma. I have exponentiated the logit coefficients and present them in the tables as odds ratios. NH Whites are used as the reference category for the race/ethnicity comparisons. In the baseline model, for both NH Blacks and Black Mexicans the odds of having been diagnosed with asthma are 9% higher, compared to NH Whites (but only statistically significant for NH Blacks); they are 43% lower for White Mexicans and 65% lower for Other Mexicans, compared to NH Whites. In the final model, with all of the predictors, the odds of having asthma are 18% and 35% lower for White Mexicans and for Other Mexicans, respectively. On the other hand the odds of having asthma are 2% higher for NH Blacks and 23% higher for Black Mexicans, respectively, compared to NH Whites. Although these last two effects are not statistically significant, Black Mexicans do not show a health advantage compared to NH Whites with respect to asthma, as do their White Mexican and Other Mexican counterparts.

When White Mexicans are the reference group (see Table 3), other things being equal, the odds of being diagnosed with asthma is 51% higher for Black Mexicans. When the Other Mexicans group is used as the reference group, the odds of asthma are 89% higher for Black Mexicans; these last two effects are statistically significant (p. <0.05). Thus, for this particular outcome of asthma, Black Mexicans are significantly disadvantaged compared to White Mexicans and to Other Mexicans.

All foreign born respondents are less likely to have been diagnosed with asthma, compared to U.S. born respondents. The immigrant advantage is greater for those with less than 5 years of U.S. residency and for those who have lived in the U.S. for 5 to 14 years. For these two groups, the odds of being diagnosed with asthma are 66% and 63% lower, respectively, other things being equal. For those with 15 and more years of residency in the U.S., the odds of having asthma are 43% lower; all of these effects are statistically significant (p. <0.01).

Along the same lines, for those who answered the survey in Spanish or in the bilingual version of English/Spanish, their odds of having been diagnosed with asthma are 48% and 40% lower than those who answered the questionnaire in English (p. <0.01), ceteris paribus. For females, the odds are 33% higher relative to males (p. <0.01). In terms of age, every one year increase in age decreases the odds of being diagnosed with asthma by 2% (p. <0.01). Respondents with less than a high school education and those with some college have 9% and 7% higher odds of having been diagnosed with asthma, respectively, in relation to those with a bachelor's degree and more (p. <0.01). Those who smoke have 10% higher odds of having been diagnosed with asthma compared to those who do not smoke (p. <0.01). Employed and married respondents have respectively 27% and 10% lower odds of this outcome (p. <0.01) compared to the unemployed and unmarried. In summary, all the independent variables related to nativity and

length of residency, language, schooling as well as other sociodemographic variables behaved in expected ways.

Liver Disease

Compared to NH Whites, in the full model, all the Mexican ethnoracial groups are significantly more likely to have been diagnosed with liver disease (Table 4). Black Mexicans' odds of having liver disease are 2.16 times as high as the odds for NH Whites. The odds of liver disease are also 41% higher for White Mexicans and 64% higher for other Mexicans, all things equal. Compared to NH Blacks (Table 5), the odds of having liver disease are 84% higher for White Mexicans, 183% higher for Black Mexicans and 115% higher for Other Mexicans (p. <0.05). Thus, Black Mexicans and Other Mexicans are considerably more disadvantaged than NH Blacks in respect to liver disease. Overall, all Mexican ethnoracial groups are at a disadvantage in terms of this outcome but this is more salient for Black Mexicans.

The odds of having been diagnosed with liver disease are 39% lower for the foreign born with less than five years of residing in the U.S. and 37% lower for those who are foreign born and have lived in the U.S. for 5 to 14 years (p. <0.05) relative to the U.S. born (Table 12). For those who are employed, the odds of liver disease are 55% lower compared to the unemployed (p. <0.01). The odds decrease by 6% with every one person increase in family size (p. <0.05). For respondents with less than a bachelor's degree, the odds are 21 to 38% higher compared to those with a bachelor's degree or higher. The odds of having been diagnosed with liver disease are also 78% higher for smokers in relation to non-smokers.

Discussion and Final Considerations

In this section, I discuss the empirical findings vis-à-vis the hypotheses I proposed. I will review each research hypothesis and then discuss how the empirical findings do or do not support them

H1: Other things equal, White Mexicans will have better health outcomes than Non-Hispanic (NH) Whites.

H2: Other things equal, White Mexicans will have better health outcomes than NH Blacks.

H3: Other things equal, Black Mexicans will have poorer health outcomes than NH Whites.

H4: Other things equal, Black Mexicans will have better health outcomes than NH Blacks.

H5: Other things equal, Black Mexicans will have poorer health outcomes than White Mexicans.

H6: Other things equal, Other Mexicans will have better health outcomes than NH Whites.

H7: Other things equal, Other Mexicans will have better health outcomes than NH Blacks.

White Mexicans Will Have Better Health Outcomes than NH Whites

Based on the Latino Epidemiological Paradox (Markides and Coreil 1986; Markides and Eschbach 2005), I hypothesized that White Mexicans would have better health outcomes than NH Whites. This hypothesis was confirmed with respect to asthma but not liver disease. Thus, this hypothesis is partially supported.

White Mexicans Will Have Better Health Outcomes than NH Blacks

I hypothesized that White Mexicans would have better health outcomes than NH Blacks due to the intersection of their ethnic and "near-White" statuses. This hypothesis is only partially supported as well. I showed that NH Blacks have a health advantage in relation to White

Mexicans for liver disease. The White Mexican disadvantage is substantial and statistically significant for liver disease.

Black Mexicans Will Have Poorer Health Outcomes than NH Whites

Black Mexicans are more likely than NH Whites to be diagnosed with asthma and liver disease, the latter being statistically significant. The disadvantage in liver disease is more pronounced among Black Mexicans than among the other two Mexican ethnoracial groups. This result could be explained in part by their double minority status as Black and Mexican. Both NH Blacks and Mexicans share similar risk factors for liver disease (Flores et al 2008). Moreover, a higher exposure to discrimination has been associated with higher levels of alcohol consumption as a coping mechanism. Discrimination can affect health by affecting health behaviors, and alcohol consumption has been positively associated with discrimination (Yen et al. 1999). For asthma, Black Mexicans do not seem to benefit from the advantages suggested by the Latino Paradox and for liver disease the disadvantage is much greater.

Black Mexicans Will Have Better Health Outcomes than NH Blacks

Black Mexicans are more likely to be diagnosed with asthma and liver disease than NH Blacks, the latter effect being statistically significant. Black Mexicans do not seem to be able to capitalize on their ethnic advantage to achieve a better health status than NH Blacks as White Mexicans do.

Black Mexicans Will Have Poorer Health Outcomes than White Mexicans

Black Mexicans compared to White Mexicans are more likely to be diagnosed with both outcomes. This effect is statistically significant for asthma. The overall disadvantage in asthma among the Black Mexican population is particularly interesting. Mexican Americans have the

lowest rate of asthma among all Latino subgroups (Holguin et al. 2005) despite the fact that 80% of Latinos/as in the U.S. live in communities failing to meet at least one Environmental Protection Agency air-quality standard (Wernette and Nieves 1992). Also, predominantly Latino counties have been shown to have elevated rates of air pollution (English et al. 1998). Why then are Black Mexicans disadvantaged compared to White Mexicans (and also in reference to NH Whites and Blacks, albeit non-significantly)? Again, their status as both Black and Mexican might put them at higher risk of this particular outcome. As Mexicans, they already live in polluted environments and being Black puts them at a higher risk of a myriad of factors that contribute to asthma such as premature birth, passive smoking and substandard housing (Schwartz et al. 1990; Weitzman et al. 1990).

Black Mexicans do not share the "ethnic" benefits of their White Mexican counterparts. Their health outcomes seem to be influenced by the different mechanisms of race that produce poor health.

Other Mexicans Will Have Better Health Outcomes than NH Whites

Based on the Latino Paradox, I expected Other Mexicans to have better health outcomes than NH Whites. This hypothesis has been partially supported. Other Mexicans are significantly less likely to be diagnosed with asthma but more likely to be diagnosed with liver disease. These findings are similar to those of White Mexicans.

Other Mexicans Will Have Better Health Outcomes than NH Blacks

Compared to NH Blacks, Other Mexicans are less likely to be significantly diagnosed with asthma but more likely to be diagnosed with liver disease. Thus, this is also partially supported.

The main finding of my study is that Mexican ethnoracial groups are not homogeneous in terms of their health outcomes. We may infer from this empirical exercise that not all Mexicans are equally advantaged as we have come to expect based on the Latino Paradox literature. Black Mexicans seem to be particularly disadvantaged compared to NH Whites and to a lesser extent vis-à-vis White Mexicans and NH Blacks. Thus, the micro and macro mechanisms of race (and racism) that produce health inequalities are apparently having an effect on this population (Williams et al. 2010) in terms of asthma and liver disease. The intersection of the Black and Mexican identities seems to concatenate risk factors to produce poorer health outcomes. For Black Mexicans, ethnicity does not seem to offer a protective effect. Instead it be confounded with the race effect to create a double layer of disadvantage.

One of my objectives was to ascertain whether the paradoxical benefits of the Latino health advantage extend to Black Mexicans and to Other Mexicans (Acevedo-Garcia and Bates 2008; Franzini et al. 2001; Markides and Coreil 1986; Markides and Eschbach 2005). Black Mexicans do not appear to share the same advantage compared to NH Whites as do White Mexicans and Other Mexicans. Indeed, they have a slight disadvantage in relation to NH Blacks. Overall, it seems that in determining health outcomes, race trumps ethnicity. This would appear to be the byproduct of a system of health inequalities in which individuals of Black descent continue to be afflicted with excess illness and death. An extensive body of literature suggests that race, or being of Black descent, affects health negatively in myriad ways. These range from perceived discrimination at the micro level (Brondolo et al. 2009) to residential segregation at the macro level (Williams and Collins 2001). Race continues to be a major predictor of health status due to a wide disparity in risk exposure (Williams et al. 1994).

Differences between the Mexican ethnoracial groups also suggest that we must exercise caution when studying the health outcomes of Latino subgroups residing in the United States. These groups (Mexicans, Cubans, Puerto Ricans, and others) differ in health status, and, moreover, they are not racially homogeneous. Combining the ethnic groups and failing to recognize the role of race will continue to mask health inequalities among these groups. The differences in health outcomes among White Mexicans, Black Mexicans and Other Mexicans speak to the power of the race construct in determining health outcomes independent of ethnic status. Thus, scholars need to do a better job engaging ethnoracial groups in the health disparities discourse (Cuevas et al. 2016).

The acculturative predictors in the model are mostly statistically significant across all outcomes and for all groups. Foreign born individuals with shorter length of U.S. residency and those who speak Spanish or are bilingual are less likely to have poor health outcomes. It appears that acculturative effects still play a large role in Mexican health outcomes, particularly those of Mexican immigrants. Even though numerous studies have been conducted in this area, there is not consensus about what causes this effect. Some scholars argue that social and cultural factors (i.e., familial, food, social support) offer a protective buffer for new immigrants (Hayes-Bautisa 2002; Morales et al. 2002). It is presumed that such a protective buffer will diminish with length of residency. Other scholars contend that the better health outcomes may be the result of healthy immigrant selection, whereby healthier persons are more likely to migrate (Franzini and Fernandez-Esquer 2004; Palloni and Morenoff 2001). Alternatively, other scholars have suggested that patterns in health outcomes may arise due to data artifacts such as underreporting health problems, undercounting of deaths, or inconsistency in Latino identity (Abraído-Lanza et al. 1999; Acevedo-Garcia and Bates 2008; Jasso et al. 2004; Palloni and Morenoff 2001). These

issues notwithstanding, the acculturation findings presented here are consistent with previous research (Abraído-Lanza et al. 1999; Acevedo-Garcia and Bates 2008; Franzini and Fernandez-Esquer 2004; Franzini et al. 2001; Palloni and Morenoff 2001).

In terms of socioeconomic status, those with greater educational attainment and the employed are also less likely to report health issues. Marriage and family size also have a protective effect against poor health outcomes.

The data and analyses of this study are not without limitations. First, the data used in the analysis are cross-sectional and causality cannot be inferred. Second, I do not have access to measures of discrimination and can only speculate whether and how the different mechanisms of racial discrimination are operating to influence the outcomes. Third, the small sample size of Black Mexicans in relation to the other groups might restrict the statistical power to detect significant differences among groups.

Future research among Latino subgroups should continue to explore the role of race in determining health and other outcomes, especially educational attainment and labor market participation. The results presented here suggest that race plays an important role in shaping health outcomes. I would suspect that race also shapes other experiences. It would also be interesting to examine these outcomes using discrimination-related variables to ascertain whether Black Mexicans experience discrimination similarly to NH Blacks and how these experiences shape health. Another important consideration is the study of Other Mexicans' racial identity. Who are they? Why do they racially identify as other? Overall, my main contribution was the disaggregation of Mexicans into distinct racial categories in order to determine how race affects their health independently of ethnic status and the findings are suggestive of heterogeneity within this population.

TABLES

Table 1. Weighted Percentage Distributions and Means of Sample Respondents by Monoracial and Ethnoracial Groups across Dependent and Independent Variables.

	NH Whites	**NH Blacks**	**White Mexicans**	**Black Mexicans**	**Other Mexicans**
N= 1,002,351 (unweighted)	*700,510 (69.89%)*	*155,832 (15.55%)*	*137,688 (13.74%)*	*1,913 (0.19%)*	*6,408 (0.64%)*
Respondents with Asthma	12.01%	13.01%	7.22%	13.00%	4.61%
Respondents with Liver Disease	1.38%	1.07%	1.43%	2.09%	1.38%
Native Born	95.23%	89.14%	44.81%	51.08%	41.08%
Foreign Born <5 Years of US Residency	0.50%	1.39%	5.66%	3.52%	12.36%
Foreign Born 5-14 Years of Residency	0.99%	3.57%	18.45%	15.59%	21.85%
Foreign Born 15+ Years of Residency	3.27%	5.88%	31.08%	24.80%	24.70%
English Speaker	99.88%	99.93%	58.06%	70.26%	58.21%
Spanish Speaker	0.06%	0.03%	25.56%	18.33%	25.38%
Bilingual	0.06%	0.03%	16.39%	11.41%	16.41%
Percentage of Females	51.71%	55.24%	48.42%	52.84%	49.14%
Mean of Age	47.98	43.41	38.89	35.49	36.30
Schooling: Less than High School	10.45%	18.69%	44.19%	33.59%	50.82%
Schooling: High School	28.25%	30.93%	26.27%	29.16%	24.05%
Schooling: Some College	30.98%	32.64%	21.45%	30.02%	19.50%
Schooling: Bachelor's and More	30.32%	17.74%	8.08%	7.22%	5.62%
Employed	62.83%	60.18%	65.72%	68.83%	71.01%
Married	64.96%	42.29%	64.51%	60.75%	67.80%
Mean of Family Size	2.61	2.81	3.88	3.68	4.09
Respondents who Smoke	21.03%	20.05%	13.31%	13.90%	14.89%

Table 2. Logistic Regression Analysis of Asthma, with the Coefficients Expressed in Odds Ratios, using Non-Hispanic Whites as Reference Category.

Model Asthma 1 (Reference: NH Whites)											
NH	1.09**	1.14**	1.13**	1.12**	1.08**	1.06**	1.05*	1.03+	1.03+	1.03*	1.02
Blacks	(.017)	(.018)	(.018)	(.018)	(.017)	(.017)	(.017)	(.017)	(.017)	(.017)	(.016)
White	.57**	.82**	.93*	.93*	.86**	.83**	.83**	.83**	.83**	.84**	.82**
Mexicans	(.014)	(.024)	(.029)	(.029)	(.026)	(.026)	(.026)	(.026)	(.026)	(.026)	(.025)
Black	1.09	1.42*	1.54*	1.52*	1.36+	1.31+	1.30	1.31	1.31	1.32+	1.23
Mexicans	(.177)	(.236)	(.257)	(.253)	(.227)	(.219)	(.221)	(.221)	(.222)	(.224)	(.210)
Other	.35**	.54**	.59**	.59**	.54**	.52**	.54**	.54**	.54**	.55**	.65**
Mexicans	(.039)	(.062)	(.069)	(.069)	(.063)	(.061)	(.063)	(.063)	(.063)	(.064)	(.076)
Nativity and Length of Residency											
FB <5		.31**	.37**	.38**	.34**	.35**	.33**	.33**	.33**	.34**	.34**
Years		(.031)	(.038)	(.038)	(.035)	(.035)	(.033)	(.034)	(.034)	(.034)	(.035)
FB 5-14		.34**	.39**	.39**	.37**	.37**	.36**	.37**	.37**	.37**	.37**
Years		(.020)	(.024)	(.024)	(.022)	(.023)	(.023)	(.023)	(.023)	(.023)	(.023)
FB 15+		.51**	.54**	.54**	.57**	.56**	.58**	.58**	.58**	.58**	.57**
Years		(.017)	(.018)	(.019)	(.020)	(.020)	(.020)	(.020)	(.020)	(.020)	(.020)
Language											
Spanish			.53**	.53**	.54**	.50**	.50**	.51**	.51**	.51**	.52**
			(.038)	(.038)	(.038)	(.036)	(.036)	(.037)	(.037)	(.037)	(.037)
Bilingual			.63**	.63**	.63**	.59**	.59**	.60**	.60**	.60**	.60**
			(.047)	(.047)	(.047)	(.044)	(.044)	(.044)	(0.44)	(.045)	(.045)
Gender and Age											
Female				1.35**	1.37**	1.37**	1.32**	1.32**	1.32**	1.32**	1.33**
				(.017)	(.017)	(.017)	(.017)	(.017)	(.017)	(.017)	(.017)
Age					.99**	.99**	.98**	.99**	.99**	.99**	.98**
					(.0003)	(.0003)	(.0003)	(.0003)	(.0004)	(.0004)	(.0004)
Schooling											
Less than						1.23**	1.10**	1.08**	1.08**	1.05*	1.09**
HS						(.024)	(.022)	(.021)	(.022)	(.021)	(.022)
High						.95**	.90**	.89**	.89**	.88**	.90**
School						(.016)	(.015)	(.015)	(.015)	(.015)	(.015)
Some						1.13**	1.09**	1.08**	1.08**	1.07**	1.07**
College						(.017)	(.017)	(.016)	(.016)	(.016)	(.017)
Other Control Variables											
Employed							.72*	.73**	.72**	.73**	.73**
							(.010)	(.010)	(.010)	(.010)	(.010)
Married								.89**	.89**	.89**	.90**
								(.010)	(.011)	(.011)	(.011)
Family									.99	.99	.99
Size									(.005)	(.005)	(.005)
Smoking										1.09**	1.10**
										(.015)	(.015)
Year											1.02**
											(.001)

Notes: Standard errors in parentheses.
+p. <0.1; *p. <0.05; **p. <0.01

Table 3. Logistic Regression Analysis of Asthma with the Coefficients Expressed in Odds Ratios using the Different Monoracial and Ethnoracial Groups as Reference Categories.

	Model Asthma 1	**Model Asthma 2**	**Model Asthma 3**	**Model Asthma 4**	**Model Asthma 5**
	Reference: NH Whites	*Reference: NH Blacks*	*Reference: White Mexicans*	*Reference: Black Mexicans*	*Reference: Other Mexicans*
NH Whites	--	.97	1.22**	.80	1.53**
		(.016)	(.038)	(.137)	
NH Blacks	1.02	--	1.25**	.82	1.56**
	(.016)		(.042)	(.140)	
White Mexicans	.82**	.79**	--	.66*	1.25+
	(.025)	(.027)		(.112)	
Black Mexicans	1.23	1.20	1.51*	--	1.89*
	(.210)	(.204)	(.256)		
Other Mexicans	.65**	.63**	.79+	.52*	--
	(.076)	(.074)	(.094)	(.109)	

Notes: The effects of all other independent variables remain the same as model asthma 1; standard errors in parentheses.
+p. <0.1; *p. <0.05; **p. <0.01

Table 4. Logistic Regression Analysis of Liver Disease with the Coefficients Expressed in Odds Ratios using Non-Hispanic Whites as Reference Category.

Model Liver 1 (Reference: NH Whites)											
NH Blacks	.77**	.78**	.79**	.79**	.86*	.79**	.76**	.74**	.75**	.77**	.76**
	(.037)	(.038)	(.038)	(.038)	(.042)	(.039)	(.038)	(.037)	(.038)	(.039)	(.039)
White	1.03	1.16*	1.21*	1.21*	1.46**	1.29*	1.29*	1.28*	1.34*	1.43**	1.41**
Mexicans	(.054)	(.072)	(.086)	(.086)	(.105)	(.097)	(.096)	(.095)	(.100)	(.107)	(.105)
Black	1.51	1.69	1.75	1.75	2.27*	2.04+	2.02+	2.02+	2.08+	2.27*	2.16*
Mexicans	(.601)	(.667)	(.690)	(.691)	(.900)	(.808)	(.810)	(.807)	(.833)	(.907)	(.864)
Other	.99	1.13	1.20	1.20	1.49+	1.27	1.34	1.36	1.42	1.46+	1.64*
Mexicans	(.203)	(.241)	(.259)	(.259)	(.323)	(.276)	(.294)	(.297)	(.309)	(.319)	(.362)
Nativity and Length of Residency											
FB <5 Years		.51*	.52*	.51*	.66+	.67+	.61*	.57*	.56*	.60*	.61*
		(.105)	(.112)	(.111)	(.143)	(.150)	(.135)	(.126)	(.123)	(.131)	(.133)
FB 5-14		.55**	.50**	.50**	.59**	.58**	.58**	.59**	.59**	.63**	.63**
Years		(.064)	(.058)	(.058)	(.069)	(.071)	(.070)	(.071)	(.072)	(.078)	(.078)
FB 15+		.97	.96	.96	.87+	.89	.94	.95	.96	.98	.97
Years		(.068)	(.067)	(.067)	(.061)	(.064)	(.066)	(.067)	(.068)	(.070)	(.070)
Language											
Spanish			1.05	1.05	.99	.86	.87	.89	.92	.95	.95
			(.118)	(.118)	(.113)	(.099)	(.100)	(.102)	(.105)	(.109)	(.109)
Bilingual			.77	.77	.75	.68*	.69*	.70*	.72*	.74+	.74+
			(.122)	(.122)	(.120)	(.108)	(.109)	(.111)	(.115)	(.118)	(.118)
Gender and Age											
Female				.95	.92*	.91*	.83**	.83**	.83**	.86**	.86
				(.029)	(.028)	(.028)	(.026)	(.026)	(.026)	(.027)	(.027)
Age					1.01**	1.01**	1.00**	1.00**	1.00**	1.00**	1.00**
					(.0007)	(.0007)	(.0007)	(.0007)	(.0008)	(.0008)	(.0008)
Schooling											
Less than						1.96**	1.55**	1.52**	1.55**	1.34**	1.38**
HS						(.105)	(.083)	(.082)	(.084)	(.073)	(.075)
High School						1.51**	1.33**	1.31**	1.33**	1.19**	1.21**
						(.072)	(.064)	(.064)	(.064)	(.058)	(.059)
Some						1.63**	1.49**	1.46**	1.47**	1.37**	1.38**
College						(.074)	(.068)	(.068)	(.068)	(.064)	(.064)
Other Control Variables											
Employed							.44**	.45**	.45**	.45**	.45**
							(.016)	(.017)	(.017)	(.017)	(.017)
Married								.87**	.93+	.98	.95
								(.028)	(.035)	(.036)	(.036)
Family Size									.93**	.94*	.94*
									(.016)	(.016)	(.016)
Smoking										1.78**	1.78**
										(.064)	(.064)
Year											1.01**
											(.003)

Notes: Standard errors in parentheses.
+p. <0.1; *p. <0.05; **p. <0.01

Table 5. Logistic Regression Analysis of Liver Disease with the Coefficients Expressed in Odds Ratios using the Different Monoracial and Ethnoracial Groups as Reference Categories.

	Model Liver 1	**Model Liver 2**	**Model Liver 3**	**Model Liver 4**	**Model Liver 5**
	Reference: NH Whites	*Reference: NH Blacks*	*Reference: White Mexicans*	*Reference: Black Mexicans*	*Reference: Other Mexicans*
NH Whites	--	1.30**	.71**	.46+	.60*
		(.067)	(.053)	(.183)	(.133)
NH Blacks	.76**	--	.54**	.35*	.46*
	(.039)		(.044)	(.142)	(.103)
White Mexicans	1.41**	1.84**	--	.64	.85
	(.105)	(.152)		(.263)	(.188)
Black Mexicans	2.16*	2.83*	1.53	--	1.31
	(.864)	(1.14)	(.624)		(.607)
Other Mexicans	1.64*	2.15*	1.16	.75	--
	(.362)	(.481)	(.256)	(.350)	

Notes: The effects of all other independent variables remain the same as model liver 1; standard errors in parentheses.
+p. <0.1; *p. <0.05; **p. <0.01

REFERENCES

Abraído-Lanza, Ana F., Bruce P. Dohrenwend, Daisy S. Ng-Mak, and J.Blake Turner. 1999. "The Latino Mortality Paradox: A Test of the 'Salmon Bias' and Healthy Migrant Hypotheses." *American Journal of Public Health* 89(10):1543–48.

Acevedo-Garcia, Dolores and Lisa M. Bates. 2008. "Latino Health Paradoxes: Empirical Evidence, Explanations, Future Research, and Implications." Pp. 101–13 in *Latinas/os in the United States: Changing the Face of America*, edited by H. Rodriguez, R. Saenz and C. Menjivar. New York: Springer.

Acevedo-Garcia, Dolores, Mah-J. Soobader, and Lisa F. Berkman. 2007. "Low Birthweight among US Hispanic/Latino Subgroups: the Effect of Maternal Foreign-Born Status and Education." *Social Science & Medicine* 65(12):2503-2516.

Adler, Nancy E., Thomas Boyce, Margaret A. Chesney, Sheldon Cohen, Susan Folkman, Robert L. Kahn, and S. Leonard Syme. 1994. "Socioeconomic Status and Health: the Challenge of the Gradient." *American Psychologist* 49(1):15.

Archer, Kellie J., Stanley Lemeshow, and David W. Hosmer. 2007. "Goodness-of-fit Tests for Logistic Regression Models when Data are Collected using a Complex Sampling Design." *Computational Statistics & Data Analysis* 51(9):4450-4464.

Ayala, María Isabel. 2017. "Intra-Latina Fertility Differentials in the United States." *Women, Gender, and Families of Color* 5(2):129-152.

Barber, Sharrelle, Ana V. Diez Roux, Letícia Cardoso, Simone Santos, Veronica Toste, Sherman James, Sandhi Barreto, Maria Schmidt, Luana Giatti, and Dora Chor. 2018. "At the Intersection of Place, Race, and Health in Brazil: Residential Segregation and Cardio-Metabolic Risk Factors in the Brazilian Longitudinal Study of Adult Health (ELSA-Brasil)." *Social Science & Medicine* 199:67-76.

Bediako, Phylicia T., Rhonda Belue, and Marianne M. Hillemeier. 2015. "A Comparison of Birth Outcomes among Black, Hispanic, and Black Hispanic Women." *Journal of Racial and Ethnic Health Disparities* 2:573–82.

Blewett, Lynn A., Julia A. Rivera Drew, Risa Griffin, Miram L. King, and Kari C. W. Williams. 2016. *IPUMS Health Surveys: National Health Interview Survey, Version 6.2.* Minneapolis: University of Minnesota. http://doi.org/10.18128/D070.V6.2

Borrell, Luisa N. 2005. "Racial Identity among Hispanics: Implications for Health and Well-Being". *American Journal of Public Health* 95(3):379-381.

Borrell, Luisa N., and Florence J. Dallo. 2008. "Self-Rated Health and Race among Hispanic and Non-Hispanic Adults." *Journal of Immigrant and Minority Health* 10(3):229-238.

Brondolo, Elizabeth, Linda C. Gallo, and Hector F. Myers. 2009. "Race, Racism and Health: Disparities, Mechanisms, and Interventions." *Journal of Behavioral Medicine* 32(1):1–8.

Centers for Disease Control and Prevention. 2017. *National Health Interview Survey*. National Center for Health Statistics. Retrieved from https://www.cdc.gov/nchs/nhis/about_nhis.htm

Centers for Disease Control and Prevention. 2013. *CDC Health Disparities and Inequalities Report*. Hyattsville, MD: National Center for Health Statistics.

Douglas, Karen M., and Rogelio Saenz. 2008. "No Phone, No Vehicle, No English and No Citizenship: The Vulnerability of Mexican Immigrants in the United Status". Pp. 161-180 in *Race, Human Rights and Inequality* edited by A. Hattery, D.G. Embrick and E. Smith. Lanham, MD: Rowman and Littlefield.

Dowling, Julie A. 2014. *Mexican Americans and the Question of Race*. Austin, TX: University of Texas Press.

Dressler, William W., Kathryn S. Oths, and Clarence C. Gravlee. 2005. "Race and Ethnicity in Public Health Research: Models to Explain Health Disparities." *Annual Review of Anthropology* 34:231-252.

English, Paul B., Julie Von Behren, Martha Harnly, and Raymond R. Neutra. 1998. "Childhood Asthma along the United States/Mexico Border: Hospitalizations and Air Quality in Two California Counties." *Revista Panamericana de Salud Pública* 3(6):392-399.

Flores, Yvonne N., Hal F. Yee Jr, Mei Leng, José J. Escarce, Roshan Bastani, Jorge Salmerón, and Leo S. Morales. 2008. "Risk Factors for Chronic Liver Disease in Blacks, Mexican Americans, and Whites in the United States: Results from NHANES IV, 1999–2004." *The American Journal of Gastroenterology* 103(9):2231.

Franzini, Luisa, and Maria Eugenia Fernandez-Esquer. 2004. "Socioeconomic, Cultural, and Personal Influences on Health Outcomes in Low Income Mexican-Origin Individuals in Texas". *Social Science & Medicine* 59(8):1629–1646.

Franzini, Luisa, John C. Ribble, and Arlene M. Keddie. 2001. "Understanding the Hispanic

Paradox". *Ethnicity and Disease* 11(3):496-518.
Gimenez, Martha E. 1989. "Latino/"Hispanic"—Who Needs a Name? The Case Against a Standardized Terminology." *International Journal of Health Services* 19(3):557-571.
Golash-Boza, Tanya Maria. 2011. *Yo Soy Negro: Blackness in Peru*. Gainesville, FL: University Press of Florida.
Gonzalez-Barrera, Ana and Mark H. Lopez. 2015. "Is Being Hispanic a Matter of Race, Ethnicity, or Both?" *Pew Research Center*.
Hayes-Bautisa, David. 2002. "The Latino Health Research Agenda for the Twenty-First Century." Pp. 215-235 in *Latinos: Remaking America*, edited by M. Suarez-Orozco and M. Paez. Berkeley: University of California Press.
Heron, Melonie et al. 2009. "National Vital Statistics Reports Deaths : Final Data for 2009." *National Center for Health Statistics* 57(14):1–136.
Hoffmann, Odile. 2006. "Negros y Afromestizos en México: Viejas y Nuevas Lecturas de un Mundo Olvidado." *Revista Mexicana de Sociología* 68(1):103-135.
Hoffmann, Odile, and Christian Rinaudo. 2014. "The Issue of Blackness and Mestizaje in Two Distinct Mexican Contexts: Veracruz and Costa Chica." *Latin American and Caribbean Ethnic Studies* 9(2):138-155.
Holguin, Fernando, David M. Mannino, Josep Antó, Joshua Mott, Earl S. Ford, W. Gerald Teague, Stephen C. Redd, and Isabelle Romieu. 2005. "Country of Birth as a Risk Factor for Asthma among Mexican Americans." *American Journal of Respiratory and Critical Care Medicine* 171(2): 103-108.
Hummer, Robert A., Daniel A. Powers, Starling G. Pullum, Ginger L. Gossman, and W. Parker Frisbie. 2007. "Paradox Found (Again): Infant Mortality among the Mexican-American Population in the United States". *Demography* 44(3):441-457.
Hummer, Robert A., Richard G. Rogers, Sarit H. Amir, Douglas Forbes, and W. Parker Frisbie. 2000. "Adult Mortality Differentials among Hispanic Subgroups and Non-Hispanic Whites". *Social Science Quarterly* 81:459-476.
Instituto Nacional de Estadistica y Geografia. 2015. *Encuesta Intercensal 2015*. Retrieved from http://www.beta.inegi.org.mx/proyectos/enchogares/especiales/intercensal/
Instituto Nacional de Estadistica y Geografia. 2017. *Presenta Inegi, Por Vez Primera, Resultados Sobre La Movilidad Social Intergeneracional*. Retrieved from http://www.inegi.org.mx/saladeprensa/boletines/2017/mmsi/mmsi2017_06.pdf
Jasso, Guillermina, Douglas S. Massey, Mark R. Rosenzweig, and James P. Smith. 2004. "Immigrant Health: Selectivity and Acculturation." Pp. 227-266 in *Critical Perspectives on Racial and Ethnic Differences in Health and Late Life* edited by N.B. Anderson, R.A. Bulatao and B. Cohen. National Research Council (US) Panel on Race, Ethnicity, and Health in Later Life. Washington, DC: National Academies Press.
Knight, Alan. 1990. "Racism, Revolution and Indigenismo: Mexico 1910-1940". Pp. 71-113 in *The Idea of Race in Latin America, 1870-1940*, edited by R. Graham. Austin, TX: University of Texas Press.
Lara, Marielena, Cristina Gamboa, M. Iya Kahramanian, Leo S. Morales, and David E. Hayes Bautista. 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.
LaVeist-Ramos, Alexis Thomas, Jessica Galarraga, Roland Jr. Thorpe, Caryn N. Bell, and Chermeia J. Austin. 2011. "Are Black Hispanics Black or Hispanic? Exploring Disparities at the Intersection of Race and Ethnicity." *Journal of Epidemiology & Community Health* 66(7):e21–e21.
Markides, Kyriakos S. and Jeannine Coreil. 1986. "The Health of Hispanics in the Southwestern United States: An Epidemiologic Paradox." *Public Health Reports* 101(3):253–65.
Markides, Kyriakos S., and Karl Eschbach. 2005. "Aging, Migration and Mortality: Current Status of Research on the Hispanic Paradox". *Journals of Gerontology* 60B:68-75.
Morales, Leo S., Marielena Lara, Raynard S. Kington, Robert O. Valdez, and José J. Escarce. 2002. "Socioeconomic, Cultural, and Behavioral Factors Affecting Hispanic Health Outcomes." *Journal of Health Care for the Poor and Underserved* 13(4):477–503.
Omi, Michael and Howard Winant. 1994. *Racial Formation in the United States*. NY: Routledge.
Palloni, Alberto and Jeffrey D. Morenoff. 2001. "Interpreting the Paradoxical in the Hispanic Paradox: Demographic and Epidemiologic Approaches." *Annals of the New York Academy of Sciences* 954(December):140–74.
Palloni, Alberto, and Elizabeth Arias. 2004. "Paradox Lost: Explaining the Hispanic Adult

Mortality Advantage". *Demography* 41(3):385-415.
Phillips, Wendy E. 2009. "Representations of the Black Body in Mexican Visual Art: Evidence of an African Historical Presence or a Cultural Myth?" *Journal of Black Studies* 39(5):761-785.
Ramos, Blanca, James Jaccard, and Vincent Guilamo-Ramos. 2003. "Dual Ethnicity and Depressive Symptoms: Implications of Being Black and Latino in the United States." *Hispanic Journal of Behavioral Sciences* 25(2):147-173.
Roth, Wendy D. 2016. "The Multiple Dimensions of Race." *Ethnic and Racial Studies* 39(8):1310-1338.
Saenz Rogelio. 2010. "Latinos in the United States 2010". *Population Reference Bureau Bulletin Update.*
Saenz Rogelio and Trinidad Morales. 2012. "The Latino Paradox". Pp. 47-73 in *The Demography of the Hispanic Population: Selected Essays*, edited by R.R. Verdugo. Charlotte, NC: Information Age Publishing.
Saucedo, Gabriel, Marlen Garcia, and Florentino Virgen Castro. 2008. "Socio-Economic and Health Conditions of an Afro-Mexican Rural Population in the State of Veracruz, Mexico, 2007/Condiciones Socioeconómicas y de Salud de una Población Afromexicana Rural del Estado de Veracruz, México. 2007." *Callaloo* 31(1):147-162.
Schwartz, Joel, Diane Gold, Douglas W. Dockery, Scott T. Weiss, and Frank E. Speizer. 1990. "Predictors of Asthma and Persistent Wheeze in a National Sample of Children in the United States." *The American Review of Respiratory Disease* 142(3):555-562.
Sorlie, Paul D., Eric Backlund, Norman J. Johnson, and Eugene Rogot. 1993. "Mortality by Hispanic Status in the United States". *Journal of the American Medical Association* 270(20):2464-2468.
StataCorp. 2017. "Stata Statistical Software: Release 15."
Sue, Cristina. 2013. *Land of the Cosmic Race: Race Mixture, Racism and Blackness in Mexico*. Oxford: Oxford University Press.
Telles, Edward E. 2004. *Race in Another America: The Significance of Skin Color in Brazil*. Princeton, NJ: Princeton University Press.
Telles, Edward. 2014. *Pigmentocracies: Ethnicity, Race, and Color in Latin America*. Chapel Hill, NC: University of North Carolina Press.
Telles, Edward, and Tianna Paschel. 2014. "Who is Black, White, or Mixed Race? How Skin Color, Status, and Nation Shape Racial Classification in Latin America." *American Journal of Sociology* 120(3):864-907.
Treiman, Donald J. 2009. *Quantitative Data Analysis: Doing Social Research to Test Ideas*. San Francisco, CA: Jossey-Bass, a Wiley Imprint.
Turra, Cassio M. and Noreen Goldman. 2007. "Socioeconomic Differences in Mortality among U.S. Adults: Insights into the Hispanic Paradox." *The Journals of Gerontology. Series B, Psychological Sciences and Social Sciences* 62(3):S184-92.
U.S. Census Bureau. 1990. 1990 Census of Population, General Population Characteristics.
Wade, Peter. 1993. *Blackness and Race Mixture: the Dynamics of Racial Identity in Colombia*. Baltimore, MD: Johns Hopkins University Press.
Weitzman, Michael, Steven Gortmaker, and Arthur Sobol. 1990. "Racial, Social, and Environmental Risks for Childhood Asthma." *American Journal of Diseases of Children* 144(11): 1189-1194.
Wernette, Dee R., and Leslie A. Nieves. 1992. "Breathing Polluted Air: Minorities are Disproportionately Exposed." *EPA Journal* 18(1): 16-7.
Williams, David R. 2001. "Racial Variations in Adult Health Status: Patterns, Paradoxes, and Prospects." Pp. 371-410 in *American Becoming: Racial Trends and Their Consequences,* Vol. II, edited by N. Smeler, W. J. Wilson, and F. Mitchell. Washington, DC: The National Academies Press.
Williams, David R. and Chiquita Collins. 1995. "US Socioeconomic and Racial Differences in Health : Patterns and Explanations." *Annual Review of Sociology* 21:349–86.
Williams, David R., Risa Lavizzo-Mourey, and Rueben C. Warren. 1994. "The Concept of Race and Health Status in America." *Public Health Reports* 109(1):26–41.
Williams, David R., and Michelle Sternthal. 2010. "Understanding Racial-Ethnic Disparities in Health: Sociological Contributions." *Journal of Health and Social Behavior* 51(1):S15-S27.
Williams Castro, Fatimah. 2013. "Afro-Colombians and the Cosmopolitan City: New Negotiations of Race and Space in Bogotá, Colombia." *Latin American Perspectives* 40(2): 105-117.

Yen, Irene H., David R. Ragland, Birgit A. Greiner, and June M. Fisher. "Workplace Discrimination and Alcohol Consumption: Findings from the San Francisco Muni Health and Safety Study." *Ethnicity and Disease* 9(1):70-80.