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Unhealthy trajectories: race, migration, and the formation of health disparities in the United States

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Dissertation

UNHEALTHY TRAJECTORIES: RACE, MIGRATION, AND THE FORMATION OF HEALTH DISPARITIES IN THE UNITED STATES

by

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ABSTRACT

This dissertation investigates race as a determinant of health trajectories for immigrants to the United States. Previous research suggests that integration into U.S. society can be detrimental to the health and mortality outcomes of many minority immigrant groups. Popular explanations for post-migration health changes have focused on individual-level mechanisms, such as behavioral changes associated with acculturation. I use multiple sources of data and a variety of quantitative methods to situate these changes in a context of racial inequality for three migrant groups. In my first case, I draw on historical data collected from the Vital Statistics of the United States and the U.S. Census to analyze the changing health trajectories associated with European immigrants’ transition from marginalized minorities to members of the white majority in the early 20th century. My second case draws on restricted-use data from the National Survey of American Life to test how interpersonal and institutionalized racial discrimination influence health patterns of black immigrants from the Caribbean. In my third case, I use population-level birth data from New York City (2000-2010) to investigate changes in birth outcomes associated with elevated anti-Muslim sentiment after the attacks of September 11, 2001. Taken together, these cases demonstrate how racial formation in the United States shapes patterns of post-migration outcomes. I find that marginalized European immigrants exhibited patterns of worsening mortality trajec-
ries, but the overall gap between European immigrants and native-born whites narrowed as racial categories were redefined in the early 20th century. This pattern of intergenerational health improvement contrasts with the segmented trajectories of contemporary Caribbean black immigrants, whose health is shaped by experiences of both interpersonal and institutionalized racism. Similarly, rates of low birth weight births increased for Middle Eastern and Asian Indian immigrants in the decade after the attacks of September 11, 2001, likely due to increased experiences of discrimination. By tying health trajectories and outcome disparities to the construction and stratification of racial boundaries, I advance theory about the “upstream” social causes of health and illness and develop a framework for analyzing the sociohistorical formation of health disparities.
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CHAPTER 1

INTRODUCTION: IMMIGRANT HEALTH TRAJECTORIES

The study of health inequalities has long contributed to sociological understandings of individuals’ life chances in a given social context. From Friedrich Engels’ writings on economic production and the poor health conditions of the working class in England (Waitzkin 2000) to Emile Durkheim’s (1951) analysis of the social determinants of suicide and Max Weber’s foundations for health lifestyle models (Weber 2005; Cockerham and Scambler 2010), sociologists have uncovered connections between the organization of society and the distribution of disease and mortality. These lines of inquiry not only highlight how individual illnesses and deaths are caused by social factors, but they also illuminate the social, cultural, political, and economic contexts in which health inequalities occur. To predict a person’s health, we ask about the conditions in which they live. To understand a society, we look to how its members live and die.

These connections are particularly salient in analyses of race and racial inequality. In *The Philadelphia Negro*, arguably the foundational text of American sociology (Morris 2015), W.E.B. DuBois (1899) not only documented disparities in death rates between black and white populations, but he also identified vastly different social conditions for each group as the primary cause. His diagnosis stood in stark contrast to prevailing ideas of the time that favored eugenics-based explanations of inherent difference. In the century that followed, debates about the causal origins of racial health disparities continued, as did efforts to understand why the black-white gap in mortality lingered even as overall population health improved dramatically (Sloan et al. 2010; Williams and Sternthal 2010). Although we have since expanded our understanding of the mechanisms linking social position and health,
our conclusions today are not so different from DuBois’ in 1899: Racial disparities exist because race and racial inequality persist as fundamental organizers of social life (Phelan and Link 2015).

Yet the apparent simplicity and stability of black-white racial disparities can be deceptive. DuBois was followed by a legion of scholars of race who established that the social conditions of groups, as well as the very boundaries of the groups themselves, are neither inherent nor fixed (Jenkins 1994; Omi and Winant 1994; Bonilla-Silva 1997; Winant 2000; Wimmer 2008; Feagin 2013; Emirbayer and Desmond 2015). Although the poles of the U.S. racial hierarchy have always been black and white, the racial order is more complex and constantly in flux due to conflict, social change, and the arrival of new immigrant groups (Frank, Akresh, and Lu 2010; Kibria, Bowman, and O’Leary 2013; Brown and Jones 2015). Both theoretical and empirical conclusions about racial health disparities become more complicated when considering this dynamic construction and stratification of racial boundaries.

For instance, the link between social conditions and health is less evident for other U.S. minority groups, particularly international migrants. As the Hispanic population has grown to constitute the largest U.S. minority group, a growing body of research has found it to be healthier than expected, particularly given a history of low average socioeconomic status and experiences of discrimination (Landale, Oropesa, and Gorman 2000; Antecol and Bedard 2006; Dubowitz, Bates, and Acevedo-Garcia 2010; Ruiz, Steffen, and Smith 2013; Lariscy, Hummer, and Hayward 2015). Initially dubbed a paradox, this pattern is often explained as the result of selection effects during the migration process or cultural differences that shape health behaviors. Yet, in the United States, these health advantages tend to decline with duration of residence. The second and third generations are often less healthy than the first, and even within the population of first-generation immigrants health status often deteriorates after migration (Rumbaut 1997; Cho et al. 2004; Hamilton et al. 2011). Despite
drawing a great deal of attention, it is still unclear why integration may be detrimental to the health of migrant minority groups or whether this dynamic is consistent across different social, economic, cultural, and political contexts.

The general question driving this dissertation, then, is simple: What happens to the health patterns of immigrant groups after migration, and why? I am not interested in explaining the paradox of the healthy new migrant. Rather, my focus is on intra- and inter-generational changes in health patterns, which I refer to as immigrant health trajectories. Literature on immigrant health in the United States has rarely been anchored to the larger body of research on health disparities, particularly popular theories that examine race and socioeconomic status as fundamental causes of poor health (Link and Phelan 1995; Phelan and Link 2015). This is in part because between-group comparisons mask social processes that occur after migration. Specifically, I argue that post-migration integration into the U.S. racial hierarchy better explains downward immigrant health trajectories than existing acculturation explanations alone.

This approach has significance beyond immigrant health research. Understanding the determinants of immigrant health trajectories can unmask some of the hidden linkages between race, racial discrimination, immigration, and health. Because immigrants, by definition, move across social contexts, their post-migration health trajectories can reveal the effects of social conditions with fewer concerns about the endogenous development of culture, structure, and other influences. Although my empirical examples highlight the health outcomes of immigrant populations, I draw on them to engage with broader theoretical questions about how the social processes of group formation cause disparities in group outcomes. In other words, I turn to theory on race to analyze immigrant health trajectories, but I also use immigrant health trajectories to understand the significance of race and race theory.

Specifically, I examine three different cases that span immigration eras in U.S. history
to better connect immigrant health research with sociological theory on the formation and stratification of racial and ethnic group boundaries. Beginning with early European immigration and concluding with the post-2001 era, my case selection links health disparities research with historical changes in immigrant incorporation, racial formation, and inequality in the United States. Doing so allows me to advance theory on the social causes of health and illness by making connections between processes of racial formation and the sociohistorical formation of disparities in health and mortality outcomes.

1.1 IMMIGRATION AND HEALTH DISPARITIES: A PRIMER

THE EPIDEMIOLOGICAL PARADOX

Although this dissertation eventually pivots to broader theoretical questions related to the causes of health disparities, its jumping off point is a body of research on immigrant health outcomes. One of the key threads in research on migrant health has been focused on a phenomenon referred to as the immigrant “epidemiological paradox” or “healthy immigrant effect”. In short, numerous studies have observed better overall health for new immigrants to the United States relative to their native-born counterparts. The “healthy immigrant effect” pattern has been repeatedly observed and is now a well-accepted finding in the health literature (Razum, Zeeb, and Rohrmann 2000; Jasso et al. 2004; Kennedy, McDonald, and Biddle 2006; Akresh and Frank 2008).

Much of the initial research in this area focused on Hispanic immigrants in the United States, in part because they represented an empirical puzzle: Immigrant health advantages are present despite disproportionately low socioeconomic status, which would normally suggest poorer health profiles (Dubowitz et al. 2010; Ruiz et al. 2013). Researchers have replicated this finding—sometimes called the “Latino health paradox”—using a range of health measures, including self-reported health, adult and infant mortality, birth weight, and


Although this research originated in studies of Hispanic immigration, researchers have also found evidence supporting the healthy immigrant effect for Asian and Pacific Islander immigrants to the United States (Frisbie, Cho, and Hummer 2001), West Indian and African blacks (Read, Amick, and Donato 2005; Read, Emerson, and Tarlov 2005), and other immigrant populations (Singh and Hiatt 2006; Singh et al. 2013; Singh and Miller 2004 May-Jun2004 May-Jun). Figure 1.1 shows the life expectancy differences between foreign-born and U.S.-born individuals in the major racial/ethnic categories between 1999 and 2001. Even for non-Hispanic whites and Asian/Pacific Islanders, foreign-born individuals tend to have slightly higher life expectancy than those born in the United States.

While evidence for the healthy immigrant pattern may be widespread, particularly in the U.S. context, it is not entirely consistent or generalizable across populations. For instance, a 2009 study of Arab immigrants in Detroit found the inverse of the expected immigrant

Even within immigrant populations for which the healthy immigrant effect is found, there is considerable within-group heterogeneity and sensitivity to group definitions. Although Frisbie and colleagues (2001) found that Asian and Pacific Islander immigrants were more likely to report better health than U.S.-born Asian and Pacific Islander adults, analyses of subpopulations revealed variation between Japanese, Chinese, Filipino, Korean, Asian Indian, Pacific Islander, and Vietnamese migrants. A similar analysis of Hispanic subpopulations found that the expected healthy immigrant was not evident for Puerto Ricans and Cubans, and the effect size differed between sending country groups (Cho et al. 2004).

There also appears to be a great deal of variation in migrant health patterns across destination contexts, although there has been less research in this area. At the national level, the general pattern of better health for new immigrants has been found in a handful of Western industrialized countries other than the United States, primarily Canada, Australia, and parts of Europe (Guendelman et al. 1999; Kennedy et al. 2006; Malmusi, Borrell, and Benach 2010; Boulogne et al. 2012). Attempts to compare migrant health patterns across destination contexts in Europe more broadly have found mixed results, with older migrants in France, Germany, Netherlands, Sweden, and Switzerland actually reporting worse self-perceived health (Solé-Auró and Crimmins 2008). A review of international literature found a general tendency for migrants to exhibit disadvantaged risk profiles (making them prone to hypertension, chronic conditions, and obesity), however, overall migrant disease patterns vary widely based on country of origin, country of destination, characteristics of the migrant, and the health outcome being measured (McKay, Macintyre, and Ellaway 2003). It is worth noting that while these studies observed heterogeneity, they made little progress toward
explaining it.

Researchers have often attributed the initial health patterns to a combination of selection of healthier migrants during the migration process, possible return migration of less-healthy migrants, and “protective cultural buffering” that may encourage healthier behaviors, particularly for Hispanic migrants (Palloni and Arias 2004; Turra and Elo 2008; Dubowitz et al. 2010; Bostean 2012; Riosmena, Wong, and Palloni 2012). Although immigrant selection is commonly used to explain the initial health benefits of new migrants, uncertainty remains about how much immigrant selection accounts for health gaps and how the selection process works. The more common explanation points to migrant self-selection, in which healthier individuals are most likely to be physically or financially able to migrate (Jasso et al. 2004; Kennedy et al. 2006). Additional, and perhaps compatible, approaches have looked at the self-selection selection of return migrants, in which individuals with poor health are more likely to return to their native countries late in life, possibly skewing mortality statistics (Abraido-Lanza et al. 1999; Palloni and Arias 2004). There is also the under-studied influence structural selection of healthier migrants through host-country immigration policies and health screening procedures (Chiswick, Lee, and Miller 2008).

While selection theories are sometimes treated as generalizable—for instance, Jasso et al. (2004) attempt to incorporate health into a cost-benefit equation predicting migration likelihood—it is becoming increasingly clear that the health selection process is far from uniform, and in fact varies based on characteristics of the immigrant populations and their destination countries. An analysis of the New Immigrant Survey 2003 cohort found significant variation in likelihood of selection by region of origin, related in part to the socioeconomic profiles of immigrant streams (Akresh and Frank 2008). Health selection rates may also vary by gender (Singh Setia et al. 2011). An examination of Mexican immigrants found women were less likely to experience positive health selection but also had smaller health declines over time than men (Gorman, Read, and Krueger 2010). The role
of health selection in the migration process also can depend on the reasons for migration, age at the time of migration, and dimensions of health (Lu 2008).

Attempts to contextualize migrant health patterns at a more localized level within the U.S. have been more common and fruitful. Research suggests that Hispanic migrants living in immigrant enclaves have better health outcomes than their counterparts living in neighborhoods with few migrants or high levels of ethnic/racial segregation (Eschbach et al. 2004; Cagney, Browning, and Wallace 2007; Osypuk, Bates, and Acevedo-Garcia 2010). Living in a neighborhood with a higher proportion of immigrants is also associated with better diets for Hispanic and Chinese migrants, although it is unclear whether this extends to other health behaviors or is consistent across immigrant groups (Osypuk et al. 2009).

In sum, although there is evidence for health selection in the migration process, there is a great deal of contextual variation in migrant health that warrants further study in order to better understand how migrant health patterns vary. Although the concept is often either treated as generalizable or dismissed as a statistical artifact, it is clear that both sending-country and receiving-country contexts affect immigrants’ health patterns. A key challenge is to move beyond explaining the paradox toward analyzing the variation between groups and contexts that shapes patterns of outcomes.

**ACCULTURATION AND HEALTH TRAJECTORIES**

Ultimately, this dissertation does not aim to explore or explain why some immigrants are healthier upon migration. There is a second component of the epidemiological paradox, and that is a repeated finding that health advantages often erode with duration of residence in the United States. The second and third generations are often less healthy, across a range of measures, than the first, and even within the population of first-generation immigrants health status may deteriorate after migration (Rumbaut 1997; Cho et al. 2004; Hamilton et al. 2011). These intra- and inter-generational changes in health patterns, which I refer to
as immigrant health trajectories, are the primary focus of this dissertation. The interesting question for health disparities researchers is not why are migrants healthier at first, but what happens to migrants in the context of reception that may be detrimental to health outcomes?

One of the most popular theoretical explanations for the decline in health with duration—often referred to as the “acculturation hypothesis”—argues that acculturation into U.S. society erodes a “cultural buffer” and leads to unhealthy behaviors that resemble the health behavior patterns of the native population. This explanation assumes the relatively good health outcomes are related to better diets, higher levels of physical activity, stronger family ties and social networks, and lower rates of smoking and drinking that are associated with the sending-country cultural values, particularly for Hispanic migrants. Acculturation, the theory argues, erodes these values and leads to more “American” health behaviors. Although this was developed in the context of Hispanic migration to the United States, the acculturation explanation has been used for a variety of immigrant groups and in other destination contexts, often as a stand in for general changes in health outcomes (Huijts and Kraaykamp 2012).

Despite its widespread use, there are several methodological problems with the acculturation explanation for immigrant health patterns. First, the conceptualization of acculturation in health studies is often disconnected from theoretical definitions used in research on international migration. One of the earliest definitions of acculturation came from the field of anthropology, and conceptualized it as “phenomena which result when groups of individuals having different cultures come into continuous first-hand contact, with subsequent changes in the original patterns of either or both groups” (Redfield, Linton, and Herskovits 1936:149). Subsequent scholarship has added nuance to this concept, noting the ways in which acculturation is a dynamic process, non-linear, bi-directional, and heavily influenced by relationships of dominance and subordination (Teske and Nelson 1974). Health researchers deploying the acculturation hypothesis, however, typically rely on a linear and
unidimensional conceptualization of acculturation, without accounting for possibilities of biculturalism, contextual identities, and pluralism in the cultural adaptation process.

The second, and related, methodological problem has to do with the operationalization of acculturation and culture in migrant health research. In general, the literature is highly fragmented on how to properly measure the concept (Salant and Lauderdale 2003). Tests of the acculturation hypothesis frequently rely on linear proxy measures of cultural integration, such as duration of residence, generation, and citizenship status, although some studies (particularly in the field of psychology) rely on more complex survey constructs (Rudmin 2009; Thomson and Hoffman-Goetz 2009).

While these measures provide evidence that greater duration of residence in the United States is associated with changes in health patterns, they are ineffective at establishing cultural change as the causal mechanism or detecting differences in integration experiences. A large body of work on segmented assimilation, for instance, argues that modern migrants can take divergent paths of assimilation and acculturation, depending in part on social context and structural constraints (Rumbaut 1994; Portes, Fernandez-Kelly, and Haller 2005; Portes and Rumbaut 2006; Stepick and Stepick 2010). Although the linear model of social and cultural integration may fit for some migrants, others experience either “downward assimilation” into a permanent urban underclass or pursue economic mobility while maintaining national and ethnic community ties (Portes et al. 2005; Stepick and Stepick 2010). This body of research suggests measures of acculturation should account both for social context of integration and multiple integration trajectories in order to be effective.

A third methodological challenge has been understanding the possible mechanisms linking migrant integration and health patterns. The acculturation hypothesis implicates culturally-driven health behaviors as a primary mechanism, with significant supporting evidence. For Mexican men and women, to varying degrees, acculturation correlates with increases in smoking, drinking and BMI (Antecol and Bedard 2006; Blue and Fenelon 2011).
However, others have suggested alternative mechanisms or even questioned the validity of the health paradox. For instance, lower rates of illness for new migrants may reflect differential access to and utilization of medical care, which may also explain the gender differences in health patterns (Gorman et al. 2010).

A major theoretical gap in the acculturation perspective is the missing link between culture and structure. Although post-migration changes in behavior and cultural adaptation are undeniable, it is important to understand how these changes are structured by social conditions in the context of reception, particularly economic and racial inequality. For example, although changes in smoking behaviors play a large role in deteriorating health outcomes across generations, particularly for Hispanic migrants (Blue and Fenelon 2011; Fenelon 2013; Lariscy et al. 2015), there is an interaction between economic conditions and post-migration smoking rates. Acculturated immigrants with low socioeconomic status tend to smoke more relative to new immigrants, but for high-SES immigrants the same downward trajectory is not present. Health trajectories also appear to be segmented according to perceptions of social mobility, with groups who perceive downward social mobility after migration more likely to exhibit poor health outcomes (Alcántara, Chen, and Alegría 2014). Evidence suggests acculturation often affects health in conjunction with material hardship and processes of cumulative disadvantage, suggesting either segmented trajectories or multicausal mechanisms that extend beyond cultural change (Allen et al. 2014; Riosmena et al. 2015).

Increasingly, scholars have argued that research on migrant health over-relies on acculturation—and by implication, cultural explanations—and have called for shifting focus toward factors tied to structural inequality, institutional racism, and experiences of discrimination (Finch, Frank, and Vega 2004; Abraído-Lanza et al. 2006; Holmes 2006; Acevedo-Garcia et al. 2012). My core argument is that changing health behaviors and outcome patterns must be understood within the context of racial and ethnic inequality
into which acculturation occurs. Each of the proposed case studies is designed to test how variability in such social conditions relates to the post-migration pattern of worsening health outcomes discussed above.

### 1.2 Gaps in the Disparities Literature

**Network Analysis of Health Disparities Research**

Although scholars have increasingly called attention to the over-reliance on acculturation explanations in the immigrant health literature, there has been no systematic analysis of the literature on immigrant and minority health disparities. In what follows, I present a citation analysis of research on health disparities in order to inductively identify communities in the disparities literature, as well as gaps between them. Does this seeming disconnect between research on immigrant health and research on racial disparities actually exist? If so, what are its implications?

Figure 1.2 is based on the citation patterns of 2,392 articles published between 2000 and 2015 from the following journals: *Social Science and Medicine, Journal of Health and Social Behavior, Sociology of Health and Illness*, and *Journal of Immigrant and Minority Health*. The dataset was collected from Web of Knowledge based on search terms for “race”, “racial”, “ethnic”, “ethnicity”, “immigrant”, “immigration”, or “foreign-born.” In order to focus on the most influential works in the field and limit the size of the graph, articles were only included if they were cited 10 or more times. The resulting dataset was derived from these articles, as well as the works they cite. This expands the scope to not only include research pulled from these journals, but also influential theoretical works and general analyses that are central to these conversations. The final dataset included 668 nodes (representing individual articles) with 13,125 edges (representing citations).

I analyzed the citations using a Louvain (Blondel et al. 2008) community detection algo-
The analysis identified seven unique communities or cliques, which are described in detail below. The data was graphed using a Fruchterman Reingold (1991) force-directed graph layout, with different colors denoting each citation community. Node size is proportional to the number of in-citations for each article, and edges represent undirected ties between any two articles. The resulting graph depicts the major conversations within the

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1This analysis was conducted using Python code made publicly available by Neal Caren. For more information, see: http://nealcaren.web.unc.edu/a-sociology-citation-network/
disparities literature related to race, ethnicity, immigration, and health.

The majority of articles fall into one of five communities. Cluster 1, in blue, represents research focused primarily on immigrant populations. The high-centrality articles in this cluster (Singh and Siahpush 2002; Abraído-Lanza, Chao, and Flórez 2005; Lara et al. 2005) are concerned with health behavior and health outcomes differences between native-born and foreign-born individuals, primarily in the United States. A keyword analysis also reveals the major theoretical and substantive focus of this cluster (see Table 1.1). Theoretically, this cluster is heavily engaged in a discussion about the “acculturation hypothesis,” which seeks to explain why health behaviors and outcomes may become worse with greater duration of residence and into the second generation for many contemporary immigrant groups.

Cluster 2, in red below, represents research that is broadly interested in neighborhood effects and health. Robert Sampson et al.’s (1997) *Science* article on neighborhood crime and collective efficacy serves as the primary theoretical foundation around which this set of literature is built. Not all of these articles are chiefly concerned with racial or ethnic minority populations. However, David Williams’ (2001) widely-cited article, “Racial Residential Segregation: A Fundamental Cause of Racial Disparities in Health,” represents this cluster’s approach to analyzing such disparities.

Cluster 3, in green, consists of research on mental health outcomes. Theoretically, this set of articles focuses primarily on the sociological study of stress, as well as the consequences of stigma, particularly in association with depression and other mental health conditions.

Cluster 4, in yellow, includes studies that emphasize socioeconomic status. These articles are often highly-cited by research focused on ethnic, racial, and immigrant health, but they are not always focused on these disparities themselves. Link and Phelan’s (1995, 1996) publications on socioeconomic status as a fundamental cause of health and illness are the most highly-cited works in this cluster.

Cluster 5, in purple, represents 13.47% of the sample, and contains articles exploring the
link between experiences of discrimination and disparities along racial and ethnic lines. The comparison is most often between white and black Americans, although more recent studies have also looked at immigrant populations, particularly regarding mental health outcomes. Situated between the Immigrant Health Cluster and the Mental Health Cluster, this group of articles includes studies that bridge the two fields.

Cluster 6, in pink, is the smallest cluster. These articles are dispersed throughout the network and focus on health care provision, utilization, access, and related barriers to service. A portion of the medical sociology research on immigrants also falls in this grouping. Rather than emphasize the better health outcomes of immigrant communities, this research tends to analyze how immigrants are often excluded in health policy. This community is much smaller than the main immigrant health cluster, and it is highly dispersed throughout the network. The remaining articles fell into a loosely-defined seventh cluster that consisted of articles about the medical profession, more than anything else.

Table 1.1: Keyword Analysis of Health Disparities Literature, 2000-2015

<table>
<thead>
<tr>
<th>Cluster</th>
<th>Pct.</th>
<th>Keywords</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immigrant Health</td>
<td>23%</td>
<td>immigrants, acculturation, lower, U.S., compared</td>
</tr>
<tr>
<td>Neighborhood Effects</td>
<td>22%</td>
<td>neighborhood, association, characteristics, income</td>
</tr>
<tr>
<td>Mental Health</td>
<td>18%</td>
<td>mental, stress, depression, life, symptoms, adults, gender</td>
</tr>
<tr>
<td>SES and Health</td>
<td>14%</td>
<td>socioeconomic, disparities, education, income, white</td>
</tr>
<tr>
<td>Discrimination</td>
<td>13%</td>
<td>discrimination, mental, racial, national, outcomes, stress</td>
</tr>
<tr>
<td>Health Services</td>
<td>9%</td>
<td>medical, access, patients, services, immigrants, barriers</td>
</tr>
</tbody>
</table>

There are two important takeaways from this figure that inform my dissertation. First is the separation of the blue and purple clusters, which represent research on racial disparities and immigrant health, respectively. In between those two is, literally, the initial gap in the research I am interested in filling. The disconnect is interesting not only because it represents perhaps an empirical disconnect, but, more importantly, because of the different mechanisms
that are implicated in each set of literature. In the immigrant health cluster, the most popular explanation for changes in health is based on deleterious effects of acculturation. In the disparities cluster, however, there is much more attention paid to stress, discrimination, and structural factors. Researchers have increasingly called attention to this disconnect and have argued that understanding immigrant health trajectories requires greater attention to structural and social factors, other than cultural change (Finch et al. 2004; Abraido-Lanza et al. 2006; Holmes 2006; Acevedo-Garcia et al. 2012).

A second takeaway from this graph can be found when looking at the most influential works both within and across clusters. There is a surprising lack of social theory. More specifically, there is a notable absence of citations to sociological research that theorizes immigration, race, and racial inequality. This is a diverse field, with submissions from public health, epidemiology, and sociology. What is missing, and what sociologists can offer to help direct these lines of inquiry, is theory about the causes and consequences of group formation, immigrant incorporation, and inequality. Scholars have argued that immigration and race and inextricably linked (Kibria 2011). Immigrant incorporation is inherently racialized, and even studying longstanding black-white racial inequality is tied to streams of newcomers, whether European immigrants in the early 20th century or Hispanic migrants today. While both acculturation and discrimination might have different degrees of influence across groups, it is theoretically important to integrate research on immigrant and racial disparities.

Bridging this theoretical gap can also advance theory about the social causes of health and health inequalities. There is a great deal of research on discrimination as an individual-level cause of poor health, across a range of outcomes. But what are the “upstream” causes of an individual or group’s exposure to experiences of discrimination? This is a question sociologists have pondered since the founding of the discipline, and better linking race and immigration theory to health disparities research can help us better understand how group
outcomes are tied to social processes of group formation.

**CONNECTING IMMIGRANT HEALTH TO THE SOCIOLOGY OF IMMIGRATION**

The gap between immigrant health research and the broader literature on health disparities is arguably driven by a simultaneous disconnect between immigrant health research and literature on the sociology of immigration and race. Explaining how, when, and why some immigrants’ health outcomes tend to decline post-migration requires a better understanding of the immigrant experience. A great deal of research has looked at the political, economic, cultural, and social changes that migrants often undergo when integrating into a new society. But this scholarship has not been fully integrated into explanations of immigrant health trajectories.

Although immigrant health research tends to emphasize the importance of post-migration acculturation, sociologists have typically focused more broadly on assimilation, or the process of migrant integration into the destination society. While there is a cultural element to this adaptation, it is also commonly measured by socioeconomic status, spatial concentration, language use, or intermarriage (Waters and Jiménez 2005). Early theories based on research of European immigrants viewed assimilation as a linear process, in which low-SES new immigrants arrived in urban immigrant enclaves but gradually transitioned to more ethnically-mixed suburbs in subsequent generations when they achieved a higher socioeconomic status and integrated into the mainstream white middle class (Alba et al. 1999). This is still the typical conceptualization in many immigrant health studies.

More recent research, however, has focused on the segmented assimilation of new-wave immigrants who arrived after 1965. Although some migrants follow a path of linear assimilation, others experience either “downward assimilation” into a permanent urban underclass or pursue economic mobility while maintaining national and ethnic community ties (i.e., selective acculturation) (Portes et al. 2005; Stepick and Stepick 2010). While
there are a variety of explanations for diverging paths of assimilation—human capital, family structures, reasons for migration—one key difference is that new immigrants from Latin America, Africa, and Asia face brighter racial barriers that may limit their ability to assimilate into the white middle class (Gans 1992, 1992; Portes and Rumbaut 2006).

Such barriers to assimilation call attention to the role of the receiving society in shaping immigrant trajectories. The responses of the destination country—from cultural receptiveness to policy configurations—can play a large role in shaping migrant identity and assimilation trajectories (Phinney et al. 2001). Receiving societies often racialize newcomers based on historical racial markers in the society or globalized national images of the origin country’s political and economic status (Kibria 2000, 2011). This can result in both symbolic boundaries between groups, as well as social boundaries in the forms of exclusionary policies that block full incorporation (Wimmer and Soehl 2014). Many recent immigrants, particularly racial minorities, are unable to follow the European path to assimilation as they counter an environment of racial stereotypes, job discrimination, and residential segregation that can constrain their identity choices and limit their life chances (Waters 1999).

While this is only a cursory review of research on the intersections of race and immigration, it highlights the potential pitfalls of modeling health acculturation as a simple linear transition. Time in the United States does not necessarily equate to greater acculturation or integration. The destination country continues to shape migrants’ lives, and identities of migrants and the second generation are increasingly transnational and shaped by multiple frames of reference and interactions in multiple contexts (Vertovec 2004; Levitt 2009). Moreover, receiving-country responses may facilitate new identity choices that do not fully

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Some early European immigrants were also treated as racial minorities, particularly Irish, Italian, and Jewish immigrants. However, distinctions between color and race—as well as shifting boundaries in the early 20th century—arguably make racial boundaries brighter for non-European waves of immigrants (Fox and Guglielmo 2012).
resemble either the sending-country or receiving-country culture, as is the case with second-generation Muslim migrants who in some cases identify more with global Islam than their parents (Kibria 2011).

**OPERATIONALIZING RACE IN HEALTH RESEARCH**

One solution to the above gaps is a theoretically-driven focus on race and racial inequality as determinants of immigrant health trajectories. The acculturation explanation on its own has proven insufficient at explaining post-migration health changes, and it fails to recognize the importance of race in the lives of minority immigrant groups. Rather than treat immigrants as distinct subpopulations, it is crucial to situate them in a social context in which their health and life chances are affected by similar mechanisms that act as fundamental causes of minority health in general. Integration into the United States does not just involve an adoption of new cultural norms and behaviors, but it also involves changes in social status and boundary work in relation to sometimes-unfamiliar racialized social identities. This, in turn, involves navigating and adapting to an existing U.S. racial/ethnic hierarchy that is capable of structuring access to resources and exposure to stressors and discrimination (Romero 2008).

Social scientists have long debated the use of race and ethnicity in health research. As indicators of race and ethnicity became increasingly incorporated into studies of health and health disparities in the 1990s, sociologists—as well as scholars in other fields like public health and epidemiology—questioned their validity as epidemiological variables and raised ethical implications of their inclusion in health research (Sheldon and Parker 1992; LaVeist 1994; Bhopal and Donaldson 1998; Fullilove 1998). Drawing largely on a social constructionist perspective that defines race and ethnicity as historically contingent and tied to cultural, economic, and social context, these scholars argued that categorical representations of racial and ethnic health disparities misrepresented human population
variation and risked reinforcing a biological essentialist interpretation of human difference. This concern has only grown as advances in genomics science have given rise to similar discussions—often with political implications—about how to disentangle ancestral history, biological difference, and social position (Foster and Sharp 2002; Collins 2004; Krieger 2005).

Despite these critiques, a large body of research emerged, both in the biomedical and social sciences, demonstrating the importance of race and ethnicity in determining health outcomes. Many racial and ethnic minority groups have worse health across a range of outcomes even after controlling for socioeconomic status, a pattern that has been particularly pronounced and persistent for the black population in the United States (Williams and Jackson 2005; Williams and Sternthal 2010). Research on racial and ethnic health disparities has highlighted the differential access to material and symbolic resources associated with racial and ethnic stratification, and has also directed researchers toward new mechanisms of disease causation, such as additional stress-induced cortisol elevation related to experiences of discrimination (Thoits 2010). Racial and ethnic health differences have been found throughout the life course, including in utilization patterns, health behaviors, and treatment from providers (Alegría et al. 2011).

These two threads of scholarship have proven difficult to fully reconcile. It is long past prudent to ask whether or not race and ethnicity should be included in health research. Removing them would conceal important indicators of how stratification and discrimination shape life chances and opportunities. Yet definitional and methodological debates have lingered, and at times become heated (Krieger 2005) because they implicate questions of causality. Research indicates that disparities derive largely from social factors—differences in culture, diet, socioeconomic status, access to health care, education, environmental exposures, social marginalization, discrimination, stress and other factors (Collins 2004). Yet notions of inherent racial health differences persist, in part because of the consistent
variation in outcomes across racial categories.

The contested interpretations of population-based health differences highlight the need for more careful operationalization of race and ethnicity. Despite drastic differences in the genetic/biological essentialist versus the social constructionist epistemological understandings of race and ethnicity, one would have trouble distinguishing their basic operationalization. Both use similar proxies for different concepts. Contextualization can help disentangle the two, to a degree. Researchers have shown that neighborhood- and city-level spatial stratification, measured primarily by residential segregation levels, have an independent effect on health for minorities, for instance (Williams and Collins 2001; Takeuchi, Walton, and Lenug 2010). However, less work has been done at a more macro-level to situate segregation in a larger historical context of group construction and stratification.

Despite a widespread acceptance of social constructivist principles regarding race and ethnicity, much work is still informed by what Brubaker (2009) has called “groupism,” or a tendency to treat various categories of people as if they were internally homogeneous, externally bounded groups. This approach is the basis for much of what is considered population health. While it may be difficult and unnecessary to completely abandon the idea of population-level health profiles, it is important understand and demonstrate how population outcomes result from the processes that form the populations themselves. In Chapter 2, I outline some methods for making these connections by theorizing and testing how processes of racial formation contribute to the formation of health disparities.

1.3 Case Selection and Contributions

In order to empirically test theory about the formation of health disparities, I rely on three cases that focus on different immigrant groups in unique social contexts of reception. Each case is written and presented as a standalone analysis, yet they are tied together with a
common theoretical focus. Given the above findings and gaps in the research, my case selection has three goals. First, I aim to expand the empirical scope of immigrant health research by studying immigrant groups that receive less attention in the health literature. A great deal of research has examined Hispanic immigrant health in the United States. My goal is to investigate the health trajectories of other immigrant groups in order to test the generalizability and variability of previous selection-acculturation explanations. The literature already suggests a great deal of heterogeneity across sending and receiving contexts, and further diversification of empirical cases is essential to developing the subfield of immigrant health research.

Second, my goal is to examine the context of acculturation and integration. If selection patterns and health trajectories vary across sending and receiving contexts, it is important to examine how and why health patterns differ. In order to advance theory on the broader understanding of how social conditions affect health and health inequalities, the social conditions themselves must be conceptualized and operationalized in the research design. Specifically, I examine the construction and stratification of race in the context of reception. Drawing on theory about the processes of racial formation, my case selection seeks to highlight how experiences of interpersonal or institutionalized racial discrimination play a role in immigrants’ post-migration health trajectories. Doing so can help us understand how race operates as a context-specific social category, rather than an inherent characteristic.

Finally, my case selection aims to tie research on immigrant health to a broader historical literature on race and immigration in the United States. I explicitly select cases that span immigration eras in U.S. history, again in order to incorporate theory on racial formation into empirical analysis of health disparities. Analyzing the determinants of immigrant health trajectories requires situating each immigrant group’s integration experiences in historical context. Migration to the United States has come in waves, each corresponding to new policy responses, demographic changes, and shifts in racial politics (see Figure 1.3). The
post-migration trajectories of each group of immigrants depends in large part on the social conditions of their arrival.

**CASE 1: EUROPEAN IMMIGRANTS IN THE EARLY 20TH CENTURY**

In the mid-19th and early 20th centuries, immigrants came predominantly from Europe—Northern and Western Europe at first, and later Southern and Eastern countries. The integration experiences of these early immigrants were heavily influenced by racial politics, growing anti-immigrant sentiment, and shifting ideas about racial identity. Irish, Italian, and Jewish immigrants were initially racialized as inferior to their Nordic and Anglo-Saxon predecessors and faced discrimination and hostility (Brodkin 1998; Jacobson 1999; Roediger 2006).

This racialized nativism fueled, and was fueled by, medical inspection and exclusion of new immigrants based on public health fears tied to nationality, skin color, and eugenics.
science (Markel and Stern 1999). Anti-immigrant hostility grew until it culminated in the passage of the 1924 National Origins Act, which restricted immigration from Southern and Eastern Europe while at the same time defining the bounds of whiteness (Kibria et al. 2013). Around the same period, states began formalizing one-drop rule policies that further redefined racial boundaries and entrenched the black-white dichotomy.

Much has been written about processes by which Southern and Eastern European immigrants eventually transitioned from marginalized minorities to members of the white majority in the early 20th century (Lieberson and Carter 1979; Brodkin 1998; Jacobson 1999; Fox and Guglielmo 2012). In many cases, juxtaposition or competition with black Americans facilitated the transition and re-aligned racial politics along a strictly black-white axis (Jacobson 1999). The state also played a strong role, particularly as New Deal policies that excluded blacks helped European ethnic groups move into the mainstream middle class (Brodkin 1998). Recently, scholars have looked back at this period to understand the origins of racial disparities and theorize about shifts in racial identity and inequality (Muller 2012; Olzak and Shanahan 2014).

The first empirical case of this dissertation begins this early wave of U.S. migration and examines the health trajectories of European immigrants in the early 20th century. In absolute size, the number of annual immigrants in the early 1900s was second only to the most recent wave of migration. In relative terms, however, migration actually represented a larger proportion of the population than documented migration does today. Looking at European immigrant health is a useful empirical comparison, because there has been little or no work on previous waves of migration in immigrant health research. But it is also theoretically valuable, because there were different paths to assimilation for these groups, and there was a well documented change in racial categories and the racial hierarchy at the time.

Chapter 3, then, examines the scenario of a broad macro-level decrease in racial/ethnic

The analysis tests two broad hypotheses that draw on research about race and immigration during this period. First, I expect the post-migration trajectories to reflect European immigrants’ “middle tier” status in the racial hierarchy of the early 20th century. Because both the racial dynamics and the primary causes of illness and mortality were very different than they are today, this case uniquely expands the scope of immigrant health research. Second, I expect that inequalities in mortality rates between native whites and European immigrants declined in conjunction with successful upward mobility along the racial hierarchy. Using longitudinal analysis, I find a diminishing “gradient” between acculturated European migrants and white natives over time. A great deal of historical scholarship has documented the racial transition of European immigrants during this period, but few studies have examined the consequences for health outcomes.

CASE 2: BLACK IMMIGRANTS TO THE U.S.

A new period of immigration began in 1965, when the Immigration and Nationality Act eliminated the national origins quota system and facilitated increased immigration from South and Central America, Asia, and Africa. Much like their European predecessors, contemporary migrants often find their integration experiences tied to race relations and the black-white color line. Although some migrants follow a path of linear assimilation, others experience either “downward assimilation” into a permanent urban underclass or pursue economic mobility while maintaining national and ethnic community ties (Portes et al. 2005; Stepick and Stepick 2010).
This is not only true of Hispanic migrants, who have been the largest group in the post-1965 era, but also black and Asian immigrants, who often find themselves juxtaposed to the native black population both in their racial and ethnic identity formation and integration into the labor market (Waters 2001; Waters, Kasinitz, and Asad 2014). However, today’s minority migrants are often less successful than their European predecessors at climbing that ladder, as they often encounter an environment of racial stereotypes, job discrimination, and residential segregation that can constrain their identity choices and limit their life chances (Waters 1999).

The second case examines variability in interpersonal and institutionalized racial inequality on health trajectories of black immigrants. Health research on black immigrants is theoretically important because the black-white racial hierarchy has a strong influence on their identity formation and mobility prospects. However, institutionalized forms of racial inequality (e.g., residential segregation, incarceration disparities, poverty rates, etc.) can vary across neighborhoods, cities, and states within the U.S. This case is broadly focused on how variability in migrants’ context of integration influences health trajectories.

Using geocoded data from the National Survey of American Life (NSAL), Chapter 4 seeks to understand the health trajectories of Caribbean immigrants within the context of U.S. race relations. Research already suggests that institutionalized racism, particularly residential segregation, has an independent negative effect on the health of black Americans (Williams and Collins 2001; Schulz et al. 2002; Subramanian, Acevedo-Garcia, and Osypuk 2005). Expanding this line of inquiry to include black immigrants may shed light on how racial inequality acts as a fundamental cause of disease and health inequalities for immigrants.
CASE 3: IMMIGRANTS FROM THE MIDDLE EAST

In recent years, racial exclusion has been bound up with concerns about security and border control. After September 11, 2001, the USA Patriot Act included a special registration program (which was later phased out) for immigrants from many Muslim-majority countries. Sociological interest in Middle Eastern and Muslim migrants has increased dramatically during this post-2001 period, in part because their experiences may offer a contemporary example of racial identity formation and stratification. On the one hand, a racial lens is difficult because these groups are rendered statistically invisible (as they are officially considered Caucasian) and often balance a variety of ethnic, religious, and national identities (Bakalian and Bozorgmehr 2011). However, the documented rise in post-2001 experiences of discrimination, surveillance, and violence suggest a combination of Islamic identity and Middle Eastern physical appearance can serve as a barrier to full social and political integration (Read 2008).

The third case explores health patterns of migrants from the Middle East. Specifically, it looks at changes in birth outcomes for Muslim and Middle Eastern migrants in an era of racialization after 2001. Much of the extant research on Middle Eastern populations is based on community studies of Arab Americans and produces mixed results (Read, Amick, et al. 2005; Abdulrahim and Baker 2009). In studies that have found Middle Eastern immigrants to be less healthy than non-Hispanic whites, cultural factors and possible genetic differences are often put forward as explanations (El-Sayed and Galea 2010; El-Sayed et al. 2011; Nasseri and Moulton 2011).

However, research looking specifically at experiences of post-2001 discrimination and acculturative stress found both to be associated with psychological distress and worse self-rated health (Padela and Heisler 2010). In the six-month period immediately following September 11, Arab mothers identified by name-matching algorithms were found to have
lower birth weights, with elevated stress related to anti-Arab discrimination put forward as a likely explanation (Lauderdale 2006).

In Chapter 5, I use data on the population of births from the vital statistics of New York City to look beyond the immediate post-2001 period to assess possible lingering effects of elevated anti-Muslim and anti-Arab sentiment. To my knowledge, this is the first research to examine and document a longterm emergence of a health outcome disparity among the population of Muslim migrants after 2001. I not only show an increase in low birth weight births for Muslims in New York City, but I also demonstrate an association to levels of discrimination, as measured by employment discrimination charges. In addition, I test hypotheses related to the racialization of immigrant groups who are misidentified as Muslim, as well as possible duration effects.

1.4 Caveats and Context

The above cases, at first glance, may seem distinct and disconnected. They represent different immigrant populations in variety social contexts and historical periods. The standard approach to studying immigrant health has been to treat different origin groups as relatively distinct subpopulations, though at times influenced by similar selection and acculturation mechanisms. Yet one of the goals of this dissertation is to avoid the pitfall of over-segmentation. Each of the empirical cases, though unique, contributes to a larger theoretical story about the importance of race and racialization in the post-migration experiences and health outcomes of immigrant groups.

My overarching argument is that context-specific experiences of race, racism, and racialization act as an overarching fundamental cause of immigrant health trajectories across cases. Yet adopting a racial lens for understanding these cases invokes theoretical questions about the nature of race. It requires analyzing race not as a set of fixed categories of identity,
but as a marker of group conflict that merges in a sociohistorical context. In making this pivot to connecting immigrant health outcomes with race theory, I also engage with lingering questions about root causality in the field of medical sociology. In Chapter 2, I do this by outlining a theory of “health disparities formation” that examines upstream processes of racial formation as a root cause of disparities in group outcomes.

The benefit of this inquiry is a stronger and more accurate understanding of health disparities, and a more theoretically-grounded literature on health. But there are also contributions to the sociology of race and our general understanding of social life more broadly. For one, it can help us understand the consequences of racial inequality. The outcomes sociologists often rely on for quantifying racial inequality—job market discrimination, pay gaps, incarceration rates, etc.—capture important and consequential material differences between groups. Yet health and mortality outcome inequalities persist at every level of socioeconomic status, implicating additional mechanisms such as stress-induced physiological consequences of accumulated discrimination experiences, in addition to institutional barriers to resources and opportunities (Thoits 2010; Williams and Mohammed 2013). In this sense, health disparities capture consequences of racial or ethnic stratification beyond material inequalities. Moreover, they contribute to the reproduction of such stratification. The lost wages, physical disability, shorter lives, and other consequences of poor health serve as an additional barrier to mobility that often begins at birth. To study health disparities is to study the reproduction of inequality.

More broadly, the analysis of post-migration trajectories has utility across fields of interest. Because immigrants move across social contexts, post-migration changes can partially reveal the exogenous effects of specific constellations of social conditions. By comparing immigrant and U.S.-born blacks, for example, researchers have looked at post-migration trajectories to disentangle shared ancestry from race as a social category and social experience (David and Collins 1997). By looking at post-migration behaviors, scholars
have been able to examine the effects of culture with fewer concerns about the endogenous
development of preferences (Polavieja 2015). Examining immigrant trajectories is a simple
yet effective methodological innovation for better analyzing race, structure, culture, and
other facets of social life.

I do not claim an exhaustive analysis in the pages that follow. The three cases are
empirical snapshots that represent a larger and wider historical trajectory. Each is a different
dot that I attempt to connect through analysis and theoretical discussions. Together, they
begin to tie research on immigrant and racial health disparities to the broader historical and
sociological story of immigration and racial politics in U.S. history. Making that connection
is impossible, however, without first clarifying the meaning and significance of race from a
sociological perspective.
Questions of causality have been central to the development of the field of medical sociology. One of the primary ongoing projects for sociologists—as well as public health scholars and epidemiologists—has been the development of theory about the social causes of health, illness, and mortality. This has in many ways been a process of progressively shifting attention away from biological candidates and even proximate social mechanisms toward an understanding of the social conditions and social processes that broadly shape life chances and affect outcomes through a myriad of pathways. This dissertation aims to take a significant step further by theorizing the sociohistorical formation of health outcome disparities.

In public health, the challenge of understanding and treating illness is often metaphorically depicted as a flowing river. Health care delivery is analogous to a person standing on the banks of the river witnessing people float by in distress. The proper reaction at that point is to jump in and save the struggling swimmers. This is also the job of many health care providers—formal health care delivery is often organized around responding to illness at the point of crisis. But the social scientist on the bank asks a different question: What is happening further upstream that is causing these people to end up in the river in the first place? The development of theory about the causes of health and illness has been an incremental journey up that stream.

This “upstream” approach initially became influential with a recognition that social behaviors and determinants (e.g., tobacco, diet, alcohol, firearms, etc.) act as the “actual” causes of a majority of conditions listed on death certifications, such as heart disease, stroke,
and cancer (McGinnis and Foege 1993). This was followed by calls for prevention and primary care as solutions to health delivery problems, as well as new opportunities for sociologists and social scientists to contribute to medical knowledge. Sociologists have since developed new frameworks for understanding the causes of social behaviors and determinants, the constraints and contexts in which they occur, and the interaction of social and biological determinants (Bird and Rieker 1999; Rieker, Bird, and Lang 2010; Shim 2010; Thoits 2010; Pescosolido 2011). One of the (arguably) most influential of these perspectives conceptualizes social conditions, such as socioeconomic status and racism, as fundamental causes of a broad range of behavioral determinants and exposures to illness risks (Link and Phelan 1995; Phelan and Link 2015).

Most recently, sociologists have pushed this investigation of the “cause of causes” a step further. If social conditions act as fundamental causes of health and health inequalities, we can examine how social conditions themselves are situated in varying political, economic, and macro-social contexts (Olafsdottir 2007; Beckfield and Krieger 2009; Olafsdottir and Beckfield 2011; Beckfield, Olafsdottir, and Bakhtiari 2013; Olafsdottir, Beckfield, and Bakhtiari 2013). This final step is one sociologists are uniquely qualified to take, as it moves toward the broadest examination of how the organization of society causes and distributes illness and death outcomes.

In conceptualizing health disparities formation, I engage with and develop Link and Phelan’s (1995) theory of social conditions as a fundamental cause of illness while moving theoretically further upstream to examine the factors that shape race as a fundamental cause. I borrow from Omi and Winant’s (1994) concept of racial formation to understand how the construction and stratification of the social categories we often rely on for identifying outcome disparities are created, maintained, and stratified in unique historical contexts. In using the term “health disparities formation,” I refer to the sociohistorical processes that create and alter the underlying social conditions—particularly race/racism—that act as
fundamental causes of health and illness.

Taking this step is important not only because it advances the mission of theoretically understanding the root “cause of causes”, but because it also has the potential to unearth political, institutional, and cultural causes of (and possibly solutions to) disparities in health and mortality. It calls attention to the policies and historical shifts that affect racial inequality, such as the role of Jim Crow segregation policies in shaping mortality outcomes for African Americans (Krieger et al. 2014) or the health consequences of institutionalized inequalities in housing, schooling, employment, and incarceration (Williams and Collins 2001; Schulz et al. 2002; Subramanian et al. 2005; Britton and Shin 2013). Examining outcomes in a macrosocial context is not limited to racial disparities. There is a burgeoning literature that looks further upstream to how structural inequality and institutional configurations affect disparities related to class, gender, and other axes of stratification (Olafsdottir 2007; Beckfield and Krieger 2009; Olafsdottir and Beckfield 2011; Beckfield et al. 2013; Olafsdottir et al. 2013). In fact, quite a bit of work has been done to understand the sociohistorical processes—such as the development of the welfare state—that affect the expression of socioeconomic status as a fundamental cause (Olafsdottir 2007; Beckfield et al. 2015). There has been less work focused on the formation of racial disparities in health, and this project aims to address that gap by explicitly considering how macro-level racial inequality constrains and shapes migrants’ health and life chances.

2.1 Social Conditions as a Fundamental Cause of Disparities

The association between social position and health is well established. Currently, one of the most influential theoretical perspectives in the area of health inequalities looks at social conditions broadly as a fundamental cause of disease (Hankin and Wright 2010). Link and Phelan (1995, 1996) argue that social conditions can be considered a fundamental cause
because they shape access to the resources—both material and symbolic—that can be used to avoid risks or to minimize the consequences of disease after it occurs, even as the more proximal risk factors and linking mechanisms change. In this sense, social position acts as a “cause of causes” or “risk of risks” (Link and Phelan 2010).

Link and Phelan introduced the fundamental cause perspective by noting how socio-economic status has been associated with mortality, even as the risk factors and causes of death changed from dying from infectious diseases in previous centuries to dying from chronic conditions today. So social conditions shape access to resources even as the resources change, and they shape exposure to disease risks, even as the risks change, acting as an overarching organizer of a “massive multiplicity of connections” to more proximate causal mechanisms (Lutfey and Freese 2005).

From this perspective, health inequalities (e.g., differences in outcomes between population groups) must be understood in the context of underlying social inequalities. The core tenant of the fundamental cause theory is stated as follows: “It is our enormously expanded capacity to control disease and death in combination with existing social and economic inequalities that create health disparities by race and SES” (Phelan and Link 2005). If medical intervention and prevention have little benefit, the association between social conditions and a particular disease is expected to be relatively weak as everyone suffers equally; however, when a treatment is available, those at the top of a given hierarchy have better access, and a gradient tends to emerge reflecting underlying societal inequalities (Chang and Lauderdale 2009; Link and Phelan 2010). Stated differently, that combination can be conceptualized as an interaction between resources and inequality:

\[
\text{Social Inequality} \times \text{Capacity to Control Disease} = \text{Health Disparity}
\]

Thus, variability in either the capacity to control disease or the context of social inequality has the potential to shape patterns of health disparities. Much of the empirical support for
the fundamental cause hypothesis looks at the former, demonstrating how racial disparities emerge corresponding with improvements in the capacity to control disease. Looking across time, the black-white disparity in heart disease mortality emerged coinciding with advancements that made heart disease more treatable and preventable, suggesting white Americans were better able to benefit from the technological advancements (Phelan and Link 2005). Similarly, improvements in HIV/AIDS treatments in the 1990s reduced mortality rates for everyone, but at the same time led to a greater inequality in death rates between blacks and whites (Rubin, Colen, and Link 2010). Research also suggests racial disparities in cancer mortality rates are inversely related to the particular cancer’s amenability to treatment (Tehranifar et al. 2009).

These analyses are effective in part because the black-white dividing line of racial inequality has been so persistent throughout the history of the United States. With a persistent (though not invariable) environment of inequality, variation in treatment capacity allows for straightforward tests of the fundamental cause proposition. In theory, however, variability in the context of inequality will also alter patterns of disparities, and the fundamental cause theory can be tested by observing changes in patterns of inequality. This is practically important because if improved capacity to control disease necessarily results in disparities that reflect underlying social inequalities, addressing such social conditions may be the only means of alleviating health disparities.

There have been attempts to understand this relationship by looking at variability in inequality related to socioeconomic status. There is, for example, a longstanding interest in how patterns of income inequality influence overall health and the distribution of disease across contexts. Although early research in this area focused on variations in macro-level income inequality and either individual-level or aggregate health outcomes (Wilkinson 1996; Kawachi, Kennedy, and Glass 1999; Beckfield 2004), a growing body of cross-national work looks at how welfare state organization and political factors attenuate or shape the relative

There has been less attention to how variability in racial and ethnic inequality impacts health disparities from a fundamental cause perspective, although initial research suggests it is an important line of inquiry. For instance, at the neighborhood level, contextual variation in residential segregation has been shown to act as a fundamental cause of racial disparities in health outcomes, suggesting variations in institutionalized patterns of racial inequality affect outcomes (Williams and Collins 2001; Schulz et al. 2002; Subramanian et al. 2005; Britton and Shin 2013). Similarly, macro-level analyses have examined the enduring impact of Jim Crow policies on premature mortality among the U.S. black population, pointing toward historical variation (Krieger et al. 2013, 2014). This project aims to advance theory on the fundamental causes of health disparities by more explicitly examining variability in social inequality related to race, ethnicity, and migration.

2.2 Theories of Race and Racial Formation

In order to understand the root causes of racial health disparities, it is important to first clarify what race represents. As noted in Chapter 1, social scientists have frequently debated the use of race and ethnicity in health research. Popular notions of race as markers of inherent biological difference persisted in health research much longer than in other social sciences. Yet even as other fields have adopted a language that recognizes race as a social construction—even biologists and geneticists at times acknowledge it as such (Collins 2004)—the challenge has been incorporating that insight into research design and theory about causality.

Sociologists define race as a socially constructed category, although there have been a variety of attempts to clarify how and why such categories are developed and maintained
(Jenkins 1994; Omi and Winant 1994; Bonilla-Silva 1997; Winant 2000; Wimmer 2008; Feagin 2013; Emirbayer and Desmond 2015). Rather than wade into the esoteric debates within the field of race studies, I prefer to begin by identifying commonalities and areas of consensus. Three insights from this intersecting theoretical literature are particularly relevant for understanding race as a fundamental cause of health and health inequalities.

First, racial identities, and group boundaries more broadly, are variable and socially defined. Rooted in Weber’s (2005) notion that ethnic and national identities are (to a degree) subjective and contextual, this insight is the central tenant of the widely-adopted social constructionist perspective on race and ethnicity, and more recently has been incorporated into theoretical work on boundary making (Wimmer 2008; Telles and Sue 2009). Such social identities are predicated on a combination of self identification and categorization by others, both of which vary across time and place (Jenkins 1994). At a microsocial level, we see variation in how individuals self identify and how they are categorized in their interactions with others (Saperstein and Penner 2012). At a macrosocial level, the racial classification schemes on which individuals draw varies both across societies as well as across time within a given society (Omi and Winant 1994; Andrews 2014; Bailey, Saperstein, and Penner 2014). Even in a given time and place, racial codes can take on distinct and multivalent meanings that are tied to the context of usage (Go 2004). While racial categories are often rendered ahistorical, they are fundamentally spatially and historically generated (Emirbayer and Desmond 2015). In order to understand race and racial inequality as fundamental causes of disparities, it is important to begin with a recognition that the underlying social conditions reflect sociohistorical processes of group construction.

Second, these processes of racial/ethnic identity formation are embedded in institutional contexts. A key goal for modern theorists of race has been linking micro-level racial/ethnic signification and identity formation with macro-level racialized social structure (Winant 2000). In the United States, health disparities represent just one domain of racial and ethnic
inequality. Disparities in residential location, schooling, employment, housing, credit, and criminal justice are also interrelated with health outcomes as part of a larger system of discrimination that structures culture, cognition, and institutions (Reskin 2012). Within the health disparities literature, race and ethnicity are often treated as proxies for social position and exposure to certain life experiences, but it is important to recognize that these positions and exposures are not fixed. Racial and ethnic categories can tell us about the social context—the economic, political, social, and cultural context—as much as the individual. Cognitive and culture drivers of racial classification can become entrenched in social structure and institutions in ways that reproduce such identities subconsciously and on a large scale (Bonilla-Silva 1997; Weiner 2012).

Third, the construction and reproduction of race is tied to and reproduced through power differentials, conflict, and group stratification. Group boundaries are formed and maintained in part through power-driven struggles in economic and political arenas, in which the majority/dominant group has the upper hand (Wimmer 2009). Violence also often plays a role in the activation and maintenance of group boundaries (Smångs 2016). Intergroup struggles are often channeled through the state in the form of border-policing efforts and policies aimed at defining and excluding certain groups. While the dynamics of intergroup conflict are unique to each historical and social context, scholars have traced ideas of racial difference and racial superiority to histories of European colonialism and imperialism that privileges European political power (Go 2004; Kibria 2011).

In order to understand the significance of race for health and health outcomes, then, we need to look more carefully at racial formation, or the “sociohistorical processes by which racial categories are created, inhabited, transformed, or destroyed” (Omi and Winant 1994:55). The concept of racial formation has been the most influential theory of race within the field of sociology, and it encapsulates the above insights by directing attention toward the micro-level and macro-level social processes—also known as racial projects—
that give race meaning. Race and racial inequality are produced through both interpersonal interactions and institutional/structural characteristics of the state and global order. I argue that theoretically understanding the causes of racial health disparities requires analyzing the processes of racial formation that create both racial categories as well as between-group disparities in outcomes.

**Racialization and the Intersections of Immigration, Ethnicity, and Race**

One of the challenges to adopting a racial formation perspective is disentangling the intersections of race, ethnicity, immigration, and other forms of identity. As the network analysis of disparities literature in Chapter 1 demonstrated (Figure 1.2), health researchers often segment their conversations depending on whether they are focused on racial, ethnic, or immigrant group outcomes. In practice, this often means scholars talk about racial inequality when examining black-white health disparities but take different approaches for understanding other minority groups, particularly recent immigrants. Even within the theoretical literature, there is disagreement about the distinctions and similarities between processes of ethnic, national, and racial boundary formation, with some scholars arguing that they are all driven by similar processes (Wimmer 2015) and others maintaining that such a perspective amounts to a form of apolitical color blindness creeping into social scientific practice (Winant 2015a, 2015b).

My analysis begins by recognizing social identities in general as being shaped by two components: Self-identification and ascriptive categorization. Popular definitions often assume ethnicity is driven by the former and race by the latter. In other words, ethnicity is often assumed to be a representation of fluid culture, and race a representation of either fixed physical differences or entrenched social structure. Rather than segmenting the conceptualization of each, however, I argue it is important to recognize how the dual
components vary in their importance and become salient under different circumstances. Ethnic identity is often driven more by agentic self-identification, yet it is also shaped, strengthened, or muted in reaction to ascriptive categorization across contexts. Similarly, although race is often shaped more directly by ascriptive categorization, there are also strong components of self-identity that make racial identities meaningful.

The study of racial formation as it pertains to health disparities is then an analysis of how ascriptive categorization comes to shape the identities and outcomes of a social group. Racialization is one of the key concepts for bridging the apparent gap and recognizing the importance of race in shaping group boundaries. It is, in short, the process by which racial categories are imposed and by which individuals and groups inhabit or respond to them (Omi and Winant 1994). It “signals the processes by which ideas about race are constructed, come to be regarded as meaningful, and are acted upon” (Murji and Solomos 2005:1). In other words, the focus is not on racial or ethnic groups as static categories of belonging or ancestry, but as dynamic social identities that are developed in an institutional context characterized by power inequalities. Although this is often deployed when talking about racial categories, the related concepts of panethnic identify formation and ethnoracialization attempt to explain similar processes in non-white and non-black ethnoracial group formation (Brown and Jones 2015).

This perspective is intended to supplement and extend, rather than replace, existing frameworks for examining the links between social identities and health outcomes. It is not misguided to ask questions about ethnic self-identification or to investigate how changes in cultural identities (i.e., acculturation) might affect patterns of health behaviors and outcomes. But theoretically, it is crucial to situate such changes in a racial context and recognize the ways in which such processes are racialized. It is impossible to understand either immigration or race separately, without acknowledging the ways in which they intersect.

At a micro-level, racial formation shapes the context into which acculturation and
assimilation occur. Recent migrants, for instance, may continue to identify with their national origin, may adopt a hyphenated identity (e.g., Mexican-American), may fully identify as American, or may identify with newly constructed pan-ethnic categories (e.g., Hispanic); the option they choose can depend in part on their gender, parents’ socioeconomic status, experiences of discrimination, and other contextual factors (Rumbaut 1994). Responses of the receiving society play a large role in constraining migrant identity and integration trajectories based on historical racial markers in the society or globalized national images of the origin country’s political and economic status (Kibria 2000, 2011; Phinney et al. 2001). This has been a key insight from research on the segmented assimilation paths of new-wave immigrants. Although some migrants follow a path of linear assimilation, others experience either “downward assimilation” into a permanent urban underclass or pursue economic mobility while maintaining national and ethnic community ties (Portes et al. 2005; Stepick and Stepick 2010).

At a macro-level, the history of immigration to the United States is inextricably intertwined with race and nation-building, creating a “race-immigration nexus” of linkages among the institutions, ideologies, and practices that shape migrant integration experiences (Kibria et al. 2013). The experiences of each new immigrant group, from early European migrants to modern-day Hispanic immigrants, has been defined in the context of black-white race relations (Marrow 2011). Moreover, immigration policy often acts as a racial formation project, not only reflecting but also shaping racial dynamics of the time. This was true of the 1924 National Origins Act that restricted the influx of Southern and Eastern European immigrants in the early 20th century, as well as current policy debates about building a wall along the Mexico border and limiting the arrival of Muslim refugees.
2.3 TOWARD A THEORY OF HEALTH DISPARITIES FORMATION

In studying the formation of health disparities, I aim to understand how the sociohistorical processes of racial formation create the conditions that shape health disparities through multiple mechanisms. Phelan and Link (2015) have recognized that systemic racism acts as a fundamental cause of racial disparities through a variety of pathways, including socioeconomic status, physiological effects of experiences of discrimination, neighborhood effects tied to residential segregation, and even the loss of freedom stemming from disparities in the criminal justice system. Yet by failing to interrogate the origins of systemic racism, the fundamental cause approach is limited. It works best when analyzing black-white disparities, but it falls short when examining disparities for other minority groups who have experienced changes in social status. Beyond that, it fails to identify the underlying processes of racialization and racial formation that create and maintain many of the linking factors they identify.

As Figure 2.1 illustrates, analyzing health disparities formation does not replace other modes of analyzing the causes of health disparities. Rather, it is a step further upstream in the investigation of root causality. It further contextualizes existing approaches to examining how social behaviors and social conditions shape the distribution of illness and death. In doing so it advances the goal of understanding how differences in population outcomes are influenced by the processes that shape the populations themselves.

This goal is not entirely original. Many of the leading scholars of health disparities have incorporated sociological theory about the social construction of race and the sociohistorical processes that underly studies of discrimination (Williams and Sternthal 2010; Gee and Ford 2011; Krieger 2014). The obstacle has been empirical. Scholars have long recognized that race and ethnicity are socially constructed. But flaws have been reproduced through between-group comparisons of categorical representations of race in quantitative research.
While I cannot claim to offer an easy or comprehensive solution, I outline some conditions in which a health disparities formation perspective can be incorporated explicitly into research design.

The key for empirically testing the influence of racial formation is to identify cases in which there is variation in the social process that create and shape racial groups. To quote Nancy Krieger’s (2014) agenda for advancing the scientific study of discrimination and health:

“To research how discrimination harms health, we accordingly must draw on not only a nuanced understanding of the likely biological pathways of embodying discrimination, from conception to death, but also a finely tuned historical, social, and political sensibility, situating both the people we study and ourselves in the larger context of our times.”
Drawing on the insights from race theory, racial context can be operationalized in relation to the components of racial social construction—boundary fluidity, institutionalized categories and inequalities, and group conflict. Below, I sketch three methods for doing so. First, by looking at immigrant health trajectories, we can capture social context not when there is change in the social conditions of a place, but when there is change in the social conditions to which an individual or group is exposed. Second, historical comparative work can and has been useful for tracing the social processes that can reinforce or redefine racial hierarchies within a given society. And finally, cross-national comparison can highlight the ways in which racial categories are differently constructed and institutionalized across societies. Although this dissertation primarily relies on the first two approaches, below I offer an example of cross-national comparative research.

2.4 Testing Health Disparities Formation

Historical Comparison

Although race theorists have attempted to identify generalizable processes related to boundary formation and inter-group interaction, much of their work is rooted in historical comparison. Contemporary racial formation is analyzed not only in relation to previous eras, but is often traced back to ideological frameworks and group relations associated with European colonialism and the rise of modernity (Omi and Winant 1994). One of the clearest empirical proofs that racial categories are socially constructed is the observable variation in how races are identified and classified over time. In the United States, for example, there have been clear shifts in the definitions of blackness and whiteness over time, ranging from one-drop policies of defining blackness to early definitions of whiteness that excluded European immigrants from Southern and Eastern Europe (Lieberson 1980; Brodkin 1998; Jacobson 1999; Roediger 2006).
That racial boundaries change over time is undeniable. Health researchers can link such changes to patterns of health outcomes by leaning on the large body of historical research that documents when and where such changes occur. In Chapter 3, I attempt to do this by drawing on research about the blurring of boundaries between U.S.-born whites and European immigrants in the early 20th century to predict improvements in health disparities between the groups. Similarly, in Chapter 5 I investigate how a hardening of boundaries toward Muslims and the racialization of a Muslim identity facilitated the formation of birth outcome disparities for Muslims and Asian Indians in the decade after the attacks of September 11, 2001.

Descriptive historical comparison alone is not sufficient, however. The key is to link such changes to the underlying processes that drive them. This involves identifying the racial projects, or the context-specific interpretations of race and efforts to reorganize resources along racial lines (Omi and Winant 1994). This can be done by identifying the patterns of inter-group interactions, changes in political mobilization, and policies that institutionalize boundaries and redistribute resources. In the early European immigrant case, for example, group boundaries were often institutionalized in housing practices that pushed immigrant groups into highly-segregated neighborhoods with dilapidated conditions and few public resources. Over time, however, Europeans were re-defined as “white” in part through New Deal welfare state policies that helped facilitate upward mobility while simultaneously excluding the black population (Brodkin 1998; Jacobson 1999). These upstream processes in theory affected the underlying social conditions into which European immigrants migrated and had consequences for their health and mortality outcomes.

Through this approach we can make empirical links between health outcomes and a variety of policies and institutional configurations that lie outside the health care domain but are nonetheless influential in their effect on the underlying social conditions of minority groups. Even the racialization of the black population, which was never redefined in the way
that it was for Europeans, can be examined by identifying such racial projects. Research has shown, for example, that the abolition of Jim Crow laws had a unique impact on reducing infant death rates and premature mortality among the black population (Krieger et al. 2013, 2014). Rather than simply identifying racism as a fundamental cause of disparities, such research pushes further upstream to identify the processes that make race salient for health outcomes.

**Immigrant Trajectories**

One of my core arguments in this dissertation is that racial formation processes can also be identified in the health trajectories of immigrant groups. Because immigrants move across social contexts, their experiences are at times approached as a quasi-natural experiment, in which the effects of social context can be examined with fewer concerns about the endogenous development of structure, identity, and culture (Polavieja 2015). Immigrant health researchers have often taken this approach, but focused too heavily on the effects of changing cultural environments on identity and behaviors. Movement across contexts can also serve as a case for analyzing the effects of context-specific racial category constructions and structures. Indeed, theory on the intersections of race and immigration suggest these are crucial components to understanding what happens to migrants after migration.

An example of how immigrant health can shed light on racial health disparities was seen in the 1990s, as biomedical scientists were trying to understand racial disparities in infant birth weights. Some scientists at the time argued that genetic factors, inherent to racial groups, underlied the differences. However, an important study in the *New England Journal of Medicine* found that African-born black immigrants had birth weights similar to U.S.-born whites, both of which were higher than U.S.-born blacks (David and Collins 1997). The patterns of immigrant health provided empirical disproof of the shared ancestry hypothesis, and advanced understanding of the social determinants of racial birth weight
disparities. An important implication of this research is that it is not shared African ancestry that influences disparities, but shared African ancestry in the context of the United States racial hierarchy, that seems to shape health patterns. To understand why this happens we can draw on qualitative and ethnographic work that documents how ascriptive categorization constrains the identity choices and life chances of recent immigrants (Waters 1999).

Each of the empirical chapters in this dissertation aim to incorporate similar tests about how racial inequality shapes post-migration trajectories. In Chapter 3, I hypothesize that European immigrants who were defined as non-white in the early 20th century exhibit similar downward trajectories that we see in contemporary minority immigrant groups. In Chapter 4, I examine the segmented trajectories of black Caribbean immigrants while accounting for their encounters with interpersonal and institutionalized forms of anti-black racism. In Chapter 5, I examine the post-migration trajectories of Muslim and Middle Eastern immigrants in the context of post-2001 racialization.

The conclusions of comparing immigrant trajectories are not straightforward. Health outcomes are influenced by both sending-context and receiving-context conditions, as well as a variety of factors related to the timing of migration, reasons for migrating, and intersecting effects of gender, class, and race (Gorman et al. 2010; Read and Reynolds 2012; Hamilton, Palermo, and Green 2015). But it is likely no coincidence that the largest gap between foreign-born and U.S.-born outcomes seen in Figure 1.1 correspond with the racial hierarchy (i.e., the largest among the black and Hispanic populations). There is mounting evidence that the relative difference in racialized social status between the sending and receiving contexts influences the group-specific patterns of the epidemiological paradox (Read and Emerson 2005; Read, Emerson, et al. 2005). Expanding analysis to other immigrant groups and contextualizing their post-migration experiences can add clarity to previous research that was founded largely on studies of recent Hispanic migration.
CROSS-NATIONAL COMPARISON

Although this dissertation is limited to analysis of immigration to the United States, cross-national comparison offers another empirical approach to identifying the processes of health disparities of formation. The social exclusion of minority groups is common across societies. Yet the axes of exclusion between majority and minority groups often differ across contexts, with varying associated consequences. A turn toward cross-national comparative research has advanced understanding of the similarities in boundary-making processes that divide such groups, whether based on markers of religion, ethnicity, nativity, phenotype, or culture (Lamont and Molnár 2002; Bail 2008; Wimmer 2008, 2009; Brubaker 2009; Telles and Sue 2009). At the same time, comparative work has highlighted differences in the institutional context in which boundaries are drawn, and related implications for political, social, and economic incorporation (Alba 2005; Foner and Alba 2008; Mollenkopf and Hochschild 2010; Andrews 2014). Much like economic inequality, stratification based on ascriptive characteristics can vary across place. A major challenge to contemporary sociology is understanding these similarities and differences.

Mapping such gradients has the potential to extend theoretical development and empirical testing of the broader social forces that shape health inequalities (Beckfield et al. 2013; Olafsdottir et al. 2013). This work has already begun in analyses of socioeconomic inequalities. Cross-national comparison has provided robust empirical evidence for a generalizable association between low socioeconomic position and poor health (Kunst et al. 2005; Eikemo et al. 2008; Mackenbach et al. 2008; Elo 2009). At the same time, country-specific variation in the degree of health inequalities has allowed scholars to expand the focus on social conditions to upstream factors, such as institutional arrangements, aggregate inequality, and the structure of health care delivery (Olafsdottir 2007; Beckfield and Krieger 2009; Olafsdottir and Beckfield 2011). Most work in this area, however, has focused on
inequality related to class or, to a lesser extent, gender differences (Eikemo et al. 2008; Bambra and Eikemo 2009). Less work has been done in the area of disparities related to minority ethnic, racial, or immigration status.

Large-scale comparison of racial health disparities has proven difficult in part because the ways in which race has been historically constructed and stratified differs across societies. Although the conceptual processes of group formation are often similar, the variety of expressions can make operationalization and data harmonization difficult (Aspinall 2007). In addition, many official sources of health data do not include identifying information about race, ethnicity, or religion, particularly where the collection of such information is considered politically sensitive (Simon 2011). Comparative studies have therefore often been limited to a handful of countries (Nazroo et al. 2007; Siddiqi and Nguyen 2010; Salway et al. 2011; Siddiqi et al. 2013), reached conclusions through meta analysis (Gagnon et al. 2009; Nielsen and Krasnik 2010), or have broadly examined health outcomes of foreign-born groups without explicit comparison of health inequalities (Huijts and Kraaykamp 2012).

Although explicit cross-national comparison is beyond the scope of this dissertation, it remains an important theoretical consideration for broadly thinking about health disparities formation in part because it can help identify upstream institutional configurations that make health disparities salient. For example, cross-national comparison of health and health inequalities has helped clarify how the politics and policies of the welfare state play a major role in shaping the stratification of societies, including the stratification of health outcomes (Olafsdottir 2007; Bambra and Eikemo 2009; Olafsdottir, Bakhtiari, and Barman 2014). Yet much less is known about the specific effects on minority groups, or whether other institutional arrangements matter more for the health patterns of minority groups, particularly recent immigrants.

Early work in this area suggests it can help identify similar institutional foundations of inequality. For instance, a comparison of minority health disparities across 22 European
countries reveals that although welfare state support is associated with better health for all groups, policies aimed at political incorporation or protecting minorities from discrimination are more influential in reducing relative health inequalities (Bakhtiari, Olafsdottir, and Beckfield n.d.). Immigrant incorporation policies matter not only for citizens relative to non-citizens, but are associated with disparities between groups as a whole. In that sense, they do not affect health only by legally restricting access to certain resources, but more broadly represent the configuration and institutionalization of boundaries in a society.

2.5 Conclusion

In the chapters that follow, I present three cases that draw on the above health disparities formation perspective to understand the health trajectories of different immigrant groups that span immigration eras in U.S. history. These do not constitute a comprehensive historical analysis of immigration and health disparities in the 20th century. However, they each are an example of how expectations and findings about health trajectories, and health disparities more broadly, are tied to sociohistorical processes of racial formation. They are three examples intended to demonstrate a broader theoretical point and illustrate a larger research agenda.

Throughout the examples and in the concluding chapter, I argue that shifting theoretical focus upstream to processes of disparities formation offers three benefits for sociological studies of health inequalities. First, it reorients questions of causality to focus on the causes of identified fundamental social conditions. Although the fundamental cause perspective is very influential and useful for moving beyond studying determinants and mechanisms in isolation, it leaves the social conditions themselves undertheorized, particularly when examining racial health disparities.

Second, this approach has the potential to bridge the gap between social theory on race
and empirical research on outcome disparities. Sociologists have long conceptualized race and ethnicity as historically contingent and deeply embedded in cultural, economic, political, and social institutions (Jenkins 1994; Winant 2000). However, within the health disparities literature, race and ethnicity are often treated as fixed social categories or subpopulations that are “ritualistically” incorporated into research design, often as immutable individual traits (Shim 2005). This disconnect between how race/ethnicity are conceptualized and operationalized has led to heated debates about their validity as epidemiological variables, with some scholars questioning whether they should be included at all (Sheldon and Parker 1992; LaVeist 1994; Bhopal and Donaldson 1998; Fullilove 1998; Foster and Sharp 2002; Collins 2004; Krieger 2005). By examining the connections between the processes that simultaneously shape group formation and create disparities in group outcomes, we can avoid some of the pitfalls of previous disparities research.

Third, while this is useful for understanding how race affects health, it may also be useful for understanding the reverse. Situating health disparities in sociohistorical context can also direct attention to how health outcomes reproduce racial categories and racial inequality. For example, the barriers faced by many Hispanic immigrants to accessing health insurance or often used to justify further exclusion (i.e., public charge discourse) and group many immigrants into one category. There is also a long history of public health screening being used in immigration policy to characterize and exclude undesired groups of immigrants (Markel and Stern 1999; Mckiernan-González 2012). Beyond that, the poor health outcomes experienced by many new immigrant groups can have longstanding consequences, both later in life and for subsequent generations, in ways that limit opportunities for mobility and reproduce the social conditions that shape health inequalities.

I cannot demonstrate all of this in three empirical cases. The theoretical scope of this dissertation is broader than the analysis presented in its chapters. However, I believe it provides new directions for both theorizing and testing the formation of health disparities.
This is perhaps most evident in my first case, in which I turn to a previous era of immigration to show how a well-documented shift in racial boundaries in the early 20th century helped eliminate certain mortality disparities for European immigrants in the early 1900s.
CHAPTER 3

WHEN DISPARITIES WERE WHITE: IMMIGRANT HEALTH TRAJECTORIES IN HISTORICAL PERSPECTIVE

In 1900, the infant mortality rate in the United States for mothers who immigrated from Italy was 189 per 1,000 live births—one-third higher than the rate for native-born white mothers. For Irish immigrants, it was roughly 20% higher. Mothers from the countries of Southern, Central, and Eastern Europe—who came to make up the majority of the immigrant inflow in the early years of the 20th century—exhibited similar disparities in infant mortality rates.

The ensuing decades brought two significant changes. First, the infant mortality rates for all groups—immigrant and native—dropped dramatically. And second, by the middle of the 20th century the relative differences between white immigrants and natives all but disappeared. Similar improvements and convergence occurred for overall mortality rates and a variety of disease outcomes.¹

What accounted for these initial disparities and their subsequent decline? Although there have been few studies to examine the heterogeneity of white immigrant health and mortality rates, historical and sociological research on this era provides context for general hypothesizing. Irish immigrants were well-known targets for stereotyping and discrimination in the 19th and early 20th centuries (Kenny 2006). As immigration from Southern, Central, and Eastern Europe increased in the 1900s, so did an anti-immigrant discourse that marginalized these groups in explicitly racialized terms. Although officially listed as white on Census records, many of the social conditions that characterized life for these groups—

¹Evidence for these trends is presented in the results section and is based on data from the historical Vital Statistics Records, the U.S. Census, and previous analysis European immigrant infant mortality (Lieberson 1980).
low socioeconomic status, occupational and residential segregation, and experiences of discrimination—are considered key social determinants of poor health and early mortality for contemporary minority groups (Schulz et al. 2002; Phelan, Link, and Tehranifar 2010; Williams and Sternthal 2010).

In what follows, I use the case of European immigration to the United States to understand how the formation and stratification of racial boundaries acts as a “fundamental cause” of intra- and inter-generational immigrant health trajectories and racial health disparities. Although my analysis is confined to the early 20th century, I make two contributions that have implications for contemporary scholarship on race, immigration, and health. First, I argue that immigrant health trajectories are shaped by racial and ethnic inequality in the context of reception. In doing so, I aim to bridge a gap within the health disparities literature between studies that rely on acculturation to explain the health trajectories of immigrant groups and studies of racial and ethnic minorities that focus more on discrimination, inequality, and structural conditions (Finch et al. 2004; Holmes 2006; Yoo, Gee, and Takeuchi 2009; Acevedo-Garcia et al. 2012).

Second, I discuss how studying intra- and inter-generational immigrant health trajectories in a different era of immigration can link health disparities research to sociological theory on the formation and stratification of racial and ethnic boundaries. Scholarship on health inequalities has focused both on proximate social determinants (i.e., resource access, health behaviors, social stressors), as well as the broader social conditions that fundamentally structure the distribution of proximate mechanisms, such as racism and socioeconomic status (Phelan and Link 2015). I argue that sociologists can investigate further up the causal chain by analyzing the formation and variation of social conditions themselves. In this case, theory and research on racial boundary formation and institutionalized inequality can provide a deeper understanding of the social processes that shape both proximate mechanisms and upstream social causes of disease and mortality patterns. Early European immigration is
an ideal case for such an analysis because of the well-documented shifts in discourse and policies related to race and incorporation that facilitated both the upward mobility and the “whitening” of European immigrants in the early 20th century.

I proceed by bringing together theory on racial and ethnic boundary formation and historical accounts of European immigration to the United States. This allows me to develop a set of hypotheses about immigrant health trajectories that take into account the variable construction and stratification of group boundaries in the early 20th century. For my analysis, I draw on a variety of sources of infant, childhood, and adult mortality data from the United States Vital Statistics Records and Census Microdata spanning 1900 to 1960, which are outlined in the methods and results sections. I conclude with a discussion of the implications for our understanding of immigration, race, and health disparities. Analyzing racial boundaries and stratification in the context of reception as a fundamental cause not only accounts for European immigrants’ convergence in health and mortality outcomes during the early 20th century, but it also helps explain why the black population—as well as many contemporary minority migrants—did not do the same.

3.1 Background

As noted in Chapter 1, much of the empirical work on immigrant health outcomes has focused on contemporary immigration from developing nations to the United States and other Western industrialized countries. This paper offers a comparison case by examining the mortality trajectories of white European immigrants to the United States in the early 20th century. Immigration scholars have frequently juxtaposed early European immigration with contemporary waves in order to understand how racial inequality, labor market segmentation, and immigration policies result in different models of assimilation between the two eras (Portes and Rumbaut 2006; Restifo, Roscigno, and Qian 2013). However, this comparison
has not yet made its way into health research.

In what follows, I outline some of the ways in which the early 20th century was both similar to and different from today’s environment in terms of immigration rates, ideas about race, and the causes of illness and mortality. Because the early 1900s witnessed high rates of immigration as well as a well-documented anti-immigrant backlash, it makes for a timely comparison. Yet the vastly different disease profiles of the eras—death often resulted from infectious diseases that spread and acted quickly—allows for examining migrant trajectories while temporarily setting aside contemporary assumptions about the importance of factors such as diet, exercise, and substance use. Investigating the effects of social conditions across contexts of changing disease profiles and causes of death is central has been central to theorizing about the fundamental causes of health and illness (Link and Phelan 1996, 1996).

**EUROPEAN IMMIGRATION IN THE EARLY 20TH CENTURY**

Early immigration to the United States came in waves, with each wave composed of different origin groups. Before the turn of the 20th century, most immigrants arrived from Northern and Western Europe. In the 1860s, for example, immigrants from Germany, the United Kingdom, and Ireland made up 80% of all new arrivals (see Figure 3.1). Canada and other countries of Europe, particularly Scandinavian countries, accounted for much of the remaining influx.

By the early 1900s, however, immigrants began arriving from other parts of Europe, particularly Southern and Central/Eastern Europe. In the 1920s, the majority of new arrivals hailed from Italy, Russia, and Austria-Hungary. These new groups of Europeans not only came to represent the largest proportion of immigration, but they also came in greater numbers. The inflow grew in the early 20th century into the largest wave of immigration the country had seen, with a peak of more than 8 million arrivals between 1909 and 1919.

This period makes for an important comparison because, in absolute size of immigration,
it was second only to the most recent wave of immigration to the United States. In relative terms, immigrants actually represented a larger proportion of the population than documented migration does today. Another parallel is seen in the response to immigrants and immigration. As more immigrants arrived, they were greeted by a growing anti-immigrant hostility that made its way into politics, labor organizing, housing patterns, and immigration policies. This hostility built until 1924, when Congress passed the National Origins Act, and severely restricted new migration by establishing quotas that targeted Southern and Central/Eastern European arrivals.

An example of the climate can be seen in the political language used during the debate of the 1924 legislation. In a speech leading up to the vote, Ellison DuRant Smith (1924), a U.S. Senator from South Carolina, said on the Senate floor:

“Thank God we have in America perhaps the largest percentage of any country in the world of the pure, unadulterated Anglo-Saxon stock; certainly the greatest
of any nation in the Nordic breed. It is for the preservation of that splendid stock that has characterized us that I would make this not an asylum for the oppressed of all countries, but a country to assimilate and perfect that splendid type of manhood that has made America the foremost Nation in her progress and in her power, and yet the youngest of all the nations.”

In this language, as well as from other examples from the period, one can see both the anti-immigrant politics as well as the racialized language that characterized such debates. Although European immigrants were officially classified as white in Census documents, historians and sociologists have documented a different racial logic of the period that dissected the white/European population into a hierarchy based on what were considered inherent differences between Anglo-Saxon and Nordic Europeans and more recent arrivals from Southern and Central/Eastern Europe (Brodkin 1998; Jacobson 1999; Roediger 2006).

**Racial Formation in the Early 20th Century**

Much of the early theorizing about the construction of racial boundaries was derived from research on the processes by which certain groups of European immigrants transitioned from marginalized minorities to members of the white majority. Immigrants arrived not only to a climate of growing nativism, but nativism rooted in a racial logic that dissected the white/European population into groups of “Celts, Hebrews, Teutons, Mediterraneans, and Slavs” (Jacobson 1999). Such work has highlighted how racial boundaries and discrimination not only vary across time and place, but also how such social processes can shape and stratify outcomes related to economic success, incarceration and crime, political participation, and societal assimilation (Lieberson 1980; Muller 2012; Olzak and Shanahan 2014). Yet despite a large body of research in this area, little is known about the health and mortality disparities of various European immigrant groups in this era.
Although there is debate about the brightness of boundaries between native-born whites and European immigrants—particularly whether such groups were truly marginalized relative to blacks and other groups of color (Fox 2010)—differences between various immigrant groups were often portrayed as inherent and fixed. Throughout the media and public discourse, it was not uncommon to see references to Irish physiology, Slav character, or other racialized trait descriptions. Eugenics science provided a language for explaining social position as an outcome of genetic makeup and group strength, and helped maintain a racial hierarchy that favored those of Nordic, Germanic and Anglo-Saxon heritage, who happened to also be among the first settlers and migrants to the United States.

For a period, then, certain European immigrant groups occupied a “middle tier” in the U.S. racial hierarchy. They were not subject to the same level of discrimination, exploitation, and racialization as the black population. However, they also were not considered full members of the Anglo-Saxon/Nordic white population at the top of the hierarchy. Irish immigrants were the first occupants of this middle tier status in the 19th century, but in the early 20th century Italians and Jewish immigrants from Central and Eastern Europe were growing targets of discrimination and racialization.

The configuration of boundaries between European immigrants and U.S.-born whites had health and mortality implications because of resulting material consequences. Many immigrants were excluded from certain jobs—as symbolized in the iconic “Irish Need Not Apply” advertisements—or limited to low-wage work. At times, avenues to political office and other civic institutions were closed off. The sentiment of racialized nativism occasionally manifested in lynchings of Italian or Jewish immigrants (Jacobson 1999).

Discrimination was also institutionalized at a variety of levels. For instance, group boundaries were often visible in segregated housing practices. Many immigrants were congregated in urban areas, where they were closely packed together and sanitation was poor and there were few resources available (Riis 1901).
of the leading causes of death were infections diseases, like cholera or tuberculosis, which could spread easily, with devastating consequences, in such close quarters.

Importantly, these racialized boundaries and experiences of discrimination changed over time and varied across place. As a large body of historical and sociological work documents, “non-white” immigrants were able to transition from the “middle tier” of the U.S. racial hierarchy to undisputed members of the white majority throughout the 20th century (Lieberson 1980; Brodkin 1998; Jacobson 1999; Roediger 2006). The factors that facilitated this transition—and how it varied across time and place—offer insight into the possible ways in which the racial politics of the era may have shaped health patterns. These broad transitions in racial classification and social status for European immigrants provide a case for considering the link between the sociohistorical processes of racial formation and group health and mortality outcomes.

**THE CAUSES OF HEALTH INEQUALITIES IN THE EARLY 20TH CENTURY**

Although early European immigrants experienced social conditions that are often associated with health disparities for minority populations, little is known about patterns of health and mortality disparities within the European/white population during this time. Moreover, it is unclear whether early immigration to the United States is characterized by similar patterns of health selection or negative acculturation that is seen with contemporary immigrant groups. For early European immigrants, initial selection mechanisms were certainly in place—immigrants arrived via often-perilous journeys by ship, and the United States ramped up “health screening” policies at the ports in conjunction with the nativist movement of the early 20th century (Markel and Stern 1999). Yet it is possible that health selection might be less impactful in an era of high mortality from infectious diseases, rather than chronic conditions, and when return-migration late in life was not as feasible.

The second part of the immigrant health pattern—the worsening outcomes associated
with duration of residence—is more relevant for the current analysis. These changing patterns of health outcomes associated with intra- and inter-generational integration—which I refer to as migrant health trajectories—are useful for theorizing the formation of health inequalities. Because immigration involves movement from one social context to another, post-migration experiences can illustrate the links between social conditions and health. If duration of residence is conceptualized as an indicator of “exposure” to the context of reception, health trajectories can be interpreted as the changes in life chances associated with greater exposure to certain social conditions.

For marginalized minorities, in particular, greater duration of residence may entail greater cumulative exposure to a range of mechanisms (medical care disparities, resource barriers, psycho-social stressors, etc.) that can have a detrimental effect on health outcomes across immigration eras. A large and growing body of literature has documented the harmful health and mortality consequences of discrimination (Krieger 1999; Gee 2002; Mustillo et al. 2004). Discrimination has been associated with higher mortality, low birth weights, higher risk of cardiovascular disease, and lower self-rated health, among other conditions. In fact, discrimination may be a key determinant of the persistent black-white gap in health and mortality throughout the history of the United States. Yet we do not know if discrimination experiences had similar consequences for early European minority groups.

The literature on immigrant health is also particularly disconnected from one of the most influential theoretical perspectives in the area of health and health inequalities, which seeks to look beyond individual-level mechanisms to conceptualize social conditions broadly as a fundamental cause of disease. Social conditions are considered causally “fundamental” because they shape access to resources—both material and symbolic—that can be used to avoid risks or minimize the consequences of disease after it occurs, even as more proximal risk factors and linking mechanisms change (Link and Phelan 1995, 1996). In this sense, social position acts as a “cause of causes” or “risk of risks” (Link and Phelan 2010) that
shapes a “massive multiplicity of connections” to more proximate disease mechanisms (Lutfey and Freese 2005). Although much of the early work in this area focused on socioeconomic status, racism in the United States also shapes a “massive multiplicity” of mechanisms that affect health, including discrimination experiences, as well as neighborhood effects, socioeconomic differentials, medical care disparities, and risk exposures (Phelan and Link 2015).

The relatively good health of new immigrants has made empirical connections to fundamental cause theory difficult. However, if social conditions are indeed a fundamental cause of health and health inequalities, immigrants are not likely exceptions to such influences. Rather, the accumulation and use of resources to improve health and prevent disease is context specific. Therefore, the effects of social conditions are better seen in the trajectories after migration, in how and why health patterns improve or worsen with greater duration of residence. My argument, in other words, is that race acts as a fundamental cause of health for immigrants, just as it does for racial minorities, yet its effects are seen in post-migration health trajectories, rather than straightforward between-group comparisons.

It is possible to push the fundamental cause perspective further. Racism has been theorized as a fundamental cause of the black-white health and mortality gap, operating through a variety of mechanisms (Phelan and Link 2015). I argue for taking the “cause of causes” approach to examining racism itself in health disparities research. Sociologists are well-equipped to look further up the causal chain at the social processes that shape the construction and stratification of racial and ethnic boundaries. Although health disparities scholars have paid attention to the consequences of racial inequality, less attention has been paid to the links between racism and racial formation, or “sociohistorical processes by which racial categories are created, inhabited, transformed, or destroyed” (Omi and Winant 1994:55). The fundamental cause perspective is most often applied to the black-white binary, which has been remarkably static throughout U.S. history. But what happens to
health and mortality patterns when boundaries are redrawn or the racial hierarchy realigns? Taking such an approach has the potential to resolve a lingering tension between how race is conceptualized—as constructed and dynamic—with how it is operationalized or interpreted in health disparities research.

**HYPOTHESES**

Based on the above review of race and immigration in the early 20th century, I develop a broad set of general expectations/hypotheses.

First, I expect patterns of mortality to correspond to European immigrants’ “middle tier” status in the U.S. racial hierarchy and vary based on the degree of racialization of each group. If race/racism act as a fundamental cause of health, it does not do so invariably but is tied to the socially-defined racial hierarchy of a time and place. In the early 20th century, U.S.-born whites and immigrants from Northern and Western Europe were at the top of that hierarchy, while immigrants from Southern and Eastern Europeans were marginalized to a lesser degree than the black population.

Second, I expect the health trajectories (i.e., the association between duration of residence and mortality patterns) to similarly correspond to each group’s status within the racial hierarchy in the context of reception. As mentioned above, post-migration trajectories provide a case for examining the effects of exposure to social conditions. This would generally correspond to worsening outcomes for marginalized migrants from Southern, Central, and Eastern Europe, but possible improving outcomes for migrants from Northern and Western Europe.

Third, potential health disparities between foreign- and native-born whites should vary across place, with fewer disparities in areas where the boundaries are blurred, as indicated by residential segregation rates or the relative size of the immigrant population. Examining such variation across context can provide an understanding of how race and ethnicity—as
social constructs/processes—matter to health and health inequalities.

Similarly, as the social boundary between native and foreign-born whites became blurred and eventually became non-distinct over time, the patterns of health and mortality disparities that might be influenced by discrimination, SES, and access to other resources should also have changed. I expect a general convergence over time with that of the native-born white health and mortality patterns.

3.2 METHODS

I have compiled a variety of sources that allow me to approach the analysis of European immigrant health trajectories from multiple angles. These range from a broad view relying on national-averages over time to a more detailed analysis of cross-sectional individual-level data. The separate findings of these analyses are presented in the results section, and I discuss how they work together to address my research question in the discussion. The analysis can be divided into the subsections I outline below.

PART 1: INDIVIDUAL LEVEL (1910)

The first step of my analysis is cross-sectional and at the individual level. Because it allows for comparison of outcomes based on country or region of origin, this section addresses two questions about European immigrant health trajectories. First, how did the racialization of various European groups affect their mortality outcomes, relative to native-born whites and blacks? Second, how did duration of residence affect the health and mortality patterns of immigrants during this era?
DATA

For Part 1, I use individual-level data from the 1% sample of the 1910 Census provided by the Minnesota Population Center’s Integrated Public Use Microdata Series (Ruggles et al. 2010) to examine excess childhood mortality. The 1910 IPUMS dataset is a 1-in-100 sample of the United States population, including Alaskans, Hawaiians, and persons enumerated on the American Indians schedules. The 1910 sample is one of the only to include data on total number of children born and total number of children surviving, which are used to estimate excess childhood deaths. Because information on marriage duration is used to estimate exposure to risk for children of the respondent, women who have been married more than once are excluded from the analysis, following Haines and Preston (1997). The final sample consists of women ages 14-49, who are not missing birth or marriage data.

MEASURES

Excess childhood deaths: Although individual-level data on mortality are not available, researchers have used indirect methods to estimate childhood mortality using available information in Census reports (United Nations 1982; Haines and Preston 1997). Using two key pieces of information—number of children ever born to a mother and number of surviving children—I adapt these methods to estimate excess child mortality at the individual level for mothers in the 1910 IPUMS dataset. Childhood mortality encompasses both infant mortality and deaths occurring after the first year of life. In this sense, it can be an indicator of both maternal health (a factor in infant mortality) and the health of her child. Because the major causes of death were infectious diseases, such as typhoid fever or malaria (Durand 1911), the effect of acculturation on health behaviors is less relevant than it is to contemporary studies of immigrant health.

Measures of excess deaths are often calculated at the group level as the number of
observed deaths in the population minus an estimate of the expected deaths, based on some conditional prediction. Although general measures of excess death are not typically measured at the individual level for general mortality (i.e., every person has one observed and expected death), the possibility of multiple births per woman allows for variation in both observed and expected childhood mortality. The observed deaths per woman are calculable from the 1910 IPUMS dataset using information on the number of children born and the number of surviving children.

Estimating the number of expected deaths can be approached in a number of ways. Scholars have used information about the duration of marriage to calculate possible exposure to risk of death for children before a certain age. This can be combined with model life tables to adjust the probability to a certain population (in this case, estimates for Western Europe provided by the United Nations). Following the examples provided by Haines and Preston (1997), I multiply these estimates by the number of children born to a given mother to provide an expected number of deaths at the time of the 1910 census. Details on the method can be found in their Appendix:

\[
\text{EXPECTED DEATHS} = \left[ \frac{q(x)s}{k(i)} \right] \times \text{CEB}
\]

CEB = children ever born  
q(x)s = probability of dying between birth and exact age (x) in a standard life table  

Gutmann et al. (2000) use similar data to calculate childhood mortality ratios at the individual level (i.e., observed deaths divided by expected deaths). However, the zero numerator for “observed deaths” wipes out all variation for mothers who have not lost a child. While not a problem when pooled at the group level, at the individual level, the index would be zero for any mother reporting zero deaths, regardless of family size. Using a
measure of excess mortality instead (observed – expected), includes zero-death respondents in relation to the number of expected.

*Origin groups:* My key comparison focuses on differences between immigrant groups of various European origins. Using information on the birthplace of the respondent and the respondent’s mother and father, I divide immigrants into four regions of origin: 1) Northern and Western Europe, 2) Ireland, 3) Southern Europe, and 4) Central and Eastern Europe. These distinctions correspond roughly to different waves of immigration to the United States (with Northern and Western Europeans arriving the earliest), as well as symbolic and social cleavages based on religion, culture, and ideas about racial difference.

The largest non-European group of white immigrants was from Canada and was coded as an “other” fourth group (results are not presented here). However, there was a significant group of immigrants from Canada whose parents were both born in Ireland, and these migrants were coded similar to other Irish immigrants. See Table A.1 in Appendix A for a list of countries and frequencies for each origin group.

For samples that include both immigrants and natives, the origin groups include second-generation immigrants. Birthplace data for each respondent’s mother and father are coded into the categories listed above. However, individuals are only included as members of the second generation if both their mother and father were born in the same origin region.

*Individual-level controls:* The key variable of interest for much of the analysis is duration of residence in the United States. Using reported information about the year of immigration, I calculate a continuous measure of duration of residence for each respondent. This variable is only included in models that use an immigrant-only subsample.

Other independent variables include proxies for assimilation and/or controls often related to health outcomes. Age and age-squared (to account for a non-linear effect on infant mortality as mothers aged) are included as continuous measures. A binary variable indicating whether the individual lived in a rural (0) or urban (1) environment is included.
to capture differences in settlement patterns between immigrants and natives, as well as geographic differences in health outcomes. Rural areas tended to report better overall mortality and health outcomes during this period.

To assess the effect of socioeconomic status, the relative occupational prestige of each group was derived from Duncan’s Socioeconomic Index (SEI) as reported in the IPUMS microdata. The SEI is a measure of occupational status based on prestige ratings from the 1947 National Opinion Research Center (NORC) survey, the income level, and educational attainment associated with each occupation, as calculated in 1950 (Duncan 1961). The SEI is useful because it captures multiple dimensions of socioeconomic status and scores do not vary across Census years. Because most women in the 1910 Census were not actively in the labor market, average household SEI scores were calculated.

Finally, a binary variable representing English-language ability was included (0 = does not speak English, 1 = speaks English). Language ability is commonly included as a proxy for acculturation in research on immigrant incorporation.

**Analysis**

The analysis for part one proceeds in several steps, each focused on a slightly different question about childhood mortality patterns of immigrant and minority groups. In the first stage, I am interested in how immigrant groups from various European origins compare to native-born whites and blacks. Using OLS regression, I compare expected childhood mortality rates between Northern/Western European immigrants, Irish immigrants, Southern European immigrants, Central/Eastern European immigrants, and native-born blacks, with native-born whites as the reference group. After establishing age-adjusted difference, I control for location (rural vs. urban), SEI, and English-speaking ability, to gauge the importance of assimilation factors.

The second question I am interested in is whether duration of residence in the United
States is beneficial or harmful for the childhood mortality outcomes of various immigrant groups. For this analysis, I use a subset of the original sample that only includes first-generation immigrants for whom duration of residence information is available. After establishing the average effect of duration of residence in the baseline model, I include interactions between duration of residence and region of origin to investigate whether the effect differed between different European-origin groups. Again, I conclude this stage of analysis with controls for location, SEI, and English-language ability.

**PART 2: CITY LEVEL (1900-1920)**

The second section of my analysis relies on city-level adult mortality data to address questions related to the context of reception. The disadvantage of this approach is that comparison based on country or region of origin is no longer possible. However, the data does allow for examining how characteristics such as the level of segregation between immigrants and native-born whites, the size of the immigrant population, and other indicators of the social barriers between the two groups may have affected patterns of mortality.

**DATA**

Drawing on data from the Vital Statistics of the United States, I analyze mortality patterns for first- and second-generation European immigrants, blacks, and native whites in 1900, 1910, and 1920. These annual reports of deaths in the United States are compiled by the National Center for Health Statistics and can be combined with U.S. Census data—collected from the Integrated Public Use Microdata Series (IPUMS)—to produce mortality rates by race and nativity status (Ruggles et al. 2010). Early mortality report published by the U.S. Census contained tables showing nativity of parents as well as nativity of decedent, allowing a distinction of first- and second-generation migrants by race.

There are differences between the waves that make direct comparison challenging. The
1900 report includes state-level and city-level age-adjusted rates. It offers two sets of corrected rates: One adjusted based on the age distribution of the native white population (white native parents), and another based on the distribution of the foreign white population. However, the 1900 registration area only includes nine states (CT, DC, ME, MA, MI, NH, NJ, NY, RI). Subsequent waves expanded the registration area to include more states. The 1910 and 1920 reports are very similar, in that they include both state and city-level absolute death numbers. In addition, they provide rich detail on nativity status and parent nativity, distinguishing when one or both parents are foreign, as well as noting when the origin of one or both parents is unknown.

There are two additional inconsistencies across years. First, the second generation is measured differently. In 1910 and 1920, separate data is provided for second generation (two parents foreign) and the 2.5 generation (one foreign parent). In 1900, however, the two categories are lumped together. Two codings were therefore tested, one measuring only the literal second generation, and another looking at anyone who had at least one foreign parent. However, results in this paper reflect the alternative coding only (i.e., anyone with one foreign-born parent). Second, there were inconsistencies in how race was reported across the waves. In 1900, death rates were reported for “colored” populations. In 1910, there were two categories: “Negro” and Indian/Chinese/Japanese. For the purposes of this paper, only rates for the black population are used.

Measures

Dependent variables: Two sets of dependent variables are used for the analysis. First, mortality rates are calculated for each group. The numerator is derived from death totals by race, nativity, and parent nativity in Vital Statistics of the United States reports, 1900-1930. At the city level, population figures for the denominator come from IPUMS samples of Census micro data. Data presented in this version are based on rates corrected using the
indirect method of standardization to account for age differences across populations. Indirect standardization is applied by first calculating a standardized mortality ratio, with age-specific death rates for the total population of registration states used to calculate an expected number of deaths for each group. Rates were calculated based on the following age groups: Under 5, 5 to 19, 20 to 39, 40 to 59, and 60 and over. Dividing the observed deaths by the expected produces the ratio. This is then multiplied by the crude mortality rate for each group, in each year, to produce the final mortality rate.

The second dependent variable is a mortality ratio between groups to measure relative health inequalities. The ratio is calculated by dividing the corrected mortality rate for one population by the mortality rate for another, to represent the relative difference between the two. Three sets of mortality ratios are calculated: first-generation immigrant to native white, second-generation immigrant to native white, and the ratio between second- and first-generation immigrants.

**Independent variables:** Independent variables include information on population composition and the relative occupational status of each group. Data on population size come from U.S. Census for each year and for each of the 64 cities. The proportions of blacks, first-generation white immigrants, and second-generation white immigrants were calculated relative to the total population of each city. Again, only cities over 100,000 population were used due to limitations of the 1% samples of IPUMS data.

A dissimilarity index, measuring residential segregation, was calculated for each city based on political ward-level IPUMS data. The ward data are not without flaws. Census enumerators often neglected to note ward locations, and ward shapes and sizes varied from city to city and over time. However, they are the best-available data for residence location in 1910 and are sufficient for a crude calculation of city-level segregation.

The relative occupational prestige of each group was derived from Duncan’s Socioeconomic Index (SEI) as reported in the IPUMS microdata. The SEI is useful because it
captures multiple dimensions of socioeconomic status and scores do not vary across Census years. However, because the index is based on 1950 data and assessments are applied retroactively, it is possible that occupational prestige was gauged differently in previous decades. Average SEI scores were calculated for each minority group by city, in order to compare, for example, the average SEI for black versus immigrant populations in a given location.

ANALYSIS

The analysis for Part 2 looks at patterns of mortality between cities between 1900 and 1920. After examining some initial bivariate correlations, I run two sets of fixed-effects regression models to control for unmeasured heterogeneity between cities. The first examines the effect of segregation between immigrants and native-born whites and the immigrant population size, while controlling for other demographic characteristics, such as indicators of SEI for immigrant and black populations in each city. These models are run for mortality rates. The second set relies on similar predictors but uses mortality ratios for the dependent variables. These capture the relative difference between groups. I look at the ratios for first-generation immigrants relative to native-born whites, second-generation immigrants relative to native-born whites, and second-generation immigrants relative to the first-generation in each city.

It is important to note that all analysis is at the aggregate level, and individual-level measures of mechanisms are not available. Rather than testing individual-level determinants of health, this analysis is interested in the patterns of social conditions that may have shaped a variety of more proximate mechanisms.
**PART 3: NATIONAL LEVEL (1900-1960)**

Finally, I pull together sources of aggregate national data to examine broad changes throughout the 20th century. The analysis at this stage is relatively simple and focuses on plotting childhood and infant mortality rates to assess the hypothesis that the health and mortality patterns for European immigrants converged with those of native-born whites in the early 20th century. If racial inequality is a fundamental cause of health and mortality, the realignment of the racial order (i.e., the “whitening” of European-origin immigrant groups) should correspond to decrease in disparities between groups during the same period.

### 3.3 RESULTS

**PART 1: INDIVIDUAL LEVEL (1910)**

*Did European immigrants have higher rates of childhood mortality than native-born whites?*

Looking first at comparisons in the entire population, child mortality differences match up fairly well with known ethno-racial boundaries and inequalities in 1910, supporting the “middle tier” hypothesis. Immigrants from Ireland, Southern Europe, and Central/Eastern Europe had significantly higher rates of excess child mortality relative to native-born whites, yet experienced fewer deaths than the African American population. However, excess child deaths for immigrants from Northern and Western Europe—who arguably faced some of the lowest boundaries to integration and “whiteness”—were roughly equivalent to their native-born white counterparts (Figure 3.2). While previous research has found general immigrant-native differences among those classified as white during this period, these findings highlight the importance of considering the variability within the European immigrant group. It is worth noting that comparisons at this stage include both first- and second-generation immigrants, which may mask inter-generational health trajectories.

Additional controls are introduced to the comparison in Table 3.1. The second model
controls for household SEI and whether the household was in an urban or rural environment. These factors do account for a portion of the relative excess mortality for all groups except native-born blacks, although the significant differences remain. Although the measure of socioeconomic status is imperfect, the fact that disparities remain after accounting for SEI is important and would be expected under conditions of prolonged discrimination and disadvantage.

Much of the reduction in the effects from Model 1 is related to where immigrants lived. Rural areas in general had lower rates of mortality in this period, in part because of poor sanitation and living conditions in large urban centers. This is further illustrated when an interaction is introduced to highlight the relative urban vs. rural differences for each group. All groups except Central/Eastern Europeans reported worse health in urban environments than in rural ones. The urban-rural difference was particularly large for Northern/Western European migrants. In rural areas, they report better childhood mortality outcomes than native-born whites, whereas their rates of excess death are slightly higher in cities.

Another major factor was English speaking ability. This is a commonly-used measure
Table 3.1: Excess Childhood Mortality by Nativity, Race, and Origin

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<th>Model 3</th>
<th>Model 4</th>
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*** p < 0.001, ** p < 0.01, * p < 0.05
of “acculturation” in contemporary research on immigration and may serve as a proxy for acculturation/integration of white European migrants during this period. Although both first- and second-generation immigrants are included in these analyses, the English-speaking variable primarily applies to the first generation. By the second-generation, at least 95% of all groups reported speaking English. In the first generation, roughly half of Central and Eastern European immigrants did not speak English, and this seems to account for much of the differences in outcomes in groups other than the Irish.

How did duration of residence affect childhood mortality outcomes?

One of the primary objectives of this paper is to compare the effects of duration of residence—or exposure to a specific social context—on the health outcomes of new immigrants. Table 3.2 includes results for regressions that only include the first-generation immigrant population for which duration of residence data applies. As the first model shows, child mortality outcomes tended to improve with greater duration of residence in the United States for the pooled group of immigrants (alternative models tested duration as a five-category factor variable rather than continuous, and included squared terms to test for non-linearity. See Appendix A2). On average, roughly 12 years after immigration, the predicted number of excess child deaths drops from 1 to 0, after controlling for age. This finding is noteworthy in itself because it contrasts with the association with duration of residence seen for contemporary immigrant groups.

As suggested in the previous analysis, however, each European immigrant group had unique integration experiences and different relative mortality outcomes during this period. The second model includes an interaction between duration of residence and the indicator of region of origin. The results add perspective to the disparities found in Table 3.1. Although duration of residence is generally associated with fewer excess child deaths, the effect is not
Figure 3.3: Excess Child Mortality by Duration of Residence

as great for Irish immigrants or Southern Europeans. Figure 3.3 plots the predicted deaths for each group.

The gently rising slopes for Irish and Southern European migrants contrast with the declining slopes of other groups, suggesting the rates of childhood mortality may have increased—or at least shown no improvement—with greater duration of residence in the United States for the former. In other words, the childhood mortality trajectories for Irish and Southern European immigrants looked similar to those for contemporary migrants (i.e., worse outcomes with greater duration), and improvement with duration of residence was primarily seen for immigrant groups who faced fewer barriers to incorporation. Surprisingly, Central and Eastern Europeans saw the largest benefits associated with duration of residence, even greater than those for Northern Europeans. For these groups, duration of residence was associated with better childhood mortality outcomes.²

When controlling for income, location, and English-speaking ability, in the third and

²Although this analysis is interested in the “treatment effect” of duration of residence in the United States, it is possible that differences are related to pre-migration experiences in the sending country. Including sending-country life expectancy in the models did not substantially change the results. Those results are not included here because the life expectancy data is incomplete.
Table 3.2: Duration of Residence Effects by Region of Origin

<table>
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<td>(0.18)</td>
<td>(0.18)</td>
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<td>-0.01</td>
<td>-0.01</td>
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<td>0.00*</td>
<td>0.00**</td>
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<td>(0.07)</td>
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</tr>
<tr>
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<td>0.10*</td>
<td>-0.02</td>
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<tr>
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<td>0.13***</td>
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<td>-0.00*</td>
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<tr>
<td></td>
<td>(0.00)</td>
<td>(0.00)</td>
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</tr>
<tr>
<td></td>
<td>0.13***</td>
<td>0.14***</td>
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<td>(0.02)</td>
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<td>0.01</td>
<td>0.02</td>
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<td>9.82</td>
<td>9.81</td>
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fourth models of Table 3.2, the differences between Northern/Western and Central/Eastern European immigrants are reduced. Excess child mortality declines with duration for both groups. For Irish migrants, however, the predicted number of excess child deaths actually increases with greater duration, after controlling for the full set of acculturation and integration variables. Although the household measure of SEI used in this dataset is an imperfect measure, the results hint at a possible disparity that is not fully accounted for by barriers to employment and other socioeconomic resources.

**PART 2: CITY LEVEL (1900-1920)**

*How did segregation and population characteristics affect European immigrant mortality rates?*

Although the individual-level analysis in the previous section allows for comparison of various origin groups, the data was limited to the 1910 census microdata. Using a longitudinal set of city-level data, this section is interested in a different set of questions. Although this set of data does not allow for disaggregation by region of origin, it is possible to examine how and why immigrant mortality rates and disparities between immigrants and native-born whites in general might have varied across time and place. Specifically, were mortality rates and mortality inequalities lower in contexts where barriers between immigrants and native-born whites were lower?

Looking first at descriptive statistics for comparisons of the cities included in the dataset, two patterns stand out. First, the highest mortality rates for white immigrants tended to be in cities in the Southern and Western parts of the United States. These are also cities in which immigrants made up a smaller portion of the overall population. Indeed, there is an initial correlation between first-generation immigrant mortality rates and the relative size of the immigrant population (R = -.45, p < .001). One possible explanation is that a larger immigrant population provided a degree of ethnic social capital or similar conditions that
allowed new immigrants to settle and achieve some level of economic success. However, this seems to contradict expectations from some of the historical literature, which noted that boundaries between immigrant and native whites were lower in rural areas of the South and West.

A second, and related, observation is that the differences in mortality rates between first- and second-generation immigrants (i.e., the relative mortality ratio) tended to be higher in these same regions, and in cities with smaller immigrant populations. This is not only due to higher first-generation mortality in these cities, but also due to lower second-generation mortality rates. The correlation between second-generation mortality and the relative size of the immigrant population is positive, and opposite that of first-generation immigrants (R = .42, p < .001).

The relationships between mortality rates for these groups and the population size may be skewed in part by the greater likelihood of error due to the smaller numbers of both the numerator and denominator. However, the initial pattern is consistent with the “group threat” explanation of intergroup conflict, in that it may have been easier for second-generation immigrants to integrate into the white population—and, in turn, reap the health benefits of higher social standing—in areas with a smaller immigrant presence. In other words, a large immigrant population may be beneficial for first-generation immigrants, but may act as a barrier for intergenerational incorporation.

Table 3.3 presents the results of regression models that further test the relationship between city characteristics and overall mortality rates. In the first set of models, I test the relationship between the segregation of the immigrant population and first-generation mortality rates. Segregation between immigrants and native-born whites is not related to first-generation mortality rates, either in the first model or when controls are added. In the second model, the size of the immigrant population remains associated with lower mortality rates, as does the average duration of residence for the city. Surprisingly, a higher average
Table 3.3: Fixed-Effect Regression Results of Mortality Rates for First and Second Generation Immigrants (1900-1920)

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<td>(18.86)</td>
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<td>(8.82)</td>
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***p < 0.001, **p < 0.01, *p < 0.05

socioeconomic index for the immigrant population is associated with a higher mortality rate.

The second set of models examines the same relationship for the second generation. In model 1, the Duncan segregation index is positively associated with the overall mortality rate. However, after controlling for city fixed effects and population characteristics, the positive relationship is no longer significant. The positive relationship between the size of the immigrant population and the second-generation mortality rate remains. Although adding controls for SEI reduces the effect, it remains significant in the second model.

Table 3.4 runs similar analyses but looks at relative inequalities (i.e., mortality ratios) rather than rates of death. Here, the general direction of effects are similar. For first-generation immigrants (columns 1 and 2), segregation between immigrants and native-born whites is not predictive of relative mortality differences between the two groups, although the size of the immigrant population remains a significant predictor. In cities with larger
immigrant populations, the relative inequality between first-generation immigrants and native-born whites tends to be lower. For instance, in Nashville and Louisville, which had small immigrant populations, the mortality rate of first-generation immigrants was nearly four times higher than that of native whites. In many Massachusetts cities, however, the rates were nearly identical.

For the second generation, segregation rates were again more predictive (columns 3 and 4). In cities with higher levels of segregation between immigrants and native-born whites, second generation immigrants had higher mortality rates, relative to native-born whites. If the second generation were assimilating into the native-born white population, a mortality ratio approaching one would be expected. The higher ratios in areas of greater segregation may indicate barriers to assimilation that had health and mortality consequences.

In addition to looking at inequalities relative to whites, Table 3.4 includes models measur-
ing the relative mortality ratios between second-generation immigrants and first-generation immigrants (columns 5 and 6). This is a rough proxy of the inter-generational health trajectories associated with assimilation. Again, the relationship is positive, suggesting greater relative inequalities in cities with a larger immigrant presence. In most areas, second generation immigrants tended to be healthier than their first-generation counterparts. In many cities where immigrants made up less than 20 percent of the population, the second generation mortality rate was roughly half that of the first-generation. But in many Northeastern cities with larger immigrant populations, the second generation was not significantly healthier than the first.

**PART 3: NATIONAL LEVEL (1900-1960)**

*How did childhood and infant mortality differences change over time?*

Changes over time in the boundaries separating European immigrants and native-born whites are important for understanding the racial dynamics of the early 20th century. Unfortunately, the current data do not allow for longitudinal comparisons over the full period of interest that are disaggregated by country or region of origin. However, U.S. Vital Statistics reports continued to collect information on general differences between foreign-born and native-born whites into the 1960s.

Figure 3.4 illustrates the changes in infant and childhood mortality rates for foreign-born and native-born whites between 1900 and 1960. The relative differences in infant mortality (deaths under 1 year of age) are relatively small, and rates declined dramatically throughout the first half of the 20th century. It is unclear whether the spike in the infant mortality rate for foreign-born whites is related to a data/measurement error or is related to actual changes in the rates related to the Great Depression, changes in immigration policy, or another external factor.

The data for childhood mortality (ages 1-4) are more consistent with the expected trend
of convergence as ethno-racial boundaries shifted throughout this period. Both groups saw improvements in mortality rates for this age range, and the gap between immigrants and native-born whites appears to have shrunk, although the relative difference fluctuated even into the 1960s. It is worth noting that the overall mortality rate for foreign-born whites during this period failed to drop in parallel to native-born whites, but that may reflect, in part, the age and demographic composition of the immigrant population after the 1924 National Origins Act restricted the flow of newcomers.

While disaggregated data is not available for the full 1900-1960 period, it is possible to observe trends in immigrant convergence over a shorter period. Figure 3.5 presents changes in infant mortality rates by country of origin and race, based on data originally analyzed by Lieberson (1980). One can see the dual trends discussed earlier in the paper. Between 1900 and 1932, infant mortality rates fell dramatically for all groups.

In addition, there was a relative convergence, particularly between various groups of European immigrants and native-born whites. The coefficient of variation for all “white” groups, foreign-born and native-born, fell from 17.9 in 1900 to 13.9 in 1932. If the
comparison begins at 1917 instead of 1900 (which seems to contain anomalous data for Austrian and Polish immigrants) the convergence is more pronounced, falling from 29.4 to 13.9 in the span of 15 years. This trend suggests a convergence in health/mortality patterns as racial boundaries shifted and facilitated European immigrant mobility heading into the middle of the 20th century. However, without disaggregated data for the second generation in this comparison—they are included with native-born whites—it is difficult to fully assess inter-generational trajectories.

Looking at similar trends for the black population, there were also vast improvements, as well as a reduction in relative inequalities. The black rate fell from 297 deaths per 1,000 births in 1900 to 84 per 1,000 in 1932. However, in 1932 the black infant mortality rate was still 60% higher than that of native-born whites, and further convergence never occurred. The relative gap remained high throughout the 20th century, and today the black rate of 11 per 1,000 births is more than twice as high as the rate of 5 per 1000 for non-hispanic whites. In relative terms, the black-white infant mortality gap is actually larger now than it was in the 1930s.
3.4 DISCUSSION

This analysis contributes four unique empirical findings to research on immigration, race, and health in the early 20th century. First, it finds disparities in childhood mortality between immigrant groups from different European regions, relative to native-born whites. Some of these differences appear related to human capital and/or ability to assimilate. However, the patterns of mortality match up relatively well with the documented boundaries between “whites” and other groups during this period. Immigrants from Ireland and Southern, Central, and Eastern Europe—who had the highest rates of childhood mortality among immigrant groups included in this study—were often racialized as non-white and marginalized as they arrived to the United States in greater numbers. In contrast, older immigrant cohorts from Northern/Western Europe often had easier paths to assimilation, in part because of a racial discourse that placed them firmly at the top of the racial hierarchy.

Second, this analysis finds variation in how child mortality patterns changed with duration of residence in the United States. If duration is considered a proxy for exposure to the social context of reception, the results may be considered further evidence of the effect of the particular socio-historical configuration of ethno-racial boundaries. While duration in the United States was in general associated with fewer child deaths, this was not true for Irish and Southern European migrants. Given the marginalization of such migrants at the time, it is possible that greater duration of residence equated with greater exposure to a variety of social factors—barriers to resources, stresses of discrimination, etc.—that could manifest in health disparities. This downward pattern was not seen for Central/Eastern European immigrants, who were also marginalized during this period. In part, that may be due to the extremely low life expectancy in many of the origin countries at the time.

Third, I find variation in adult mortality rates based on indicators of segregation between the immigrant and native-born white population and, more consistently, the size of the
immigrant population. I find that the second generation tended to have lower mortality rates—both in general and relative to the native-born white population—in areas with a smaller immigrant presence and in cities with less segregation of immigrants. This may suggest that symbolic/racial boundaries between immigrants and native-born whites prevented “health assimilation” or a convergence of mortality outcomes.

Fourth, I find a convergence over time of infant and childhood mortality rates for European immigrant groups and the native-born white population. A large body of research has documented the shifts in racial boundaries that allowed European immigrants to “whiten” over the course of the early 20th century. The trends outlined above suggest that this movement up the racial hierarchy was accompanied by a convergence in mortality rates. In 1900, mortality disparities existed between various groups of foreign-born and native-born whites, but by the middle of the 20th century, the mortality rates began to converge to resemble a single white identity.

This research is limited in part by data availability. In an ideal study design, disaggregated mortality outcomes would be compared across several decades, extending into the post-war expansion of welfare state social support. Such a comparison is not currently feasible. The cross-sectional examination is further limited by unknown information related to cause of death, medical treatments, and other factors that influence child mortality outcomes. While the data allow for the calculation of overall mortality rates, it does not tell us why or how individuals perished.

Still, there are a number of theoretical implications in the above findings. First, they suggest the selection-acculturation framework used to explain contemporary immigrant health patterns is, at minimum, not generalizable to different contexts. However, my argument goes beyond that. I suggest that the fundamental cause theory of health inequalities can be a unifying framework for understanding inter-generational immigrant health trajectories across different immigration eras. Specifically, the context of reception—characterized by
how race is constructed and stratified in a given time and place—may act as a fundamental cause that shapes immigrants’ overall life chances and ability to prevent disease, across a range of more proximate mechanisms. This insight has eluded researchers looking at between-group comparisons in the contemporary era of immigration because of possible selection mechanisms that shape patterns of population health during the migration process. However, looking at post-migration health trajectories is more revealing of the consequences of social conditions in the context of reception.

Second, the findings bridge theory on race and racial inequality with research on the fundamental causes of health and health inequalities. While researchers have made a great deal of progress toward understanding how racial inequality manifests in health inequalities, this body of work has stopped short of addressing some core theoretical questions. What, exactly, is race? How are racial boundaries formed, stratified, and maintained? Looking at instances where boundaries shift allows us to look upstream at the social processes that shape both racial categories and racial outcomes in health. The same factors that help explain why we no longer see drastic health disparities within the white population—changing ideas about racial boundaries combined with a racialized expansion of the welfare state that facilitated selective upward mobility—can also help us understand why there has been so little progress in eliminating health disparities for African Americans.

As barriers between Europeans began to blur early in the 20th century, the sharp black-white binary was in many ways institutionalized in post-war New Deal spending and related social policies that facilitated upward mobility but explicitly excluded the black population (Brodkin 1998). This is important for two reasons. One, policies improved many of the underlying social conditions that were detrimental to health. Thanks in part to federal spending, European immigrants increasingly moved to the suburbs, went to college, and worked in middle class jobs alongside the white majority. But second, practices like redlining and white flight stratified access to these resources along racial lines, and European
immigrants were now fully on the “white” side of that line.

Sociologists have often written of immigrants from Southern, Central, and Eastern Europe as a “middle tier” in the early U.S. racial hierarchy. The era of European immigration in the early 20th century was characterized by shifting ideas about race and changing patterns of inequality. Looking further upstream at the political structures and social processes that shape group formation can facilitate better connections between theory on race and racial inequality and empirical research on health and other outcomes. Examining the health and mortality outcomes of these groups provides a case for looking beyond the immediate mechanisms often associated with ethnic and racial health disparities—differential treatment, discrimination experiences, barriers to resources, etc.—to the social processes that simultaneously shape both racial categories and racial outcomes in health.
Chapter 4

Are Immigrants Always Healthier? Racial Discrimination and the Health Patterns of Black Caribbean Immigrants

Studying the health patterns of black immigrant populations is increasingly important to understanding immigrant and racial health inequalities in the United States. Although a longstanding body of research has found earlier mortality and higher morbidity for black Americans relative to other racial groups (Williams and Sternthal 2010), black immigrants, particularly from Africa and the Caribbean, tend to be healthier than their U.S.-born counterparts across a range of outcome measures, and in some cases healthier than white Americans (Read and Emerson 2005; Read, Emerson, et al. 2005; Hamilton and Hummer 2011; Vang and Elo 2013). Researchers have typically relied on explanations related to racial inequality and consequences of racial discrimination to explain poorer black American health, and have focused on selection processes to account for better black immigrant health. However, these explanatory factors are often studied separately. Little is known about the interaction between racial discrimination experiences and black immigrant health patterns.

Understanding the determinants of black immigrant health has enormous potential for expanding our understanding of the linkages between race, racial discrimination, and health. Because immigrants, by definition, move across social contexts, black immigrant health trajectories can reveal the effects of context-specific racial inequality on health outcomes. An early example was seen in the 1990s, as scientists were trying to understand racial disparities in infant birth weights. While some at the time argued that genetic factors inherent to shared African ancestry underlied the differences, a comparison found that African-born black immigrants had birth weights similar to U.S.-born whites, both of which were higher than
U.S.-born blacks (David and Collins 1997). The patterns of black immigrant health provided empirical disproof of the shared ancestry hypothesis, and advanced understanding of the social determinants of racial birth weight disparities. Because black immigrants and natives share some aspects of ancestry but differ in exposure to pre-migration social conditions, analyzing black immigrant outcomes allows for examining, to a degree, exogenous effects of social context.

Scholarship on health disparities has since advanced to better understand how racial inequality and experiences of discrimination act as a fundamental cause of health and health inequalities (Phelan and Link 2015). A major determinant of poor health for black Americans is chronic stress related to experiences of discrimination. Numerous studies have found linkages between experiences of racial discrimination, in a variety of forms, and poor health outcomes (Krieger 1999; Gee 2002; Mustillo et al. 2004; Monk 2015). Some studies have found similar associations for immigrant groups experiencing racial discrimination or acculturative stress (Viruell-Fuentes 2007; Yoo et al. 2009). On the whole, however, research on immigrant health has favored explanations related to acculturation and post-migration changes in behavior to explain immigrant health trajectories. As a result, we do not yet know the degree to which racial discrimination experiences account for differing outcomes for the native-born and foreign-born black populations or how it affects immigrant health after migration.

Moreover, it is unclear the extent to which various manifestations of racialization and racial inequality affect immigrant health trajectories. In addition to daily experiences of discrimination or racial microaggressions, racial discrimination against U.S.-born blacks manifests though institutionalized patterns of inequality in housing, schooling, employment, credit, and criminal justice (Winant 2000). Such forms of institutionalized discrimination also have effects on health. At the neighborhood level, for example, contextual variation in residential segregation can act as an independent cause of racial disparities in health
outcomes (Williams and Collins 2001; Schulz et al. 2002; Subramanian et al. 2005, 2005; Britton and Shin 2013). For immigrants, however, segregation in ethnic enclaves may have protective effects or explain a portion of the healthy immigrant effect (Osypuk et al. 2009, 2010; Vang and Elo 2013). Previous work in this area has focused largely on Hispanic migrants and immigrant-native segregation, with less attention paid to racial segregation’s effects on black immigrant health (Vang and Elo 2013).

This chapter addresses the above gaps by examining the effects of racial discrimination experiences—both interpersonal racism and institutionalized inequality as measured by housing segregation—on the health outcomes of black Caribbean immigrants to the United States. Using data from the National Survey of American Life, I use three indicators of health—cardiovascular disease, self-rated health, and diabetes—to examine the extent to which differential experiences of discrimination explain the “healthy immigrant effect” for black Caribbean immigrants. Results suggest the widely-discussed pattern of better health for immigrants is primarily found for immigrants reporting low levels of interpersonal discrimination or living in areas of low segregation. For black immigrants experiencing high levels of interpersonal discrimination or living in hypersegregated areas, there is no significant difference in outcomes.

4.1 BACKGROUND

BLACK IMMIGRATION TO THE UNITED STATES

The U.S. racial order has not only changed due to an increase in non-black and non-white immigrant populations. It has also been shaped by an increase in black immigration in recent decades. In both absolute and relative terms, the black immigrant population has nearly tripled, from fewer than one million immigrants in 1980 to nearly 3.8 million in 2013 (see Figure 4.1). Black immigrants now account for 8.7% of the U.S. black population, up
from roughly 3% in 1980. Their representation is even larger in certain locations with high immigrant concentrations. In New York City and Miami, for instance, immigrants represent roughly 30% of the local black populations.

The foreign-born black population itself is relatively diverse, with immigrants coming from all parts of the world. About half of black immigrants come from countries of the Caribbean. Jamaica and Haiti are by far the largest sending countries, although immigration from Africa has grown rapidly in recent years (Capps, McCabe, and Fix 2012; Anderson 2015). Most Caribbean black migrants come from English-speaking islands of the West Indies, although Spanish-speaking Dominican and Cuban immigrants also often have partial African ancestry (Waters et al. 2014). Although this complicates the measurement of the black population, most immigrants from these countries tend to identify as Hispanic rather than black on surveys and census reports.

Foreign-born blacks differ from their U.S. counterparts on many measures. They tend to be older, are more likely to have a college degree (26% versus 19%), less likely to live in poverty (20% versus 28%), and have higher household incomes (Anderson 2015). Yet for each of these measures, foreign-born blacks are slightly worse off than the U.S. population as a whole. In terms of socioeconomics, foreign-born black outcomes tend to fall between the lows of the U.S. black population and the highs of the white population.

The foreign-born black population also fares better than their U.S.-born counterparts when it comes to health outcomes, and in many cases are comparable to the white population. Black immigrants report better self-rated health, have longer life expectancies, are diagnosed with fewer psychiatric disorders, and have fewer high-risk births than the U.S.-born black population (David and Collins 1997; Read and Emerson 2005; Read, Emerson, et al. 2005; Williams et al. 2007; Hamilton and Hummer 2011). Notably, each of these outcomes tends to become worse for subsequent generations. Understanding the causes of such trajectories is important for understanding the consequences of race in the lives of black immigrant

**Race in the Context of Reception**

It is impossible to understand the acculturation experiences and life trajectories of black immigrants without analyzing race and racial inequality in the United States. The history of immigration to the United States is inextricably intertwined with race and nation-building, creating a “race-immigration nexus” of linkages among the institutions, ideologies, and practices that shape migrant integration experiences (Kibria et al. 2013). In this sense, it is difficult to understand the social experiences that shape immigrant health outcomes, particularly for black immigrants, without examining the social importance of race and racial discrimination.

As the population of black immigrants in the United States has increased, so has research on their immigration experiences, their relationship with the U.S. black population, and their life outcomes. One undeniable conclusion from scholarship on black immigration is
that race—and specifically, the history of racial inequality in the United States—shapes the integration experiences and trajectories of black immigrants.

This manifests in part through their ethnic and racial identity choices. First-generation Caribbean black immigrants are often well aware of the possible discrimination and downward mobility associated with an African American identity, and at times assert a strong ethnic or national-origin identity as a form of distinction (Waters 1999; Vickerman 2007; Waters et al. 2014). This trend can extend into the second generation, with upwardly mobile youth identifying with their national identity or a hyphenated identity and downwardly mobile youth identifying more with a black American identity (Waters 1999; Feliciano 2009).

The acculturation hypothesis that pervades research on immigrant health often assumes a straight-line transition from an origin-country identity to a destination-country identity. Yet for many Caribbean migrants, identity choices are often shaped by cultural meaning and structural opportunities in the context of reception.

It is not only Caribbean immigrants’ identities and choices that are shaped by race, but also their opportunities and experiences. As black immigrants integrate into U.S. society, they encounter an environment of racial stereotypes, labor market discrimination, and residential segregation that can constrain their choices and limit their life chances. Contrary to early European paths of spatial assimilation, black immigrants remain highly segregated from the white population, yet tend to be spatially integrated with the U.S. black population, despite findings of tension and distinction between the two groups (Freeman 2002). Whether second-generation Caribbean migrants are upwardly or downwardly mobile is often tied to experiences of racism—both everyday racism and location in segregated neighborhoods (Portes et al. 2005; Portes and Rumbaut 2006).

It is important to recognize both structural and cognitive/psycho-social pathways that make race salient for black immigrant outcomes. For instance, experimental research has found that second-generation black immigrants respond similarly to African Americans
when primed with stereotype threat information (Deaux et al. 2007). One of the proposed explanations for black immigrant trajectories is their relative experiences of race-based social status. Immigrants who come from countries with a black majority have better outcomes—including health outcomes—than first-generation immigrants who migrate from countries where they were already a racial minority, such as parts of Europe (Read and Emerson 2005; Read, Emerson, et al. 2005). Generations of immigrants often have different experiences of both relative and absolute inequality.

**RACE, DISCRIMINATION, AND HEALTH**

Black immigrant groups have similar health profiles as immigrants to the United States in general: They have better overall health behaviors (i.e., lower rates of smoking and drinking and high rates of physical activity) but lower access to health insurance and medical care (Lucas, Barr-Anderson, and Kington 2003). These factors play a role in post-migration trajectories and have been tied to acculturation explanations for intergenerational declines in health status. Yet research on black immigrants’ experiences of race and racial inequality suggest behavioral changes and culture do not account for outcome changes alone. If the acculturation hypothesis is insufficient, what explains the association between duration of residence and poorer health for these migrant groups?

The existing literature on racial and ethnic minority health disparities offers potential answers. A large and growing body of literature has documented the harmful health and mortality consequences of discrimination (Krieger 1999, 2014; Gee 2002; Mustillo et al. 2004; Monk 2015). Experiencing discrimination can account for health disparities between ethnic or racial groups that persist after accounting for socioeconomic status and material resources. A common explanation for this mechanism examines the connection between discrimination experiences and chronic stress, which can trigger physiological responses in the body—in particular, elevated cortisol levels—that are linked with a variety of health
conditions. Discrimination has been associated with higher mortality, low birth weights, higher risk of cardiovascular disease, and lower self-rated health, among other conditions. Discrimination experiences are also associated with health behaviors, such as smoking and drinking, particularly as means of coping with psychological distress (Kwate et al. 2003). In fact, discrimination may be a key determinant of the persistent black-white gap in health and mortality throughout the history of the United States.

Much of the research on discrimination and health has focused on individual-level experiences. However, personal experiences of discrimination are most often shaped by a larger context of racial hierarchy that is based on shifting definitions of group belonging and privilege. The distinction between individual-level discrimination and systemic racism is important because racism is capable of shaping a “massive multiplicity” of mechanisms that affect health, including discrimination experiences, as well as neighborhood effects, socioeconomic differentials, medical care disparities, and risk exposures (Phelan and Link 2015). While discrimination is considered a mechanism influencing health, racism may be considered a “fundamental cause” of health inequalities.

While a general link between racial discrimination and racial health disparities is well-established, scholars are still working to integrate race and racial discrimination as multidimensional concepts. For instance, within-group racial disparities related to skin tone can be as large or larger than disparities between blacks and whites as a whole (Monk 2015). Moreover, it can be difficult to disentangle everyday interpersonal discrimination—experienced as racial microaggressions or minor everyday racism—from encounters with institutional discrimination or larger-scale consequences of racism, such as job loss, incarceration, etc. At the neighborhood level, residential segregation can act as an independent cause of racial disparities in health outcomes (Williams and Collins 2001; Schulz et al. 2002; Subramanian et al. 2005, 2005).

Advancing understanding of the influence of discrimination on health is important
for moving research on black immigrant health forward. Studies suggest experiences of discrimination can play a role in declining post-migration health trajectories, in general, and racism may have substantial consequences for black African and Caribbean immigrants. Discrimination may not only represent a post-migration exposure to stress, but it may also indicate a status change associated with movement across social contexts. Black immigrants who experience a much more significant change in racial social status (i.e., those coming from majority-black countries of Africa and the Caribbean) tend to have better initial health and experience larger post-migration declines than black immigrants from Europe (Read, Emerson, et al. 2005). This points to the importance of racial social status and experiences of racialized discrimination in shaping both aspects of the “immigrant paradox” for black migrants.

4.2 METHODS

DATA

Using data from the National Survey of American Life 2001-2003 (Jackson et al. 2010), this chapter seeks to understand the health trajectories of black Caribbean immigrants within the context of U.S. racial discrimination. The NSAL surveys mental health and well-being among African American and Afro-Caribbean populations of the United States and is part of the larger Collaborative Psychiatric Epidemiology Surveys dataset. Its primary advantage over other surveys of migrant and minority health is its extensive focus on discrimination experiences and measurement of multiple self-reported health conditions. The NSAL includes a variety of questions related to encounters with everyday experiences of discrimination, as well as multiple mental and physical health outcome measures.

The NSAL relies on a national multistage probability design that consists of 64 primary sampling units, and all analyses presented in this paper are weighted to account for complex
survey design. A total of 6,082 face-to-face interviews were conducted with persons age 18 or older, including 3,570 African-Americans, 891 non-Hispanic whites, and 1,621 blacks of Caribbean descent, with an overall response rate of 72.3%. Interviews were administered face-to-face and conducted within respondents’ homes from February 2001 to June 2003. The analysis for this paper relies only on African American and Afro-Caribbean respondents.

MEASURES

DEPENDENT VARIABLES

This study uses three outcome measures to assess the relationship between discrimination and health: Self-reported health, self-reported diabetes, and self-reported cardiovascular disease. Self-reported health is assessed based on the following question: “How would you rate your overall physical health at the present time? Would you say it is excellent, very good, good, fair or poor?” Responses indicating fair or poor health were coded as 1, and the remaining responses were coded as 0.

In general, self-assessed measures of health can be powerful predictors of mortality and morbidity, and the increasing availability of health information may be improving their validity (Idler and Benyamini 1997; Schnittker and Bacak 2014). However, scholars have found variation in the reliability and validity of self-assessed health measures between groups based on age, gender, socioeconomic status, and ethnic or linguistic background (Dowd and Zajacova 2007, 2007; Huisman, Lenthe, and Mackenbach 2007; Dowd and Todd 2011; Viruell-Fuentes et al. 2011). Although caution is warranted when comparing self-assessed health across groups born in different cultural contexts, dichotomizing the original five-point response scale reduces possible variation associated with cultural or linguistic interpretations of relative health differences (i.e., bad vs. very bad).

Cardiovascular disease was measured with an item in which respondents were asked to
identify if a doctor or health professional had ever told them if they had “heart trouble or a heart attack.” Responses indicating yes were coded as 1, and respondents without knowledge of heart trouble were coded as 0. Diabetes was measured from a similar survey question asking respondents if a doctor or health professional had ever told them they had diabetes or “sugar”. Responses were similarly coded with 1 indicating a diagnosis of diabetes. Although the responses to these two questions are less subject to the respondent’s interpretation or uncertainty, they are highly influenced by access to a health care professional.

**INDEPENDENT VARIABLES**

The primary goal of this study is to distinguish the effects of discrimination on immigrant health patterns. I use two measures of discrimination, representing everyday racial discrimination and encounters with institutionalized discrimination, respectively. To measure the first, I use questions from the everyday discrimination scale to look at interpersonal discrimination, or what are increasingly referred to as racial microaggressions.

This scale, developed by David Williams and colleagues (Williams et al. 1997), includes a variety of questions aimed at quantifying the frequency of discrimination experiences in a range of everyday encounters. The survey questions ask respondents to report the frequency they were: treated with less respect than others, received poorer restaurant service, treated as less smart, treated as someone to be feared, treated as dishonest, treated as inferior, called names or insulted, threatened/harassed, or followed in stores. For each item, respondents reported the frequency as never, less than once a year, a few times a year, a few times a month, at least once a week, or almost everyday. The eight items were combined into a single scale representing frequency of cumulative microaggressions. The resulting scale was highly reliable, with an alpha of 0.89.

For the measure of institutionalized discrimination, I use the white-black index of dissimilarity to measure residential segregation for each respondent’s county of residence,
using Census tract data. The dissimilarity index is calculated as

$$\frac{1}{2} \sum_{i=1}^{N} \left| \frac{b_i}{B} - \frac{w_i}{W} \right|$$

where

- $b_i =$ the black population of the $i^{th}$ census tract
- $B =$ the total black population of the county in which the respondent lives
- $w_i =$ the white population of the $i^{th}$ census tract
- $W =$ the total white population of the county in which the respondent lives

I include two additional independent variables in order to distinguish reporting and selection biases that may influence the results. First, I include a variable indicating if the respondent was a new immigrant (i.e., in the United States five years or less). Because the health of Caribbean immigrants has been shown to deteriorate with duration of residence, between-group comparisons of immigrants and natives could mask duration effects. Supplementary analysis of a multi-category duration measures suggests the five-year cutoff point is the most meaningful comparison in this sample. Second, I include a measure of health care utilization, measured as whether the respondent reported having access to a source of care that was not family or a non-medical source.

Final results include controls that account for demographics and common determinants of health. Age was measured in years. Household income was measured in dollars and top-coded by the NSAL at $200,000. A log-transformed income variable was used in all regression analysis. Education was included as a categorical variable represented by four categories: 0-11 years, 12 years, 13-15 years, and 16 years or more. Marital status was measured using a binary variable with 1 indicating married and all others coded as 0. Rather than relying on gender as a control, separate analyses were performed for men and women in the sample.
ANALYSIS

First, I present a descriptive comparison of means of the three dependent variables and all independent variables grouped by immigration status and gender. Because each of the outcome variables is binary, I next use logistic regression to estimate the probability of reporting cardiovascular disease, poor self-rated health, and diabetes. The first set of models for each outcome is an age-adjusted comparison of black immigrants and U.S.-born blacks. The second model tests the above measure of racial microaggressions as a moderator variable. The third model includes an interaction of discrimination and immigration status to assess differential immigrant-native health gaps based on discrimination experiences. The final model includes controls for all independent variables. Because previous research suggests discrimination experiences and immigrant health patterns differ by gender, separate analyses are run for male and female respondents.

4.3 RESULTS

DESCRIPTIVE RESULTS

Table 4.1 presents descriptive statistics for health outcomes, the discrimination scale, and other independent variables. Looking first at discrimination experiences, U.S.-born blacks report greater levels of discrimination than foreign-born blacks, although differences vary by gender. Overall, men report more frequent discrimination experiences than women. However, the relative gap between foreign-born and U.S.-born blacks is higher for women than for men. Foreign-born black women are the least likely to report experiencing interpersonal racial discrimination.
Table 4.1: Descriptive Statistics for U.S.-born and Foreign-Born Black Adults, Male and Female, National Survey of American Life

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Gender</td>
<td>0.00</td>
<td>0.00</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Cardiovascular disease</td>
<td>0.08</td>
<td>0.05</td>
<td>0.08</td>
<td>0.03</td>
</tr>
<tr>
<td>Self-rated poor health</td>
<td>0.19</td>
<td>0.12</td>
<td>0.23</td>
<td>0.14</td>
</tr>
<tr>
<td>Diabetes</td>
<td>0.10</td>
<td>0.08</td>
<td>0.12</td>
<td>0.09</td>
</tr>
<tr>
<td>Age</td>
<td>43.23</td>
<td>42.61</td>
<td>42.79</td>
<td>43.46</td>
</tr>
<tr>
<td>Discrimination scale</td>
<td>2.35</td>
<td>2.29</td>
<td>2.14</td>
<td>1.95</td>
</tr>
<tr>
<td>Marital status</td>
<td>0.45</td>
<td>0.57</td>
<td>0.31</td>
<td>0.40</td>
</tr>
<tr>
<td>Education</td>
<td>4.30</td>
<td>4.57</td>
<td>4.33</td>
<td>4.63</td>
</tr>
<tr>
<td>Household income</td>
<td>40489.16</td>
<td>51011.78</td>
<td>30303.37</td>
<td>40238.34</td>
</tr>
<tr>
<td>Segregation index</td>
<td>59.00</td>
<td>74.42</td>
<td>58.41</td>
<td>76.50</td>
</tr>
</tbody>
</table>

When it comes to residential segregation, black immigrants tend to live in more racially segregated census tracts than the U.S.-born black population. This does not account for the composition of immigrants in the area—such an analysis is beyond the scope of this paper. However, it does indicate a high degree of segregation from the white population, and a higher likelihood of living in areas of hyper-segregation.

As expected, U.S.-born blacks report worse health than foreign-born blacks for every outcome measure. U.S.-born blacks are more likely to report cardiovascular disease, more likely to report poor self-rated health, and more likely to have diabetes. Although these averages are not age-adjusted, the mean age is similar for each group. There are also gender differences in baseline health, in that women report slightly worse outcomes than men for each measure. The above findings are consistent with previous research that finds higher morbidity for women, a healthy immigrant effect for foreign-born blacks, and greater experiences of discrimination for black males. The remaining analysis explores these patterns in greater depth by examining how these factors intersect.
LOGISTIC REGRESSION RESULTS

INTERPERSONAL DISCRIMINATION

Table 4.2 presents log-odds logistic regression estimates for each outcome measure for men in the sample. Looking at the first set of models for each measure confirms the “healthy immigrant” pattern. Age-adjusted comparisons find black immigrant men report better health than U.S.-born blacks. However, this does pattern does not hold for immigrant versus native comparisons for women when examining diabetes and cardiovascular diagnosis (Table 4.3). Although the association is in the same direction as expected under the healthy immigrant pattern, the differences are non-significant in Model 1 for each outcome. Other scholars have noted gender differences in patterns of immigrant health trajectories, related to factors such as gender differences in health behaviors, care utilization, or social status (Read and Reynolds 2012). It is possible that a portion of the healthy immigrant effect is related to lower rates of utilization among new immigrants, and as a result less awareness about existing chronic health conditions.

Adding the everyday discrimination/microaggressions scale as a control variable in the second set of models fails to account for initial differences between immigrants and natives for most measures. However, the relative gap in diabetes diagnoses between immigrant and U.S.-born men is non-significant after accounting for interpersonal discrimination experiences. Moreover, experiences of discrimination do have a consistently detrimental effect on self-rated health and cardiovascular diagnoses rates for men. On the whole, discrimination does have a negative health effect, but does not appear to moderate the association of immigration status.

The third set of models, in which an interaction between immigration status and experiences of discrimination is introduced, returns equally mixed results about the possible effects of discrimination. The interaction coefficients are not significant, although they
Table 4.2: Logistic Regression Estimates (Log-Odds) of Immigration Status and Discrimination on Health Outcomes, Men

<table>
<thead>
<tr>
<th></th>
<th>CVD Model 1</th>
<th>CVD Model 2</th>
<th>CVD Model 3</th>
<th>CVD Model 4</th>
<th>Self-Rated Health Model 1</th>
<th>Self-Rated Health Model 2</th>
<th>Self-Rated Health Model 3</th>
<th>Self-Rated Health Model 4</th>
<th>Diabetes Model 1</th>
<th>Diabetes Model 2</th>
<th>Diabetes Model 3</th>
<th>Diabetes Model 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-4.70***</td>
<td>-6.03***</td>
<td>-6.02***</td>
<td>-7.77***</td>
<td>-3.97***</td>
<td>-3.93***</td>
<td>2.72*</td>
<td>5.03***</td>
<td>-5.74***</td>
<td>-5.78***</td>
<td>-4.81***</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>0.05***</td>
<td>0.05***</td>
<td>0.05***</td>
<td>0.05***</td>
<td>0.03***</td>
<td>0.03***</td>
<td>0.03***</td>
<td>0.06***</td>
<td>0.06***</td>
<td>0.06***</td>
<td>0.06***</td>
<td></td>
</tr>
<tr>
<td>Immigrant</td>
<td>-1.54***</td>
<td>-1.32***</td>
<td>-1.49</td>
<td>-1.70</td>
<td>-0.94***</td>
<td>-0.95***</td>
<td>-1.71**</td>
<td>-1.73*</td>
<td>-0.81*</td>
<td>-0.57</td>
<td>0.68</td>
<td>0.46</td>
</tr>
<tr>
<td>Discrimination</td>
<td>0.39**</td>
<td>0.39**</td>
<td>0.36**</td>
<td>0.39***</td>
<td>0.38***</td>
<td>0.38***</td>
<td>0.21</td>
<td>0.23</td>
<td>0.25</td>
<td>0.14</td>
<td>0.14</td>
<td>0.14</td>
</tr>
<tr>
<td>Immig.*Disc.</td>
<td>0.07</td>
<td>0.21</td>
<td>0.30</td>
<td>0.38</td>
<td>0.38</td>
<td>0.38</td>
<td>0.38</td>
<td>0.46</td>
<td>0.50</td>
<td>0.50</td>
<td>0.50</td>
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</tr>
<tr>
<td>Married</td>
<td>0.10</td>
<td>0.30</td>
<td>0.21</td>
<td>0.29</td>
<td>0.46*</td>
<td>0.29</td>
<td>0.46</td>
<td>0.29</td>
<td>0.29</td>
<td>0.29</td>
<td>0.29</td>
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</tr>
<tr>
<td>Income (logged)</td>
<td>-0.45**</td>
<td>-0.61***</td>
<td>-0.64</td>
<td>-0.64</td>
<td>-0.64</td>
<td>-0.64</td>
<td>-0.64</td>
<td>-0.64</td>
<td>-0.64</td>
<td>-0.64</td>
<td>-0.64</td>
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</tr>
<tr>
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<td></td>
<td></td>
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<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>0-11 years</td>
<td>-0.20</td>
<td>-0.13</td>
<td>-0.13</td>
<td>-0.13</td>
<td>-0.13</td>
<td>-0.13</td>
<td>-0.13</td>
<td>-0.13</td>
<td>-0.13</td>
<td>-0.13</td>
<td>-0.13</td>
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</tr>
<tr>
<td>13-15 years</td>
<td>0.22</td>
<td>0.25</td>
<td>0.25</td>
<td>0.25</td>
<td>0.25</td>
<td>0.25</td>
<td>0.25</td>
<td>0.25</td>
<td>0.25</td>
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<td>0.25</td>
<td>0.25</td>
</tr>
<tr>
<td>16+ yrs.</td>
<td>0.20</td>
<td>0.30</td>
<td>0.30</td>
<td>0.30</td>
<td>0.30</td>
<td>0.30</td>
<td>0.30</td>
<td>0.30</td>
<td>0.30</td>
<td>0.30</td>
<td>0.30</td>
<td>0.30</td>
</tr>
<tr>
<td>Recent immigrant</td>
<td>-1.33</td>
<td>-0.42</td>
<td>-0.42</td>
<td>-0.42</td>
<td>-0.42</td>
<td>-0.42</td>
<td>-0.42</td>
<td>-0.42</td>
<td>-0.42</td>
<td>-0.42</td>
<td>-0.42</td>
<td>-0.42</td>
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<tr>
<td>Access to care</td>
<td>0.52</td>
<td>0.30</td>
<td>0.30</td>
<td>0.30</td>
<td>0.30</td>
<td>0.30</td>
<td>0.30</td>
<td>0.30</td>
<td>0.30</td>
<td>0.30</td>
<td>0.30</td>
<td>0.30</td>
</tr>
<tr>
<td>Deviance</td>
<td>805.74</td>
<td>653.63</td>
<td>653.62</td>
<td>630.31</td>
<td>1534.85</td>
<td>1225.22</td>
<td>1224.48</td>
<td>1090.78</td>
<td>943.24</td>
<td>737.47</td>
<td>736.31</td>
<td>702.63</td>
</tr>
<tr>
<td>Dispersion</td>
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<td>0.97</td>
<td>0.97</td>
<td>0.97</td>
<td>1.02</td>
<td>0.98</td>
<td>0.98</td>
<td>0.96</td>
<td>0.90</td>
<td>0.85</td>
<td>0.86</td>
<td>0.89</td>
</tr>
<tr>
<td>Num. obs.</td>
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<td>1401</td>
<td>1380</td>
<td>1736</td>
<td>1401</td>
<td>1401</td>
<td>1380</td>
<td>1736</td>
<td>1401</td>
<td>1401</td>
<td>1380</td>
</tr>
</tbody>
</table>

***p < 0.001, **p < 0.01, *p < 0.05
Table 4.3: Logistic Regression Estimates (Log-Odds) of Immigration Status and Discrimination on Health Outcomes, Women

<table>
<thead>
<tr>
<th></th>
<th>CVD</th>
<th>Self-Rated Health</th>
<th>Diabetes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Model 1</td>
<td>Model 2</td>
<td>Model 3</td>
</tr>
<tr>
<td>Intercept</td>
<td>-4.70***</td>
<td>-5.41***</td>
<td>-5.30***</td>
</tr>
<tr>
<td></td>
<td>(0.26)</td>
<td>(0.46)</td>
<td>(0.45)</td>
</tr>
<tr>
<td>Age</td>
<td>0.05***</td>
<td>0.05***</td>
<td>0.05***</td>
</tr>
<tr>
<td></td>
<td>(0.00)</td>
<td>(0.01)</td>
<td>(0.01)</td>
</tr>
<tr>
<td>Immigrant</td>
<td>-0.41</td>
<td>-0.29</td>
<td>-3.06*</td>
</tr>
<tr>
<td></td>
<td>(0.52)</td>
<td>(0.62)</td>
<td>(1.31)</td>
</tr>
<tr>
<td>Discrimination</td>
<td>0.23</td>
<td>0.18</td>
<td>0.16</td>
</tr>
<tr>
<td></td>
<td>(0.12)</td>
<td>(0.12)</td>
<td>(0.12)</td>
</tr>
<tr>
<td>Immig.*Disc.</td>
<td>1.19</td>
<td>1.32*</td>
<td>-0.01</td>
</tr>
<tr>
<td></td>
<td>(0.61)</td>
<td>(0.67)</td>
<td>(0.25)</td>
</tr>
<tr>
<td>Married</td>
<td>-0.02</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.24)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Income (logged)</td>
<td>-0.17</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.12)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Edu. (12 yrs. ref.)</td>
<td>0.07</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.27)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-11 years</td>
<td>0.35</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.31)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13-15 years</td>
<td>0.34</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.37)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recent immigrant</td>
<td>-10.95***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.90)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access to care</td>
<td>0.70</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.42)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Deviance | 1563.79 | 1205.21 | 1199.03 | 1178.91 | 3065.08 | 2415.32 | 2415.32 | 2245.56 | 2074.35 | 1620.93 | 1620.31 | 1576.16 |
Dispersion | 0.95 | 0.95 | 0.95 | 0.94 | 0.99 | 0.99 | 0.99 | 0.99 | 0.96 | 0.96 | 0.96 | 0.97 |
Num. obs. | 3023 | 2379 | 2379 | 2337 | 3022 | 2378 | 2378 | 2336 | 3022 | 2379 | 2379 | 2337 |

*** p < 0.001, ** p < 0.01, * p < 0.05
are consistently in the positive direction that would indicate a smaller immigrant-native gap at the higher end of the discrimination scale. For women, this effect is significant and stronger effect when looking at cardiovascular disease and after accounting for other controls. Specifically, it suggests healthy immigrant pattern applies to immigrants who report no or little discrimination. For those reporting frequent discrimination, cardiovascular
disease outcomes are no different from their native-born counterparts.

Plotting the interaction terms allows for easier interpretation, given the nonlinear effects in logistic regression. Figure 4.2 illustrates the direction of these relationships by plotting the predicted probabilities for immigrants and US-born blacks based on frequency of discrimination experiences. Both men and women at the low end of the scale (i.e., reporting discrimination rarely or never) have lower odds of self-reported cardiovascular disease than their U.S.-born counterparts. Although there was no immigrant-native difference for females in the initial models, there is an apparent healthy immigrant effect for women who report no or little discrimination. However, these differences disappear for both genders further up the discrimination scale. This is in part due to greater uncertainty about the predictions that result in overlapping prediction intervals. However, it is also related to an increase in the risk of cardiovascular disease with greater experiences of discrimination.

Rows 2 and 3 of Figure 4.2 plot similar results for self-reported health and diabetes diagnosis, respectively. For men, the same general pattern holds when examining self-rated health. Immigrant men who report no or little discrimination are less likely to report poor health and than U.S.-born blacks. Yet the results for diabetes diagnoses differ. Not only does the previous trend not hold, but the general direction of the relationship reverses. Immigrant men who report low levels of discrimination have similar diabetes rates as U.S.-born men, yet the healthy immigrant pattern appears to emerge among those with higher levels of discrimination.

RESIDENTIAL SEGREGATION

Tables 4.4 and 4.5 include similar models with the index of dissimilarity as the measure of discrimination. In each table, Models 1-3 show results for cardiovascular disease, Models 4-6 are results for self-rated health, and Models 7-9 are results for diabetes. The results for residential segregation are similar to the above findings for interpersonal racial
discrimination, although arguably more conclusive.

Adding the indicator of residential segregation accounts for a portion of the difference between black immigrants and natives, yet it does not fully explain the “healthy immigrant” effect across the models. The interaction between segregation and immigration status is most evident for the self-rated health outcomes for women. In general, it appears the healthy immigrant pattern holds primarily for black immigrants in areas of low or moderate segregation. In areas of high segregation, the relative gap between foreign-born and U.S.-born blacks narrows or becomes negligible.

Figure 4.3 plots this relationship for each dependent variable. The left column includes results for men and the right column of graphs represents results for women. The first row, showing results for cardiovascular disease, shows the largest relative gap for immigrants compared to natives, with slight narrowing in areas of higher segregation.

Rows 2 and 3, showing results for self-rated health and diabetes, demonstrate the trend more clearly. Contrary to the results for microaggressions, where men saw greater convergence relative to women, the self-rated health results here show greater convergence for women in areas of higher segregation. In areas approaching hyper-segregation, with an index of dissimilarity greater than 80, there are virtually no differences in self-rated health between immigrant and U.S. born black women.

The diabetes results for segregation effects also differ than those microaggression effects. In Figure 4.3, both immigrant men and women become more likely to report diabetes in areas of higher segregation, and the relative difference between immigrant native diabetes rates all but disappears.
Table 4.4: Logistic Regression Estimates (Log-Odds) of Immigration Status and Segregation on Health Outcomes, Men

<table>
<thead>
<tr>
<th></th>
<th>CVD</th>
<th>Self-Rated Health</th>
<th>Diabetes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Model 1</td>
<td>Model 2</td>
<td>Model 3</td>
</tr>
<tr>
<td>Intercept</td>
<td>-4.76***</td>
<td>-5.25***</td>
<td>-5.23***</td>
</tr>
<tr>
<td></td>
<td>(0.39)</td>
<td>(0.53)</td>
<td>(0.53)</td>
</tr>
<tr>
<td>Age</td>
<td>0.05***</td>
<td>0.05***</td>
<td>0.05***</td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
</tr>
<tr>
<td>Immigrant</td>
<td>-1.54***</td>
<td>-1.62***</td>
<td>-4.29*</td>
</tr>
<tr>
<td></td>
<td>(0.34)</td>
<td>(0.36)</td>
<td>(1.70)</td>
</tr>
<tr>
<td>Segregation</td>
<td>0.01</td>
<td>0.01</td>
<td>0.01</td>
</tr>
<tr>
<td>Imm.*Seg.</td>
<td>0.04</td>
<td>0.03</td>
<td>0.02</td>
</tr>
<tr>
<td></td>
<td>(0.02)</td>
<td>(0.03)</td>
<td>(0.02)</td>
</tr>
<tr>
<td>Married</td>
<td>0.05</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.26)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Income (logged)</td>
<td>-0.41**</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.13)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Educ. (12 yrs. ref.)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>0-11 years</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13-15 years</td>
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<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>16+ yrs.</td>
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<td></td>
</tr>
<tr>
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<td></td>
<td></td>
<td></td>
</tr>
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<td>Recent immigrant</td>
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<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access to care</td>
<td>0.55</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>(0.38)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deviance</td>
<td>805.74</td>
<td>800.89</td>
<td>800.58</td>
</tr>
<tr>
<td>Dispersion</td>
<td>0.96</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Num. obs.</td>
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<td>1645</td>
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</table>

***p < 0.001. **p < 0.01. *p < 0.05
Table 4.5: Logistic Regression Estimates (Log-Odds) of Immigration Status and Segregation on Health Outcomes, Women

<table>
<thead>
<tr>
<th></th>
<th>CVD</th>
<th>Self-Rated Health</th>
<th>Diabetes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Model 1</td>
<td>Model 2</td>
<td>Model 3</td>
</tr>
<tr>
<td>Intercept</td>
<td>-4.70***</td>
<td>-5.10***</td>
<td>-5.69***</td>
</tr>
<tr>
<td>Age</td>
<td>0.05***</td>
<td>0.05***</td>
<td>0.05***</td>
</tr>
<tr>
<td>Immigrant</td>
<td>-0.41</td>
<td>-0.46</td>
<td>-2.49</td>
</tr>
<tr>
<td>Segregation</td>
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<td>0.01</td>
<td>0.01</td>
</tr>
<tr>
<td>Imm. *Seg.</td>
<td>0.03</td>
<td>0.02</td>
<td>0.04*</td>
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<tr>
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<td>0.04</td>
</tr>
<tr>
<td>Income (logged)</td>
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<td>-0.40***</td>
<td>-0.06</td>
</tr>
<tr>
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<td>0-11 years</td>
<td>0-11 years</td>
</tr>
<tr>
<td></td>
<td>-0.15</td>
<td>-0.15</td>
<td>0.15</td>
</tr>
<tr>
<td>13-15 years</td>
<td>-0.01</td>
<td>-0.01</td>
<td>-0.01</td>
</tr>
<tr>
<td>16+ yrs.</td>
<td>0.06</td>
<td>0.06</td>
<td>0.06</td>
</tr>
<tr>
<td>Recent immigrant</td>
<td>-11.80***</td>
<td>-11.80***</td>
<td>-11.80***</td>
</tr>
<tr>
<td>Access to care</td>
<td>1.03*</td>
<td>1.03*</td>
<td>1.03*</td>
</tr>
</tbody>
</table>

| Deviance       | 1563.79| 1537.72| 1537.27| 1497.05| 3065.08| 3037.48| 3035.03| 2824.21| 2074.35| 2062.35| 2060.71| 2013.15 |
| Dispersion     | 0.95| 0.96| 0.96| 0.95| 0.99| 1.02| 1.02| 1.02| 0.96| 0.99| 0.99| 1.01 |
| Num. obs.      | 3023| 2916| 2916| 2865| 3022| 2916| 2916| 2865| 3022| 2915| 2915| 2864 |

*** p < 0.001, ** p < 0.01, * p < 0.05
4.4 DISCUSSION

This study joins a large body of existing literature in seeking to understand and explain immigrant-native differences in health patterns for racial minority groups. Its primary contribution is showing that differential discrimination experiences may account for a portion of the “healthy immigrant effect” for black Caribbean immigrants to the United States.
Specifically, everyday discrimination experiences—referred to as microaggressions—and residential segregation mediate the relationship between immigration status and some health outcomes. The commonly-studied pattern of better-than-expected health for immigrants relative to their U.S.-born counterparts is apparent primarily for immigrants who experience low levels of discrimination or living in areas of low or moderate segregation. Immigrants who experience high levels of discrimination or live in highly-segregated areas are less likely to be healthier than U.S.-born blacks.

There are important gender differences, both in experiences of discrimination and its effects on health. Consistent with other literature, black natives and black immigrant men are more likely to experience discrimination than women. Moreover, the effects of discrimination on self-rated health appear more substantial for men than women. The negative effects of living in racially segregated neighborhoods, however, may be more substantial for immigrant women. While this study does not attempt causal investigations of such gender differences, research suggests men and women differ in how they experience and cope with discrimination and stress.

The implication of the above findings is that experiences of racial discrimination may offer an alternative—or at least complementary—explanation of immigrant health patterns. Previous studies have focused extensively on acculturation and the behavioral changes associated with immigration. However, the context of reception for black Caribbean immigrants is one in which racial identity and experiences of racism are fundamental to social life (Waters 2001). It is therefore impossible to fully understand acculturation experiences without also considering the effects of race and racial inequality.

Detailed studies of the black Caribbean experience have found that experiences of racism play a major role in shaping their life chances. This study confirms that general notion by finding health consequences to everyday discrimination experiences for black Caribbean immigrants. Further, institutional discrimination may similarly act as a fundamental cause
of health disparities and health trajectories for black Caribbean immigrants. Previous studies suggest residential segregation may act as an independent fundamental cause of racial disparities in health. This research suggests such patterns may also play a role in immigrant health trajectories after migration.

There are, of course, limitations to this work. Although the everyday discrimination scale has been widely used, particularly in research interested in the consequences of discrimination on health, the survey questions do not specify the timing or location of the discrimination experience. Although the assumption in this research is that the discrimination encounter occurred after immigration (i.e., in the United States), it is also possible that some reports represent pre-migration experiences. In addition, the cross-sectional nature of these data make it difficult to establish causality, particularly when examining changes occurring after migration. These limitations could be addressed with further longitudinal cohort studies that specifically focus on post-migration experiences of racial discrimination and racial inequality.

Such research is much needed and has the potential to advance our understanding of both immigrants’ integration experiences and of the formation of racial health inequalities. Research on immigrant health has focused heavily on selection and acculturation processes, to the neglect of existing sociological scholarship that highlights how racial categorization and racial discrimination shape the life chances of new immigrants. If health disparities reveal the embodiment of racial discrimination and inequality (Krieger 1999), studying black immigrant health trajectories is essential to better understanding the linkages between exposure to such social conditions and patterns of morbidity and mortality.
CHAPTER 5

MUSLIM RACIALIZATION AND THE FORMATION OF BIRTH OUTCOME DISPARITIES AFTER 2001

The attacks of September 11, 2001 had many immediate and longterm consequences for both the United States and populations around the world. For Muslim and Arab communities, the attacks were followed by a backlash of anger and violence, which gave way to a lingering environment of discrimination, surveillance, and public scrutiny. These changes not only created new barriers to economic opportunities and social inclusion, but they were also likely sources of acute and chronic stress. Although discrimination-related stress has been associated with poor health outcomes among minority populations (Krieger 1999; Mustillo et al. 2004; Williams and Mohammed 2013), there has been little research on the health patterns of U.S. Muslims or how their outcomes changed in the years after September 11.

Muslim migration presents both challenges and opportunities for understanding the intersections of race, immigration, and health. For scholars interested in the consequences of shifting symbolic and social boundaries, the documented backlash against Muslims in the United States and Europe provides an opportunity to study such processes as they dynamically unfold. Indeed, the attacks of September 11 have been treated as a natural experiment for understanding the consequences of discrimination on birth outcomes (Lauderdale 2006). Although Muslims and immigrants from the Middle East were subject to exclusion and discrimination before 2001, the ensuing years have brought an undeniable hardening of boundaries that has manifested in greater interpersonal discrimination as well as institutional surveillance and exclusion.

However, Muslim populations present both practical and theoretical challenges for schol-
ars interested in the links between social identities and disparities in outcomes. Applying a strict racial lens is difficult because these migrants often balance a variety of ethnic, religious, and national identities (Bakalian and Bozorgmehr 2011). Moreover, individuals of Middle Eastern descent are often formally classified as Caucasian or White, rendering them “statistically invisible” in official documents and databases. Because of data limitations, it is often difficult to define and identify the population of interest, let alone study potential disparities in outcomes.

Yet it is because of these complexities that research on Muslim and Middle Eastern migrant health is so important. Although scholars are only beginning to incorporate Muslims and Middle Easterners into race scholarship (Selod and Embrick 2013), their experiences can help us understand the social processes of racial and group formation. Muslim identity and Arab ethnicity are often racialized in a way that makes a Middle Eastern appearance salient to social life and a marker for discrimination and exclusion. If race is understood not as a set of fixed categories but as a signifier of social conflict referring to different types of human bodies (Omi and Winant 1994), then the ongoing social exclusion of perceived Muslims illustrates the formation of a Muslim other (Rana 2011). Understanding how these conflicts affected health outcomes can not only advance our understanding of the Muslim experience, but can also bridge a gap between our theory on racial identity and our empirical research on outcome disparities.

In this chapter, I investigate birth outcomes in New York City between 2000 and 2010 to understand how patterns of absolute and relative disparities changed after 2001. To my knowledge, there has been no previous research on the longterm consequences to Muslim health. I connect these patterns to levels of discrimination, as measured by the change in employment discrimination cases filed during the same period. Beyond that, I am interested in understanding how processes of boundary construction—specifically, the racialization of perceived Muslims—had an impact on groups who often do not share a Muslim identity,
such as Asian Indians. Finally, I connect this analysis to existing research on immigrant health by examining changes in birth outcome patterns associated with duration of residence for each immigrant group. I conclude by discussing how the emergence of birth outcome disparities during this period contributes to theory on the sociohistorical formation of health disparities.

5.1 Background

Muslim Racialization Before and After 2001

Discrimination against Muslims and Middle Eastern immigrants is certainly nothing new. Edward Said’s *Orientalism* (1978) documented a long history of essentialist and colonialist depictions of the Middle East and its peoples. In art, scholarship, and the media, Muslims and Arabs have been portrayed as villainous and uncivilized, and presented as a cultural contrast to the West (Shaheen 2003). In previous eras, Muslims were often excluded from European societies based on perceived inherent differences between Muslims and Christians, and this ideology was used to justify imperialism against Muslim populations (Rana 2011; Selod and Embrick 2013). Even before 2001, Muslims were “others” both in Europe and the United States.

Yet the attacks of September 11, 2001 marked a turning point for the experiences of Muslim and Middle Eastern immigrants. The days after brought an immediate backlash from a population unaccustomed to large-scale attacks on its own soil. The FBI documented a dramatic 1,600 percent spike in hate crimes against Muslims in the period after the attacks, from 28 reported incidents in 2000 to 481 in 2001 (Disha, Cavendish, and King 2011). Although the number of hate crimes declined from their post-9/11 peak, they remain five times higher than their pre-2001 levels and may again be on the rise.

While hate crime data only captures the most extreme and violent manifestations of
discrimination, symbolic and social boundaries against Muslims hardened in other ways. Arab men saw a 10% reduction in their real wage and weekly earnings in the period after 2001 (Kaushal, Kaestner, and Reimers 2007). An audit field experiment using matched resumes found that Arab applicants need to send two resumes for every one sent by a white applicant in order to receive a callback for an interview (Widner and Chicoine 2011). The U.S. Economic Employment Opportunity Commission also reported a spike in workplace discrimination charges made by Muslims and those of Middle Eastern origin (see Figure 5.1).

It is important to note that the hardening of symbolic and social boundaries against the U.S. Muslim population was not solely an organic reaction to a single act of terrorism, but resulted from social and political organization and conflict throughout the 2000s. For example, after 2001, networks of civil society organizations worked to influence the public discourse about Islam through media outlets (Bail 2012, 2014). Fringe organizations that portrayed Islam as inherently violent and inferior were able to organize and gain traction by the end of the decade and had a substantial influence on cultural representations of Muslims.
in the media and politics.

In addition, boundaries against Muslims were institutionalized in immigration policy and state surveillance efforts. The National Security Entry-Exit Registration System, enacted in June of 2002, required non-citizen men over the age of 16 from twenty-four Muslim countries to undergo fingerprinting and interrogations, although this program was later phased out (Cainkar 2009). The USA Patriot Act similarly expanded federal capacity to monitor and track terror suspects, often without probable cause. The Muslim population became subject to increased surveillance, ranging from profiling in airport security screenings to a systemic monitoring and tracking. The most notorious example occurred in New York City, where the New York Police Department established an extensive program of monitoring every mosque within 100 miles of New York, as well as Muslim student associations and other community sites (Shamas and Arastu 2013).

5.2 Racialization and the Formation of the Muslim ‘Other’

Such responses toward Muslims are often analyzed under the umbrella of Islamophobia, indicating a fear or hostility directed toward Islam as a religion. However, religion is not a prerequisite to experiencing the post-2001 effects of Islamophobia. Rather, physical appearance often serves as a marker for exclusion and discrimination. This may include cultural practices that distinguish Muslims, such as head scarfs and other forms of distinctive dress. But physical markers—brown skin and long beards in particular—can be the basis for exclusion, as well. Sikhs, for instance, are neither Muslim nor Arab, yet their long beards and distinguishing turbans have led to similar experiences of discrimination and violence after the attacks of September 11 (Ahluwalia and Pellettiere 2010).

In this sense, Muslims have been racialized in the years since 2001 (Kibria 2011; Selod and Embrick 2013; Selod 2014). By racialization I refer to the extension of racial meaning
to a previously racially unclassified social practice or social group (Omi and Winant 1994). We can see this extension of bodily-based social conflict (as well as its ambiguity and irrationality) anecdotally in the harassment of Nina Davuluri, the first Asian-Indian winner of the Miss America pageant, or in opinion polls showing belief that President Obama is Muslim. While the fear may be anchored to religion and religious terrorism, its social application relies on appearance.

Analyzing processes of racialization can reveal the post-2001 experience better than between-group comparisons alone. For one, it helps overcome methodological decisions about choosing between religious, ethnic, and regional markers of identity. Studies of Arab ethnicity, for example, often miss the larger population of Muslims. However, the dearth of data on religion makes it difficult to study the Muslim population in the first place. Shifting theoretical focus to processes of racialization sheds light on the dynamics of post-2001 life that make these identities salient, as well as possible consequences for individuals whose do not share these religious and ethnic identities but may be categorized as such regardless. Although scholars have increasingly documented the dynamics of post-2001 Muslim racialization (Kibria 2011; Selod and Embrick 2013; Selod 2014), we still do not fully understand its consequences, particularly for health outcomes.

5.3 **Muslim and Middle Eastern Health Outcomes**

Much of the research on the health of Middle Eastern and Muslim populations in the United States is based on community studies of Arab Americans and produces mixed results (Read, Amick, et al. 2005; Abdulrahim and Baker 2009). By many measures, Arab migrants tend to be relatively healthy, particularly compared with other non-White minority groups (Dallo et al. 2012). Their relatively high socioeconomic status and health behaviors associated with practicing Islam, such as abstaining from alcohol, are often put forward as explanations.
However, Arabs in Michigan have higher mortality risk from chronic conditions than would be otherwise expected (El-Sayed and Galea 2010; El-Sayed et al. 2011; Nasseri and Moulton 2011).

There are two lingering questions about determinants of Muslim American health. First, how has the increase in experiences of racialization and discrimination affected their health outcomes? Research looking specifically at experiences of post-2001 discrimination have found it to be associated with psychological distress and worse self-rated health (Padela and Heisler 2010). In the six-month period immediately following September 11, Arab mothers identified by name-matching algorithms—a methodological solution to the dearth of data Middle Eastern migrants (Nasseri, Mills, and Allan 2007; Nasseri and Moulton 2011; Dallo et al. 2012)—were found to have lower birth weights, with elevated stress related to anti-Arab discrimination put forward as a likely explanation (Lauderdale 2006).

A second question, however, is how does acculturation affect these experiences and outcomes? While immigrant health literature typically finds associations between acculturation and worsening outcomes for Hispanic, black, and Asian immigrants, it is unclear if Muslim immigrants follow a similar pattern. Residence in areas with high Arab–American concentrations may be associated with lower risk of poor birth outcomes, at least when examining the large Arab population in Michigan (El-Sayed and Galea 2010). Other research suggests Arab American self-rated health may improve or show no real change with greater duration of residence or acculturation, a trend that runs counter to the trajectories of other immigrant populations (Read, Amick, et al. 2005; Abdulrahim and Baker 2009).

The current literature is inconclusive in part because of data limitations. Much of the research has been conducted on the large Arab-American population in Michigan, particularly Dearborn, and does not always represent Arabs dispersed throughout the rest of the United States. Beyond that, there are larger theoretical and methodological issues with defining the population. Studies tend to focus on Arab immigrants, in part because they are
the easiest to identify, either by location (i.e., Dearborn) or using name-matching algorithms (Lauderdale 2006; Nasseri et al. 2007; Nasseri and Moulton 2011; Dallo et al. 2012). Yet if our theoretical interest is in discrimination and racialization of Muslims, identifying Arabs only captures a fraction of the population. Even identifying Muslims would be insufficient, given the racialization of Sikhs and other groups who may be mistaken for Muslims.

This is not a methodological challenge with an easy solution. It not only requires better data, but also justifying a variety of decisions about how to conceptualize and operationalize the group of interest and the mechanisms affecting their outcomes. Yet even without a straightforward solution, it is valuable to identify the problem. Approaching the analysis as a comparison of the Arab ethnic subpopulation leaves a large gap between our theory on group formation and the mechanisms that impact health outcomes. As explained in the methods section that follows, I take steps to address these issues by creating a more expansive definition of the Muslim population and explicitly including Asian Indians, who are less likely to identify as Muslim.

5.4 Predicting Birth Weight Outcomes

Large bodies of research have looked at the detrimental effects of both racial discrimination and duration of residence for recent immigrants. A significant portion of this work has relied on low birth weights as an indicator of maternal and child health. This is a useful indicator, in part, because it is sensitive to short- and long-term exposure to stress. The stress response in the mother is thought to trigger the production of placental corticotrophin-releasing hormone (CRH), which can induce preterm birth and is associated with reduced birth weight (Lockwood 1999). The hormonal response can be triggered by short-term shocks, such as earthquakes or wars during pregnancy (Torche 2011; Torche and Shwed 2015). But it also is associated with long-term chronic stress, including prolonged exposure to racial
discrimination (Dominguez et al. 2008).

Birth weight not only captures the stress and health profile of the mother, but it also can be a predictor of a variety of outcomes for the child. Low birth weight is associated with neurological disorders and lung disease during infancy, as well as health conditions later in life, including cardiovascular disease and diabetes (Torche 2011). It is also associated with a variety of social outcomes, including lower socioeconomic status later in life (Conley and Bennett 2000). In this sense, poor birth outcomes can help us understand the intergenerational reproduction of inequality, as the social conditions of the mother can have longterm negative consequences for her child, beginning in utero.

Table 5.1: Hypothesis Table for Birth Outcome Predictions

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Acute Stress Hypothesis</strong></td>
<td>Rates of adverse birth outcomes increased for the Muslim population immediately after 2001, corresponding to the anti-Muslim and anti-Arab backlash.</td>
</tr>
<tr>
<td><strong>Chronic Stress Hypothesis</strong></td>
<td>Rates of adverse birth outcomes increased for the Muslim population throughout the 2000s, corresponding to indicators of growing anti-Muslim and anti-Arab discrimination.</td>
</tr>
<tr>
<td><strong>Racialization Hypothesis</strong></td>
<td>Rates of adverse birth outcomes increased for non-Muslims who also experienced post-2001 discrimination, particularly Asian Indians.</td>
</tr>
<tr>
<td><strong>Duration Hypothesis</strong></td>
<td>Rates of adverse birth outcomes become worse for the Muslim population with duration in the United States, as exposure to discrimination increases.</td>
</tr>
</tbody>
</table>

Given the extant research linking discrimination and birth weights, I develop multiple hypotheses about changes in post-2001 outcome disparities. Table 5.1 lists predictions of increased adverse birth outcomes corresponding to the acute stress of a post-2001 backlash, which resulted in a period of elevated violence, threats, and explicit anti-Muslim
discrimination. In addition, I predict prolonged changes in birth outcomes related to chronic stress, which has been associated with frequent experiences of racial discrimination. The racialization hypothesis predicts these outcomes not only for the population from Muslim-majority countries, but also for groups frequently misidentified as Muslims, such as Sikh and Hindu Asian Indians. Finally, I test for duration effects to see if, as expected, birth outcomes become worse for Muslim immigrants with duration of residence, as is seen for other minority populations.

5.5 METHODS

DATA

This case draws birth data from the vital statistics of New York City to look beyond the immediate post-2001 period and assess possible health consequences of elevated anti-Muslim and anti-Arab sentiment. New York City is an important case for examining the post-2001 effects on Muslims for a number of reasons. First, because of the relatively small size of the U.S. Muslim population, there are only a few cities in the United States with enough Muslims for comparable outcome data. Second, the attacks of September 11 occurred in part in New York City, as did some of the largest backlash against Muslims. Further, New York City is arguably the place where boundaries against Muslims were institutionalized to the greatest degree, in the case of expansive NYPD surveillance and profiling of Arabs and Muslims.

The Vital Statistics reports of New York City are also one of the few data sources to collect ancestry information for individuals from the Middle East, North Africa, and Central Asia. It therefore allows for the construction of a category representing Muslim-majority countries of the Middle East and Central Asia, which is not available in many national records or survey datasets.
The limited-use data were obtained from the New York City Office of Vital Statistics after approval from Boston University’s institutional review board, the development of a data protection plan, and submission of a notarized affidavit pledging data confidentiality. The final dataset includes the entire population of more than 1.3 million births occurring in New York City between January 1, 2000 and December 31, 2010.

**Measures**

For the analysis that follows, I use birth weight data to create two measures of adverse outcomes. Following national standards, infants weighing less than 2,500 grams are classified as low birth weight (LBW). Births under 1,500 grams are considered very low birth weight (VLBW). Nationally, about 8% of births are considered LBW and 1.4% are VLBW.

The primary independent variable is a combined measure of the Vital Statistics race and ancestry categories. As discussed above, the population of interest extends beyond those identifying Arab ancestry. In order to approximately measure the Muslim population, I combine ancestry categories defined in the NYC Vital Records as “Near East”, “North Africa”, and “South Central Asia”. This captures a wider range of Muslim-majority countries than Arab ethnicity alone. However, the records do not explicitly identify religion, so it is impossible to disaggregate Muslims and non-Muslims who identify with the same regional ancestry.\(^1\) Because the South Central Asian category includes India, I created a separate category using the “Asian Indian” racial category. The final categorical variable includes the following groups: non-Hispanic White, Muslim, Asian, Black, Hispanic, Asian Indian, and Other. Table C.1 in the Appendix includes a breakdown of the original codes and origin countries used to create the final categorical variable.

\(^1\)In the remaining tables and figures I use the label “Muslim” to denote this population, although a more accurate description would describe it as individuals with ancestry from Muslim-majority countries of the Middle East and Central Asia. I use the terms “Muslim” and “Middle Eastern” interchangeably throughout this chapter, in part because I lack data on religious background.
The vital statistics records also include a limited number of socioeconomic and behavioral variables that are collected during the delivery. The father’s and mother’s education was coded as a dummy variable, with 0 representing high school or less and 1 indicating education above the high school level. I also include data on whether or not the mother smoked, drank alcohol, or used narcotics during pregnancy, with 0 indicating no and 1 indicating yes. For a subsection looking at duration of residence effects, I use information about the year of migration to create a variable with the following duration categories: 0-4 years, 5-9 years, 10-20 years, and more than 20 years.

I pair the above individual-level data with a macro-level indicator of discrimination. I collected data on the number of discrimination charges filed with the U.S. Equal Employment Opportunity Commission that were based on a Muslim identity (descriptive statistics are presented in Figure 5.1 above). In the initial months after the 9/11 attacks, the EEOC saw a 250% increase in the number of religion-based discrimination charges involving Muslims. In the years since, about 60% of such charges were related to alleged unlawful discharge, and about 40% were related to harassment, which can “take the form of offensive jokes, slurs, name calling, physical assaults or threats, displaying offensive objects or pictures, and interfering with work performance as well as other actions.” Although the EEOC also reports data on discrimination charges based on Middle Eastern ancestry, it did not begin collecting this data until the 2000s, making a trend difficult to observe. Further details about the collection of this data is available at www.eeoc.gov. I lag the reported data by one year, to reflect the likely delay between experiencing and reporting discrimination events. For 2001, births before September 11 are coded to 2001 rates and those after are coded to 2002 discrimination rates.
ANALYSIS

The analysis is broken up into two parts. In the first section, I use the full set of birth data from 2000 to 2010 to look at trends over time. I am interested in whether Muslims and other groups saw an increase in adverse birth outcomes during the period. I begin the analysis by aggregating the data for each month and decomposing the data into seasonal effects and underlying trends. I use the trend decomposition in order to understand descriptive changes and facilitate group comparison of relative disparities. I then run a logistic regression analysis to test whether the observed trends are related to levels of discrimination, as measured by EEOC cases. I run two sets of models, first establishing the relationship, and then incorporating the above individual-level measures of age, education, behaviors, and immigration status.

In the second part of the analysis, I test for a duration effect, or what is commonly referred to as the acculturation hypothesis. It is unclear whether Muslim immigrants experience worse birth outcomes with greater duration of residence, as is often seen for Hispanic and black immigrants. In this section, my analysis is limited to 2008-2010 because the NYC Office of Vital Statistics did not report year of migration data until 2008. I again rely on logistic regression to compare each group by the duration categories outlined above.

5.6 RESULTS

PART 1: TRENDS OVER TIME

Did birth outcomes become worse for Muslim and Middle Eastern immigrants after 2001? Because fertility decisions and outcomes can have seasonal variation, it is important to account for cyclical patterns when looking at the data over time. Figure 5.2 decomposes the data for the Muslim population—both foreign-born and U.S.-born—into seasonal variation and an observable trend. The top panel presents the raw data, and the third panel represents
the decomposed trend over time in the percentage of births under 2,500 grams, which is the criteria for low birth weight classification.

The trend line appears to show a dramatic jump in LBW births immediately after 2001. The decomposition may actually mask the degree of the spike by smoothing the before and after averages. This supports an “acute stress” hypothesis that predicts an increase in adverse
outcomes during the post-2001 backlash. However, in the years after 2001 the proportion of LBW births appears to have declined to near pre-2001 levels. There is again an increase, with another sharp jump around 2008 and elevated levels into 2010.

Figure 5.3 plots a similar decomposition for very low birth weight births (less than 1,500 grams). While these births represent a greater threat to short-term and long-term health
for the infant, they are less common, representing roughly 1.4% of all births in the U.S. population. The low numbers of such births in any given month make short-term trends difficult to interpret for the Muslim population.

However, the data in Figure 5.3 appear to tell a similar, though less consistent, story. There appears to be an up tick in very low birth weight births after September 11, 2001, and a subsequent decline in the years after. Although there is more general variability in the middle of the decade, Figure 5.3 shows a similar general up tick in the last years of the 2000s, as seen with LBW births in Figure 5.2.

While there appear to be increases in poor birth outcomes for Muslim groups after 2001 and at the end of the decade, the next figures put these changes in context. First, it is important to know how these changes compare to other groups. Changes in birth outcomes could reflect historical and macro-social events that are capable of affecting everyone, such as shared trauma and stress after the attacks of September 11 and the economic shock of the 2008 economic recession.

Figure 5.4 plots the decomposed trend lines for Muslims relative to non-Hispanic whites
in the period. The trend for the white population is much less variable—in part due to the larger size of the sample—and does not exhibit the same increases in LBW births after 2001 and at the end of the decade. In fact, the relative disparity between Muslims and non-Hispanic whites appears to have grown throughout the decade.

The relative comparison for very low birth weight births does not reveal the same degree of gap or increase in relative disparities. The non-Hispanic White rate for very low birth weights also remained relatively steady throughout the period, but as mentioned above, the Muslim rate of very low rate births did not show a consistent increase or pattern. The exception appears to be the period after 2001, where the relative gap grew. The trend line also shows a similar gap at the end of the decade, but not large enough to be conclusive.

Figure 5.6 plots all race and ancestry groups, with disparities indexed to January 2000 levels. This provides a visualization of how much relative gaps have changed during the period. Although the black rate of LBW births was more than 2.5 times as a high as the non-Hispanic white rate in January 2000, both are plotted as 1 on the graph, representing the comparison point for subsequent changes. In other words, this analysis holds absolute
Figure 5.6: Relative Disparities Between Groups Indexed to January 2000 Levels

disparities constant, and looks at the change in relative disparities during the period.

Although there was fluctuation throughout the period, the relative disparities did not substantially increase for most racial groups. The black disparity fluctuated to as much as 10% higher than it was in January 2000 and the Hispanic rate grew by as much as 8.5%. But even the non-Hispanic white group saw some periodic increases, with a maximum of about 6.9% higher than January 2000 levels. While these changes may be tied to fluctuating social conditions during the period, they do not suggest a substantial shift in the stratification of birth weight outcomes relative to the beginning of the decade.

However, the Muslim rate tells a different story. In January 2000, the Muslim rate was only about 10% higher than the non-Hispanic white rate, a relatively small absolute difference. The gap between the two groups grew substantially over the ensuing decades, fluctuating as much as 60% higher than the January 2000 gap. Whereas the two groups had relatively similar outcomes at the beginning of the decade, by 2010 a health disparity had emerged.

The two other groups to see relative increases were Asian and Asian Indian ancestry
groups. This falls in line with the racialization hypothesis. Asian Indians, who are less likely to be practicing Muslims but are often targets of anti-Muslim discrimination, saw the second highest increase in the outcomes gap during the period. The growth was not as large as for Muslims, but grew to as much as 26% higher than the relative gap in early 2000. It is important to note that the absolute disparity for Asian Indians was already quite large. The rate of LBW births in January 2000 was 1.87 times higher than the rate for non-Hispanic whites. So although the relative increase was not as great as it was for Muslims, the disparity was already higher. By the end of the decade, the Asian Indian rate was nearly 2.4 times as high as the rate for non-Hispanic whites.

The Asian group also saw an increase over the period, although it fluctuated more than any other group and veered upward only toward the end of the decade. This may reflect a similar case of mistaken identity, as well as possible measurement issues with the Asian category in the New York City Vital Statistics records. It is not possible to disaggregate further by country of origin to clarify the source of this change. A similar plot for VLBW births does not show the same consistent change, although it does reveal spikes in relative disparities for Muslims after 2001 and at the end of the decade. See Figure C.1 in Appendix C for details.

Although these results establish a general trend, they do not fully explain whether such changes were due to socioeconomic or behavioral factors. Perhaps more importantly, the descriptive results leave an unanswered question about why relative disparities decreased after 2001 before climbing again at the end of the decade.

The next set of multivariate results addresses these questions by examining the association of birth outcomes with anti-Muslim and anti-Middle Eastern discrimination, as measured by annual discrimination charges filed with the U.S. Equal Employment Opportunity Commission.\(^2\) Table 5.2 includes models for each racial/ancestry group, where Model 1

\(^2\)I only present results for LBW births here. Similar regressions on VLBW births can be found in Appendix
Table 5.2: Logistic Regression Results for Low Birth Weight and Employment Discrimination by Group

<table>
<thead>
<tr>
<th></th>
<th>Muslim</th>
<th>Indian</th>
<th>White</th>
<th>Hispanic</th>
<th>Black</th>
<th>Asian</th>
</tr>
</thead>
<tbody>
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<td>Intercept</td>
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<td>-2.62**</td>
<td>-2.49***</td>
<td>-2.51***</td>
<td>-3.15***</td>
<td>-2.96***</td>
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<td></td>
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<td>(0.15)</td>
<td>(0.06)</td>
<td>(0.14)</td>
<td>(0.03)</td>
<td>(0.06)</td>
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<td>0.03*</td>
<td>0.02*</td>
<td>0.01</td>
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<td></td>
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<td>(0.00)</td>
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<td>(0.01)</td>
<td>(0.02)</td>
</tr>
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<td>-0.01</td>
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<td>(0.02)</td>
<td>(0.04)</td>
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<td>-0.13***</td>
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<td>(0.01)</td>
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<td>(0.04)</td>
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<tr>
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<td>(0.01)</td>
<td>(0.02)</td>
<td>(0.04)</td>
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<td>(0.06)</td>
<td>(0.03)</td>
<td>(0.01)</td>
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AIC: 44188 44188 46764 46764 534582 534582 539038 539038 218094 218094 114258 114257
BIC: 44188 44188 46764 46764 534582 534582 539038 539038 218094 218094 114258 114257

Deviance: 19608.45 19559.95 27446.48 27405.26 121987.69 121453.75 277789.97 276374.99 149543.23 147662.85 41857.33 41660.66
Num. obs.: 44188 44188 46764 46764 354582 354582 539038 539038 218094 218094 114258 114257

* * * p < 0.001, ** p < 0.01, * p < 0.05
is a logistic regression of the EEOC data on low birth weight births, with coefficients scaled
to represent 100 charges filed. The initial models match the above disparity patterns, in
that the largest associations between birth outcomes and discrimination reports are seen for
Muslims, followed by Asian and Asian Indian births. There is also a smaller association
for the black population, before controlling for individual-level characteristics, but there is
no relationship for Hispanics or non-Hispanic whites. Much like LBW rates, employment
discrimination reports spiked after 2001, fell in the mid-200s, and then grew again toward
the end of the decade.

The second model adds individual-level characteristics to see if the above associations
remain after accounting for socioeconomic, behavioral, or migration factors. The level of
anti-Muslim discrimination remains a significant predictor of increased LBW births for
both Muslims and Asians, even after accounting for other controls. While the measure of
socioeconomic status is limited to education, this provides some support for the hypothesis
that the resulting disparities are tied to mechanisms related to discrimination, rather than
solely socioeconomic factors or immigrant selection.

Interestingly, the coefficients for white, Hispanic, and black populations become neg-
ative in the second set of models, suggesting an inverse relationship between the level of
discrimination against Muslims and adverse birth outcomes for these groups. In other words,
the outcomes for these groups seem to have improved during periods of high discrimination.

It is worth noting that the increases in LBW births for Muslims in 2001/2002 and the
end of the 2000s also coincide with periods of economic downturn. It is possible that the
increase in LBW births was related in part to economic hardship. However, immigrants
from the Middle East and Asia tend to migrate with relatively high levels of socioeconomic
status compared to other minority groups. In fact, Hispanic and black populations tend to be
more vulnerable and directly affected by economic recessions, yet they did not see similar

Table C.2. As suggested in the above analyses, the results for VLBW births reveal a less consistent trend.
increases in adverse outcomes. The fact that discrimination levels increased during both recession periods is telling. Scapegoating of immigrants and minorities tends to increase during times of economic uncertainty, and it is possible the recessions had an indirect effect on birth outcomes through an increase in group conflict.

**PART 2: DURATION OF RESIDENCE EFFECTS**

The differences between foreign-born and U.S.-born births in the above results raise questions about changes that occur across generations and with duration of residence in the United States. The New York City Office of Vital Statistics did not report year of migration in its records until 2008, so the remaining results include only births from 2008 to 2010. In this section, I am interested in whether each group exhibits the “duration effect” seen in the immigrant health literature, and whether or not this explains some of the changes in birth outcomes in the post-2001 era. Studies have found worsening birth outcomes (i.e., a higher probability of LBW births) associated with duration of residence for a variety of immigrant groups, dependent on age at arrival and receiving-context factors (Teitler et al. 2015).

Figures 5.7 plots the proportion of LBW births by duration of residence in the United States for first-generation immigrants. The rate for U.S.-born members of each group, which includes the second generation and beyond, is represented by the dotted red line on each plot. These data provide initial comparisons of general trends between groups, which will be explored further below.

On the whole, the data show an expected duration effect—with increasing rates of low birth weight with duration of residence—for black, Hispanic, Asian and Asian Indian immigrants in New York City. These groups all have higher rates of LBW births after 15 years in the United States compared to new migrants. For example, roughly 7.1% of births for black immigrants are low birth weight five years after migration, but that increases to nearly 10% for those in the country 15 years or more. This initial comparison does not
account for age.

There has been less previous research on the birth weight patterns of Arab/Muslim immigrants. The rates for Muslim immigrants do not exhibit a clear trajectory, and the continuous data points for years in the United States (not plotted here) tend to be more dispersed than the other groups. Settled Muslim immigrants have LBW births at the same rate as new immigrants, and the first generation rate is almost identical to the U.S.-born rate. On the whole, the Muslim plot more closely resembles the patterns of non-Hispanic Whites than any other group. It is important to note that it is impossible to distinguish duration
Figure 5.8: Percent Very Low Birth Weight (<1,500 grams) By Duration of Residence. Dotted red line represents U.S.-born rate for each group.

Effects from cohort effects with this cross sectional data. Nearly all migrants in the 0-4 year and 5-9 year categories arrived after the attacks of September 11, 2001.

The results in Figure 5.8 show a similar comparison for very low birth weights (i.e., less than 1,500 grams). The effects of duration of residence are again clearly detrimental for black and Hispanic immigrants, resulting in higher rates of very low birth weights. The pattern is less clear for Asian Indian, Muslim, and Asian immigrants. There is very little difference between the duration categories. Muslim immigrants in the country 5-9 years has slightly higher rates of LBW births, and this is also the group that immigrated most recently.
after 2001. However, the descriptive results are mostly inconclusive.

Again, this comparison does not adjust for the older ages of settled migrants, and the sparse data, particularly for Muslim migrants, warrants caution. Still, the initial assessment suggests that these understudied groups do not show the same worsening of birth outcomes with greater duration of residence seen in black and Hispanic immigrants.

The final set of multivariate results examines the duration effect for each group after accounting for various individual-level predictors. The first model for each group presents duration differences after controlling for age, and the second model includes education levels and the same behavioral measures presented in the previous section. The initial models confirm the descriptive patterns above: The “healthy immigrant effect” and/or the worsening of outcomes with duration of residence is only seen for black, Hispanic, and Asian immigrants. Socioeconomic and behavioral factors only account for a small portion of duration differences, in most cases.

Muslim and Asian Indian immigrants do not show the same intra- or inter-generational differences in birth outcomes. The exception is the second model for very low birth weights, which finds U.S.-born Muslims have significantly higher VLBW births relative to new migrants, after controlling for other factors.

5.7 DISCUSSION

This chapter set out to explore and understand Muslim and Middle Eastern immigrant health in the post-2001 era. Four important findings stand out. First, absolute and relative birth outcomes for foreign-born and U.S.-born Muslims became worse in the 2000s, with spikes in LBW births after 2001 and toward the end of the decade. Second, the increase in poor outcomes was not limited to immigrants from Muslim-majority countries, but also affected Asian Indians and Asians, to a lesser degree. Third, the worsening of birth
Table 5.3: Logistic Regression Results for Low Birth Weight

<table>
<thead>
<tr>
<th></th>
<th>Muslim</th>
<th>Indian</th>
<th>White</th>
<th>Hispanic</th>
<th>Black</th>
<th>Asian</th>
</tr>
</thead>
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</tr>
<tr>
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<td>(0.19)</td>
<td>(0.12)</td>
<td>(0.12)</td>
<td>(0.12)</td>
</tr>
<tr>
<td>10-19 yrs</td>
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<td>(0.06)</td>
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<td>-0.14***</td>
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AIC
BIC
Log Likelihood
Deviance  6843.50  6819.89  7176.61  7142.13  33704.65  33599.99  70712.02  70253.71  40283.94  39682.83  12830.78  12798.92
Num. obs. 14275  14248  11948  11933  97185  97009  138747  138310  58604  58288  34164  34117

*** p < 0.001, ** p < 0.01, * p < 0.05
Table 5.4: Logistic Regression Results for Very Low Birth Weight

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<th>Asian</th>
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AIC
BIC
Log Likelihood
Deviance
Num. obs.

**p < 0.001, *p < 0.01, *p < 0.05
outcomes coincided with increases in anti-Muslim discrimination, as measured by workplace discrimination cases. Fourth, these worsening outcomes appear unrelated to acculturation, and the expected worsening of outcomes with duration of residence was not seen for these groups. Each of these has theoretical implications for our understanding of race, migration, and health, which I discuss below.

The rise in low birth weight births for Muslims in New York City is new evidence in our understanding of discrimination, stress, and health. Previous research has found a similar rise in adverse birth outcomes for Arabs in the period immediately after September 11, 2001 in California, likely due to the spike in anti-Muslim and anti-Arab discrimination in this period (Lauderdale 2006). Although the attacks in New York City were a source of acute stress themselves, no group experienced an increase in low birth weight births as large as Muslims. This implicates stress related to anti-Muslim discrimination as a cause of the increase, and a similar spike in very low birth weight births offers further support.

Moreover, although the rates of LBW births for Muslims initially declined from their post-2001 peak, by 2010 the rate of LBW births had grown even higher. This is the first study, to my knowledge, to find a longterm disparity emerging among the Muslim population. The longterm trend is important because it implicates chronic stress, rather than acute episodes, and points toward the formation of a disparity in outcomes.

This is further reinforced when using workplace discrimination as a proxy for the general level of discrimination. Although this data is collected nationally, and is not specific to New York City, it likely coincides with broad cultural, political, and economic trends. Importantly, the association between discrimination and elevated LBW births persisted after accounting for available socioeconomic and behavioral factors. The hardening of boundaries against Muslims in the post-2001 era may have not only affected their social lives, but also their life chances.

And it is important to keep in mind that such boundary shifts did not occur organically,
but were in part the product of social organization and political conflict. Identifying “racial projects” can help link trends in racial formation with the sociohistorical formation of health disparities. The broader social conditions represented by the employment discrimination proxy were the result of anti-Muslim civil society organizations, political discourse, and policies related to surveillance and profiling (Cainkar 2009; Bail 2012, 2014). Future research should more explicitly make connections between such social changes with patterns of outcome disparities.

There is also evidence that this increase affected Asian Indians and Asians, to a lesser degree. This is what would be expected under the racialization hypothesis. An increase in anti-Muslim discrimination over the past 15 years has been undeniable. The challenge has been understanding the resulting configuration of boundaries and who, exactly, has been subject to such discrimination. Public health studies most frequently rely on Arab ethnicity, which only captures a portion of the Muslim population and misses group boundaries as they are actually drawn.

In this chapter, I expand the analysis to a wider range of Muslim-majority countries. Yet even Muslim identification, if such data were available, would miss important information about how Islam has been racialized. Social theorists have long understood race as a social representation and a social process, rather than an underlying biological reality. It is not the identity, but the perception of the identity—the act of social classification—that matters. We can see this in the attacks on Sikhs and non-Muslim Asian Indians who have been mistaken as Muslim. These fundamental theoretical notions about the formation of group boundaries, however, have been missing from our analysis of disparities in outcomes, particularly health outcomes.

The above information led me to hypothesize a strong duration effect for Muslim immigrants. If Muslims experience chronic stress related to discrimination, I suspected that greater exposure to that environment would lead to similar downward trajectories we
see with other minority immigrant groups. That was not the case. The null result could be related to data availability. I only examined a period from 2008-2010, where the duration effect could not be disentangled from arrival cohorts. In other words, the new immigrants (less than 10 years duration) were not exceptionally healthy relative to settled migrants, but they also arrived after 2001, when the environment had arguably changed. This is a question that warrants further analysis with longitudinal data in order to understand the true trajectory.

One possibility is that there is no decline with duration of residence for Muslim immigrants. Studies have found this pattern primarily for black and Hispanic immigrants and have attributed it to behavioral changes, such as an increase in smoking or worse diet, associated with acculturation. While other scholars, including this dissertation, argue that culture must be understood in conjunction with discrimination and structural factors, acculturation and culture may still play a role. Studies suggest that social exclusion or discrimination may affect how Muslims integrate, particularly across generations (Kibria 2008). In some cases, second generation immigrants turn away from both their home country identity and their host country toward a stronger identification with revivalist Islam, as means of coping with the challenges of integration. This may play a role in the radicalization of Muslim youth in some Western countries, for example. But strictly in terms of health outcomes, it may also reinforce behaviors that are beneficial to health, such as abstaining from alcohol.

These inter-generational changes are also an important area for further inquiry and longitudinal monitoring. If we are seeing now the formation of a disparity in adverse birth outcomes, it suggests further disparities in health and social outcomes in the future for the children born during this period, given the link between birth weight and a poor outcomes later in life. Moreover, if discrimination against Muslims has become systemic enough to act as a fundamental cause (Phelan and Link 2015), then disparities are likely to be found across an array of other disease outcomes and operate through a “massive multiplicity” of linking
mechanisms. Further research in this area can not only shed light on the consequences of post-2001 boundary shifts, but it can also help us understand the upstream “cause of causes” that lead to the formation of disparities in health and mortality.
**Conclusion**

What can three cases investigating the health trajectories of different immigrant groups across a range of historical and social contexts tell us about the sociology of race, immigration, and health? At minimum, they offer new empirical results regarding the generalizability and variability of popular theories about immigrant health. Explanations of health selection and negative acculturation were primarily generated from research on Hispanic immigration within the past couple of decades. We did not know how the health patterns of previous waves of European immigrants compared, nor fully how newer waves of black and Middle Eastern immigrants differ in their trajectories.

However, the ambition behind the case selection was larger than simply providing new tests of existing explanations. The goal was to connect immigrant health research to the broader sociological and historical literature on racial formation in the United States, and it is from there that the core contributions emerge. For example, Chapter 3 revealed that when Irish and Southern European immigrants were racialized as non-White in the early 20th century, their post-migration childhood mortality trajectories worsened, much like we see with contemporary minority migrants. Importantly, however, these trajectories improved as the racial boundaries shifted throughout the 20th century. This points toward an alternative causal explanation than the selection-acculturation framework used to describe contemporary trajectories. It suggests that race is not only capable of shaping health trajectories—or acting as a fundamental cause that operates through multiple linking mechanisms—but also that its causal origins lie in the sociohistorical processes that change and define race and racial inequality.

This insight has been overlooked in much of our theory about health disparities in part because black-white health and mortality gaps have remained so persistent throughout U.S.
history. Yet we can see how racialization and racial formation operate in the trajectories of black immigrants to the United States, as well. Chapter 4 showed that the racial order is capable of structuring the immigrant experience in ways that challenge the selection and acculturation framework. Indeed, the healthy immigrant effect does not even exist—or at least not for long—for black immigrants who experience the brunt of interpersonal and institutionalized racism.

It is by examining these processes that shape and stratify group boundaries that we can then start to predict the emergence and formation of new disparities in health. Given the documented rise in Muslim racialization in the years after the attacks of September 11, 2001, the findings of Chapter 5 are perhaps expected and unsurprising. Social changes akin to the racial formation of a Muslim “other” appear to have been accompanied by a steady worsening of birth outcomes for Muslims, and in some cases non-Muslims who share similar appearances. Although my data were limited to birth outcomes, the theory suggests we will see similar patterns for other health outcomes.

Together, the empirical cases of this dissertation provide three examples of how considering the sociohistorical formation of health disparities can advance our understanding of both immigrant health trajectories as well as the underlying causes of health and mortality disparities. They demonstrate not only that race is a fundamental cause of immigrant health trajectories, but also that the significance of race is tied to a history of racial formation. In what follows, I consider the contributions and limitations of this dissertation and of examining health disparities formation more broadly.
6.1 Contributions

Contextualizing Acculturation Trajectories

This dissertation began with a critique of the acculturation hypothesis and how it is deployed in immigrant health research. I have argued throughout that it is both conceptually and methodologically flawed, and is often presented without full consideration of the social context into which acculturation occurs. As I conclude, that begs the question: Do the findings in the previous chapters warrant dismissing the acculturation hypothesis altogether?

There is still immense value in considering the role of culture and cultural change in shaping immigrant health trajectories. Research does suggest that health behaviors vary between immigrant groups and are associated with patterns of health outcomes. Previous studies have found that smoking rates, in particular, can play a major role in the distribution of disease across groups (Blue and Fenelon 2011; Fenelon 2013; Lariscy et al. 2015). It is perfectly reasonable to question how and why health behaviors change and how those changes affect post-migration trajectories. I am not advocating a total rejection of acculturation studies.

However, sociologists are arguably unique among the scholars who study health in fully considering the complexities and nuances of culture and cultural change. Our theory is deeply concerned with the entanglements of culture and structure, from Bourdieu’s notion of habitus to studies of the causes and consequences of structural inequality (Bourdieu 1977). In this dissertation, I join a growing chorus of sociologists who advocate for contextualizing processes of acculturation and considering the ways in which culture and acculturation processes are shaped by a context of structural constraints, group interactions, and intersecting identities (Finch et al. 2004; Abraído-Lanza et al. 2006; Holmes 2006; Acevedo-Garcia et al. 2012).

In particular, I argue that race acts as a social structure or social constraint that determines
and shapes acculturation trajectories. Immigrants do not acculturate into a homogeneous and
generalized American constellation of behaviors and ideas. Rather, social position—both
socioeconomic and ethno-racial status—segments cultural networks in ways that pattern
behaviors related to health and illness. Black Caribbean immigrants who experience this
most directly through encounters with interpersonal and institutionalized racial discrimina-
tion tend to have different trajectories than those who do not. Immigration scholars have
long written about the segmented paths taken for both socioeconomic, spatial, and cultural
assimilation. It is time for more scholars of immigrant health trajectories to recognize the
same.

Moreover, whether or not acculturation is “positive” or “negative” can vary between
groups in ways that are tied to the sociohistorical formation of groups and group conflict
(Wimmer and Soehl 2014). Black and Hispanic immigrants who “acculturate” often have
as a reference point an established minority population that is often disadvantaged and
spatially segregated. New groups, such as Middle Eastern and Muslim immigrants, may
not have a similar U.S.-born minority population in which to integrate. Research suggests
second-generation Muslims neither turn toward their host country nor integrate into the
broader U.S. population. Rather, global Islam may provide an alternative identity on which
to draw (Kibria 2008). This is a different model of acculturation than is seen in other
minority immigrant groups, and it raises new questions about the trajectories available after
migration, particularly in the face of discrimination and social exclusion.

HEALTH AND THE REPRODUCTION OF INEQUALITY

The questions and analyses in this dissertation began with a causal arrow in a specific
direction. I examined how processes of racial formation create health disparities by shaping
and stratifying racial boundaries. However, shifting theoretical focus to sociohistorical
factors that shape the formation of health disparities has implications for questions of
causality that run in the other direction. Specifically, how do health disparities create, maintain, and reproduce social inequality?

This is a question that has been understudied in medical sociology. We know that an individual’s health outcomes are often influenced by social position. But there are also a myriad of ways in which health outcomes can affect subsequent social characteristics. Lost wages, time, and energy related to sickness can affect social ties, limit opportunities for economic mobility, and restrict future life chances (Conley and Bennett 2000; Lindholm, Burström, and Diderichsen 2002; Virtanen, Janlert, and Hammarström 2013). This is particularly true in the United States, where the lack of universal health insurance can make sickness particularly financially devastating. Extrapolate individual experiences to the group level, and we can begin to see lingering consequences of the formation of health disparities.

For instance, while I argued in Chapter 3 that childhood mortality rates for European immigrants improved because underlying social conditions related to their racial status changed, it is also likely that these health and mortality improvements further facilitated their upward social mobility. Longer and healthier lives are more conducive to accumulating wealth that can be passed down across generations. Black Americans, meanwhile, were not only denied equal access to public resources and social institutions that facilitated such improvements in life conditions, but they also bore the extra burden of higher levels of sickness, more lost children, and shorter lives throughout the 20th century. An important next step for understanding health disparities is to empirically analyze how such patterns of health outcomes reproduced the social conditions that caused them.

We can glimpse the process in looking at the trajectories of black immigrants to the United States. As they encounter the interpersonal and institutional racism that defines the racial order and makes racism a fundamental cause of health disparities, their health outcomes often become worse. It is taken for granted, but not inevitable, that the “healthy immigrant effect” fades with duration of residence. Why should black immigrants’ health
patterns come to resemble those of the U.S. black population? We know genetic or ancestral similarities do not underly the changes. The answer lies in their social experiences of race. In the span of a generation, we can often see in patterns of health outcomes how race constrains life choices and limits life chances. Studying the health trajectories of minority immigrants is in that sense a study of the intergenerational reproduction of race and racial inequality.

We can predict how this process will unfold in the experiences of Muslim and Middle Eastern immigrants. Chapter 5 demonstrated the emergence of a birth outcomes disparity coinciding with increases in discrimination against Muslims after 2001. Yet even if such discrimination stopped immediately—and all evidence suggests it is increasing rather than abating—the consequences would linger. Low birth weight disparities can portend disparities later in life, including health conditions like cardiovascular disease and diabetes, as well as social outcomes, including lower socioeconomic status in adulthood (Conley and Bennett 2000; Torche 2011). When we examine fundamental causes of health disparities in isolation, we may miss some of the longterm implications of these patterns. However, by shifting theoretical focus to the sociohistorical formation of health disparities, we can better understand how health disparities fit into broader discussions about the organization and stratification of societies.

**Operationalizing Race in Health Research**

Another goal for this dissertation was to bridge a divide between theoretical and qualitative work that examines the formation of race and other social identities and quantitative empirical analysis of disparities in group outcomes. This is inherently difficult because quantitative research typically relies on between-group comparisons to demonstrate differences in outcomes, which masks processes of group formation that both define the groups and create the conditions for outcome disparities. Yet without such comparisons, it would be difficult
to fully understand the generalizable consequences of social inequality.

Shifting the comparison is part of my solution. If we define our comparisons as strictly “black versus white” or “Hispanic versus white” etc., we miss heterogeneity between foreign-born and native-born members of each group. Rather than treat immigrants as subpopulations with entirely unique social circumstances, we can situate their migration experiences within a context-specific racial environment. It is important to do this without jettisoning the characteristics that make them unique. Black Caribbean immigrants, for instance, do have unique communities and cultural identities that matter for health outcomes. However, we also know that their social lives in the United States are constrained and structured by contemporary ideas about blackness and patterns of inequality that were institutionalized long before they arrived (Waters 1999, 2001; Waters et al. 2014). If we conceptually imagine the post-migration comparison as a type of natural experiment measuring the effects of exposure to such a racial environment, patterns of immigrant health trajectories are not so paradoxical. The largest effect sizes (i.e., the largest gap between immigrants and subsequent generations) tend to emerge in proportion to each group’s social position within the U.S. racial hierarchy.

A second part of my solution is to operationalize racial categories based on theory and historical context. Although official racial classification schemes can represent the formal institutionalization of boundaries, we also know that they often do not represent the social reality of inter-group relations. At various points in time, groups have been both officially classified as white and simultaneously racialized as inherently different from the white population at the top of the U.S. hierarchy. This is true of Southern and Eastern Europeans in the early 20th century and many Arabs and Muslims today. Do Muslims or Middle Eastern migrants constitute a distinct “race” by most classification schemes we use today? Most would argue no. But if we design our research beginning with theory about the processes that form disparities in group outcomes, we can see how racialization and group boundary
formation impact Muslims’ social experiences in ways that result in outcome disparities, much like they do for other minority populations.

However, it is not enough to re-operationalize group classifications. The goal is to connect theory about the processes of group formation with causes of outcome disparities. In order to fully accomplish that, it is important to draw on sociological theory to identify the racial projects, both at interpersonal and institutional levels, that make race a meaningful organizer of social life. There is a burgeoning literature that does so by examining the effects of social policies on health outcomes, but there are likely other promising avenues. Operationalizing race will continue to be a challenge for researchers of all types, but it is also an area ripe for innovation and collaboration. The solutions will not belong to theorists, qualitative researchers, or quantitative researchers alone.

6.2 LIMITATIONS

In addition to the limitations discussed in the conclusion of each empirical case, there are limitations to the dissertation project as a whole that offer lessons for how to improve research on immigration and racial health disparities. To continue the above thread: Although one of my goals at the outset was to narrow the gap between theory and methods when it comes to measuring group disparities, there is still a lot of space between how I conceptualize both race and racial inequality and how I measure each. To capture group boundaries at points when they were shifting, I used an operationalization that neither matched up with official racial categories of the time nor necessarily represented how individuals self identified. To measure the boundaries between whites and marginalized groups of European immigrants in the 20th century, I grouped immigrants by their country of origin based on my perception of the true social boundaries of the time, drawn from historical records. When looking at Muslim and Middle Eastern immigrants, I similarly combined classifications of race,
ethnicity, and ancestry to approximate a representation of the racial order that does not lump Middle Eastern and Asian Indian immigrants under white and Asian racial categories. In both of these cases, scholars with a different reading of history may have chosen to measure these groups differently and in ways that would affect the results and conclusions drawn. Taking a more inductive approach, using a method such as latent class analysis or propensity scoring, might be a solution to this challenge of misclassification in future research. But any method of racial classification, from official Census categories to self-identification, is going to be a partial misclassification. The challenge is to operationalize race in a way that most closely captures the theoretical processes that make race a meaningful category in the first place.

There were similar challenges in operationalizing those theoretical processes, particularly experiences of discrimination. Without the ability to survey respondents, as is the case with historical data and vital statistics reports, it is extremely difficult to document and quantify the experience of direct or indirect racial discrimination. This was a challenge in Chapter 3, as I had to rely on residential segregation as a proxy for racial boundaries and institutionalized discrimination, as well as draw on historical research to assume a decline in discrimination over time. In Chapter 5, I had to rely on a national-level measure of employment discrimination cases to explain experiences of Muslims living in New York City. This is in part because it is much easier to measure the consequences of racial discrimination than it is to measure the act of discrimination itself. Research that examines the consequences of policies related to race and immigration are on the right track, as they represent the institutionalization of discrimination. But there may also be fruitful avenues in emerging methods that mine the growing availability of big data to better understand culture and communication (Bail 2012, 2014). Perhaps in the spaces of social media and online interaction researchers can observe the processes of interpersonal discrimination and cultural boundary drawing in ways that would not be feasible in person.
There was another significant gap between my conceptualization of health trajectories and how they are operationalized in each case. I placed health trajectories at the center of my dissertation because I am interested in the implications of intra- and intergenerational changes in health patterns. However, my data reflect cross-sectional measures of duration of residence and generation status, and do not represent trajectories in the literal sense. While I infer that associations based on these variables reflect post-migration trajectories, that conclusion would be more defensible with longitudinal data tracking individual or family outcomes over time. This methodological issue is pervasive in the immigrant health literature, but it is important nonetheless. Rather than reframing my theoretical approach, I chose to recognize the limitations of my current data and set the stage for future research that more accurately measures post-migration trajectories.

Finally, this dissertation narrowed in on the structural and ascriptive aspects of race to explain immigrant health trajectories and health disparities. A fuller explanation would also recognize the importance of culture, of the uniqueness of the immigrant experience, of the intersections with gender, and other complementary and alternative explanations for changes in health status. Although race continues to be a fundamental organizer of social life, it does not fully explain human behavior or opportunity. In Chapter 4, I attempted to distinguish the differential experiences of racial discrimination by gender, but my results offer little to advance research related to gender, race, and migration. My recommendation would never be to approach immigrant health research only through a racial lens. Rather, it should be considered an important strand in a larger examination of the social conditions that matter for life outcomes. A similar analytical approach to the one taken here could also be useful for understanding the formation of health disparities based on other context-specific social conditions, including gender inequality and the influence of culture.
6.3 CONCLUSION

This dissertation began with a simple question: What happens to the health patterns of immigrant groups after migration, and why? The answer, of course, depends on the specific group of immigrants. But one of the conclusions drawn from the three cases of this dissertation is that race acts as a determinant—or even as a fundamental cause—of post-migration health trajectories. However, that conclusion leads naturally to core questions about the meaning and significance of race. It is impossible to grasp how race affected the health of early European immigrants without drawing on theory about the variable nature of racial boundaries and history about how the U.S. hierarchy changed over time. Similarly, it is difficult to understand the consequences of post-2001 discrimination against Muslims without analyzing the ways in which the boundaries between religion, ancestry, and ethnicity become blurred and racialized in practice.

Perhaps popular definitions of “race” are too loaded and misconceived to be meaningful in health research. Population disparities emerge around a constellation of categories that we label as ethnicity, religion, race, immigration status, gender, sexuality, class, and more. Examining each individually, or even in intersections, reveals the unique determinants associated with each, but it also risks segmenting our larger understanding of the social causes of health and illness. In a sense, it is social status that acts as a fundamental cause of health and health inequalities across a range of identity markers. The challenge is to recognize the underlying processes that define social status and structure access to resources and exposure to risks in ways that impact social life.

In framing my dissertation as an investigation of the formation of health disparities, I set out to understand the processes that define and stratify the status markers and lines of conflict in U.S. society. I was not content with identifying racism as a fundamental cause of health inequalities without clarifying how, why, and for whom racism came to
define social life. This is an inquiry sociologists are uniquely qualified to undertake, as it began with the foundation of sociology as a discipline. Yet we have struggled to export our concepts to other disciplines beyond redefining race as a social construction. By examining the sociohistorical processes of health disparities formation, I provide evidence that it is the variable construction and stratification of racial boundaries that acts as a root cause of immigrant health trajectories and, more broadly, disparities in health and mortality.
APPENDIX A

SUPPLEMENT TO CHAPTER 3

ORIGIN GROUPINGS BY BIRTHPLACE

Table A.1: Origin Groupings by Birthplace, Foreign-Born Whites

<table>
<thead>
<tr>
<th>N/W Europe</th>
<th>Ireland</th>
<th>S. Europe</th>
<th>C/E Europe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denmark</td>
<td>192</td>
<td>Ireland</td>
<td>1,485</td>
</tr>
<tr>
<td>Finland</td>
<td>186</td>
<td>Canada*</td>
<td>49</td>
</tr>
<tr>
<td>Iceland</td>
<td>1</td>
<td>Malta</td>
<td>1</td>
</tr>
<tr>
<td>Lapland, n.s.</td>
<td>1</td>
<td>Norway</td>
<td>423</td>
</tr>
<tr>
<td>Norway</td>
<td>423</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sweden</td>
<td>910</td>
<td></td>
<td></td>
</tr>
<tr>
<td>England</td>
<td>898</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scotland</td>
<td>303</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wales</td>
<td>82</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Belgium</td>
<td>68</td>
<td></td>
<td></td>
</tr>
<tr>
<td>France</td>
<td>118</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Luxembourg</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Netherlands</td>
<td>153</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Switzerland</td>
<td>125</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Germany</td>
<td>2,847</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

DURATION OF RESIDENCE AS A CONTINUOUS VERSUS CATEGORICAL VARIABLE

Examining the effect of duration of residence as a continuous variable requires an assumption of linearity. This was tested by comparing the continuous-variable model to one in which duration of residence is treated as a six-level categorical variable: 0-5 years, 6-10 years, 10-15 years, 15-20 years, 20-30 years, and more than 40 years. The below table compares two models that control for age and age-squared, using the categorical and continuous versions
of this variable. The high p-value for the F-test suggests treating duration of residence as categorical does not significantly improve the model (see Table A.2).

Table A.2: Comparison of Models Using Continuous and Categorical Measures of Duration

<table>
<thead>
<tr>
<th>Res.Df</th>
<th>RSS</th>
<th>Df</th>
<th>Sum of Sq</th>
<th>F</th>
<th>Pr(&gt;F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>15215</td>
<td>1478469</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>15211</td>
<td>1478363</td>
<td>4</td>
<td>105.142</td>
<td>0.27</td>
<td>0.897</td>
</tr>
</tbody>
</table>

This can also be examined graphically. Figure A.1 plots the predicted effects of duration using each method, along with 95% confidence intervals. Although the confidence intervals diverge at 20-30 years, the overall trend of the two plots, combined with the comparison of models above, suggest the difference is not substantial.
INTERPERSONAL DISCRIMINATION AS A BINARY VARIABLE

In addition to measuring interpersonal discrimination using the everyday discrimination scale, I re-ran the analysis in Chapter 4 using a binary measure of discrimination. Responses were coded 0 if the respondent said they never experienced any of the forms of discrimination that were used to code the microaggressions scale, and they were coded 1 if they reported occasional or frequent discrimination. The results are presented in Tables ?? and ?? . The effects of discrimination are less evident using this coding, although they appear to be most pronounced for black women, particularly for self-rated health and diabetes. It is possible that a different cutoff point would be appropriate (i.e., only coding those who report frequent discrimination as 1).
Table B.1: Logistic regression estimates (log-odds) of immigration status and binary discrimination measure on health outcomes, men

<table>
<thead>
<tr>
<th></th>
<th>CVD</th>
<th>Self-Rated Health</th>
<th>Diabetes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Model 1</td>
<td>Model 2</td>
<td>Model 3</td>
</tr>
<tr>
<td>Intercept</td>
<td>-4.76***</td>
<td>-5.10***</td>
<td>-5.09***</td>
</tr>
<tr>
<td></td>
<td>(0.39)</td>
<td>(0.53)</td>
<td>(0.53)</td>
</tr>
<tr>
<td>Age</td>
<td>0.05***</td>
<td>0.05***</td>
<td>0.05***</td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
</tr>
<tr>
<td>Immigrant</td>
<td>-1.54***</td>
<td>-1.39***</td>
<td>-1.87*</td>
</tr>
<tr>
<td></td>
<td>(0.34)</td>
<td>(0.35)</td>
<td>(0.81)</td>
</tr>
<tr>
<td>Discrimination</td>
<td>0.31</td>
<td>0.30</td>
<td>0.33</td>
</tr>
<tr>
<td></td>
<td>(0.29)</td>
<td>(0.30)</td>
<td>(0.30)</td>
</tr>
<tr>
<td>Imm.*Disc.</td>
<td>0.66</td>
<td>1.02</td>
<td>0.54</td>
</tr>
<tr>
<td></td>
<td>(0.90)</td>
<td>(1.04)</td>
<td>(0.55)</td>
</tr>
<tr>
<td>Married</td>
<td>0.06</td>
<td>0.10</td>
<td>0.06*</td>
</tr>
<tr>
<td></td>
<td>(0.31)</td>
<td>(0.21)</td>
<td>(0.31)</td>
</tr>
<tr>
<td>Income (logged)</td>
<td>-0.47**</td>
<td>-0.61***</td>
<td>-0.25</td>
</tr>
<tr>
<td></td>
<td>(0.15)</td>
<td>(0.11)</td>
<td>(0.15)</td>
</tr>
<tr>
<td>Edu. (12 yrs. ref.)</td>
<td>0-11 years</td>
<td>-0.20</td>
<td>-0.13</td>
</tr>
<tr>
<td></td>
<td>(0.43)</td>
<td>(0.24)</td>
<td>(0.43)</td>
</tr>
<tr>
<td></td>
<td>13-15 years</td>
<td>0.26</td>
<td>-0.64*</td>
</tr>
<tr>
<td></td>
<td>(0.43)</td>
<td>(0.30)</td>
<td>(0.51)</td>
</tr>
<tr>
<td></td>
<td>16+ yrs.</td>
<td>0.19</td>
<td>-0.85*</td>
</tr>
<tr>
<td></td>
<td>(0.51)</td>
<td>(0.37)</td>
<td>(0.51)</td>
</tr>
<tr>
<td></td>
<td>Recent immigrant</td>
<td>-1.41</td>
<td>-0.49</td>
</tr>
<tr>
<td></td>
<td>(1.12)</td>
<td>(0.82)</td>
<td>(1.12)</td>
</tr>
<tr>
<td></td>
<td>Access to care</td>
<td>0.53</td>
<td>0.27</td>
</tr>
<tr>
<td></td>
<td>(0.42)</td>
<td>(0.25)</td>
<td>(0.42)</td>
</tr>
<tr>
<td>Deviance</td>
<td>805.74</td>
<td>676.05</td>
<td>675.91</td>
</tr>
<tr>
<td>Dispersion</td>
<td>0.96</td>
<td>0.94</td>
<td>0.94</td>
</tr>
<tr>
<td>Num. obs.</td>
<td>1736</td>
<td>1437</td>
<td>1437</td>
</tr>
</tbody>
</table>

*** p < 0.001, ** p < 0.01, * p < 0.05
Table B.2: Logistic regression estimates (log-odds) of immigration status and binary discrimination measure on health outcomes, women

<table>
<thead>
<tr>
<th></th>
<th>CVD</th>
<th>Self-Rated Health</th>
<th>Diabetes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Model 1</td>
<td>Model 2</td>
<td>Model 3</td>
</tr>
<tr>
<td>Intercept</td>
<td>-4.70***</td>
<td>-5.06***</td>
<td>-5.03***</td>
</tr>
<tr>
<td></td>
<td>(0.26)</td>
<td>(0.37)</td>
<td>(0.37)</td>
</tr>
<tr>
<td>Age</td>
<td>0.05***</td>
<td>0.05***</td>
<td>0.05***</td>
</tr>
<tr>
<td></td>
<td>(0.00)</td>
<td>(0.01)</td>
<td>(0.01)</td>
</tr>
<tr>
<td>Immigrant</td>
<td>-0.41</td>
<td>-0.25</td>
<td>-1.10*</td>
</tr>
<tr>
<td></td>
<td>(0.52)</td>
<td>(0.61)</td>
<td>(0.56)</td>
</tr>
<tr>
<td>Discrimination</td>
<td>0.31</td>
<td>0.27</td>
<td>0.24</td>
</tr>
<tr>
<td></td>
<td>(0.22)</td>
<td>(0.22)</td>
<td>(0.22)</td>
</tr>
<tr>
<td>Imm.*Disc.</td>
<td>1.29</td>
<td>1.45</td>
<td>0.04</td>
</tr>
<tr>
<td></td>
<td>(0.93)</td>
<td>(0.95)</td>
<td>(0.44)</td>
</tr>
<tr>
<td>Married</td>
<td>-0.03</td>
<td></td>
<td>0.14</td>
</tr>
<tr>
<td></td>
<td>(0.24)</td>
<td></td>
<td>(0.16)</td>
</tr>
<tr>
<td>Income (logged)</td>
<td>-0.17</td>
<td></td>
<td>-0.50***</td>
</tr>
<tr>
<td></td>
<td>(0.12)</td>
<td></td>
<td>(0.08)</td>
</tr>
<tr>
<td>Edu. (12 yrs. ref.)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-11 years</td>
<td>0.06</td>
<td></td>
<td>-0.26</td>
</tr>
<tr>
<td></td>
<td>(0.27)</td>
<td></td>
<td>(0.17)</td>
</tr>
<tr>
<td>13-15 years</td>
<td>0.33</td>
<td></td>
<td>-0.18</td>
</tr>
<tr>
<td></td>
<td>(0.32)</td>
<td></td>
<td>(0.21)</td>
</tr>
<tr>
<td>16+ yrs.</td>
<td>0.31</td>
<td></td>
<td>-0.67**</td>
</tr>
<tr>
<td></td>
<td>(0.37)</td>
<td></td>
<td>(0.26)</td>
</tr>
<tr>
<td>Recent immigrant</td>
<td>-11.75***</td>
<td></td>
<td>-1.77**</td>
</tr>
<tr>
<td></td>
<td>(0.91)</td>
<td></td>
<td>(0.91)</td>
</tr>
<tr>
<td>Access to care</td>
<td>0.69</td>
<td></td>
<td>-0.41</td>
</tr>
<tr>
<td></td>
<td>(0.41)</td>
<td></td>
<td>(0.23)</td>
</tr>
</tbody>
</table>

Deviance: 1563.79, 1219.76, 1218.04, 1198.09, 3065.08, 2436.89, 2436.89, 2256.34, 2074.35, 1636.48, 1636.37, 1591.65
Dispersion: 0.95, 0.96, 0.95, 0.93, 0.99, 0.99, 0.99, 0.98, 0.96, 0.95, 0.95, 0.96
Num. obs.: 3023, 2411, 2411, 2369, 3022, 2410, 2410, 2368, 3022, 2411, 2411, 2369

*** p < 0.001, ** p < 0.01, * p < 0.05


APPENDIX C

SUPPLEMENT TO CHAPTER 5

MUSLIM AND RACIAL CATEGORY CODING

Table C.1: Coding Scheme for Racial Category That Includes Muslims

<table>
<thead>
<tr>
<th>Final Category</th>
<th>Original NYC Vital Records Coding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Hispanic White</td>
<td>Ethnicity = &quot;White Non-Hispanic&quot;</td>
</tr>
<tr>
<td>Asian Indian</td>
<td>Race = &quot;Asian Indian&quot;</td>
</tr>
<tr>
<td>Hispanic</td>
<td>Ethnicity = &quot;Puerto Rican&quot; or &quot;Other Hispanic&quot;</td>
</tr>
<tr>
<td>Black</td>
<td>Ethnicity = &quot;Black Non-Hispanic&quot;</td>
</tr>
<tr>
<td>Asian</td>
<td>Ethnicity = &quot;Asian and Pacific Islander&quot;</td>
</tr>
<tr>
<td>&quot;Muslim&quot;</td>
<td>Ancestry = North African (ALG BER EGY LBY MOR SUD TUN)</td>
</tr>
<tr>
<td></td>
<td>Ancestry = Near East (ARA BHR CYP IRN IRQ ISR JOR KUR KUW LEB OMA PAL QAT SAU SYR TUR UAE UIG YEM YMA)</td>
</tr>
<tr>
<td></td>
<td>Ancestry = South Central Asia (AFG BAN BHU CEY HIN IND KAS KAZ MAV NEP PAK SIK SKM SRI TAJ TRK UZB)*</td>
</tr>
</tbody>
</table>

* Excluding those who are racially classified as Asian Indian

DISPARITY GRAPH FOR VERY LOW BIRTH WEIGHT BIRTHS

Much like the results for low birth weight births, Figure C.1 shows a spike in the relative disparities for very low birth weight births for Muslim/Middle Eastern immigrants after 2001. There was also a decline in the mid-2000s and a spike at the end of the decade, again mirroring trends seen for LBW births. However, there is more fluctuation throughout the decade, and the emergence of a sustained disparity is not as evident in this more severe outcome measure. It is worth noting, however, that the Muslim population saw the largest
relative increases of any group, with the rate climbing to more than 50% larger than the relative gap seen in January 2000. The different trend for Asian Indians using this measure is particularly stark. Whereas there appeared to be an increase in the relative gap between Asian Indians and whites when looking at LBW births, here we see relative improvements throughout most of the 2000s.

**REGRESSION RESULTS FOR VERY LOW BIRTH WEIGHT BIRTHS AND DISCRIMINATION BY GROUP**
Table C.2: Logistic Regression Results for Very Low Birth Weight and Discrimination Indicator by Group

<table>
<thead>
<tr>
<th></th>
<th>Muslim 1</th>
<th>Muslim 2</th>
<th>Indian 1</th>
<th>Indian 2</th>
<th>White 1</th>
<th>White 2</th>
<th>Hispanic 1</th>
<th>Hispanic 2</th>
<th>Black 1</th>
<th>Black 2</th>
<th>Asian 1</th>
<th>Asian 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-5.26***</td>
<td>-4.86***</td>
<td>-4.57***</td>
<td>-5.30***</td>
<td>-5.16***</td>
<td>-5.02***</td>
<td>-4.18***</td>
<td>-4.88***</td>
<td>-3.78***</td>
<td>-4.40***</td>
<td>-5.25***</td>
<td>-6.52***</td>
</tr>
<tr>
<td></td>
<td>(0.24)</td>
<td>(0.47)</td>
<td>(0.18)</td>
<td>(0.48)</td>
<td>(0.09)</td>
<td>(0.16)</td>
<td>(0.04)</td>
<td>(0.07)</td>
<td>(0.05)</td>
<td>(0.08)</td>
<td>(0.16)</td>
<td>(0.35)</td>
</tr>
<tr>
<td>EEOC Charges</td>
<td>0.03</td>
<td>-0.03</td>
<td>-0.01</td>
<td>-0.08</td>
<td>-0.00</td>
<td>-0.04**</td>
<td>-0.01</td>
<td>-0.04***</td>
<td>0.02*</td>
<td>-0.00</td>
<td>-0.00</td>
<td>-0.05*</td>
</tr>
<tr>
<td></td>
<td>(0.04)</td>
<td>(0.04)</td>
<td>(0.04)</td>
<td>(0.04)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.03)</td>
<td>(0.03)</td>
<td>(0.03)</td>
</tr>
<tr>
<td>Age</td>
<td>0.02</td>
<td>0.05***</td>
<td>0.02***</td>
<td>0.04***</td>
<td>0.03***</td>
<td>0.06***</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
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<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.00)</td>
<td>(0.00)</td>
<td>(0.00)</td>
<td>(0.01)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Edu. (Mother)</td>
<td>-0.08</td>
<td>0.18</td>
<td>-0.03</td>
<td>0.08**</td>
<td>0.02</td>
<td>0.25*</td>
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</tr>
<tr>
<td></td>
<td>(0.15)</td>
<td>(0.13)</td>
<td>(0.08)</td>
<td>(0.03)</td>
<td>(0.03)</td>
<td>(0.12)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Edu. (Father)</td>
<td>-0.37*</td>
<td>-0.30*</td>
<td>-0.60***</td>
<td>-0.21***</td>
<td>-0.28***</td>
<td>-0.42***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.16)</td>
<td>(0.13)</td>
<td>(0.06)</td>
<td>(0.03)</td>
<td>(0.03)</td>
<td>(0.12)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Smoking</td>
<td>-0.76</td>
<td>0.78</td>
<td>0.55***</td>
<td>0.41***</td>
<td>0.22***</td>
<td>1.06***</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>(1.00)</td>
<td>(0.73)</td>
<td>(0.11)</td>
<td>(0.07)</td>
<td>(0.06)</td>
<td>(0.34)</td>
<td></td>
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</tr>
<tr>
<td>Alcohol</td>
<td>-13.57</td>
<td>0.25</td>
<td>0.42</td>
<td>0.20</td>
<td>0.44**</td>
<td>-0.11</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>(676.30)</td>
<td>(1.03)</td>
<td>(0.28)</td>
<td>(0.19)</td>
<td>(0.14)</td>
<td>(0.72)</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Drug use</td>
<td>-0.00</td>
<td>-0.03*</td>
<td>0.00***</td>
<td>0.00***</td>
<td>0.00</td>
<td>0.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.02)</td>
<td>(0.00)</td>
<td>(0.00)</td>
<td>(0.00)</td>
<td>(0.00)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Immig. father</td>
<td>-0.19</td>
<td>-0.36**</td>
<td>-0.11</td>
<td>-0.19***</td>
<td>-0.08*</td>
<td>-0.24*</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>(0.17)</td>
<td>(0.14)</td>
<td>(0.06)</td>
<td>(0.03)</td>
<td>(0.04)</td>
<td>(0.11)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Immig. mother</td>
<td>-0.14</td>
<td>0.40</td>
<td>-0.10</td>
<td>-0.14***</td>
<td>-0.36***</td>
<td>-0.18</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>(0.18)</td>
<td>(0.19)</td>
<td>(0.07)</td>
<td>(0.03)</td>
<td>(0.04)</td>
<td>(0.13)</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

AIC | BIC
Log Likelihood
Deviance | 3432.07 | 3412.97 | 5158.07 | 5102.40 | 24896.22 | 24710.75 | 78963.64 | 78299.22 | 51058.43 | 50590.18 | 7411.95   | 7310.96  |
Num. obs. | 44188   | 44188   | 46764   | 46764   | 354582   | 354582   | 539038   | 539038   | 218094   | 218094   | 114258   | 114257   |

*** p < 0.001, ** p < 0.01, * p < 0.05


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2014 GSO Conference Travel Grant, Boston University: $500
2013 Morris Collaborative Research Grant, Boston University: $2,500 (with Sigrun Olafsdottir and Emily Barman)
2013 Morris Travel Grant, Department of Sociology, Boston University: $1,000
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2012 ICPSR Summer Funding, Boston University: $3,600
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2010-2011 Presidential Fellowship, Boston University
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2015  Instructor, Sociology of Health and Medicine. Department of Sociology, Boston University.

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2011  Research Assistant, Genomic Sovereignty Research Project, Ruha Benjamin (Principal Investigator), Boston University.
ADDITIONAL TRAINING

2015  “Immigration, Immigrants, and Health Conditions,” Gilbert Gee, John Garcia, Krista Perreira, Gabriel Sanchez, Carmela Alcantara. Inter-University Consortium for Political and Social Research (Ann Arbor, MI)

2013  “Hierarchical Linear Models,” Aline Sayer. Inter-University Consortium for Political and Social Research (Amherst, MA)

2012  “Social Network Analysis,” Ann McCranie. Inter-University Consortium for Political and Social Research (Ann Arbor, MI)

2012  “Regression Analysis III: Advanced Methods,” David Armstrong. Inter-University Consortium for Political and Social Research (Ann Arbor, MI)

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2013  Graduate Student Representative, Faculty Search Committee, Boston University.


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