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# Beyond Acculturation: Health and Immigrants' Social Integration in the United States

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## Abstract

Immigrants typically have more favorable health outcomes than their U.S.-born counterparts of the same race-ethnicity. However, little is known about how race-ethnicity and region of birth moderate the health outcomes of different immigrant groups as their tenure of U.S. residence increases. We study the association between time spent in the United States and health outcomes among non-Hispanic Black, non-Hispanic White, Asian, and Hispanic immigrants using National Health Interview Survey data. Although all immigrant groups initially report better health outcomes than their U.S.-born counterparts, the association between U.S. tenure and reported health outcomes varies among immigrants by race-ethnicity and region of birth. Black immigrants have the worst hypertension profiles, and Black and Hispanic immigrants have the worst obesity profiles. The results suggest that acculturation cannot fully explain racial-ethnic differences in the association between U.S. tenure and health outcomes. We advance a more complete sociological theory of immigrant integration to better explain disparate immigrant health profiles.

## Keywords

health disparities, health heterogeneity, healthy immigrant effect, immigrants, race

Prior research indicates that upon arrival in the United States, new immigrants have better health profiles than their U.S.-born same race-ethnicity counterparts (Antecol and Bedard 2006; Cho, Frisbie, and Rogers 2004; Jasso et al. 2004; Singh and Siahpush 2002). Immigrants' initial health advantage may result from selective migration to the United States, selective return migration by less healthy immigrants to their home countries (Palloni and Arias 2004), and/or cultural behaviors that promote better health among new immigrants (Abraído-Lanza, Chao, and Flo 2005). Regardless of the causes of their initial health advantage, immigrants' health advantages erode as they spend more time in the United States (Antecol and Bedard 2006; Cho et al. 2004; Frisbie, Cho, and Hummer 2001; Singh and Siahpush 2002). Researchers have attributed this deterioration in immigrant health to the acquisition of negative health behaviors as immigrants acculturate to life in the United States (Abraído-Lanza et al. 1999; Antecol and Bedard 2006).

Although prior research has focused extensively on differences in health patterns between U.S.-born individuals and U.S. immigrants, few studies have examined how race-ethnicity and national origin moderate the association between time spent in the United States and immigrant health outcomes. While the immigrant health advantage appears across racial-ethnic groups, the magnitude of the advantage varies (Hamilton and Hagos 2020). For example, although Black immigrants have better

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health than U.S.-born Black adults across a range of measures, evidence is mixed when Black immigrants' health is compared to the health of non-Black immigrant groups (Antecol and Bedard 2006; Cho et al. 2004; Hamilton and Hummer 2011; Read, Emerson, and Tarlov 2005). Further, individuals of different racial-ethnic backgrounds may be differentially affected by time spent in the United States (Hamilton and Hagos 2020).

The remarkable growth of the foreign-born population in the aftermath of the Immigration and Nationality Act of 1965 has redefined the ethnic and racial landscape of the United States (Hamilton 2019). Whereas the majority of pre-1965 immigrants hailed from Europe, most post-1965 immigrants come from countries in Africa, Latin America, the Caribbean, and Asia (Hamilton 2019; Portes and Rumbaut 2014). These newer immigrant populations have contributed to growing heterogeneity within ethnic and racial categories (Hamilton and Hummer 2011). Consideration of the racial and ethnic diversity of these new groups of immigrants is important for evaluations of immigrants' health integration and acculturation processes in the United States (Portes and Rumbaut 2014).

This study examines the association between time spent in the United States and immigrants' health outcomes using National Health Interview Survey (NHIS) data from 2000 to 2018. The primary objective of the analysis is to examine disparities in two indicators of chronic conditions—hypertension and obesity—between foreign-born and U.S.-born non-Hispanic Black (Black), non-Hispanic White (White), Asian, and Hispanic individuals to shed light on the degree to which nativity and race-ethnicity are associated with health outcomes. The current study contributes to a growing health literature that disaggregates racial and ethnic populations to better understand immigrant health heterogeneity (Brown 2018; Jackson et al. 2018; Read, Lynch, and West 2021; Read, West, and Kamis 2020; Reynolds, Chernenko, and Read 2016). We first examine how the health profiles of immigrants compare to those of their U.S.-born racial and ethnic counterparts as their tenure in the United States lengthens. Second, we compare the health profile of each immigrant group (i.e., White immigrants, Black immigrants, Hispanic immigrants, and Asian immigrants) to that of the entire U.S.-born population. Third, we compare the health profiles of same-race immigrant groups by region of birth to examine within-group heterogeneity. Finally, we investigate whether the health profiles of immigrant groups vary by race-ethnicity.

# BACKGROUND

## *The Healthy Immigrant Effect and Possible Mechanisms*

The healthy immigrant effect is a documented phenomenon in which upon arrival in the United States, Canada, Australia, and the United Kingdom, immigrants report better health, on average, than their domestic-born counterparts. As they spend more time in the destination country, however, their health status converges to levels found within the domestic population (Jasso et al. 2004; Kennedy et al. 2015; Markides and Rote 2019; McDonald and Kennedy 2004). Prior studies have advanced two noncompeting explanations for immigrants' initial health advantage: selective migration and cultural buffering (Hamilton 2015; Hamilton and Hummer 2011).

Explanations based on selective migration propose that healthier individuals are more likely to migrate, producing a health advantage among immigrants relative to their counterparts in both their countries of origin and the United States (Akresh and Frank 2008; Feliciano 2020). In addition to selective in-migration, selective return migration of unhealthy immigrants to their origin countries, sometimes called "salmon bias," may artificially generate a healthier population of immigrants in the destination country.

Notably, however, the combination of selective in-migration and return migration does not fully explain the immigrant health advantage (Akresh and Frank 2008; Hummer et al. 2007; Palloni and Arias 2004; Turra and Elo 2008). For example, although there is evidence that poor health is associated with the likelihood of return migration for Mexican individuals (Arenas et al. 2015), Hummer et al. (2007) found a mortality advantage among infants born to Mexican women relative to infants born to non-Hispanic, White U.S.-born women within the first few hours of life when it is highly unlikely that they are engaging in return migration. The second explanation for immigrants' favorable initial health profiles, the cultural buffering hypothesis, suggests immigrants maintain cultural practices and behaviors (e.g., diets and family support networks) from their countries of origin that promote good health (Abraído-Lanza et al. 1999; Scribner 1996; Scribner and Dwyer 1989).

The health advantage enjoyed by recent immigrants to the United States and other Western countries diminishes with time spent in the destination country (Markides and Rote 2019). Explanations for this phenomenon are contested (Antecol and Bedard 2006). Although previous work has identified structural

determinants, such as the physical environment and occupational hazards, as possible mechanisms underlying the diminishment of health advantages (Finch et al. 2001; Finch and Vega 2003; Goldman et al. 2021), acculturation is the dominant explanation in the immigrant health literature. *Acculturation* refers to the process by which immigrants adopt the behaviors and practices of the mainstream U.S. population, including those related to health (e.g., increased consumption of alcohol, tobacco products, and/or less nutritious foods) and lose protective cultural factors associated with their home country as their tenure in the United States increases (Abraído-Lanza et al. 2005; Cho et al. 2004; Creighton et al. 2012; Leung 2014). These changes in behaviors and circumstances lead to declines in health for immigrants in the form of increased prevalence of chronic disease and disability (Antecol and Bedard 2006; Lee et al. 2013; Singh and Siahpush 2002).

## Assimilation and Acculturation

Nonetheless, acculturation does not fully account for differential health outcomes across immigrant populations, nor does it explicitly describe how structural factors such as discrimination and socioeconomic inequality influence the health of non-White immigrants in the United States (Riosmena et al. 2015; Viruell-Fuentes 2007). Recent research has employed a range of methods and data sources to address these critiques (Abraído-Lanza, Echeverría, and Flórez 2016); however, we argue that understanding the merits and limitations of acculturation as an explanation of immigrant health outcomes requires contextualizing and defining the concept within the broader assimilation literature in sociology.

*Classical assimilation theory.* Classical assimilation theory originated as a framework for understanding the integration of European immigrants into northern cities in the late nineteenth- and early twentieth-century America (Alba and Nee 2003). The theory posits that distinct immigrant groups merge with the dominant society via the process of assimilation, during which immigrants follow a "straight-line" pattern of moving into alignment with mainstream U.S. society (Warner and Srole 1945). Assimilation entails multiple dimensions, including cultural, structural, marital, identificational, attitude receptional, behavioral receptional, and civic assimilation (Gordon 1964). Within this model, cultural assimilation or acculturation is a crucial first step of the assimilation process (Gordon 1964). Completing the assimilation process, however, entails not only the adoption of cultural practices but also changes in structural dimensions such as intermarriage, the entrance of immigrants into destination-country social networks, and the adoption of identities and values common in the destination country (Gordon 1964). Although the sociological definition of acculturation is similar to the public health definition, the former goes beyond individualistic accounts by emphasizing the crucial role of group-level interactions in the process. As Gordon (1964) explained, "The nature of these groups and their interrelationships has a profound impact upon how people of different ethnic backgrounds regard and relate to one another" (234).

*Reformulating assimilation theory.* Although researchers have used classical assimilation theory extensively to understand immigrant integration, they have also criticized the theory for conceptualizing assimilation as an inevitable, monolithic, and one-sided process of immigrants becoming more like the White, middle-class mainstream (Alba and Nee 2003). The contemporary reconceptualization of assimilation theory has addressed these limitations by emphasizing assimilation as a contingent, incremental, and intergenerational process that occurs at different speeds within and across ethnic and racial groups (Alba and Nee 2003).

In this more recent formulation of assimilation theory, the ethnicity of immigrants serves as a symbolic and social boundary that shapes actions and mental orientations toward others in society (Alba 2005). In some cases, if there is sufficient contact between the groups, the social boundaries between immigrants and U.S.-born individuals begin to blur—borrowing Alba and Nee's (2003) term, the "ethnic distinction" begins to fade. In other cases, however, these social boundaries remain distinct or "bright," preserving a clear demarcation between the immigrant or ethnic group and mainstream U.S. society. Beyond the bright boundaries of ethnicity, race may act as an intractable boundary for individuals with certain phenotypic appearances that ultimately play a role in the assimilation process (Alba 2005).

*Contemporary trends in assimilation.* Empirical data suggest a "bright" boundary between Black and White Americans but a more rapidly fading boundary between Asian, Hispanic, and White Americans (Alba 2020). Sociologists commonly rely on the frequency of interracial marriages, particularly those that include White Americans, to

assess the degree of social closeness between different racial and ethnic groups (Alba and Nee 2003). When people from immigrant minority communities tend to marry within their own racial or ethnic group, it often indicates that they have limited integration into the broader society and face significant prejudice and discrimination (Bean and Stevens 2003; Drachsler 1920; Pagnini and Morgan 1990). Recent statistics reveal that 42% of opposite-sex intermarriages involve a non-Hispanic White and a Hispanic individual, whereas only 12% of such marriages involve a White and Black partner (Livingston and Brown 2017). This pattern suggests a loosening of social barriers between White Americans and Hispanics (Alba 2020; Bean and Stevens 2003). Researchers have documented similar patterns between Asian and White Americans (Lee and Bean, 2010). According to Lee and Bean (2010), even though the population of the United States is becoming more diverse, the historic racial separation between Black and White Americans is expected to remain unchanged to some extent. This scenario will result in continued inequality between Black Americans relative to other racial and ethnic subgroups.

In many of the seminal studies of assimilation, researchers have predicted that U.S.-born Black individuals will either never assimilate to the "American mainstream" or, relative to non-Black subgroups, will take an exceptionally long time to assimilate (Gordon 1964). This prediction raises the question of whether the bright boundary that characterizes relationships between Black and White Americans will apply to contemporary Black immigrants from the Caribbean and Africa, one of the fastest growing U.S. immigrant populations. Although straight-line assimilation theory suggests that discrimination and prejudice inhibit the full integration of immigrants into U.S. society, the architects of segmented assimilation made this point much more explicitly by theorizing directly about the role of structural factors, such as discrimination, in producing differential patterns of social integration among post-1965 immigrants and their descendants (Portes and Zhou 1993). Kasinitz et al. (2008) argued that across generations, immigrants to the United States assimilate to the social positions of their "proximal hosts." Thus, over time and across generations, Black immigrants are predicted to converge to the outcomes of U.S.-born Black individuals, highlighting the persistence of color-coded racism and its influence on the outcomes of all Black people in the United States (Alba and Foner 2015).

*Assimilation, acculturation, and health.* Although assimilation theory's original focus was the social integration of early European immigrants, this group-level relational theory also offers insights into the health profiles of contemporary immigrants as they acculturate to U.S. society. The discourse among immigrant health scholars about the importance of acculturation, however, has focused on individual-level behavioral changes, such as diet and tobacco use, while overlooking the ways that structural factors, such as racial discrimination, affect the health of non-White immigrants who share a racial status with marginalized U.S.-born minorities (Portes and Rumbaut 2014; Read et al. 2005; Viruell-Fuentes 2007). Goosby, Cheadle, and Mitchell (2018) outlined the mechanisms by which racism and discrimination can impact the health of minority populations. Within this framework, individual experiences of perceived discrimination are internalized as stressors that over time generate allostatic load, or "wear and tear," on bodily systems, which, in turn, increases risks for adverse health outcomes.

In the immigrant health literature, scholars often theorize that time spent in the United States acts as a proxy for acculturation (Abraído-Lanza et al. 2006; Lee et al. 2013; Oza-Frank and Venkat Narayan, 2010), with immigrants who are more acculturated (those with a longer tenure of U.S. residence) having worse health than less acculturated immigrants (those with a shorter tenure of U.S. residence). Sociological interpretations also view time spent in the United States as a proxy for acculturation but offer the opposite prediction, namely, that immigrants who are more acculturated and assimilated (those who experience less structural discrimination and blurred boundaries) should experience better health than less acculturated and assimilated immigrants (those who experience more discrimination and brighter social boundaries).

Although it is tempting to predict which groups of immigrants will experience a more rapid worsening of health based on traditional markers of structural assimilation (e.g., intermarriage), making such claims are complicated by variation in the degree of health selection associated with the immigration process and the forces that shape an individual's health. Some immigrants migrate to the United States to escape violence or political persecution, some move for economic opportunities, and others want to reunite with family. The degree of health selection among immigrant groups likely varies based on the underlying reason for moving (Hamilton 2015). Likewise, differences in premigration exposure to

health-decelerating factors, such as pollution, famine, civil conflict, racism, and material deprivation, at critical points in the life course lead to variation in the health outcomes of immigrants (Berkman, Kawachi, and Glymour 2014).

### The Current Study: Goals and Design

This study examines the health outcomes of U.S. immigrants with the goal of providing a more comprehensive understanding of the social integration of the diverse immigrant population residing in the United States. Specifically, we use data from the 2000 to 2018 waves of the NHIS to compare disparities in chronic conditions—hypertension and obesity—between foreign-born and U.S.-born Black, White, Asian, and Hispanic individuals, thus shedding light on the ways nativity and race are associated with health outcomes. We first examine how the health profiles of immigrant groups compare to the health profiles of their U.S.-born racial and ethnic counterparts as their tenure of U.S. residence increases. Second, we compare each immigrant group (White, Black, Hispanic, and Asian immigrants) to the entire U.S.-born population. Third, we investigate whether the health outcomes of immigrant groups vary by race.

In addition to understanding what happens to immigrants when they arrive in the destination country, it is important to contextualize their origin. The extant research focuses on health outcomes within racial-ethnic groups by nativity, but there is also significant heterogeneity based on region of birth (Biddle, Kennedy, and McDonald 2007; Brown et al. 2017; Ford, Narayan, and Mehta 2016). Thus, we assess how the health profiles of same-race-ethnicity immigrant groups vary by region of birth.

## DATA AND METHODS

### Sample and Data

We pooled the data collected in the 2000 to 2018 waves of the NHIS for White, Black, Hispanic, and Asian respondents ages 24 to 64 (Blewett et al. 2019). The NHIS is an annual, nationally representative cross-sectional survey that collects data on a range of socioeconomic, demographic, behavioral, and health factors through in-person interviews (Blewett et al. 2019). We excluded individuals born abroad to American parents from the sample. The sample included 276,223 U.S.-born individuals: 23,667 Hispanic, 205,029 White, 44,083 Black, and 3,444 Asian adults. In addition, the sample included 64,200 immigrants: 35,471 Hispanic, 9,619 White, 5,320 Black, and 13,790 Asian adults.

### Measures

*Dependent variables.* We examined two specific indicators of chronic health conditions—hypertension and obesity—that are life threatening, strongly correlated with perceived discrimination, and prevalent among marginalized U.S.-born populations (Brondolo et al. 2003; Goosby et al. 2018). Goosby et al. (2018), which presented biosocial mechanisms linking discrimination and African American health inequalities based on their review of the literature, concluded that the influence of racism and discrimination are acutely observed in measures of hypertension and obesity.

Adult NHIS respondents were asked, "Have you ever been told by a doctor or other health professional that you had hypertension, also called high blood pressure?" (Blewett et al. 2019). Although this is a self-reported measure, previous research has shown that self-reports of hypertension status are highly correlated with physician diagnoses (Giles et al. 1995; Kehoe et al. 1994; Vargas et al. 1997). Body mass index (BMI) was calculated using self-reported measures of the individual's height and weight. Although prior studies have found that self-reported height and weight are subject to reporting errors that may bias estimates (Antecol and Bedard 2006; Mehta et al. 2015), additional research has shown that using adjustment procedures that correct for errors in reporting height and weight do not substantially alter results (Antecol and Bedard 2006). Based on these findings, we constructed an obesity measure identifying individuals with a BMI equal to or greater than 30 $kg/m^2$.

*Independent variables.* We grouped respondents into four racial-ethnic categories—White, Black, Hispanic, and Asian—based on self-identification. Immigrants' health is shaped by factors from three distinct periods of life, namely, the time spent in their countries of origin, the period of their arrival in the United States, and the years after arrival. To capture the associations from the last of these three periods, we generated a set of dichotomous variables that assess immigrants' tenure of U.S. residence. NHIS data contain an ordinal variable that identifies whether an individual has resided in the United States for less than 1 year, 1 to 4 years, 5 to 9 years, 10 to 14 years, or 15 or more years. We

combined the first two categories (to create a group of immigrants who have been in the United States for 0 to 4 years) and used the other categories as given by the NHIS (5–9, 10–14, and 15+ years).

### Method

We estimated probit regression models for each health outcome; we reported the results as average marginal effects. All models were weighted according to the NHIS sampling scheme. The regression models included a range of demographic, social, and economic characteristics correlated with health. Demographic variables included age, age-squared, sex, race-ethnicity, marital status, and region of current residence. To account for the influence of socioeconomic status on health, the models controlled for education, employment status, and whether the family's income was below the U.S. Census Bureau's annual poverty level determination. To adjust for potential period associations with health, the regression models also included the survey year of each observation.

In addition, to capture the associations from the first period—time in immigrants' country of origin—we assessed the initial health profiles of immigrant across birth regions. The NHIS grouped immigrant respondents' countries of origin into 9 regions: Europe, the Middle East, Russia (and former USSR countries), Africa, Mexico/Central America/Caribbean, South America, Southeast Asia, the Indian subcontinent, and other Asian countries. We identified three non-Hispanic White immigrant subgroups–4,837 European, 1,248 Middle Eastern, and 923 Russian/former USSR. The non-Hispanic Black immigrant sample includes 2,636 Mexican/Central American/Caribbean (hereafter referred to as Caribbean) and 2,122 African immigrants. The Hispanic immigrant subgroups include 31,255 Mexican/Central American/Caribbean and 3,841 South American immigrants. Finally, the Asian immigrant subgroups are composed of 5,750 Southeast Asian, 3,777 Indian subcontinent, and 3,715 other Asian immigrants.

Finally, ancillary analyses included a measure of arrival cohort to capture the associations from the second period— the period of arrival in the United States. The NHIS does not contain a measure that captures immigrant arrival cohort. We used the survey year and the midpoint of the respondent's U.S. tenure category to create four arrival-cohort variables (2003 or before, 2004–2008, 2009–2013, and 2014–2018); respondents in the open-ended tenure category of 15+ years were coded as arriving in the cohort that entered the United States 15 years before the survey year (Antecol and Bedard 2006; Funkhouser and Trejo 1995). Although this approach entailed some degree of measurement error, given the structure of the data, it is likely the best way to assess variation by arrival cohort. For these analyses, please refer to Appendix Tables 1 to 3 in the online version of the article.

## RESULTS

### Descriptive Results

Table 1 presents summary statistics for the entire sample by race-ethnicity, and Table 2 presents descriptive statistics for immigrants separately by region of birth within each racial-ethnic group. Although prior research has found gender differences in racial-ethnic and nativity disparities (Read and Reynolds 2012), we were unable to generate robust estimates of tenure of U.S. residence for men and women separately for all immigrant subgroups observed in the study. Consequently, the descriptive and regression results are based on the combined sample of men and women.

Table 1 presents data on the health outcomes of interest (hypertension and obesity) separately by race-ethnicity and nativity. Four notable descriptive patterns emerged: First, immigrants have more favorable health outcomes, on average, than their same race-ethnicity U.S.-born counterparts. Second, relative to White, Hispanic, and Asian individuals, Black individuals exhibit a larger nativity gap in obesity and hypertension; this pattern is driven by the uniquely poor health profile of U.S.-born Black individuals rather than exceptionally good health among Black immigrants. Third, among immigrants, Black immigrants have the highest hypertension rates, on average, and Hispanic immigrants have the highest obesity rates. Lastly, among U.S.-born individuals, Black individuals are more likely than those in other racial-ethnic groups to report having hypertension and obesity.

In addition to varying by race-ethnicity, health varies by region of birth, as shown by the results in Table 2. Among White immigrants, those from Europe and Russia/former USSR countries are more likely to report hypertension than those from the Middle East. Among Black immigrants, Caribbean immigrants are more likely to report hypertension and obesity than African immigrants. Among Hispanic immigrants, those from Mexico, Central America, and the Caribbean have worse health outcomes, on average, than those from South America. Finally, within the Asian immigrant population,

**Table 1.** Descriptive Statistics for U.S.-Born and Foreign-Born Adults, Ages 24 to 64.

| | All Origin | | White | | Black | | Hispanic | | Asian | |
|---|---|---|---|---|---|---|---|---|---|---|
| | (1) U.S.-born | (2) Immigrant | (3) U.S.-born | (4) Immigrant | (5) U.S.-born | (6) Immigrant | (7) U.S.-born | (8) Immigrant | (9) U.S.-born | (10) Immigrant |
| **Health outcomes** | | | | | | | | | | |
| Hypertension | .26 | .18 | .25 | .19 | .36 | .22 | .21 | .17 | .20 | .17 |
| Obese (BMI = 30+) | .31 | .21 | .29 | .20 | .43 | .25 | .40 | .27 | .18 | .08 |
| **Social and demographic characteristics** | | | | | | | | | | |
| Age | 43.52 | 41.84 | 44.14 | 43.84 | 42.51 | 41.71 | 38.88 | 40.89 | 39.40 | 42.21 |
| Female | .51 | .49 | .51 | .50 | .55 | .50 | .51 | .47 | .51 | .52 |
| Married | .60 | .70 | .65 | .72 | .38 | .56 | .53 | .68 | .52 | .77 |
| Years of education | 14.02 | 12.63 | 14.17 | 14.72 | 13.39 | 13.85 | 13.31 | 10.52 | 15.22 | 14.88 |
| Working/employed | .72 | .72 | .73 | .72 | .66 | .77 | .72 | .70 | .76 | .73 |
| Poverty | .09 | .17 | .07 | .08 | .21 | .15 | .13 | .24 | .06 | .10 |
| Northeast | .17 | .20 | .18 | .28 | .12 | .38 | .11 | .13 | .17 | .21 |
| Midwest | .26 | .12 | .29 | .18 | .18 | .11 | .10 | .09 | .11 | .14 |
| South | .38 | .33 | .34 | .27 | .62 | .43 | .36 | .37 | .18 | .24 |
| West | .19 | .35 | .19 | .28 | .08 | .08 | .42 | .40 | .54 | .41 |
| **Years of U.S. residence** | | | | | | | | | | |
| 0–4 | | .11 | | .11 | | .12 | | .08 | | .15 |
| 5–9 | | .14 | | .12 | | .15 | | .14 | | .15 |
| 10–14 | | .16 | | .12 | | .17 | | .18 | | .15 |
| 15+ | | .60 | | .65 | | .56 | | .60 | | .55 |
| **Year of immigration** | | | | | | | | | | |
| 2003 or before | | .84 | | .85 | | .81 | | .87 | | .77 |
| 2004–2008 | | .09 | | .08 | | .10 | | .09 | | .12 |
| 2009–2013 | | .05 | | .05 | | .06 | | .03 | | .08 |
| 2014–2018 | | .02 | | .02 | | .03 | | .01 | | .03 |
| Observations | 276,223 | 64,200 | 205,029 | 9,619 | 44,083 | 5,320 | 23,667 | 35,471 | 3,444 | 13,790 |

*Source*: National Health Interview Survey, 2000 to 2018.
*Note*: Overall sample of foreign-born and U.S.-born adults is $N = 340{,}423$. Relevant subsamples are shown in the table. BMI = body mass index.

**Table 2.** Descriptive Statistics for Foreign-Born Adults, Ages 24 to 64.

| | White | | | Black | | Hispanic | | Asian | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | (1) Europe | (2) Middle East | (3) Russia/ Former USSR | (4) Caribbean | (5) Africa | (6) Mexico/Central America/Caribbean | (7) South America | (8) Southeast Asia | (9) India | (10) Other Asia |
| **Health outcomes** | | | | | | | | | | |
| Hypertension | .20 | .16 | .21 | .25 | .18 | .17 | .13 | .21 | .14 | .12 |
| Obese (BMI = 30+) | .21 | .19 | .15 | .27 | .21 | .29 | .18 | .08 | .09 | .04 |
| **Social and demographic characteristics** | | | | | | | | | | |
| Age | 44.72 | 42.24 | 41.92 | 43.85 | 39.37 | 40.71 | 42.23 | 43.87 | 39.45 | 42.52 |
| Female | .51 | .44 | .54 | .54 | .44 | .47 | .51 | .54 | .46 | .56 |
| Married | .71 | .73 | .72 | .55 | .61 | .68 | .66 | .74 | .85 | .76 |
| Years of education | 14.49 | 14.78 | 15.36 | 13.43 | 14.33 | 10.05 | 13.77 | 14.12 | 15.88 | 15.09 |
| Working/employed | .72 | .64 | .76 | .78 | .75 | .70 | .75 | .75 | .73 | .71 |
| Poverty | .06 | .17 | .10 | .14 | .18 | .26 | .12 | .09 | .09 | .11 |
| Northeast | .30 | .18 | .41 | .50 | .21 | .10 | .36 | .13 | .26 | .26 |
| Midwest | .20 | .18 | .16 | .04 | .21 | .09 | .05 | .12 | .19 | .13 |
| South | .27 | .24 | .14 | .43 | .44 | .37 | .44 | .21 | .31 | .20 |
| West | .23 | .39 | .30 | .03 | .14 | .44 | .14 | .54 | .24 | .41 |
| **Years of U.S. residence** | | | | | | | | | | |
| 0–4 | .10 | .16 | .12 | .06 | .20 | .08 | .14 | .09 | .24 | .16 |
| 5–9 | .09 | .17 | .20 | .10 | .24 | .14 | .16 | .11 | .21 | .16 |
| 10–14 | .10 | .11 | .22 | .15 | .21 | .18 | .19 | .12 | .18 | .15 |
| 15+ | .71 | .56 | .46 | .68 | .36 | .61 | .50 | .68 | .37 | .53 |
| **Year of immigration** | | | | | | | | | | |
| 2003 or before | .89 | .76 | .81 | .90 | .66 | .87 | .83 | .86 | .63 | .77 |
| 2004–2008 | .06 | .11 | .12 | .06 | .17 | .09 | .09 | .08 | .17 | .12 |
| 2009–2013 | .03 | .09 | .05 | .03 | .11 | .03 | .04 | .04 | .13 | .08 |
| 2014–2018 | .02 | .04 | .02 | .01 | .06 | .01 | .04 | .02 | .06 | .03 |
| Observations | 4,837 | 1,248 | 923 | 2,636 | 2,122 | 31,255 | 3,841 | 5,750 | 3,777 | 3,715 |

*Source*: National Health Interview Survey, 2000 to 2018.
*Note*: Overall sample of foreign-born adults is $N = 64{,}200$. Relevant subsamples are shown in the table. BMI = body mass index.

Southeast Asian immigrants are more likely to report hypertension than Indian and other Asian immigrants, and Indian and Southeast Asian immigrants are more likely to report obesity than other Asian immigrants.

## Regression Results

*Within race-ethnicity comparisons.* We estimated probit regression models[1] for each health outcome separately to assess changes in immigrants' health over their tenure in the United States; results are shown in Table 3. In these models, the immigrant variable captures the nativity disparity between an immigrant group and their same-race U.S.-born counterpart (e.g., Black immigrants compared to U.S.-born Blacks) when immigrants' tenure of U.S. residence is evaluated at 0 to 4 years (the reference category for the U.S. tenure variables).

Figures 1a and 1b summarize the results in Table 3 by showing predicted probabilities for each health outcome separately by race. The covariates are set to values that correspond to a composite 42-year-old married man who has worked in the past two weeks, has approximately 13 years of education, earns an income above the poverty line, and resided in the Northeast in 2010. The gray lines are the predicted probabilities of each health outcome for the U.S.-born population by racial-ethnic group. The thick black lines represent the predicted health outcome of immigrants at each tenure of U.S. residence. The graphs reveal that for all racial-ethnic subgroups, upon arrival in the United States, new immigrants are less likely than U.S.-born individuals to report hypertension or obesity. As in the descriptive results, the initial nativity health gap is largest among Black individuals, driven by the uniquely high rate of hypertension and obesity among the U.S.-born Black population. The association between tenure in the United States and the probability of health change is uniformly positive across race-ethnicity immigrant subgroups and for both health outcomes in both figures, suggesting that immigrants who have been in the country for 15 or more years report poorer health, on average, than immigrants who have been in the United States for 0 to 4 years.

*Comparisons to the full U.S.-born sample.* The immigrant health literature often compares the health outcomes of immigrants to the outcomes of U.S.-born individuals of the same race-ethnicity rather than the outcomes from a sample of the entire U.S.-born population. However, such comparisons can obscure the magnitude of health disparities among immigrants; further, they limit the understanding of how different immigrant populations reshape the health of the entire U.S. population as they age and spend more time in the United States. To address this limitation, Table 4 provides estimates of disparities in health outcomes between each racial-ethnic subgroup of immigrants and the entire U.S.-born sample, regardless of race.

Figures 2a and 2b summarize the results in Table 4 by plotting the predicted probabilities for each health outcome by tenure of U.S. residence for each racial-ethnic immigrant subgroup and for the full U.S.-born sample. We set the covariates to the same values used in Figures 1a and 1b to create a representative individual. The gray lines represent the predicted probabilities for each health outcome for the entire U.S.-born sample. The thick black lines represent the health outcomes of immigrants across the tenure of U.S. residence categories.

The graphs reveal that upon arrival in the United States, new immigrants in all racial-ethnic groups have more favorable health profiles, on average, than the entire U.S. sample. The magnitudes of some of the nativity health gaps, however, differ considerably from those in the earlier comparisons to same race-ethnicity U.S.-born counterparts (Figures 1a and 1b). For example, although the nativity gap in hypertension is similar for White immigrants in Figures 1a and 2a, the nativity gap in hypertension for Hispanic and Asian immigrants widens notably when the comparison group shifts from U.S.-born Hispanic and Asian individuals (respectively) to all U.S.-born individuals. By contrast, when Black immigrants are compared to the entire U.S.-born sample, the nativity gap narrows, suggesting that comparing Black immigrants to U.S.-born Blacks generates an inflated perception of the relative health advantage of Black immigrants.

*Region of birth.* Next, we estimated the health outcomes conditional on time spent in the United States for each immigrant region of birth (separately by race-ethnicity) using the entire U.S.-born sample as the reference category; results are shown in Tables 5 through 8.

Table 5 presents estimates of the health outcomes of White immigrants by region of birth. Immigrants from Europe, the Middle East, and Russia/former USSR all have a lower probability of experiencing hypertension and obesity than the overall U.S.-born sample when they have lived in the United States for 0 to 4 years. As U.S. tenure increases, the association between region of birth and immigrant health changes. For example, the probability of reporting hypertension is approximately 15 percentage points higher among Russian/former USSR immigrants who have been in the

**Table 3.** Average Marginal Effects from Probit Regression Models of Health Status for U.S.-Born and Foreign-Born Adults (Same Race-Ethnicity), Ages 24 to 64.

| | Hypertension | | | | Obesity | | | |
|---|---|---|---|---|---|---|---|---|
| | (1) White | (2) Black | (3) Hispanic | (4) Asian | (5) White | (6) Black | (7) Hispanic | (8) Asian |
| **Nativity** | | | | | | | | |
| Immigrant | −.08*** | −.19*** | −.09*** | −.08*** | −.19*** | −.29*** | −.28*** | −.13*** |
| | (.02) | (.03) | (.01) | (.01) | (.02) | (.03) | (.01) | (.01) |
| **Years in United States** | | | | | | | | |
| 5–9 | .04 | .04 | −.02 | .01 | .03 | .02 | .07*** | .02 |
| | (.03) | (.04) | (.01) | (.02) | (.03) | (.04) | (.02) | (.01) |
| 10–14 | .02 | .09* | .01 | .03 | .07* | .09* | .11*** | .03* |
| | (.03) | (.04) | (.01) | (.02) | (.03) | (.04) | (.02) | (.01) |
| 15+ | .05* | .11** | .03* | .04** | .13*** | .15*** | .15*** | .05*** |
| | (.02) | (.03) | (.01) | (.01) | (.02) | (.04) | (.01) | (.01) |
| **Social and demographic characteristics** | | | | | | | | |
| Age | .01*** | .02*** | .01** | .01*** | .01*** | .02*** | .02*** | .00 |
| | (.00) | (.00) | (.00) | (.00) | (.00) | (.00) | (.00) | (.00) |
| $Age^2$ | .00 | −.00*** | .00** | −.00 | −.00*** | −.00*** | −.00*** | −.00 |
| | (.00) | (.00) | (.00) | (.00) | (.00) | (.00) | (.00) | (.00) |
| Female | −.06*** | .03*** | −.02*** | −.04*** | −.03*** | .10*** | −.00 | −.02** |
| | (.00) | (.01) | (.00) | (.01) | (.00) | (.01) | (.01) | (.01) |
| Married | −.01*** | .01* | −.01** | −.02* | .00 | .03*** | .01* | .01 |
| | (.00) | (.01) | (.00) | (.01) | (.00) | (.01) | (.01) | (.01) |
| Years of education | −.01*** | −.01*** | −.00*** | −.00*** | −.02*** | −.01*** | −.01*** | −.01*** |
| | (.00) | (.00) | (.00) | (.00) | (.00) | (.00) | (.00) | (.00) |
| Working/employed | −.05*** | −.07*** | −.06*** | −.02** | −.02*** | −.01 | −.03*** | −.01 |
| | (.00) | (.01) | (.00) | (.01) | (.00) | (.01) | (.01) | (.01) |
| Poverty | .04*** | .03*** | .02** | −.01 | .03*** | .00 | .03*** | −.01 |
| | (.00) | (.01) | (.01) | (.01) | (.00) | (.01) | (.01) | (.01) |
| Observations | 214,498 | 49,377 | 59,062 | 17,216 | 208,163 | 47,849 | 57,128 | 16,894 |

*Source*: National Health Interview Survey, 2000 to 2018.

*Note*: All models include controls for age, age squared, sex, marital status, region of current residence, education, employment status, poverty status, and survey year. Robust standard errors are in parentheses. Overall sample of foreign-born and U.S.-born adults is $N = 340{,}153$ for hypertension models and $N = 330{,}034$ for obesity models. Relevant subsamples are shown in the table.

*$p < .05$, **$p < .01$, ***$p < .001$ (for two-tailed test).

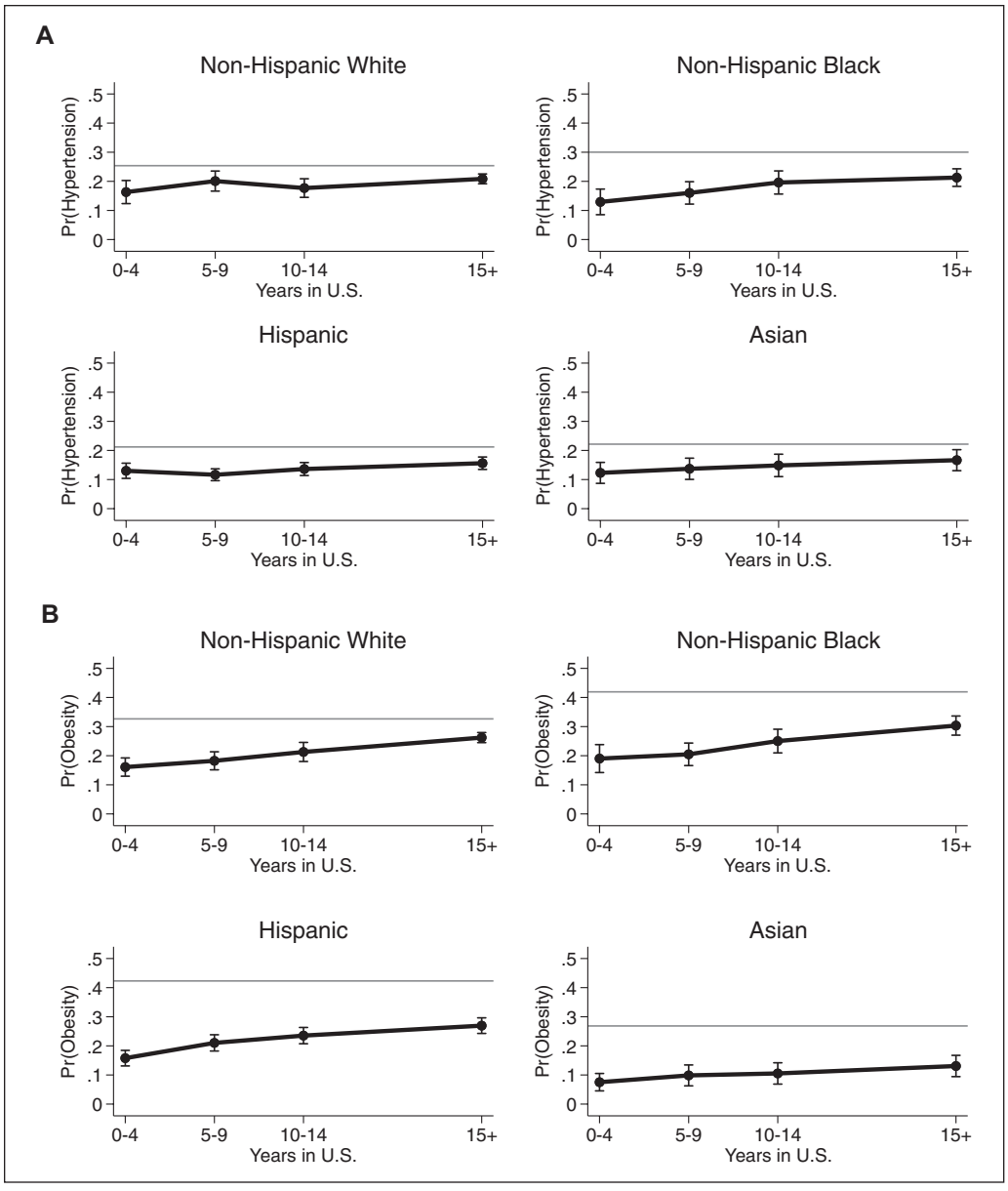


**Figure 1.** (a) Predicted Probabilities of Hypertension Status. (b) Predicted Probabilities of Obesity Status.

*Source*: National Health Interview Survey, 2000 to 2018.

*Note*: All statistics use National Health Interview Survey annual weight. Predicted probabilities of hypertension are based on probit regression models that control for age, age squared, sex, marital status, region of current residence, education, employment status, poverty status, and survey year. Predicted probabilities of obesity are based on probit regression models that control for age, age squared, sex, marital status, region of current residence, education, employment status, poverty status, and survey year. Thick black lines show immigrant groups; gray lines show U.S.-born groups.

United States for 15 or more years than among Russian/former USSR immigrants who have been in the United States from 0 to 4 years; by contrast, the increase in hypertension reporting rates is positive but statistically insignificant among White European and Middle Eastern immigrants. The probability of reporting obesity is approximately 20 percentage points higher among European

**Table 4.** Average Marginal Effects from Probit Regression Models of Health Status for U.S.-born (All) and Foreign-Born Adults, Ages 24 to 64.

| | Hypertension | | | | Obesity | | | |
|---|---|---|---|---|---|---|---|---|
| | (1) White | (2) Black | (3) Hispanic | (4) Asian | (5) White | (6) Black | (7) Hispanic | (8) Asian |
| **Nativity** | | | | | | | | |
| Immigrant | −.09*** | −.12*** | −.14*** | −.14*** | −.22*** | −.18*** | −.22*** | −.37*** |
| | (.02) | (.03) | (.01) | (.02) | (.02) | (.03) | (.01) | (.02) |
| **Years in United States** | | | | | | | | |
| 5–9 | .04 | .04 | −.02 | .03 | .03 | .03 | .07*** | .05 |
| | (.03) | (.03) | (.02) | (.02) | (.03) | (.04) | (.02) | (.03) |
| 10–14 | .01 | .09** | .01 | .06** | .07* | .09* | .10*** | .06* |
| | (.03) | (.03) | (.02) | (.02) | (.03) | (.04) | (.02) | (.03) |
| 15+ | .05 | .12*** | .04** | .10*** | .14*** | .15*** | .14*** | .09*** |
| | (.02) | (.03) | (.01) | (.02) | (.02) | (.03) | (.01) | (.02) |
| **Social and demographic characteristics** | | | | | | | | |
| Age | .01*** | .01*** | .01*** | .01*** | .02*** | .02*** | .02*** | .02*** |
| | (.00) | (.00) | (.00) | (.00) | (.00) | (.00) | (.00) | (.00) |
| $Age^2$ | −.00** | −.00** | −.00* | −.00** | −.00*** | −.00*** | −.00*** | −.00*** |
| | (.00) | (.00) | (.00) | (.00) | (.00) | (.00) | (.00) | (.00) |
| Female | −.04*** | −.04*** | −.04*** | −.04*** | −.02*** | −.01*** | −.01*** | −.01*** |
| | (.00) | (.00) | (.00) | (.00) | (.00) | (.00) | (.00) | (.00) |
| Married | −.02*** | −.02*** | −.02*** | −.02*** | −.00* | −.01* | −.01* | −.00* |
| | (.00) | (.00) | (.00) | (.00) | (.00) | (.00) | (.00) | (.00) |
| Years of education | −.01*** | −.01*** | −.01*** | −.01*** | −.02*** | −.02*** | −.02*** | −.02*** |
| | (.00) | (.00) | (.00) | (.00) | (.00) | (.00) | (.00) | (.00) |
| Working/employed | −.05*** | −.05*** | −.05*** | −.05*** | −.02*** | −.02*** | −.02*** | −.02*** |
| | (.00) | (.00) | (.00) | (.00) | (.00) | (.00) | (.00) | (.00) |
| Poverty | .05*** | .05*** | .04*** | .05*** | .04*** | .04*** | .04*** | .04*** |
| | (.00) | (.00) | (.00) | (.00) | (.00) | (.00) | (.00) | (.00) |
| Observations | 285,645 | 281,353 | 311,451 | 289,812 | 277,246 | 273,056 | 301,996 | 281,400 |

*Source*: National Health Interview Survey, 2000 to 2018.

*Note*: All models include controls for age, age squared, sex, marital status, region of current residence, education, employment status, poverty status, and survey year. Robust standard errors are in parentheses. Overall sample of foreign-born and U.S.-born adults is $N = 340{,}153$ for hypertension models and $N = 330{,}034$ for obesity models. Relevant subsamples are shown in the table.

*$p < .05$, **$p < .01$, ***$p < .001$ (for two-tailed test).

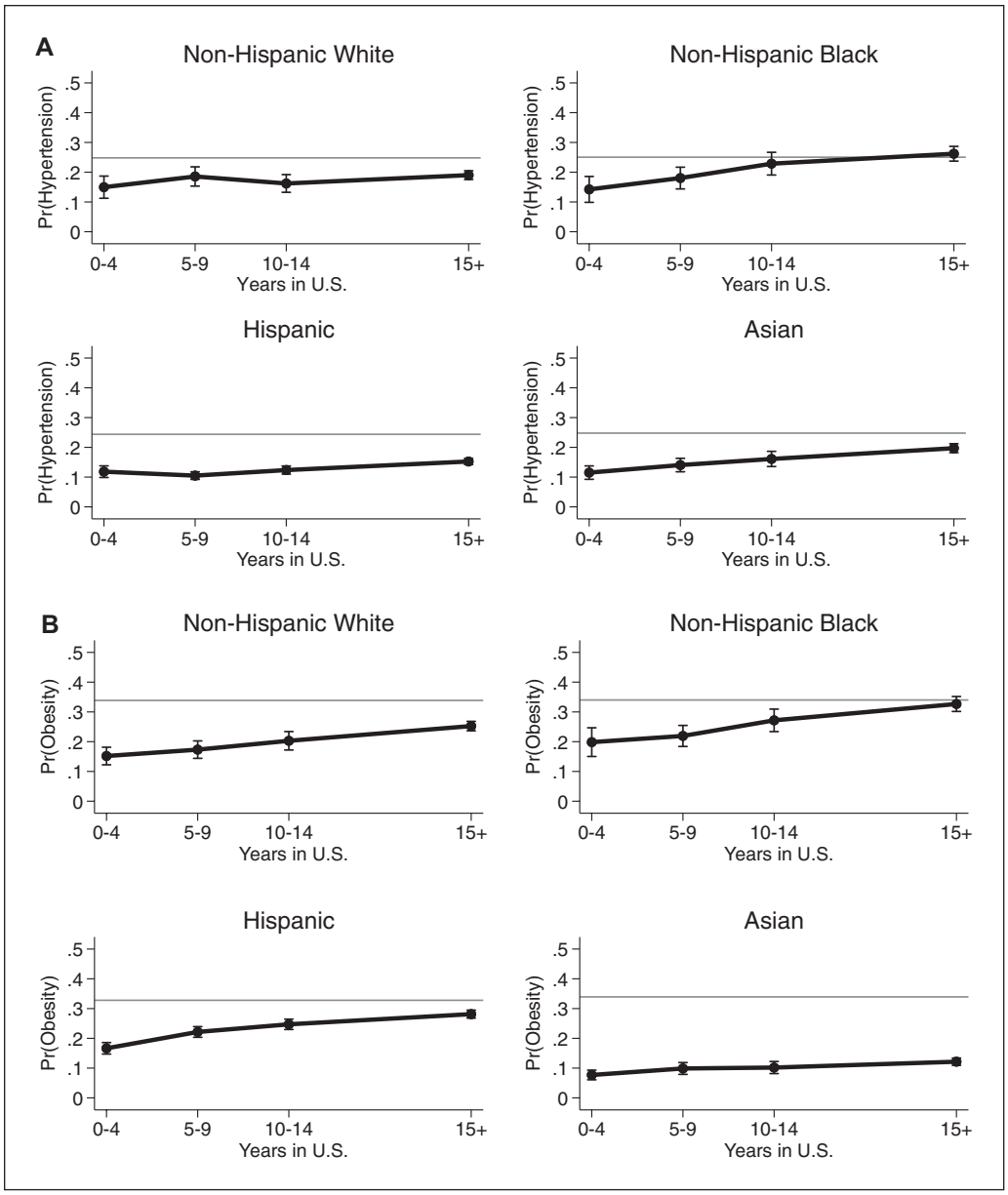


**Figure 2.** (a) Predicted Probabilities of Hypertension Status. (b) Predicted Probabilities of Obesity Status.
*Source*: National Health Interview Survey, 2000 to 2018.
*Note*: All statistics use National Health Interview Survey annual weight. Predicted probabilities of hypertension are based on probit regression models that control for age, age squared, sex, marital status, region of current residence, education, employment status, poverty status, and survey year. Predicted probabilities of obesity are based on probit regression models that control for age, age squared, sex, marital status, region of current residence, education, employment status, poverty status, and survey year. Thick black lines show immigrant groups; gray lines show U.S.-born groups.

immigrants who have been in the United States for 15 or more years than among European immigrants who have been in the United States from 0 to 4 years, whereas the increase in obesity reporting is positive yet statistically insignificant for Middle Eastern and Russian/former USSR immigrants.

Table 6 provides estimates of Black immigrant health outcomes by region of birth. Recent Black immigrants, regardless of region of birth, have a lower probability of reporting hypertension and obesity than all U.S.-born individuals. However, health outcomes differ notably across birth regions

**Table 5.** Average Marginal Effects from Probit Regression Models of Health Status for All U.S.-Born and White Foreign-Born Adults, Ages 24 to 64.

| | Hypertension | | | Obesity | | |
|---|---|---|---|---|---|---|
| | (1) Europe | (2) Middle East | (3) Russia/ former USSR | (4) Europe | (5) Middle East | (6) Russia/ former USSR |
| **Nativity** | | | | | | |
| Immigrant | −.083* | −.132* | −.114* | −.268*** | −.165** | −.188** |
| | (.040) | (.054) | (.053) | (.036) | (.056) | (.062) |
| **Years in United States** | | | | | | |
| 5–9 | .006 | .067 | .084 | .047 | −.036 | .056 |
| | (.049) | (.068) | (.065) | (.051) | (.072) | (.079) |
| 10–14 | .003 | −.004 | .117 | .119* | .027 | .039 |
| | (.048) | (.075) | (.063) | (.049) | (.076) | (.074) |
| 15+ | .040 | .052 | .153** | .198*** | .078 | .031 |
| | (.041) | (.057) | (.058) | (.037) | (.061) | (.069) |
| **Social and demographic characteristics** | | | | | | |
| Age | .013*** | .013*** | .013*** | .016*** | .016*** | .016*** |
| | (.001) | (.001) | (.001) | (.001) | (.001) | (.001) |
| $Age^2$ | −.000** | −.000** | −.000** | −.000*** | −.000*** | −.000*** |
| | (.000) | (.000) | (.000) | (.000) | (.000) | (.000) |
| Female | −.044*** | −.044*** | −.044*** | −.015*** | −.014*** | −.014*** |
| | (.002) | (.002) | (.002) | (.002) | (.002) | (.002) |
| Married | −.020*** | −.020*** | −.020*** | −.005* | −.005* | −.005* |
| | (.002) | (.002) | (.002) | (.002) | (.002) | (.002) |
| Years of education | −.013*** | −.013*** | −.013*** | −.021*** | −.021*** | −.021*** |
| | (.000) | (.000) | (.000) | (.000) | (.000) | (.000) |
| Working/employed | −.052*** | −.051*** | −.052*** | −.016*** | −.017*** | −.016*** |
| | (.002) | (.002) | (.002) | (.003) | (.003) | (.003) |
| Poverty | .051*** | .051*** | .051*** | .038*** | .038*** | .038*** |
| | (.003) | (.003) | (.003) | (.004) | (.004) | (.004) |
| Observations | 280,871 | 277,282 | 276,954 | 272,582 | 269,106 | 268,784 |

*Source*: National Health Interview Survey, 2000 to 2018.
*Note*: All models include controls for age, age squared, sex, marital status, region of current residence, education, employment status, poverty status, and survey year. Robust standard errors are in parentheses. Overall sample of foreign-born and U.S.-born adults is $N = 340{,}153$ for hypertension models and $N = 330{,}034$ for obesity models. Relevant subsamples are shown in the table.
*$p < .05$, **$p < .01$, ***$p < .001$ (for two-tailed test).

within this group. For Caribbean immigrants, the marginal effects suggest they experience a greater likelihood of reporting hypertension as U.S. tenure increases, but the estimates are not statistically significant. By comparison, relative to African immigrants who have been in the United States between 0 and 4 years, the probability of reporting hypertension is approximately 15 percentage points greater for African immigrants who have been in the United States for 15 or more years. The obesity results in Table 6 show a similar pattern for the two groups.

Table 7 provides estimates of Hispanic immigrant health outcomes by birth region. As with the previous two racial-ethnic groups, the probability of reporting hypertension and obesity varies across the birth regions. The probability of reporting obesity is about 14 percentage points higher among Mexican, Central American, and Caribbean immigrants who have been in the country 15 or more years than among Mexican, Central American, and Caribbean immigrants who have resided in the United States for 0 to 4 years. A similar pattern exists among South American immigrants. The probability of reporting hypertension is about 5 percentage points higher among Mexican, Central American, and Caribbean immigrants who have

**Table 6.** Average Marginal Effects from Probit Regression Models of Health Status for All U.S.-Born and Black Foreign-Born Adults, Ages 24 to 64.

| | Hypertension | | Obesity | |
|---|---|---|---|---|
| | (1) Caribbean | (2) Africa | (3) Caribbean | (4) Africa |
| **Nativity** | | | | |
| Immigrant | −.076 | −.152*** | −.121* | −.220*** |
| | (.055) | (.036) | (.053) | (.045) |
| **Years in United States** | | | | |
| 5–9 | −.013 | .075 | −.045 | .072 |
| | (.066) | (.044) | (.066) | (.053) |
| 10–14 | .035 | .134*** | .071 | .081 |
| | (.061) | (.045) | (.061) | (.055) |
| 15+ | .078 | .151*** | .081 | .162** |
| | (.056) | (.040) | (.055) | (.051) |
| **Social and demographic characteristics** | | | | |
| Age | .013*** | .013*** | .016*** | .016*** |
| | (.001) | (.001) | (.001) | (.001) |
| $Age^2$ | −.000** | −.000** | −.000** | −.000** |
| | (.000) | (.000) | (.000) | (.000) |
| Female | −.043*** | −.044*** | −.013*** | −.013*** |
| | (.002) | (.002) | (.002) | (.002) |
| Married | −.020*** | −.020*** | −.005* | −.005* |
| | (.002) | (.002) | (.002) | (.002) |
| Years of education | −.013*** | −.013*** | −.021*** | −.021*** |
| | (.000) | (.000) | (.000) | (.000) |
| Working/employed | −.052*** | −.052*** | −.016*** | −.016*** |
| | (.002) | (.002) | (.003) | (.003) |
| Poverty | .050*** | .050*** | .038*** | .037*** |
| | (.003) | (.003) | (.004) | (.004) |
| Observations | 278,672 | 278,155 | 270,459 | 269,935 |

*Source*: National Health Interview Survey, 2000 to 2018.
*Note*: All models include controls for age, age squared, sex, marital status, region of current residence, education, employment status, poverty status, and survey year. Overall sample of foreign-born and U.S.-born adults is $N = 340{,}153$ for hypertension models and $N = 330{,}034$ for obesity models. Relevant subsamples are shown in the table. Robust standard errors are in parentheses.
*$p < .05$, **$p < .01$, ***$p < .001$ (for two-tailed test).

been in the country 15 or more years than among Mexican, Central American, and Caribbean immigrants who have resided in the United States for 0 to 4 years. For South American immigrants, the marginal effects suggest that they do not experience a greater likelihood of reporting hypertension as U.S. tenure increases.

Finally, Table 8 presents estimates of Asian immigrants' health outcomes by birth region. Mirroring the patterns for the other subgroups, recent Asian immigrants have significantly lower probabilities of experiencing hypertension and obesity than all U.S.-born individuals, but there is birth region heterogeneity in the pace of change within the group. The probability of hypertension among Southeast Asians is approximately 11 percentage points higher among those who have resided in the United States for 15 or more years than among those who have been in the country for 0 to 4 years. For other Asian immigrants, the probability of reporting hypertension is approximately 15 percentage points higher among immigrants who have been in the country 15 or more years than among immigrants who have resided in the United States for 0 to 4 years. The parallel change in the probability of reporting hypertension is smaller and insignificant among Indian subcontinent immigrants. A similar pattern exists for obesity outcomes. Taken

**Table 7.** Average Marginal Effects from Probit Regression Models of Health Status for All U.S.-Born and Hispanic Foreign-Born Adults, Ages 24 to 64.

| | Hypertension | | Obesity | |
|---|---|---|---|---|
| | (1) Mexico/Central America/Caribbean | (2) South America | (3) Mexico/Central America/Caribbean | (4) South America |
| **Nativity** | | | | |
| Immigrant | −.140*** | −.129*** | −.212*** | −.249*** |
| | (.014) | (.039) | (.014) | (.035) |
| **Years in United States** | | | | |
| 5–9 | −.013 | −.057 | .080*** | .019 |
| | (.017) | (.048) | (.017) | (.044) |
| 10–14 | .008 | .002 | .107*** | .065 |
| | (.016) | (.045) | (.016) | (.043) |
| 15+ | .049*** | .000 | .140*** | .136*** |
| | (.014) | (.041) | (.015) | (.038) |
| **Social and demographic characteristics** | | | | |
| Age | .013*** | .013*** | .016*** | .016*** |
| | (.001) | (.001) | (.001) | (.001) |
| $Age^2$ | −.000* | −.000** | −.000*** | −.000*** |
| | (.000) | (.000) | (.000) | (.000) |
| Female | −.040*** | −.044*** | −.011*** | −.015*** |
| | (.002) | (.002) | (.002) | (.002) |
| Married | −.022*** | −.020*** | −.005* | −.005* |
| | (.002) | (.002) | (.002) | (.002) |
| Years of education | −.010*** | −.013*** | −.018*** | −.020*** |
| | (.000) | (.000) | (.000) | (.000) |
| Working/employed | −.055*** | −.051*** | −.021*** | −.016*** |
| | (.002) | (.002) | (.002) | (.003) |
| Poverty | .044*** | .051*** | .035*** | .038*** |
| | (.003) | (.003) | (.003) | (.004) |
| Observations | 307,237 | 279,875 | 297,884 | 271,635 |

*Source*: National Health Interview Survey, 2000 to 2018.
*Note*: All models include controls for age, age squared, sex, marital status, region of current residence, education, employment status, poverty status, and survey year. Robust standard errors are in parentheses. Overall sample of foreign-born and U.S.-born adults is $N = 340{,}153$ for hypertension models and $N = 330{,}034$ for obesity models. Relevant subsamples are shown in the table.
*$p < .05$, **$p < .01$, ***$p < .001$ (for two-tailed test).

together, the findings outlined in this section reveal variation in health outcomes across birth regions that is obscured when focusing solely on immigrants' racial-ethnic subgroups.

*Time spent in the United States.* Next, we examined health disparities among immigrants with different tenures of U.S. residence. Table 9 shows results for the combined sample and includes interactions between race and time spent in the United States, highlighting the differential association between U.S. tenure and race among immigrants.

Figure 3 summarizes the results in Table 9 by showing adjusted predicted probabilities for each health outcome by immigrants' length of U.S. residence. We follow the same procedure as the previous figures and set the covariates to the same values to create a representative individual. The graphs reveal significant variation in both hypertension and obesity among immigrants. Although there is modest variation in hypertension among new immigrants of different races, over time, significant disparities emerge, with a clear separation between Black immigrants and the other three racial-ethnic groups. By the time

**Table 8.** Average Marginal Effects from Probit Regression Models of Health Status for All U.S.-Born and Asian Foreign-Born Adults, Ages 24 to 64.

| | Hypertension | | | Obesity | | |
|---|---|---|---|---|---|---|
| | (1) Southeast Asia | (2) India | (3) Other Asia | (4) Southeast Asia | (5) India | (6) Other Asia |
| **Nativity** | | | | | | |
| Immigrant | −.140*** | −.094*** | −.226*** | −.454*** | −.293*** | −.538*** |
| | (.03) | (.024) | (.030) | (.044) | (.026) | (.043) |
| **Years in United States** | | | | | | |
| 5–9 | .091* | −.025 | .041 | .120* | .030 | .075 |
| | (.038) | (.033) | (.041) | (.057) | (.040) | (.064) |
| 10–14 | .100** | .040 | .036 | .146** | .008 | .101 |
| | (.038) | (.035) | (.043) | (.056) | (.041) | (.068) |
| 15+ | .114*** | .054 | .147*** | .173*** | .066* | .141** |
| | (.031) | (.028) | (.033) | (.046) | (.032) | (.048) |
| **Social and demographic characteristics** | | | | | | |
| Age | .013*** | .013*** | .013*** | .016*** | .016*** | .016*** |
| | (.001) | (.001) | (.001) | (.001) | (.001) | (.001) |
| $Age^2$ | −.000** | −.000** | −.000** | −.000*** | −.000*** | −.000*** |
| | (.000) | (.000) | (.000) | (.000) | (.000) | (.000) |
| Female | −.044*** | −.044*** | −.044*** | −.014*** | −.014*** | −.014*** |
| | (.002) | (.002) | (.002) | (.002) | (.002) | (.002) |
| Married | −.020*** | −.020*** | −.020*** | −.005* | −.005* | −.005* |
| | (.002) | (.002) | (.002) | (.002) | (.002) | (.002) |
| Years of education | −.012*** | −.013*** | −.013*** | −.020*** | −.020*** | −.020*** |
| | (.000) | (.000) | (.000) | (.000) | (.000) | (.000) |
| Working/employed | −.051*** | −.051*** | −.051*** | −.016*** | −.016*** | −.016*** |
| | (.002) | (.002) | (.002) | (.003) | (.003) | (.003) |
| Poverty | .050*** | .050*** | .050*** | .037*** | .036*** | .037*** |
| | (.003) | (.003) | (.003) | (.004) | (.004) | (.004) |
| Observations | 281,776 | 279,812 | 279,748 | 273,534 | 271,597 | 271,511 |

*Source*: National Health Interview Survey, 2000 to 2018.
*Note*: All models include controls for age, age squared, sex, marital status, region of current residence, education, employment status, poverty status, and survey year. Robust standard errors are in parentheses. Overall sample of foreign-born and U.S.-born adults is $N = 340{,}153$ for hypertension models and $N = 330{,}034$ for obesity models. Relevant subsamples are shown in the table.
*$p < .05$, **$p < .01$, ***$p < .001$ (for two-tailed test).

immigrants have lived in the United States for more than 15 years, the predicted probability of reporting hypertension is significantly greater for Black immigrants than for other immigrant groups.

Obesity rates vary more widely in the first years after immigrants arrive in the United States. Asian immigrants arrive with the lowest predicted probability of obesity and show modest changes in the likelihood of obesity over time. White immigrants have the second-lowest predicted probability of obesity among new immigrants. Yet their predicted probability of obesity escalates rapidly as tenure of U.S. residence lengthens. Black and Hispanic immigrants have the highest predicted probability of obesity among new immigrants and follow similar patterns over time.

Figure 3 also highlights an increase in health disparities among immigrants as their tenure of U.S. residence increases. Indeed, the disparity in the predicted probability of reporting each outcome is considerable smaller among immigrants who have been in the United States between 0 and 4 years than among those who have been in the United States for more than 15 years.

**Table 9.** Average Marginal Effects from Probit Regression Models of Health Status for Foreign-Born Adults, Ages 24 to 64.

| | (1) Hypertension | (2) Obesity |
|---|---|---|
| **Race-ethnicity** | | |
| Hispanic | .012** | .101*** |
| Black | .092*** | .107*** |
| Asian | .014 | −.087*** |
| **Years in United States** | | |
| 0–4 | −.078*** | −.191*** |
| 5–9 | −.040* | −.161*** |
| 10–14 | −.067*** | −.122*** |
| 15+ | −.038*** | −.062*** |
| **Interaction: Race × Years in United States** | | |
| Hispanic × 0–4 | −.046 | −.086*** |
| Hispanic × 5–9 | −.104*** | −.046* |
| Hispanic × 10–14 | −.051** | −.056** |
| Hispanic × 15+ | −.049*** | −.082*** |
| Black × 0–4 | −.104** | −.061 |
| Black × 5–9 | −.102*** | −.069* |
| Black × 10–14 | −.028 | −.048 |
| Black × 15+ | −.032** | −.053*** |
| Asian × 0–4 | −.058* | −.067* |
| Asian × 5–9 | −.065** | −.050 |
| Asian × 10–14 | −.015 | −.084** |
| Asian × 15+ | −.008 | −.108*** |
| **Social and demographic characteristics** | | |
| Age | .011*** | .015*** |
| Age$^2$ | −.000 | −.000*** |
| Female | −.041*** | −.013*** |
| Married | −.012*** | .006** |
| Years of education | −.009*** | −.015*** |
| Working/employed | −.051*** | −.020*** |
| Poverty | .033*** | .023*** |
| Observations | 340,153 | 330,034 |

*Source*: National Health Interview Survey, 2000 to 2018.
*Note*: All models include controls for age, age squared, sex, marital status, region of current residence, education, employment status, poverty status, and survey year. Overall sample of foreign-born and U.S.-born adults is $N = 340{,}153$ for hypertension models and $N = 330{,}034$ for obesity models.
*$p < .05$, **$p < .01$, ***$p < .001$ (for two-tailed test).

## DISCUSSION

This study has several key findings. First, consistent with the extant literature, new immigrants, regardless of race, arrive in the United States with favorable health profiles relative to their U.S.-born same race-ethnicity counterparts. Second, across the two measures studied, the nativity health gap is largest among Black and Hispanic individuals, with immigrants exhibiting significantly better health profiles than their U.S.-born counterparts. Third, time spent in the United States is associated with an increased likelihood of reporting both negative health outcomes (i.e., hypertension and obesity). Fourth, the association between U.S. tenure and health varies by race and region of birth. These results raise several questions for understanding racial disparities in health among U.S. immigrants.

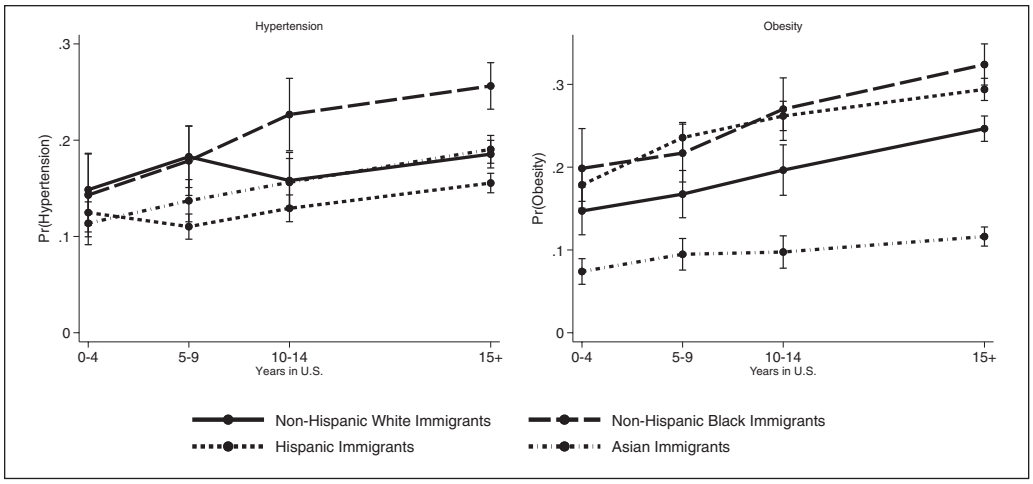


**Figure 3.** Predicted Probabilities of Health Status.
*Source*: National Health Interview Survey, 2000 to 2018.
*Note*: All statistics use National Health Interview Survey annual weight. Predicted probabilities of health status are based on probit regression models that control for age, age squared, sex, marital status, region of current residence, education, employment status, poverty status, and survey year.

## *What Explains the Initial Health Profiles of Immigrants?*

The aforementioned findings are consistent with the well-documented healthy immigrant effect, which suggests that across contemporary immigrant groups, migration is positively correlated with a range of observed (e.g., education) and unobserved factors (e.g., wealth and motivation) that produce good health (Feliciano 2020). Rates of hypertension are similar among new immigrants across racial-ethnic groups, suggesting similar patterns of health selection among immigrants in terms of factors associated with hypertension. By contrast, obesity rates among new Black immigrants are nearly 5 percentage points greater than the rate for new White immigrants and 12 percentage points greater than the rate for new Asian immigrants. A similar pattern exists among new Hispanic immigrants compared to new White and Asian immigrants, suggesting less favorable patterns of health selection among Black and Hispanic populations in terms of factors that produce obesity.

Differing conditions in immigrants' countries of origin may produce these disparities in obesity profiles. For example, the high prevalence of obesity among Hispanic immigrants, specifically Mexican immigrants, in the United States may partly be related to obesity profiles in Mexico, which has experienced a rapid increase in the prevalence of overweight and obesity. In the first decade of the twenty-first century, Mexico had an overweight and obesity prevalence of 71.3% among adults 20 years old or older (Barquera et al. 2012). As of 2019, Mexico had one of the highest obesity rates in the Organization for Economic Co-operation and Development (2019), and about 73% of the population was overweight. More generally, Hamilton (2014) showed that health outcomes are better among immigrants who migrate from countries that rank favorably on a range of aggregate-level social and economic conditions. However, a lack of data on the health profiles of immigrants and the health profiles of individuals in their home countries precludes a direct examination of the importance of home country conditions for the emergence of disparities between immigrant subgroups. Future research should examine the relationship between country-of-origin conditions and health outcomes in more detail.

## *What Explains Differences in Health Declines among Immigrants over Time?*

The findings show that although rates of hypertension and obesity are similar across racial-ethnic groups among immigrants who have been in the United States between 0 and 4 years, as these groups spend more time in the United States, health change progresses unevenly. Black immigrants experience a more pronounced increase, in both relative and absolute terms, in hypertension reporting as they reside longer in the United States compared to White and

Asian immigrants. Although the absolute increase in obesity reporting associated with increased U.S. tenure is greater for Black and Hispanic immigrants, because of their lower initial level of obesity, White immigrants experience a more pronounced relative increase in obesity reporting as their tenure of U.S. residence increases. Much of the extant literature claims that the change in health associated with time spent in the United States results from immigrants' adoption of unhealthy dietary and cultural practices common among U.S.-born adults (Ayala, Baquero, and Klinger 2008; Lee et al. 2013). This line of research uses time spent in the United States as a proxy for acculturation, concluding that more acculturated immigrants have worse health outcomes than less acculturated immigrants (Abraído-Lanza et al. 2006; Lee et al. 2013; Oza-Frank and Venkat Narayan 2010).

By contrast, based on prior sociological research, we theorize that after more than 15 years of residence in the United States, most contemporary U.S. immigrants, regardless of race, have passed the stage of acculturation, which is the first step in the assimilation process (Gordon 1964). We contend that observed health disparities among immigrants with significant tenure in the United States might reflect blocked assimilation. In other words, if we focus on hypertension, the outcome for which new immigrants all have similar reporting probabilities, Black immigrants might experience a more pronounced negative change than other immigrants because they are less assimilated than other immigrants as a result of the particularly bright boundary between Black and White individuals in the United States (Alba and Nee 2003; Gordon 1964). Gordon's (1964) version of assimilation predicts that more assimilated immigrants experience less structural discrimination. By extension, we argue that these groups should experience better health than less assimilated immigrants who face more discrimination.

It is also important to highlight the potential for the social integration of Hispanic and Black immigrants into Hispanic and Black "mainstreams." These immigrants may integrate into ethnic enclaves, which can provide social environments that protect against the stress associated with potential discrimination (Mossakowski 2003; Portes and Rumbaut 2014). However, the literature on ethnic enclaves has shown mixed evidence for their influence on immigrant health (Cagney, Browning, and Wallace 2007; Culhane and Elo 2005; Li, Wen, and Henry 2017; Osypuk et al. 2009).

Data limitations have inhibited research on how cultural change and differential exposure to racism and discrimination produce a divergence in health outcomes among immigrants as U.S. tenure increases. The research on the effects of racism and discrimination on immigrant health over time is particularly limited. Thus, while future research should aim to better understand how individual-level cultural change affects the health of immigrants, scholars should devote even greater resources to exploring how structural factors erode the health of immigrants who experience relatively more racism and discrimination as they integrate into U.S. society.

### *What Do Health Outcomes Reveal about Social Integration?*

Most of the scholarly literature on immigrants' social assimilation has focused on the assimilation process in terms of employment, socioeconomic status, and marriage outcomes. However, the current results underscore the importance of health outcomes as additional measures of social integration. Disparities in health outcomes between immigrant groups may reflect heightened barriers to social integration for some groups, especially Black and Hispanic immigrants, who have the worst health outcomes. In the case of White and Asian immigrants, their better health outcomes suggest they may be able to integrate into the White American mainstream more easily than Black and Hispanic immigrants.

Straight-line assimilation theories often implicitly or explicitly use U.S.-born White Americans as the standard for acculturation; however, the current results suggest the value of a more nuanced process of acculturation. Among new immigrants, there is little variation in health outcomes by race, but over time, greater disparities emerge, mirroring racial stratification patterns within the U.S.-born population. The expansion of these disparities shows that immigrants become more similar to the U.S.-born population in terms of health over time, but in doing so, they reproduce the racial and ethnic stratification that is prominent in the U.S.-born population. Thus, Black and Hispanic immigrants are subject to the structural disadvantages that produce racial and ethnic health disparities within the U.S.-born population. In terms of health, "becoming American" may have less to do with the adoption of cultural practices and behaviors and more to do with experiencing structural factors that hinder the progress of these racialized minority groups.

### Limitations

Despite its strengths, the current study has certain limitations. First, this study reports descriptive results that are not intended to unveil causal relationships or mechanisms. Second, because the height and weight (BMI) and hypertension measures were self-reported and thus subject to measurement error, the NHIS data may underestimate the prevalence of hypertension and obesity. Specifically, a report of hypertension necessitated access to health care services, and immigrants may face barriers to preventive care (Derose, Escarce, and Lurie 2007). Further, because this study does not use longitudinal data on these self-reported health conditions, we cannot accurately assess the impact of premigration health behavior on postmigration health profiles. The use of cross-sectional data also limits our understanding of how other factors might have induced health changes as immigrants spent time in the United States (Zheng and Yu 2022). For example, racial-ethnic disparities in health care access might arise as immigrants age and spend more time in the United States, affecting the likelihood of being diagnosed with a chronic condition.

Additionally, data limitations required us to analyze regions of birth instead of countries of birth, which limited our ability to address selectivity. Finally, NHIS data do not include information on immigrants' legal status, so we could not assess the impact of legal statuses on health outcomes among immigrants. Future work on legal status would enhance the study of immigrant health outcomes.

## CONCLUSION

According to U.S. Census data, the number of immigrants residing in the United States grew from roughly 19 million in 1990 to 44 million in 2018, a 132% increase (Budiman et al. 2020). Over the same period, the share of foreign-born residents in the U.S. population rose from 8% to 13%. As these immigrants age, they will account for a greater proportion of the country's midlife and older population (Treas and Batalova 2009). Moreover, if these trends continue, immigrants and their descendants will have a significant influence on the health and well-being of the entire U.S. population. Thus, examining the health profiles of immigrants provides valuable insights into the future population health of the United States.

Although this study focused on first-generation immigrants, prior research highlights the possible emergence of additional variation in health outcomes as second-generation immigrants adapt to U.S. society given the increasingly diverse composition of immigrant cohorts and shifts in the structure of economic opportunities (Portes and Zhou 1993). This type of adaptation would translate into immigrant health outcomes that differ across generations such that earlier generations would have better health outcomes than subsequent generations (Acevedo-Garcia et al. 2010; Hamilton and Green 2017, 2018).

Racism and discrimination have long affected the health of minority populations, particularly U.S.-born Blacks, in the United States. These factors may also affect the health advantages immigrants experience relative to U.S.-born Americans. For example, although Black immigrants have better health outcomes than U.S.-born Blacks, these advantages diminish or disappear altogether when Black immigrants are compared to the entire U.S. population or other immigrant groups. The findings also show that relative to new immigrants, those immigrants with the longest tenure of U.S. residence have greater health disparities, with Black immigrants having the highest rates of reporting hypertension and Black and Hispanic immigrants having the highest rates of obesity reporting. Further research is needed to understand the influence of discrimination on health outcomes among U.S. immigrants.

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## SUPPLEMENTAL MATERIAL

Appendix Tables 1 to 3 are available in the online version of the article.

## NOTE

1. The sample sizes reported in regression results differ from those in Tables 1 and 2 because of missing data on hypertension (270 cases) and obesity (10,389 cases).

## REFERENCES


Abraído-Lanza, Ana F., Adria N. Armbrister, Karen R. Flórez, and Alejandra N. Aguirre. 2006. "Toward a Theory-Driven Model of Acculturation in Public Health Research." *American Journal of Public Health* 96(8):1342–46. doi:10.2105/AJPH.2005.064980.

Abraído-Lanza, Ana F., Maria T. Chao, and Karen R. Flo. 2005. "Do Healthy Behaviors Decline with Greater Acculturation? Implications for the Latino Mortality Paradox." *Social Science & Medicine* 61(6):1243–55. doi:10.1016/j.socscimed.2005.01.016.

Abraído-Lanza, Ana F., Bruce P. Dohrenwend, Daisy S. Ng-Mak, and J. Blake Turner. 1999. "The Latino Mortality Paradox: A Test of the 'Salmon Bias' and Healthy Migrant Hypotheses." *American Journal of Public Health* 89(10):1543–48. doi:10.2105/AJPH.89.10.1543.

Abraído-Lanza, Ana F., Sandra E. Echeverría, and Karen R. Flórez. 2016. "Latino Immigrants, Acculturation, and Health: Promising New Directions in Research." *Annual Review of Public Health* 37:219–36. doi:10.1146/annurev-publhealth-032315-021545.

Acevedo-Garcia, Dolores, Lisa M. Bates, Theresa L. Osypuk, and Nancy McArdle. 2010. "The Effect of Immigrant Generation and Duration on Self-Rated Health among U.S. Adults 2003–2007." *Social Science & Medicine* 71(6):1161–72. doi:10.1016/j.socscimed.2010.05.034.

Akresh, Ilana R., and Reanne Frank. 2008. "Health Selection among New Immigrants." *American Journal of Public Health* 98(11):2058–64. doi:10.2105/AJPH.2006.100974.

Alba, Richard. 2005. "Bright vs. Blurred Boundaries: Second-Generation Assimilation and Exclusion in France, Germany, and the United States." *Ethnic and Racial Studies* 28(1):20–49. doi:10.1080/0141987042000280003.

Alba, Richard. 2020. *The Great Demographic Illusion*. Princeton, NJ: Princeton University Press.

Alba, Richard, and Nancy Foner. 2015. *Strangers No More: Immigration and the Challenges of Integration in North America and Western Europe*. Princeton, NJ: Princeton University Press.

Alba, Richard D., and Victor Nee. 2003. *Remaking the American Mainstream: Assimilation and Contemporary Immigration*. Cambridge, MA: Harvard University Press.

Antecol, Heather, and Kelly Bedard. 2006. "Unhealthy Assimilation: Why Do Immigrants Converge to American Health Status Levels?" *Demography* 43(2):337–60. doi:10.1353/dem.2006.0011.

Arenas, Erika, Noreen Goldman, Anne R. Pebley, and Graciela Teruel. 2015. "Return Migration to Mexico: Does Health Matter?" *Demography* 52(6):1853–68. doi:10.1007/s13524-015-0429-7.

Ayala, Guadalupe X., Barbara Baquero, and Sylvia Klinger. 2008. "A Systematic Review of the Relationship between Acculturation and Diet among Latinos in the United States: Implications for Future Research." *Journal of the American Dietetic Association* 108(8):1330–44. doi:10.1016/j.jada.2008.05.009.

Barquera, Simón, Ismael Campos-Nonato, Lucía Hernández-Barrera, Adolfo Pedroza, and Juan A Rivera-Dommarco. 2012. "Prevalencia De Obesidad En Adultos Mexicanos, 2000–2012." *Salud Pública de México* 55(Suppl. 2):S151–60.

Bean, Frank D., and Gillian Stevens. 2003. *America's Newcomers and the Dynamics of Diversity*. New York, NY: Russell Sage Foundation.

Berkman, Lisa F., Ichiro Kawachi, and M. Maria Glymour, eds. 2014. *Social Epidemiology*. Oxford, UK: Oxford University Press.

Biddle, Nicholas, Steven Kennedy, and James T. McDonald. 2007. "Health Assimilation Patterns amongst Australian Immigrants." *Economic Record* 83(260):16–30. doi:10.1111/j.1475-4932.2007.00373.x.

Blewett, Lynne A., Julia A. Rivera, Miriam L. King, and Kari C. W. Williams. 2019. *Integrated Public Use Microdata Series Health Surveys: National Health Interview Survey, Version 6.4* [Dataset]. Minneapolis, MN: IPUMS. https://www.nhis.ipums.org.

Brondolo, Elizabeth, Ricardo Rieppi, Kim P. Kelly, and William Gerin. 2003. "Perceived Racism and Blood Pressure: A Review of the Literature and Conceptual and Methodological Critique." *Annals of Behavioral Medicine* 25(1):55–65. doi:10.1207/S15324796ABM2501_08.

Brown, Alison G. M., Robert F. Houser, Josiemer Mattei, Dariush Mozaffarian, Alice H. Lichtenstein, and Sara C. Folta. 2017. "Hypertension among U.S.-Born and Foreign-Born Non-Hispanic Blacks: National Health and Nutrition Examination Survey 2003–2014 Data." *Journal of Hypertension* 35(12):2380–87. doi:10.1097/HJH.0000000000001489.

Brown, Tyson H. 2018. "Racial Stratification, Immigration, and Health Inequality: A Life Course-Intersectional Approach." *Social Forces* 96(4):1507–40. doi:10.1093/sf/soy013.

Budiman, Abby, Tamir, Christine, Mora, Laura, and Luis Noe-Bustamante. 2020. "Facts on U.S. Immigrants, 2018: Statistical Portrait of the Foreign-born Population in the United States." *Pew Research Center*. https://www.pewresearch.org/hispanic/2020/08/20/facts-on-u-s-immigrants/.

Cagney, Kathleen A., Christopher R. Browning, and Danielle M. Wallace. 2007. "The Latino Paradox in Neighborhood Context: The Case of Asthma and Other Respiratory Conditions." *American Journal of Public Health* 97(5):919–25. doi:10.2105/ajph.2005.071472.

Cho, Youngtae, W. Parker Frisbie, and Richard G. Rogers. 2004. "Nativity, Duration of Residence, and the Health of Hispanic Adults in the United States." *International Migration Review* 38(1):184–211. doi:10.1111/j.1747-7379.2004.tb00193.x.

Creighton, Mathew J., Noreen Goldman, Anne R. Pebley, and Chang Y. Chung. 2012. "Durational and Generational Differences in Mexican Immigrant

Obesity: Is Acculturation the Explanation?" *Social Science & Medicine* 75(2):300–10. doi:10.1016/j.socscimed.2012.03.013.

Culhane, Jennifer F., and Irma T. Elo. 2005. "Neighborhood Context and Reproductive Health." *American Journal of Obstetrics and Gynecology* 192(5):S22–29. doi:10.1016/j.ajog.2005.01.071.

Derose, Katherine Pitkin, Jose J. Escarce, and Nicole Lurie. 2007. "Immigrants and Health Care: Sources of Vulnerability." *Health Affairs* 26(5):1258–68. doi:10.1377/hlthaff.26.5.1258.

Drachsler, Julius. 1920. *Democracy and Assimilation, the Blending of Immigrant Heritages in America*. New York, NY: Macmillan.

Feliciano, Cynthia. 2020. "Immigrant Selectivity Effects on Health, Labor Market, and Educational Outcomes." *Annual Review of Sociology* 46:315–34. doi:10.1146/annurev-soc-121919-054639.

Finch, Brian Karl, Robert A. Hummer, Bohdan Kol, and William A. Vega. 2001. "The Role of Discrimination and Acculturative Stress in the Physical Health of Mexican-Origin Adults." *Hispanic Journal of Behavioral Sciences* 23(4):399–429. doi:10.1177/0739986301234004.

Finch, Brian Karl, and William A. Vega. 2003. "Acculturation Stress, Social Support, and Self-Rated Health among Latinos in California." *Journal of Immigrant Health* 5(3):109–17. doi:10.1023/a:1023987717921.

Ford, Nicole D., K. M. Venkat Narayan, and Neil K. Mehta. 2016. "Diabetes among U.S.- and Foreign-Born Blacks in the U.S.A." *Ethnicity & Health* 21(1):71–84. doi:10.1080/13557858.2015.1010490.

Frisbie, W.Parker, Youngtae Cho, and Robert A. Hummer. 2001. "Immigration and the Health of Asian and Pacific Islander Adults in the United States." *American Journal of Epidemiology* 153(4):372–80. doi:10.1093/aje/153.4.372.

Funkhouser, Edward, and Stephen J. Trejo. 1995. "The Labor Market Skills of Recent Male Immigrants: Evidence from the Current Population Survey." *ILR Review* 48(4):792–811. doi:10.1177/001979399504800412.

Giles, Wayne H., J. Janet, B. Croft, Nora L. Keenan, Marcia J. Lane, and Fran C. Wheeler. 1995. "The Validity of Self-Reported Hypertension and Correlates of Hypertension Awareness among Blacks and Whites within the Stroke Belt." *American Journal of Preventive Medicine* 11(3):163–69. doi:10.1016/S0749-3797(18)30468-9.

Goldman, Noreen, Anne R. Pebley, Keunbok Lee, Theresa Andrasfay, and Boriana Pratt. 2021. "Racial and Ethnic Differentials in Covid-19-Related Job Exposures by Occupational Standing in the U.S." *PLoS One* 16(9):e0256085. doi:10.1371/journal.pone.0256085.

Goosby, Bridget J., Jacob E. Cheadle, and Colter Mitchell. 2018. "Stress-Related Biosocial Mechanisms of Discrimination and African American Health Inequities." *The Annual Review of Sociology* 44:319–40. doi:10.1146/annurev-soc-060116-053403.

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

Hamilton, Tod G. 2014. "Do Country-of-Origin Characteristics Help Explain Variation in Health among Black Immigrants in the United States?" *Social Science Quarterly* 95(3):817–34. doi:10.1111/ssqu.12063.

Hamilton, Tod G. 2015. "The Healthy Immigrant (Migrant) Effect: In Search of a Better Native-Born Comparison Group." *Social Science Research* 54:353–65. doi:10.1016/j.ssresearch.2015.08.008.

Hamilton, Tod G. 2019. *Immigration and the Remaking of Black America*. New York, NY: Russell Sage Foundation.

Hamilton, Tod G., and Tiffany L. Green. 2017. "Intergenerational Differences in Smoking among West Indian, Haitian, Latin American, and African Blacks in the United States." *SSM - Population Health* 3:305–17. doi:10.1016/j.ssmph.2017.01.007.

Hamilton, Tod G., and Tiffany L. Green. 2018. "From the West Indies to Africa: A Universal Generational Decline in Health among Blacks in the United States." *Social Science Research* 73:163–74. doi:10.1016/j.ssresearch.2017.12.003.

Hamilton, Tod G., and Rama Hagos. 2020. "Race and the Healthy Immigrant Effect." *Public Policy & Aging Report* 31(1):14–18. doi:10.1093/ppar/praa042.

Hamilton, Tod G., and Robert A. Hummer. 2011. "Immigration and the Health of U.S. Black Adults: Does Country of Origin Matter?" *Social Science & Medicine* 73(10):1551–60. doi:10.1016/j.socscimed.2011.07.026.

Hummer, Robert A., Daniel A. Powers, Starling G. Pullum, Ginger L. Gossman, and W. Parker Frisbie. 2007. "Paradox Found (Again): Infant Mortality among the Mexican-Origin Population in the United States." *Demography* 44(3):441–57. doi:10.1353/dem.2007.0028.

Jackson, James S., Tod G. Hamilton, Mosi A. Ifatunji, Krim K. Lacey, Hedwig E. Lee, and Jane A. Rafferty. 2018. *Using Analytic Domains within the Black Population to Understand Disparities in Population Health*. Princeton, NJ: Robert Wood Johnson Foundation and Policy Link. https://www.policylink.org/sites/default/files/Black-report.pdf.

Jasso, Guillermina, Douglas S. Massey, Mark R. Rosenzweig, and James P. Smith. 2004. "Immigrant Health: Selectivity and Acculturation." Pp. 227–66 in *Critical Perspectives on Racial and Ethnic Differences in Health in Late Life*, edited by N. B. Anderson, R. A. Bulatao, and B. Cohen. Washington, DC: National Academies Press.

Kasinitz, Philip, John H. Mollenkopf, Mary C. Waters, and Jennifer Holdaway. 2008. *Inheriting the City: The Children of Immigrants Come of Age*. New York, NY: Russell Sage Foundation.

Kehoe, Robert, Suh-Yuh Wu, M. Cristina Leske, and Leo T. Chylack, Jr. 1994. "Comparing Self-Reported and Physician-Reported Medical History." *American Journal of Epidemiology* 139(8):813–18. doi:10.1093/oxfordjournals.aje.a117078.

Kennedy, Steven, Michael P. Kidd, James T. McDonald, and Nicholas Biddle. 2015. "The Healthy Immigrant Effect: Patterns and Evidence from Four Countries." *Journal of International Migration and Integration* 16(2):317–32. doi:10.1007/s12134-014-0340-x.

Lee, Jennifer, and Frank D. Bean. 2010. *The Diversity Paradox Immigration and the Color Line in Twenty-First Century America*. New York, NY: Russell Sage Foundation.

Lee, Sunmin, Allison H. O'Neill, Emily S. Ihara, and David H. Chae. 2013. "Change in Self-Reported Health Status among Immigrants in the United States: Associations with Measures of Acculturation." *PLoS One* 8(10):e76494. doi:10.1371/journal.pone.0076494.

Leung, Leigh Ann. 2014. "Healthy and Unhealthy Assimilation: Country of Origin and Smoking Behavior among Immigrants." *Health Economics* 23(12):1411–29. doi:10.1002/hec.2992.

Li, Kelin, Ming Wen, and Kevin A. Henry. 2017. "Ethnic Density, Immigrant Enclaves, and Latino Health Risks: A Propensity Score Matching Approach." *Social Science & Medicine* 189:44–52. doi:10.1016/j.socscimed.2017.07.019.

Livingston, Gretchen, and Anna Brown. 2017. "Intermarriage in the U.S. 50 Years after Loving v. Virginia." Pew Research Center. https://www.pewresearch.org/social-trends/2017/05/18/intermarriage-in-the-u-s-50-years-after-loving-v-virginia/.

Markides, Kyriakos S., and Sunshine Rote. 2019. "The Healthy Immigrant Effect and Aging in the United States and Other Western Countries." *The Gerontologist* 59(2):205–14. doi:10.1093/geront/gny136.

McDonald, James Ted, and Steven Kennedy. 2004. "Insights into the 'Healthy Immigrant Effect': Health Status and Health Service Use of Immigrants to Canada." *Social Science & Medicine* 59(8):1613–27. doi:10.1016/j.socscimed.2004.02.004.

Mehta, Neil K., Irma T. Elo, Nicole D. Ford, and Karen R. Siegel. 2015. "Obesity among U.S.- and Foreign-Born Blacks by Region of Birth." *American Journal of Preventive Medicine* 49(2):269–73. doi:10.1016/j.amepre.2015.02.014.

Mossakowski, Krysia N. 2003. "Coping with Perceived Discrimination: Does Ethnic Identity Protect Mental Health?" *Journal of Health and Social Behavior* 44(3):318–31. doi:10.2307/1519782.

Organization for Economic Co-operation and Development. 2019. *The Heavy Burden of Obesity: The Economics of Prevention*. Paris, France: OECD Health Policy Studies, OECD Publishing.

Osypuk, Theresa L., Ana V. Diez Roux, Craig Hadley, and Namratha R. Kandula. 2009. "Are Immigrant Enclaves Healthy Places to Live? The Multi-ethnic Study of Atherosclerosis." *Social Science & Medicine* 69(1):110–20. doi:10.1016/j.socscimed.2009.04.010.

Oza-Frank, Reena, and K.M. Venkat Narayan. 2010. "Effect of Length of Residence on Overweight by Region of Birth and Age at Arrival among U.S. Immigrants." *Public Health Nutrition* 13(6):868–75. doi:10.1017/S1368980009992084.

Pagnini, Deanna L., and S. Philip Morgan. 1990. "Intermarriage and Social Distance among U.S. Immigrants at the Turn of the Century." *American Journal of Sociology* 96(2):405–32. doi:10.1086/229534.

Palloni, Alberto, and Elizabeth Arias. 2004. "Paradox Lost: Explaining the Hispanic Adult Mortality Advantage." *Demography* 41(3):385–415. doi:10.1353/dem.2004.0024.

Portes, Alejandro, and Ruben G. Rumbaut. 2014. *Immigrant America: A Portrait*. Oakland: University of California Press.

Portes, Alejandro, and Min Zhou. 1993. "The New Second Generation: Segmented Assimilation and Its Variants." *The ANNALS of the American Academy of Political and Social Science* 530(1):74–96. doi:10.1177%2F0002716293530001006.

Read, Jen'nan Ghazal, Michael O. Emerson, and Alvin Tarlov. 2005. "Implications of Black Immigrant Health for U.S. Racial Disparities in Health." *Journal of Immigrant Health* 7(3):205–12. doi:10.1007/s10903-005-3677-6.

Read, Jen'nan Ghazal, Scott M. Lynch, and Jessica S. West. 2021. "Disaggregating Heterogeneity among Non-Hispanic Whites: Evidence and Implications for U.S. Racial/Ethnic Health Disparities." *Population Research and Policy Review* 40(1):9–31. doi:10.1007/s11113-020-09632-5.

Read, Jen'nan Ghazal, and Megan M. Reynolds. 2012. "Gender Differences in Immigrant Health: The Case of Mexican and Middle Eastern Immigrants." *Journal of Health and Social Behavior* 53(1):99–123. doi:10.1177/0022146511431267.

Read, Jen'nan Ghazal, Jessica S. West, and Christina Kamis. 2020. "Immigration and Health among Non-Hispanic Whites: The Impact of Arrival Cohort and Region of Birth." *Social Science & Medicine* 246:112754. doi:10.1016/j.socscimed.2019.112754.

Reynolds, Megan M., Alla Chernenko, and Jennan Ghazal Read. 2016. "Region of Origin Diversity in Immigrant Health: Moving beyond the Mexican Case." *Social Science & Medicine* 166:102–109. doi:10.1016/j.socscimed.2016.07.018.

Riosmena, Fernando, Bethany G. Everett, Richard G. Rogers, and Jeff A. Dennis. 2015. "Negative Acculturation and Nothing More? Cumulative Disadvantage and Mortality during the Immigrant Adaptation Process among Latinos in the United States." *International Migration Review* 49(2):443–78. doi:10.1111/imre.12102.

Scribner, Richard. 1996. "Paradox as Paradigm: The Health Outcomes of Mexican Americans."

*American Journal of Public Health* 86(3):303–305. doi:10.2105/AJPH.86.3.303.

Scribner, Richard, and James H. Dwyer. 1989. "Acculturation and Low Birthweight among Latinos in the Hispanic Hanes." *American Journal of Public Health* 79(9):1263–67. doi:10.2105/AJPH.79.9.1263.

Singh, Gopal K., and Mohammad Siahpush. 2002. "Ethnic-Immigrant Differentials in Health Behaviors, Morbidity, and Cause-Specific Mortality in the United States: An Analysis of Two National Data Bases." *Human Biology* 74(1):83–109. doi:10.1353/hub.2002.0011.

Treas, Judith, and Jeanne Batalova. 2009. "Immigrants and Aging." Pp. 365–94 in *International Handbook of Population Aging*, edited by P. Uhlenberg. Dordrecht, Netherlands: Springer.

Turra, Cassio M., and Irma T. Elo. 2008. "The Impact of Salmon Bias on the Hispanic Mortality Advantage: New Evidence from Social Security Data." *Population Research and Policy Review* 27(5):515–30. doi:10.1007/s11113-008-9087-4.

Vargas, Clemencia M., Vicki L. Burt, Richard F. Gillum, and Elsie R. Pamuk. 1997. "Validity of Self-Reported Hypertension in the National Health and Nutrition Examination Survey III, 1988–1991." *Preventive Medicine* 26(5):678–85. doi:10.1006/pmed.1997.0190.

Viruell-Fuentes, Edna A. 2007. "Beyond Acculturation: Immigration, Discrimination, and Health Research among Mexicans in the United States." *Social Science & Medicine* 65(7):1524–35. doi:10.1016/j.socscimed.2007.05.010.

Warner, W. Lloyd, and Leo Srole. 1945. *The Social Systems of American Ethnic Groups*. New Haven, CT: Yale University Press.

Zheng, Hui, and Wei-hsin Yu. 2022. "Diminished Advantage or Persistent Protection? A New Approach to Assess Immigrants' Mortality Advantages over Time." *Demography* 59(5):1655–81. doi:10.1215/00703370-10175388.

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