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Disability Among Native-born and Foreign-born Blacks in the United States

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Abstract Using the 5% Public Use Micro Data Sample (PUMS) from the 2000 U.S. census, we examine differences in disability among eight black subgroups distinguished by place of birth and Hispanic ethnicity. We found that all foreign-born subgroups reported lower levels of physical activity limitations and personal care limitations than native-born blacks. Immigrants from Africa reported lowest levels of disability, followed by non-Hispanic immigrants from the Caribbean. Sociodemographic characteristics and timing of immigration explained the differences between these two groups. The foreign-born health advantage was most evident among the least-educated except among immigrants from Europe/Canada, who also reported the highest levels of disability among the foreign-born. Hispanic identification was associated with poorer health among both native-born and foreign-born blacks.

Keywords Immigration · Disability · Black/African American · Caribbean · Africa

Introduction

Racial/ethnic differences in health are central to understanding the persistence of health disparities in the United States. Traditionally, most research on racial/ethnic

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health differences has focused on blacks and whites, with a more recent interest in Hispanic health and the Hispanic health paradox: the better-than-expected health outcomes among Hispanics given their low average socioeconomic status (SES) (Franzini et al. 2001; Hummer et al. 2000; Markides and Eschbach 2005; Palloni and Arias 2004). At the same time, the increasing racial/ethnic diversity of U.S. immigrants since the mid-1960s has produced more varied and complex identities within racial/ethnic groups that have been largely ignored in studies of immigrant health and health disparities with some exceptions (Alba and Nee 2003; Hummer et al. 2000; Jasso et al. 2004; Malone et al. 2003; Massey 1995; Mutchler et al. 2007; Read and Emerson 2005).

One important change resulting from the new immigration patterns is the increasing proportion of self-identified blacks who are foreign-born and who represent a growing share of recent immigrant flows. Following the passage of the immigration reform legislation in the mid-1960s, the number of black immigrants to the United States increased substantially; by 2005, foreign-born blacks made up 8% of the U.S. black population, up from less than 1% in 1960 (Kent 2007; Malone et al. 2003). Most black immigrants come from the Caribbean and Africa, although relatively few Africans came before 1980 and most have arrived since 1990 (Kent 2007). In contrast, the flow of immigrants from the Caribbean has been relatively steady over the past three decades and continues to make up the largest share of black immigration to the United States (60% in the 1990s), followed by immigration from Africa (36%) (Kent 2007). Black immigration from Europe and elsewhere has been and continues to be small.

The social and economic outcomes of black immigrants compared with those of native-born blacks have been used to test competing theories of black disadvantage. Some early work on this topic pointed to better labor market outcomes of black immigrants as evidence that cultural factors took primacy in explaining native-born black disadvantage (e.g., Sowell 1978). More recent work, however, questions the universality of the black immigrant "success" story and presents a more nuanced portrait of the black immigrant experience that highlights the role of selectivity, differences among black immigrant subgroups, and structural factors that limit the opportunities of both black immigrants and their native-born counterparts (e.g., Corra and Kimuna 2009; Dodoo 1997; Kalmijn 1996; Shaw-Taylor and Tuch 2007).

Although there is a growing body of research on socioeconomic experiences of black immigrants, there are limited studies of their health outcomes. Prior research on the health of black immigrants has been hampered by small sample sizes. In this study, we take advantage of the expanded questions on disability included in the 2000 U.S. census to investigate disability among native-born and foreign-born black U.S. residents. The size of the 5% Public Use Microdata Sample (PUMS) of the 2000 census makes it possible to disaggregate the black population by region of birth and Hispanic identity.

Our primary objectives are to compare levels of self-reported physical disability and self-care disability between foreign-born and native-born blacks and to investigate whether region of birth predicts health status among the foreign-born. In addition, we examine whether the Hispanic health paradox is also evident among Hispanic blacks: that is, whether Hispanic blacks report better health outcomes than non-Hispanic blacks. Although previous studies show that Hispanic identity is

associated with a health advantage (e.g., Hummer et al. 1999a, b), it is unclear whether this advantage extends to Hispanic blacks.

Background

The immigrant subgroup and its native-born counterpart that have received the most attention in the literature to date are U.S. Hispanics. This focus stems at least in part from the facts that Hispanics are the largest immigrant ethnic group, data on Hispanics are readily available, and there is much scientific interest in the Hispanic health paradox (Jasso et al. 2004; Markides and Eschbach 2005; Turra and Elo 2008). A few studies have also examined health among other immigrant groups, and most have documented better health and lower adult and infant mortality among foreign-born whites, blacks, and Asian and Pacific Islanders than among their native-born counterparts or among native-born whites (e.g., David and Collins 1997; Elo and Preston 1997; Frisbie et al. 2001; Hummer et al. 1999a, b; Jasso et al. 2004; Singh and Siahpush 2002). Among U.S. black residents, infants of foreign-born black women are less likely to be born preterm, have low birth weight, or die in their first year of life (David and Collins 1997; Hummer et al. 1999a; Singh and Yu 1996). In addition, all-cause mortality appears to be lower among black immigrants than among their native-born counterparts (Hummer et al. 1999b), including mortality from several leading causes of death, such as cardiovascular diseases, cancer, and respiratory diseases (pneumonia, influenza, and chronic obstructive pulmonary disease) (Singh and Siahpush 2002). Based on information drawn from various waves of the National Health Interview Survey (NHIS), Read and Emerson (2005) documented generally lower levels of activity limitations, better self-rated health, and lower hypertension among foreign-born blacks than native-born blacks.

Unlike studies of Hispanics, which have examined variation in health outcomes among various Hispanic subgroups (Mexicans, Cubans, Puerto Ricans, other foreign-born, and native-born Hispanics) (e.g., Cho et al. 2004; Hummer et al. 2000), most studies of non-Hispanic immigrant health have ignored subgroup heterogeneity. One recent exception is a study by Mutchler et al. (2007), in which the authors examined disability among elderly Asian immigrants by country of origin, also using data from the 2000 census. Their results showed considerable subgroup heterogeneity in disability among the elderly, measured by difficulty going outside alone as well as limitations in physical activity and in performing self-care tasks (see also Cho and Hummer 2001). One study has also investigated subgroup variability in health outcomes among foreign-born blacks in the United States (Read and Emerson 2005). The results of this investigation, based on the 2000–2002 waves of the NHIS, suggested that black immigrants from Africa and the West Indies have superior health compared with native-born blacks and with black immigrants from Europe, whose health appears to be similar to that of native-born blacks.

The aforementioned studies of native-born and foreign-born blacks focus primarily on non-Hispanics, and studies of Hispanics do not generally distinguish Hispanics by race. This convention is at least partly related to the fact that Hispanics

largely disregard the traditional U.S. concept of race and frequently choose "other race" when asked about their racial identity (Campbell and Rogalin 2006; Hitlin et al. 2007; Landale and Oropesa 2002; Rodríguez 2000). For example, in the 2000 U.S. census, more than 40% of Hispanics self-identified as "other race," and only about 2% self-identified as "black/African American," with nearly the remainder self-identifying as "white" (Grieco and Cassidy 2001).

Thus, little is known about the health status of foreign-born or native-born Hispanic blacks. Among foreign-born Hispanic blacks, the largest group (about 30%) is from the Dominican Republic (authors' tabulation from the 2000 U.S. census). The number of immigrants from the Dominican Republic approximately doubled between 1990 and 2000, and in 2000 this group constituted the fourth-largest immigrant group from Latin America (Grieco 2004). Other major sending countries for foreign-born Hispanic blacks were Panama and Mexico, each contributing about 15% (authors' tabulations from the 2000 census). Whether the health status of foreign-born Hispanic blacks resembles that of foreign-born non-Hispanic blacks from the Western Hemisphere has not been previously addressed. Also little is known about health differences among native-born Hispanic and non-Hispanic blacks.

Socioeconomic Status and Racial Context of Origin

Numerous studies have documented significant associations between various measures of SES and health in the United States and elsewhere (Elo 2009; Elo and Preston 1996; Feinstein 1993; Preston and Taubman 1994; Smith 2005; Williams 1990). SES is also a significant predictor of health among U.S. blacks, and black-white differences in SES have been implicated in black-white differences in health and mortality, (Crimmins et al. 2001; Hayward et al. 2000; Williams and Collins 1995). Because some foreign-born black subgroups have more-favorable socioeconomic profiles (at least when measured by educational attainment) than do native-born blacks (authors' tabulations from the 2000 census), we expect SES differentials to explain some part of the more-favorable health outcomes among the foreign-born. One exception to this pattern is the low educational attainment of foreign-born Hispanic blacks (authors' tabulations from the 2000 census). Socio-demographic differences among the native-born black subgroups are also expected to be related to differences in their health outcomes. Although SES differences may partially explain health differences *across* black subgroups, we hypothesize that the association between SES and health *within* subgroups may differ. Recent studies have documented flatter educational health gradients among foreign-born than native-born Hispanics, a pattern that was explained mainly by the relatively good outcomes among immigrants with low levels of education (Goldman et al. 2006; Turra and Goldman 2007). A similar finding also appears to extend to foreign-born blacks relative to native-born blacks (Kimbro et al. 2008). We build on this prior research by examining educational health gradients among the U.S. black population by region of birth.

In addition, it has been theorized that the racial context in the country of origin influences health outcomes of black immigrants (Read and Emerson 2005). According to this hypothesis, black immigrants from countries with majority white

populations, where blacks have experienced a racial climate similar to that in the United States, have similar health status as U.S.-born blacks and worse health than black immigrants from countries where blacks constitute the majority and where they have not been subjected to racial prejudice (Read and Emerson 2005). Accordingly, we would expect to find better health outcomes among immigrants from Africa and the West Indies than from Europe. At the same time, we speculate that foreign-born Hispanics who identify as black, including migrants from Puerto Rico, may have been subject to prejudice similar to that they may encounter upon arrival in the United States and thus may have worse health outcomes than African or Caribbean immigrants, a result contrary to the Hispanic health paradox.

The Role of Selective Migration

One of the principal theories offered for better health status and lower mortality of foreign-born compared with native-born U.S. residents is selective migration. Immigrants do not represent a random sample of the population in their country of origin; instead, they correspond to a group of individuals positively selected on health and other observed and unobserved characteristics, such as ambition and motivation (Jasso et al. 2004; Model 2008). Health selection also appears to pattern the health of internal migrants (i.e., those who migrate within the United States). For example, migrant selectivity from Puerto Rico is one explanation for lower infant mortality among children of Puerto Rican–born women who migrated to the U.S. mainland compared with that of children of mainland-born Puerto Rican mothers (Landale et al. 2000). Health selection is thought to be especially strong at working ages, when individuals are most likely to migrate for economic reasons (Marmot et al. 1984; Palloni and Ewbank 2004; Sharma et al. 1990). Thus, we hypothesize that those who immigrated during working ages have lower disability than those who arrived as children or adolescents or at ages 55 and older.

Among foreign-born black immigrants, we speculate that health selectivity is particularly high among immigrants from Africa, who are, on average, more highly educated and more likely to enter the United States on diversity visas and employment-based preferences than other black immigrants. Jasso et al. (2005:147) found that recent immigrants who came to the United States on diversity visas appeared to be "most positively selected on health." In contrast, Caribbean immigrants, who make up the largest black immigrant subgroup, are more likely than African immigrants to arrive on family-sponsored preferences or as immediate relatives of U.S. citizens (Akresh and Frank 2008; Kent 2007; Read and Emerson 2005). For example, based on recent data for 2001–2006, 87% of Caribbean immigrants entered on family-sponsored preferences or as immediate relatives of U.S. citizens, compared with only 40% of African immigrants (Kent 2007). Nevertheless, migrant selectivity has also been implicated in some of the economic and labor market successes of West Indian immigrants relative to U.S.-born blacks (Model 2008). Nevertheless, the higher level of selection among African immigrants leads us to hypothesize that they will have lower levels of disability compared with Caribbean immigrants.

At the same time, there has been an increase in the percentage of African immigrants who enter the United States as refugees, up from approximately 20% in the 1990s to 29% in 2001–2006 (Kent 2007). The percentage of Caribbean immigrants who entered with a refugee visa remains relatively low (~3% during 2001–2006) (Kent 2007). Refugees are likely to be less selective on SES and/or health than those who enter on diversity visas or employment-based preferences. This speculation is supported by evidence from a study of recent U.S. immigrants who were asked to rate their health relative to the average level of health in their home country. Those who arrived as refugees had twice the odds of reporting worse-than-average health compared with those on employment-based visas (Akresh and Frank 2008). Thus, health selectivity among immigrants from Africa will vary over time.

In addition, health-selective emigration of the foreign-born to their countries of origin after residing in the United States can affect comparisons of health outcomes between the native-born and the foreign-born. This so-called "salmon bias" hypothesis, which has been offered as a partial explanation for the Hispanic health paradox, proposes that some immigrants return to their homelands when they find themselves in poor health. Such health-selective emigration would thus result in a better average health status among the foreign-born who remain in the United States than would otherwise be the case (Franzini et al. 2001; Jasso et al. 2004; Markides et al. 1997). Return migration is thought to be prevalent among Hispanics because of the cultural importance of family ties and the close proximity of sending countries to the United States (Abraido-Lanza et al. 1999; Turra and Elo 2008). It may also be present among other black immigrant subgroups, especially from countries located nearby, and among Puerto Ricans migrating to the U.S. mainland. Thus, migration selectivity may also be relevant for understanding health differences among native-born black population subgroups.

Acculturation, Health Behaviors, and Stress

Besides selective migration, a commonly cited explanation for better health outcomes of immigrants compared with native-born U.S. residents are differences in lifestyles, social support, and health-related behaviors. This "cultural buffering" hypothesis postulates that "other cultures compared to the United States are more likely to be characterized by norms and values that restrain risky behaviors (smoking, abuse of alcohol and drugs) and promote stronger familial and social support networks" (Cho et al. 2004:189). These cultural customs, especially among recent migrants, protect immigrants from the negative consequences of socioeconomic disadvantage and stress associated with the migration experience itself. After arriving in the United States, however, acculturation to the U.S. environment is hypothesized to lead to negative changes in health behaviors and diet and erode social and familial ties (Amaro et al. 1990; Angel et al. 2001; Hummer et al. 1999b; Mutchler et al. 2007). This explanation gains some support from evidence showing that foreign-born individuals are less likely to smoke than the native-born, but that these differences diminish with longer duration of stay in the United States (Singh and Siahpush 2002). Similarly, Antecol and Bedard (2006) found that recent immigrants had more-favorable levels of body mass index

(BMI) than their native-born counterparts, but that the BMI levels of those who immigrated 10 years (females) and 15 years (males) ago were similar to those of the native-born. These patterns have also been documented among foreign-born black U.S. residents, who are less likely to smoke and be obese than native-born blacks (Antecol and Bedard 2006; King et al. 1999; Singh and Siahpush 2002).

At the same time, less attention has been paid to the possible negative health consequences of migration itself. It disrupts social ties and can at least temporarily lead to diminished social networks and access to emotional and instrumental social support, which in turn can increase levels of stress (Angel et al. 2001; Jasso et al. 2004; Kasl and Berkman 1983). Jasso et al. (2005:128) identified various sources of stress with potentially negative health consequences, including "*visa stress*, defined as the set of stresses related to obtaining a legal permanent residence and *migration stress*, which refer to process of moving from one country to another, net of the visa application process." The authors provide some evidence for the possibility that the negative consequences of the migration experience and U.S. exposure are conditioned by visa status and may be alleviated or reversed after the acquisition of legal, permanent residency in the United States (Jasso et al. 2005).

We speculate that U.S. exposure may generate particularly high levels of stress among black immigrants as they face prejudice, discrimination, and residential segregation in the racially stratified U.S. society, factors that also contribute to lower health status of native-born blacks relative to other native-born U.S. residents (Acevedo-Garcia and Lochner 2003; Huie et al. 2002; Williams and Collins 2001). Thus, we hypothesize that the potential negative health consequences of longer duration of U.S. residence for black immigrants stems not only from possible costs of acculturation but also from exposure to racial discrimination and its associated disadvantages (Smedley et al. 2001; Smelser et al. 2000).

In addition, among the native-born, we speculate that self-identification as black among Hispanics signals a "double" minority status. For these individuals, such identification may mean that exposure to a racist U.S. environment is compounded by a marginalized status within a larger Hispanic community. This marginalization itself in turn can have adverse health consequences through adoption of negative health behaviors and exposure to stressful life circumstances.

Data

We use the 5% PUMS of the 2000 U.S. census, which because of its large sample size, facilitates analyses of small racial/ethnic groups by place of birth (Ruggles et al. 2004). We include individuals aged 25 and older who self-identified as black/African American or black/African American and some other race, a strategy similar to that used in other studies to classify multirace individuals (Mutchler et al. 2007; Tucker et al. 2002). The 2000 census was the first census that permitted multiple race reporting. Approximately 36.4 million individuals (12.9% of the U.S. population) self-identified as black/African American (95% of the total) or black/African American in combination with at least one other race (5%) (Grieco and Cassidy 2001). In addition to the race question, the census included a separate question on Hispanic identity. In 2000, 35.3 million individuals (13% of the U.S. population) classified themselves as

Hispanic, of whom approximately 2% self-identified as black/African American (Grieco and Cassidy 2001). Our unweighted sample size is 857,207 black U.S. residents aged 25 and older in 2000.[1]

Census Measures of Disability

The 2000 census included an expanded set of questions on disability, which were considered an improvement over questions in prior censuses. One cluster of questions asked about long-lasting functional limitations involving vision, hearing, and physical disability; and the second cluster focused on difficulty in performing certain activities because of a physical, a mental, or an emotional condition. Taken together, these questions capture loosely defined sensory, physical, mental, self-care, and employment disability as well as difficulty going outside the home for shopping or to a doctor (Waldrop and Stern 2003).

In this article, we focus on physical activity limitations and personal care limitations, which are measured by the following two questions: (1) *physical disability:* "Does this person have any of the following long-lasting conditions—a condition that substantially limits one or more basic physical activities, such as walking, climbing stairs, reaching, lifting, or carrying?"; and (2) *self-care disability:* "Because of a physical, mental, or emotional condition lasting 6 months or more, does this person have any difficulty in doing any of the following activities: dressing, bathing, or getting around inside the home?" Although these measures are far less detailed than those commonly collected in health surveys such as the National Health Interview Survey (NHIS) or the Health and Retirement Study (HRS), they are related to commonly used measures of functional limitations and activities of daily living (ADLs). Specifically, physical disability consists of Nagi-like scale items of functional limitations (Nagi 1991), and the self-care disability assesses difficulty in performing a subset of basic tasks included in the Katz measure of ADL (Katz et al. 1963). Similar disability indicators from the 2000 census were used in the study of disability among elderly Asian subgroups (Mutchler et al. 2007). Both dependent variables are coded 1 for persons with disability and 0 otherwise. We chose not to include the other disability items because they are more easily subject to language or cultural barriers (such as visiting a doctor's office). In addition, a recent study (Stern 2003) identified inconsistencies in the prevalence estimates of "employment disability" and "go-outside-home" disability in the 2000 census and the Census 2000 Supplementary Survey (C2SS), a national sample based on the American Community Survey (ACS). For the two disability items used in this article, the two sets of prevalence estimates were very similar (Stern 2003).

Explanatory Variables

We examine physical care and personal care disability among eight black subgroups distinguished by region of birth and Hispanic ethnicity: native-born non-Hispanic blacks, native-born Hispanic blacks, black Puerto Ricans born in the U.S. mainland, black island-born Puerto Ricans, foreign-born Hispanic blacks, non-Hispanic blacks

[1] We excluded individuals for whom race or Hispanic identity was imputed by the Census Bureau.

born in the Caribbean, non-Hispanic blacks born in Africa, and non-Hispanic blacks born in Canada/Europe.[2] We also examine disability by period of entry and age at entry to the United States among the foreign-born, factors that have been linked to variation in health status in prior studies (Angel et al. 2001; Cho et al. 2004; Landale et al. 2000; Read and Emerson 2005; Singh and Miller 2004). Based on recent immigration patterns of blacks to the United States, we identify three time periods of entry: before 1980, 1980–1989, and 1990–2000. We categorize age at entry as less than 20 years (childhood and adolescence), ages 20–54 (young adulthood and working ages), and ages 55 and older (middle and older ages).

In addition, we control for current age and sex. Because there is considerable variation in educational attainment and marital status between native-born and foreign-born blacks and among the foreign-born by place of birth (Kent 2007; Read and Emerson 2005), we include marital status and educational attainment as explanatory variables. In prior studies, educational attainment and marital status have been closely associated with health behaviors and health status, including disability (Freedman and Martin 1999; Hayward et al. 2000; Lillard and Waite 1995; Preston and Taubman 1994). Furthermore, as a measure of SES, education is acquired relatively early in life and is less subject to reverse causality than income, which is more likely to be affected by current health states in adults (Smith 2005). Educational attainment is coded as less than high school, high school diploma or GED, some college, a college degree, or at least some graduate education. Marital status is coded as never married, currently married, separated/divorced, or widowed. There are also large differences in the settlement patterns of black immigrants in the United States by place of birth. For example, Caribbean-born blacks live mainly on the East Coast, while African-origin immigrants are more widely dispersed (Kent 2007; Logan 2007). Thus, we also control for region of residence coded as Northeast, Midwest, South, and West.

Statistical Methods and Analytic Strategy

We estimate a series of logistic regression models predicting the presence of a physical activity limitation and a personal care limitation. All models are estimated in Stata 10 (Stata Corporation 2007), and all results are presented as odds ratios. All estimates are weighted by using weights provided in the 5% PUMS data file.

We begin by comparing disability prevalence among the eight subgroups, controlling only for age and sex (Model 1), and then test whether sociodemographic characteristics explain subgroup differences (Model 2). Following previous studies of immigrant health, we also investigate whether length of time in the United States predicts disability among the foreign-born and whether disability of those who have resided in the United States for longest periods resembles that of native-born non-Hispanic blacks.

[2] The Caribbean group includes Guyana because it shares a similar colonial and cultural history with other British West Indian nations. We combine Canada and Europe because of small sample sizes and because both represent a majority white context. We exclude a small group of foreign-born non-Hispanic blacks who represent a heterogeneous set of sending countries. Preliminary analysis showed that their exclusion did not alter the findings.

We then estimate a series of models to analyze differences in disability among the foreign-born by region of birth. Model 1 estimates disability among the foreign-born subgroups, adjusting only for age and sex. In Model 2, we introduce sociodemographic characteristics; in Model 3, we add age at immigration and timing of immigration. Given the differences in sociodemographic profiles and patterns of immigration, we expect that adjusting for these characteristics will help explain variation in disability among the foreign-born. Finally, following Goldman et al. (2006), Turra and Goldman (2007), and Kimbro et al. (2008), we explore whether the education-disability gradient varies between native-born non-Hispanic blacks and the immigrant subgroups.

Results

Table 1 presents sample characteristics. Native-born non-Hispanic blacks made up approximately 91% of the sample; native-born Hispanic blacks, including Puerto Ricans, composed about 1%; and the foreign-born composed about 8% of the sample. Among the foreign-born, immigrants from the Caribbean were the largest group (65%), followed by Africans (22%), foreign-born Hispanics (10%), and Europeans/Canadians (3%).

The prevalence of both physical activity limitations and personal care limitations was higher among the native-born than the foreign-born. Among native-born blacks, island-born Puerto Ricans reported the highest level of physical activity limitations (19%) and personal care limitations (7%), followed by Hispanic blacks (15% and 6%), non-Hispanic blacks (15% and 6%), and mainland-born Puerto Ricans (9% and 4%). Among the foreign-born, African immigrants reported the lowest level of both types of disability (4% and 1%), with the highest levels recorded among Hispanic immigrants (9% and 3%).

Of all black subgroups, African immigrants had the highest level of education, with about 49% having at least a college degree. Black immigrants from Europe/Canada were also highly educated, with 45% having a college degree or graduate level schooling. The most poorly educated were island-born Puerto Ricans and Hispanic immigrants, of whom about two-thirds had only a high school degree or less. The education distributions among immigrants from the Caribbean, native-born Hispanics, and native-born non-Hispanic blacks were similar (Table 1).

In addition, the foreign-born were more likely to be currently married than the native-born subgroups, and African immigrants stood out as being much more likely to be male. The regional distribution of the black subgroups reflects the settlement patterns of the native-born and foreign-born black U.S. residents (Table 1).

Among the foreign-born, there were substantial differences in age at immigration and year of immigration (Table 2). For example, about 54% of the European/Canadian immigrants came as children or adolescents (aged<20 years) compared with only about 14% of African, 29% of Caribbean, and 31% of Hispanic black immigrants. Furthermore, about 55% of black immigrants from Africa arrived in the United States after 1990, with less than one-third of the others immigrating during this decade. In contrast, close to 47% of black immigrants from Europe/Canada migrated prior to 1980. The pattern of immigration by age and year among Caribbean and Hispanic immigrants was most similar.

Table 1 Descriptive characteristics for black native-born and black foreign-born U.S. residents ages 25+: 50 states and the District of Columbia, 2000 U.S. census (percentages unless otherwise noted)

Characteristic	Native-born				Foreign-born			
	Non-Hispanic (N = 776,684)	Hispanic[a] (N = 4,164)	Mainland-born Puerto Rican (N = 2,144)	Island-born Puerto Rican (N = 1,803)	Hispanic (N = 7,569)	Caribbean[b] (N = 46,814)	African[b] (N = 16,102)	European/Canadian[b] (N = 1,927)
Disability Measures								
Physical activity limitations	14.8	14.8	9.2	18.7	8.8	7.2	3.5	6.7
Personal care limitations	5.5	5.9	4.2	7.0	3.4	2.8	1.2	2.5
Mean age	46.0	41.5	37.3	47.4	44.6	45.5	39.6	38.7
(SD)	(15.5)	(14.8)	(10.7)	(14.9)	(14.3)	(13.8)	(10.4)	(12.2)
Sex								
Female	55.1	54.3	52.4	52.2	50.5	56.1	43.1	57.3
Male	44.9	45.7	47.6	47.8	49.5	43.9	56.9	42.7
Education								
Less than high school	26.4	26.5	20.1	43.2	43.3	29.2	13.7	11.3
High school	30.1	25.5	26.4	25.8	21.9	27.0	18.9	18.7
Some college	23.5	24.9	27.4	14.2	16.4	18.5	18.8	24.9
College degree	15.4	17.5	20.5	11.9	12.9	19.7	31.3	31.7
Graduate education	4.7	5.6	5.6	4.9	5.5	5.6	17.3	13.4
Marital Status								
Never Married	27.9	33.8	37.1	23.7	21.2	22.8	22.0	32.8
Married	37.5	32.6	35.4	41.8	45.6	48.0	50.8	42.2
Divorced/separated/widowed	34.5	33.6	27.5	34.4	33.2	29.2	27.2	25.0
Region of Residence								
Northeast	14.9	25.3	57.8	65.7	50.5	58.3	30.1	37.4

Table 1 (continued)

Characteristic	Native-born				Foreign-born			
	Non-Hispanic (*N* = 776,684)	Hispanic[a] (*N* = 4,164)	Mainland-born Puerto Rican (*N* = 2,144)	Island-born Puerto Rican (*N* = 1,803)	Hispanic (*N* = 7,569)	Caribbean[b] (*N* = 46,814)	African[b] (*N* = 16,102)	European/Canadian[b] (*N* = 1,927)
Midwest	19.5	14.2	9.0	6.5	4.8	2.7	15.7	10.7
South	56.0	37.9	21.6	21.7	30.8	35.4	39.7	37.0
West	9.6	22.6	11.6	6.1	13.9	3.5	14.5	14.9

Notes: Sample characteristics are based on weighted data. The number of cases is unweighted

Source: The 5% PUMS file of the 2000 U.S. census

[a]Excludes Puerto Ricans born in the mainland and those born in Puerto Rico

[b]Non-Hispanic

Table 2 Age and year of immigration for black foreign-born U.S. residents ages 25+: 50 states and the District of Columbia, 2000 U.S. census (percentages)

Characteristic	Foreign-born			
	Hispanic (N = 7,569)	Caribbean[a] (N = 46,814)	African[a] (N = 16,102)	European/Canadian[a] (N = 1,927)
Age at Immigration				
<20 years	30.5	28.9	14.3	53.6
20–54 years	66.1	67.2	82.7	45.5
55+ years	3.4	3.9	3.1	0.9
Year of Immigration				
1990 or later	31.8	24.5	55.1	26.0
1980–1989	32.5	37.3	30.3	27.2
Before 1980	35.7	38.1	14.6	46.8

Notes: Sample characteristics are based on weighted data

Source: The 5% PUMS file of the 2000 U.S. census

[a]Non-Hispanic

Variation in Disability Among Black Population Subgroups

Table 3 presents results from logistic regression models predicting physical activity limitations and personal care limitations. Model 1, which adjusts for age and sex only, indicates that all foreign-born subgroups reported a significantly lower level of physical activity limitations than each native-born group (i.e., native-born Non-Hispanic, native-born Hispanic, mainland-born Puerto Rican, island-born Puerto Rican).[3] Among the foreign-born, African immigrants reported a significantly lower level of physical activity limitations than all other immigrant subgroups, followed by Caribbean immigrants, whose disability level in turn was significantly lower than that of the other groups. In Model 2, we include adjustments for sociodemographic characteristics to test whether the differences between the native-born and the foreign-born can be explained by subgroup variation in sociodemographic characteristics. Despite the fact that educational attainment, marital status, and region of residence were all significant predictors of physical activity limitations (results not shown), their inclusion did not explain the foreign-born advantage (Table 3). The immigrant advantages in personal care limitations were broadly comparable with the exception of a nonsignificant difference between native-born non-Hispanic blacks and immigrants from Europe/Canada. Thus, despite substantial subgroup differences in sociodemographic characteristics, they did little to explain the foreign-born health advantage.

We also found significant differences in physical activity and personal care limitations among native-born blacks by Hispanic ethnicity and migration status from Puerto Rico. Native-born black Hispanics reported a significantly higher level of physical activity and personal care limitations than native-born non-Hispanic

[3] To test for significant differences among subgroups, we use the Wald test as implemented in Stata 10, which is similar to the likelihood ratio test (results not shown).

Table 3 Odds ratios of limitations in physical activity and personal care among black native-born and black foreign-born U.S. residents ages 25+: 50 states and the District of Columbia, 2000 (N = 857,207)

	Physical Activity Limitations		Personal Care Limitations	
Place of Birth	Model 1	Model 2	Model 1	Model 2
Native-born Hispanic[a]	1.35***	1.29***	1.46***	1.38***
Mainland-born Puerto Rican	1.08	1.11	1.54**	1.56***
Island-born Puerto Rican	1.30***	1.23**	1.27*	1.18
Foreign-born Hispanic	0.60***	0.56***	0.68***	0.63***
Caribbean[b]	0.45***	0.47***	0.53***	0.56***
African[b]	0.34***	0.41***	0.39***	0.48***
European/Canadian[b]	0.65***	0.74**	0.75	0.85

Notes: Reference group is native-born non-Hispanic. Estimates are based on weighted data. Model 1: Bivariate relationship (adjusted for age and sex only). Model 2: Model 1 + education, marital status, and region of residence

Source: The 5% PUMS file of the 2000 U.S. census

[a]Excludes Puerto Ricans born in the mainland and those born in Puerto Rico

[b]Non-Hispanic

*p < .05; **p < .01; ***p < .001

blacks. Furthermore, both island-born and U.S.-born Puerto Ricans reported higher level of physical activity limitations and personal care limitations than native-born non-Hispanic blacks, although not all comparisons reached statistical significance (Models 1 and 2, Table 3). This pattern is consistent with our speculation that self-identification as black among native-born Hispanics may result in marginalization within the larger Hispanic community, leading to adverse health consequences.

Figure 1 presents results from a model that controlled for all sociodemographic characteristics included in Model 2 (Table 3) and the time of immigration among the foreign-born. In this model, native-born non-Hispanic blacks were included in the omitted category, and immigrants were grouped by their time of entry into the

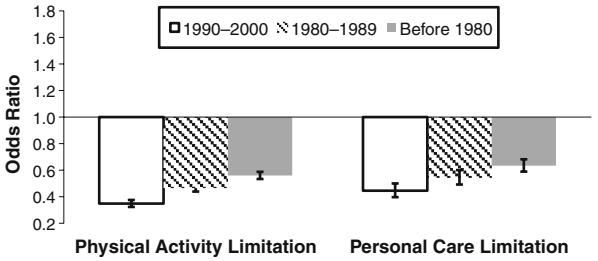

Fig. 1 Association between year of entry to the United States and limitations in physical activity and personal care for black foreign-born versus black native-born U.S. residents ages 25+: 50 states and the District of Columbia, 2000 (N = 857,207). *Note*: Reference group is native-born non-Hispanic blacks (odds ratio=1.0). Foreign-born groups include foreign-born Hispanic blacks, Caribbean-born non-Hispanic blacks, African-born blacks, and European/Canadian–born blacks. The model adjusts for age, sex, education, marital status, and region of residence. The 95% confidence intervals are shown. Data are from the 5% PUMS file of the 2000 U.S. census

United States. Consistent with previous literature, we found that those who immigrated most recently were the most advantaged relative to the native-born, with this advantage diminishing with increasing length of time in the United States. The observed pattern is consistent with the hypothesis that longer U.S. residence is associated with worsening health among the foreign-born, perhaps because of acculturation resulting in worsening health habits, lack of access to health care, and/or exposure to the racially stratified U.S. society. Nevertheless, even those black immigrants who migrated prior to 1980 reported a significantly lower disability than native-born non-Hispanic blacks.

Variation in Disability Among the Foreign-born

Results in Table 4 are based on black immigrants only. Compared with immigrants from the Caribbean, immigrants from Africa reported a significantly lower level of both physical activity and personal care limitations, controlling for age and sex (Model 1). This African advantage relative to Caribbean immigrants was explained

Table 4 Odds ratios of limitations in physical activity and personal care among black foreign-born U.S. residents ages 25+: 50 states and the District of Columbia, 2000 (N = 72,412)

	Physical Activity Limitation			Personal Care Limitation		
Characteristic	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Place of Birth (Caribbean)						
Foreign-born Hispanic	1.35***	1.23***	1.23***	1.27**	1.15	1.14
African	0.85**	0.95	1.08	0.79**	0.91	0.99
European/Canadian	1.56***	1.67***	1.59***	1.46*	1.58**	1.45*
Age and Year of Immigration (1990–2000; ages 20–54)						
Entered 1990–2000						
Ages <20	—	—	1.70*	—	—	2.17***
Ages 55+	—	—	1.25*	—	—	0.95
Entered 1980–1989						
Ages <20	—	—	1.56***	—	—	2.01***
Ages 20–54	—	—	1.44***	—	—	1.06
Ages 55+			1.55***			1.25
Entered Before 1980						
Ages <20			1.82***			1.62***
Ages 20–54	—	—	1.54***	—	—	1.11
Ages 55+	—	—	1.71**	—	—	1.80**
	—	—		—	—	

Notes: Reference groups are shown in parentheses. Estimates are based on weighted data. Model 1: Bivariate relationships (adjusted for age and sex only). Model 2: Model 1 + education, marital status, and region of residence. Model 3: Model 2+age and year of immigration

Source: The 5% PUMS file of the 2000 U.S. census

*p < .05; **p < .01; ***p < .001

by differences in educational attainment, marital status, and region of residence (Model 2), with educational attainment being the key explanatory factor. In contrast, both Hispanic immigrants and those born in Europe/Canada reported significantly higher levels of both physical activity and personal care limitations than Caribbean or African immigrants (Model 1, Table 4), and these differences were not explained by adjustment for sociodemographic characteristics, except in the case of personal care limitation for foreign-born Hispanics (Model 2, Table 4).

Model 3 of Table 4 adds age at and timing of immigration to Model 2. Despite differences in the age pattern and timing of immigration among the foreign-born, the addition of these variables did not alter the estimated *immigrant* subgroup differences discussed earlier herein. At the same time, both age at immigration and timing of immigration were significant predictors of disability. The healthiest immigrants were those who had immigrated to the United States at working ages (ages 20–54) and since 1990. Moreover, working-age immigrants reported better health than those who came as children or adolescents or at ages 55 and older, regardless of timing of immigration (Table 4; Fig. 2, Panel a). These results are consistent with the hypothesis that working-age immigrants are most selective on

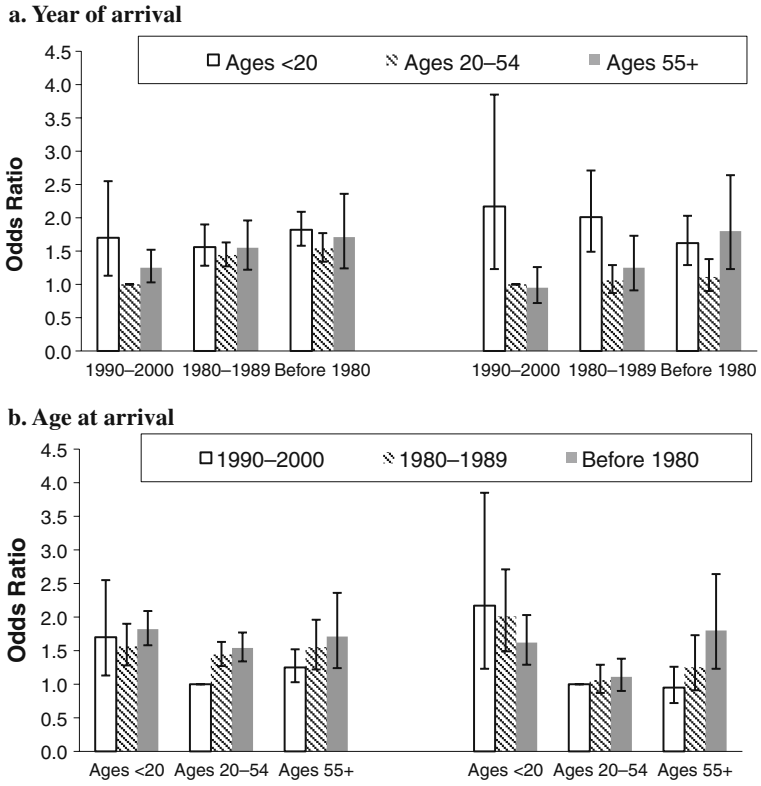

Fig. 2 Association between age and year of entry to the United States and limitations in physical activity and personal care for black foreign-born U.S. residents ages 25+: 50 states and the District of Columbia, 2000 (N = 72,412). *Note*: Reference group is 1990–2000 arrival at working ages (ages 20–54). The model adjusts for age, sex, education, marital status, and region of residence. The 95% confidence intervals are shown. Data are from the 5% PUMS file of the 2000 U.S. census

better health status (Jasso et al. 2004). In addition, we found that a longer duration of U.S. residence was associated with higher levels of disability among those who came to the United States at ages 20 and older (Table 4; Fig. 2, Panel b). These results reinforce the findings reported in Fig. 1, which does not control for life cycle age of immigration but which shows that immigrants who had lived longer in the United States reported higher level of disability than more-recent arrivals. This pattern is consistent with prior evidence cited in support of the acculturation hypothesis (Antecol and Bedard 2006; Cho et al. 2004; Singh and Siahpush 2002).

Education-Disability Gradients

We also tested the hypothesis that a part of the immigrant health advantage is related to their better health outcomes at low levels of education compared with those of the native-born non-Hispanic blacks, resulting in a flatter education health gradient among the foreign-born (Goldman et al. 2006; Turra and Goldman 2007). The results of these analyses are shown in Fig. 3, which graphs the predicted probabilities of physical activity limitations by educational attainment for foreign-born subgroups and native-born non-Hispanics blacks, holding sociodemographic characteristics (age, sex, marital status, regions of birth) at the subgroup-specific means. As seen in Fig. 3, these results lend partial support to the hypothesis that immigrants have a different education-health gradient than native-born U.S. residents. The health advantage among several black immigrant subgroups relative to the U.S.-born non-Hispanic blacks was more pronounced at lower levels of education. The main exception to this pattern was the education disability gradient of European/Canadian immigrants, among whom the education gradient was very similar or even slightly steeper than that of non-Hispanic native-born blacks. The results for personal care limitations were broadly similar but less stable because of much lower prevalence of personal care than physical activity limitations (results not

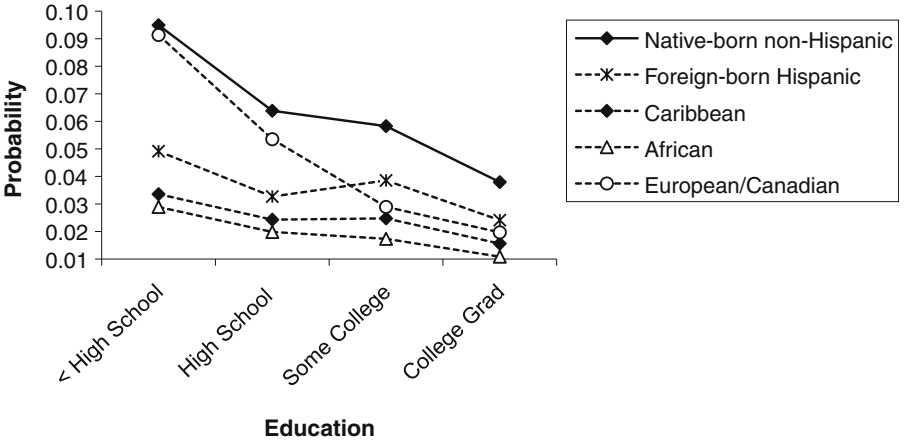

Fig. 3 Educational gradients in predicted probability of reporting a physical activity limitation among black native-born and black foreign-born U.S. residents ages 25+: 50 states and the District of Columbia, 2000. *Note*: Based on a logistic model adjusted for age, sex, educational level, marital status, and region of residence. Each covariate is held at the subgroup-specific means to estimate probabilities. Data are from the 5% PUMS file of the 2000 U.S. census

shown). Thus, it appears that black immigrants with lower levels of education, except for those from Europe/Canada, are particularly advantaged relative to native-born blacks with similar low levels of schooling. What accounts for this pattern is not known. It may be that poorly educated immigrants are especially motivated and healthy. Or, as suggested by Goldman et al. (2006), SES-health gradients in sending countries may differ from those found in the United States and/or social integration of those with low levels of schooling may vary by nativity.

Discussion

Foreign-born immigrants who self-identify as black make up a growing proportion of black residents in the United States. Until recently, relatively little has been known about the health status of these foreign-born residents. Moreover, there have been very few studies examining differences in adult health between native-born and foreign-born black subgroups, and no previous study we know of has examined variation in health outcomes among native-born and foreign-born Hispanic blacks. The 5% PUMS file of the 2000 census provides a large enough sample size to make it possible to investigate physical activity limitations and personal care limitations among native-born and foreign-born black adults by place of birth and Hispanic ethnicity.

Immigrant Health Advantage

Our results are consistent with findings of prior studies that have documented better health outcomes among foreign-born than native-born U.S. residents (e.g., Hummer et al. 1999b; Singh and Siahpush 2002). Foreign-born blacks reported lower levels of physical activity and personal care limitations than the native-born in 2000. This foreign-born advantage relative to U.S.-born blacks was not explained by subgroup variation in age, sex, educational attainment, marital status, and region of U.S. residence despite the more favorable sociodemographic characteristics of the foreign-born. We further showed that an immigrant health advantage was more pronounced at lower levels of schooling among Hispanic and non-Hispanic African and Caribbean immigrants, but not among European/Canadian immigrants. We speculate that health-selective immigration, a prominent explanation of the health advantages of the foreign-born relative to the native-born U.S. residents (e.g., Jasso et al. 2004), plays an important role in our findings. Although we cannot directly compare the health status of black immigrants with that of the population in their countries of origin, the fact that foreign-born blacks also reported lower levels of physical activity and personal care limitations than *native-born whites* lends support to this hypothesis (results not shown). Furthermore, Akresh and Frank (2008) found significant positive health selection among recent legal immigrants to the United States from Africa, South/Central America, and the Caribbean.

The pattern of differences in reported disability among black immigrant subgroups is of substantive interest. In particular, immigrants from Africa reported the lowest levels of disability, followed by immigrants from the Caribbean, Hispanic blacks, and those immigrating from Europe/Canada. This African advantage was

related in part to their higher levels of education and more recent arrival in the United States. After we adjusted for sociodemographic characteristics, their level of disability was no longer significantly different from those of Caribbean immigrants. In comparison, sociodemographic characteristics, timing of immigration, and age at immigration did not explain the higher reported level of both physical activity and personal care limitations among immigrants from Europe/Canada or higher level of reported physical activity limitations among black immigrants who also self-identified as Hispanic.

Based on similar findings using data from the 2000–2002 NHIS, Read and Emerson (2005) theorized that black immigrants migrating from majority white regions (Europe) experienced worse health status than immigrants from minority white regions (Africa, the Caribbean) because of their exposure to racist environments in Europe similar to that found in the United States. Our results confirm that black immigrants from majority white regions reported higher levels of disability than immigrants born in Africa or the Caribbean. Furthermore, we showed that the education-disability gradient among European/Canadian immigrants was similar to that of native-born non-Hispanic blacks. Exposure to majority white contexts in the sending country may have a detrimental effect on health for immigrant blacks. However, alternative explanations are also possible. A sizable fraction of black immigrants from Europe/Canada arrived in the United States prior to 1980 as children or adolescents; thus, their experiences were closely tied to the experiences of native-born blacks because many have lived in the United States since childhood or adolescence. In addition, we speculate that European/Canadian-born blacks experience fewer barriers to immigration to the United States than immigrants from less-developed regions, and thus they constitute a less-select group.

Also consistent with findings of prior studies are our results regarding the association between disability and the length of time spent in the United States; more-recent immigrants reported fewer limitations than those who arrived in the more-distant past, controlling for life cycle age of immigration. Many authors have interpreted such results as evidence for the argument that after arrival in the United States, immigrants adapt to the U.S. environment by embracing behaviors that have detrimental health consequences (Antecol and Bedadrd 2006; Jasso et al. 2004). Lower levels of health insurance coverage among the foreign-born compared with the native-born may also partly explain the positive association between duration of residence and disability (Carrasquillo et al. 2000; Pitkin et al. 2009; Thamer et al. 1997). One study found that in the 1990s, foreign-born black men were less likely to be covered by health insurance compared with native-born black men (Lucas et al. 2003). These interpretations rely on the premise that individuals who immigrated several years ago had similar health status, or at least health status that was not worse, at the time of immigration than that of more-recent migrants. However, Jasso et al. (2004) showed that the health status of recent immigrants can vary even over a short time period (5 years). Thus, in the absence of information on health status at the time of immigration, we must be careful in interpreting the association between duration of residence and health among the foreign-born.

The results regarding age at immigration, controlling for timing of immigration, in turn lend support to the theory that health selective immigration is most pronounced among the working-age population. We documented a U-shaped pattern

of age effects, such that those who migrated as children or adolescents or at ages 55 and older reported higher levels of disability than working-age immigrants, except among those who arrived in the United States since 1990 in the case of personal care disability. The motivation for migration at older ages is less likely to be tied to employment opportunities than at working ages, and older migrants are thus less likely to be selected on health or other characteristics related to labor market success. Children, in turn, immigrate primarily with their parents and are subsequently exposed to the U.S. environment.

Disability Among Hispanic Blacks

Although there is ongoing interest in the Hispanic health paradox, few studies have examined the health status of Hispanic blacks (e.g., Borrell 2006; Borrell and Dallo 2008). Thus, an important contribution of this study is the separate identification of Hispanic and non-Hispanic blacks. Unlike previous studies that indicate a Hispanic health *advantage* relative to non-Hispanic white and/or black U.S. residents, we find that both native-born and foreign-born Hispanic blacks generally displayed higher levels of disability compared with their respective non-Hispanic groups. For example, foreign-born Hispanic blacks reported a higher level of disability than African or Caribbean immigrants. Likewise, native-born Hispanic blacks reported a higher level of disability than native-born non-Hispanic blacks. In addition, island-born Puerto Ricans reported higher levels of disability than native-born non-Hispanic blacks as did mainland-born Puerto Ricans in the case of personal care limitations. Hence, Hispanic identification in this study was associated with a disadvantaged health status—a result that in general was robust for adjustment for sociodemographic characteristics.

Hispanics who self-identify as black/African American may do so for a variety of reasons. These include having a non-Hispanic black parent (Logan 2004), phenotype/skin color (Rodríguez 2000), or that one's "black" identity reflects life experiences (Hitlin et al. 2007). These Hispanic blacks constitute a distinct subgroup within the Hispanic population. Compared with Hispanics who identify as "other" or "white," they are more racially segregated from whites and more likely to live in neighborhoods with non-Hispanic blacks (Denton and Massey 1989). Hispanic blacks also have a lower median household income, higher unemployment, and a higher poverty rate than other Hispanics (Logan 2004). As noted in the introduction of this article, we speculate that being a black and a Hispanic signals a "double" minority status, which in the case of native-born Hispanic blacks may lead to an inferior status within the Hispanic community. Among foreign-born Hispanic blacks, poorer health outcomes may be rooted in racial marginalization within racially stratified Hispanic-sending nations (Howard 2001), a hypothesis consistent with the racial context of origin theory proposed by Read and Emerson (2005). Thus, the Hispanic health paradox does not extend to black Hispanics.

Limitations and Avenues for Future Research

This study has several limitations. First, the measures of health are self-reported or proxy-reported; and normative perceptions of health and illness, which may vary by

country of origin, may influence responses to census questions. Therefore, differences in reported levels of disability by place of birth may not accurately represent true differences in underlying health status. We limited our disability measures to those that were likely to be better reported. Nevertheless, some caution should be exercised in interpreting differentials in self-reported physical health measures across different cultural and national origin groups (Carr et al. 2001; Mathers 2003; Murray and Chen 1992; Sen 2002). Furthermore, some who entered the United States on diversity visas or on employment-based preferences may mistakenly fear that reporting a disability on the census would lead to loss of employment or visa status and therefore do not report an existing disability.

Second, our results with respect to age at and year of immigration were based on cross-sectional data and must be interpreted with caution. For example, we could not control for health status at the time of immigration. In addition, Redstone and Massey (2004) have shown that census questions on timing of immigration provide imprecise estimates of duration of stay in the United States. Many migrants enter and leave the United States numerous times before they make a permanent move. As a result, estimates of exposure time to the U.S. environment based on census data are likely to be imprecise, and their accuracy may vary by immigrant subgroup. Future research on acculturation and health trajectories among immigrants over time would greatly benefit from analyses of longitudinal data that make it possible to follow immigrant cohorts after their arrival in the United States. In addition, multigenerational studies of black immigrants and comparisons with populations in their countries of origin would help shed light on the impact of the U.S. environment on the health of black and other immigrant subgroups.

Third, we did not examine whether differences in residential segregation patterns among native-born blacks by Hispanic ethnicity or among foreign-born black subgroups were associated with variation in health outcomes. This area also merits further investigation. Finally, it was not possible to assess the potential role of selective return migration (salmon bias) on differences in disability. Health-selective return migration among the foreign-born subgroups (and among island-born Puerto Ricans) would result in an underestimation of disability levels for these populations.

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