

# Immigrant Health Paradox

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## Abstract

With rising rates of immigration around the globe we have seen increased interest in the socioeconomic situation of immigrants as well as their health status and health care needs, and their impact on the host countries' health care system. Much of the research has focused on immigrants of non-Western origin to the three traditional immigration destinations—the United States, Canada, and Australia. While earlier research was often focused on the negative impact of immigration on immigrants' health and mental health, research in the last couple decades has consistently found evidence of relatively good health among most immigrants especially "voluntary" immigrants from non-Western origins to western nations, a finding often referred to as an *immigrant health paradox*. Most interest in immigrant health in the United States has focused primarily on immigrants from Latin America, especially Mexico. Immigrants tend to have better health and mortality profiles than the native born, especially from the same racial/ethnic group. While there are some exceptions to these findings, which we note in the current entry, the preponderance of evidence indicates that selection processes are pivotal for understanding the paradox. Sociocultural resources have also been implicated; however, most of this line of research is still underdeveloped. In the current investigation we outline (a) foundational research, (b) cutting edge research, and (c) key issues for future research. We argue that better health among immigrants is not necessarily paradoxical. Most "voluntary" immigrants arrive in their country of destination with good health and a positive outlook on life. However, the finding that longer stays in the United States deplete health likely reflects acculturation forces. More research is needed to more adequately capture acculturative stress processes, changes in lifestyle factors (smoking, diet, and exercise), and the sociocultural resources that protect immigrants from being vulnerable to premature mortality.

## INTRODUCTION

The health of immigrants has often been investigated from a social stress-illness perspective viewing immigration as a major life stressor (Friis, Yngve, & Persson, 1998; Malzberg, 1967). Immigrants are thought to face many obstacles in adjusting to the host society, including discrimination, and thus they often experience health and mental health problems. While no doubt immigrants often are discriminated against and do experience

difficulties adjusting to the host society there is little evidence that such stresses take an immediate toll on their health and mental health at least in the United States (Cunningham, Ruben, & Narayan, 2008; Markides & Gerst, 2011; Vega, Rodriguez, & Gruskin, 2009).

In fact, much of the evidence supports immigrant selection for good health and lower mortality rates than those of the native-born population which often has been termed an *immigrant health paradox*. Another perspective has viewed immigrant health from an acculturation perspective that argues that immigrant health advantages are reduced with time in the host country and typically disappear by the next generation. It has been argued that this is due in part to changes in health behaviors including diet and exercise which increase obesity rates (Antecol & Bedard, 2006), as well as exposure to chronic stressors (Viruell-Fuentes, Miranda, & Abdulrahim, 2012).

In this review below we examine the extent to which there is an “immigrant health paradox” or immigrant health advantage characterizing all immigrants to the United States. We go beyond mortality statistics to examine data on physical health and disability. We also review evidence from Canada and Australia, the two other major immigrant destinations. We conclude with discussion of needed future research and whether it is appropriate to speak of an “immigrant health paradox.”

#### FOUNDATIONAL RESEARCH: THE HISPANIC PARADOX

Recent interest in immigrant health in the United States has focused primarily on immigrants from Latin America especially Mexico. For some time now there has been a suggestion of a “Hispanic Epidemiologic Paradox” of relatively good health despite relatively poor socioeconomic status. This “paradox” was pointed out by Markides and Coreil (1986) some 30 years ago with respect to the health and mortality situation of Southwestern Hispanics, the vast majority of whom were of Mexican origin. They noted that the health and mortality situation of Mexican Americans was more similar to that of non-Hispanic Whites than to that of African Americans with whom they shared relatively similar socioeconomic conditions.

This seemed paradoxical given the long-established association between socioeconomic status and health. Fueling the notion of a paradox were high rates of obesity, diabetes, and sedentary life styles of Mexican Americans and other Hispanics. Data from around 1980 showed that Mexican Americans had lower mortality rates from cardiovascular diseases and major cancers especially among men. Explanations emphasized strong family support system, certain health behaviors and cultural practices, as well as health selective migration (Markides & Coreil, 1986).

By the 1990s there was evidence that the life expectancy at birth of Mexican Americans and other Hispanics had surpassed the life expectancy of non-Hispanic Whites. While there were questions regarding data quality, there appears to be an emerging consensus that the data are of high quality and indeed suggest a real advantage. At the same time the suggestion that the advantage was because of “salmon bias” (Abraido-Lanza, Dohrenwend, Ng-Mak, & Turner, 1999), or return migration to Mexico or other country of origin by people in poor health, was challenged by more recent evidence by Turra and Elo (2008).

### MORTALITY AND LIFE EXPECTANCY CUTTING EDGE RESEARCH

The current evidence with respect to the Hispanic Paradox suggests that there is an advantage in the mortality situation of most Hispanic populations that is driven by an immigrant advantage (Crimmins, Kim, Alley, Karlamangla, & Seeman, 2007; Markides & Eschbach, 2005, 2011). Evidence also suggests that this long-living population is characterized by higher rates of comorbidity and disability in their middle and older years (Hayward, Hummer, Shiu, Gonzalez-Gonzalez, & Wong, 2014; Markides & Eschbach, 2011).

Official life tables published in 2010 using data from 2006 show a 2.5-year advantage of Hispanics over non-Hispanic Whites in life expectancy at birth. It was 7.7 years higher than that of Blacks/African Americans. The advantage was present among both genders. Hispanic men had a life expectancy of 77.9 years compared to 75.6 years for non-Hispanic White men and 69.2 years for African American men. Hispanic women had a life expectancy of 83.1 years compared to 80.4 years for non-Hispanic White women and 76.2 years for African American women (Table 1).

Arias (2010) suggested that this Hispanic mortality advantage may seem paradoxical given the population’s lower socioeconomic status as originally suggested by Markides and Coreil (1986). Yet the estimates were adjusted for misclassification of race and ethnicity on death certificates as well as age misstatement. Moreover these estimates were consistent with numerous

**Table 1**  
United States Life Tables by Hispanic Origin

<b>Life Expectancy at Birth</b>	<b>Total</b>	<b>Male</b>	<b>Female</b>
Hispanic:	80.6	77.9	83.1
Non-Hispanic White	78.1	75.6	80.4
Non-Hispanic Black	72.9	69.2	76.2

Adjusted for misclassification of race and Hispanic origin on death certificates. 80+ rates for Hispanics based on Non-Hispanic White rates. Adapted by Arias (2010).

studies showing a Hispanic mortality advantage. While the estimates were not available by immigrant status there was confidence that the advantage was greater among the foreign-born. In addition, while all Hispanics were lumped together the overall advantage was driven by the Mexican origin population who constitute almost two thirds of the Hispanic population (Arias, 2010).

Table 2 (adapted from Hummer, Melvin, Sheehan, & Wang, 2014) shows death rates per 100,000 as well as mortality ratios by race/ethnicity for adults aged 45 and over in the United States. Patterns observed are similar by gender. Death rates for Blacks are higher than rates for non-Hispanic Whites through ages 75–84 and lower at ages 85 and over, the latter supporting the long-noted racial mortality cross-over. While controversial, the most recent evidence suggests that is the result of higher selective mortality among earlier cohorts of Blacks (Masters, 2012) which is consistent with earlier literature (Manton & Stallard, 1997). The table also shows substantial advantages for Hispanics which are consistent with the life table data discussed earlier. Notable advantages are also observed among Asian/Pacific Islanders. The relatively favorable American Indian rates are the result of substantial misclassification of ethnicity on death rates especially at older ages (Stehr-Green, Bettles, & Robertson, 2012), with real rates being substantially higher than those for the non-Hispanic White population.

Hummer *et al.* (2014) also examined ethnic mortality patterns by cause of death. They note that Hispanics and Asian Americans exhibit low mortality rates from heart diseases and neoplasms while American Indians exhibit high mortality rates from accidents and diabetes. Diabetes is also a notable cause of death among African Americans and Hispanics. Multivariate analysis conducted by Hummer *et al.* (2014) found that both male and female foreign-born persons had lower mortality rates than the native-born.

The rates were notably lower among foreign-born women who were in the United States <10 years. They also note that low mortality among the foreign-born explained some of the overall mortality advantage of both Hispanics and Asian Americans. Such immigrant advantages are consistent with health selective immigration (Akresh & Frank, 2008; Markides & Eschbach, 2005). “Salmon bias” or return migration of less healthy persons to their country of origin is not likely to be an important contributing factor (Turra & Elo, 2008), and there is some evidence that low smoking rates among immigrants may indeed be a major contributing factor (Fenelon, 2013). An overall Hispanic mortality advantage was also suggested by a recent review and meta-analysis of longitudinal studies (Ruiz, Steffen, & Smith, 2013). There is also evidence that Puerto Ricans living in the United States do not share such an advantage. Puerto Ricans do not experience a migration selection because, with their US citizenship status, they encounter few or no barriers

**Table 2**  
**Death Rates per 100,000 by Race/Ethnicity and Mortality Rate Ratios for Racial/Ethnic Minority Groups Compared with Non-Hispanic Whites, US Adults Aged 45 and above, Official (Preliminary) Vital Statistics Mortality Data, 2010**

Sex and Age Group	Non-Hispanic Black		Hispanic Origin		Asian/Pacific Islander		American Indian/Alaskan Native		Non-Hispanic White	
	Death Rates	Death Rate Ratios	Death Rates	Death Rate Ratios	Death Rates	Death Rate Ratios	Death Rates	Death Rate Ratios	Death Rates	Death Rate Ratios
<i>Females</i>										
45-54	496.3	1.61	193.7	0.63	127.9	0.42	325.5	1.06	307.4	1.00
55-64	995.0	1.58	449.8	0.71	298.8	0.47	622.7	0.99	630.9	1.00
65-74	2,062.9	1.34	1,084.6	0.71	788.5	0.51	1,478.20	0.96	1,534.3	1.00
75-84	4,663.9	1.10	3,066.4	0.73	2,445.2	0.58	3,362.5	0.80	4,228.4	1.00
85+	12,737.3	0.94	10,235.6	0.76	8,586.9	0.63	9,249.3	0.68	13,525.7	1.00
<i>Males</i>										
45-54	736.9	1.45	351.5	0.69	213.9	0.42	495.3	0.98	507.5	1.00
55-64	1,700.8	1.63	814.6	0.78	519.4	0.50	948.2	0.91	1,045.1	1.00
65-74	3,266.0	1.45	1,773.7	0.79	1,225.0	0.54	1,969.7	0.87	2,254.5	1.00
75-84	6,832.1	1.19	4,461.3	0.77	3,436.6	0.60	4,441.5	0.77	5,763.8	1.00
85+	14,947.1	0.95	11,775.6	0.75	10,822.7	0.69	10,240.5	0.65	15,796.1	1.00

Source: Adapted from Hummer et al. (2014).

to their migration from the island to the mainland and thus are not as selected (Markides & Gerst, 2011).

As suggested earlier, the immigrant mortality advantage in the United States is not confined to Hispanics. There appears to be an overall immigrant advantage that may have increased in recent years possibly because of growing heterogeneity of the immigrant population, continuing advantages in health behaviors, and health selective migration (Singh & Hiatt, 2006). While the Hispanic foreign-born advantage is widely known and established, the foreign-born black advantage is not well-known. It is now believed that there is a substantial foreign-born black advantage over US-born Blacks and it is greatest among the African-born followed by the Caribbean-born. Singh and Miller (2004) estimated that foreign-born black men and women lived 9.4 and 7.8 years longer than their native-born counterparts during 1986–2000. In a more recent analysis of various data sources Singh, Rodriguez-Lainz, and Kogan (2013) found that in all racial and ethnic groups the foreign-born had a higher life expectancy than their US-born counterparts around 1999–2001. The greatest advantage was among black immigrants who had a life expectancy 7.4 years higher than US-born blacks. Another recent analysis of foreign-born mortality advantage at ages 65 and above using Medicare data and (Dupre, Gu, & Vaupel, 2012) found that indeed the advantage was greatest among foreign-born blacks. They conclude that the foreign-born population increased the overall life expectancy of the United States and that the US foreign-borns are among the longest-lived people in the world.

While immigrants to the United States may be healthier than immigrants to other developed countries there is evidence of significant mortality advantages among immigrants in Canada and Australia (Biddle, Kennedy, & McDonald, 2007; Chen, Ng, & Wilkins, 1996). Moreover, as in the United States (see Antecol & Bedard, 2006) there appears to be a convergence to native health levels in both Canada and Australia within 10–20 years (Biddle *et al.*, 2007; McDonald & Kennedy, 2004). Moreover the immigrant advantage in both countries appears to be greatest among immigrants from non-Western origins (see also, Kennedy, McDonald, & Biddle, 2006).

## DISABILITY AND PHYSICAL HEALTH

While there is a clear advantage in mortality and life expectancy among Mexican Americans and other Hispanics, the evidence is quite mixed with respect to other health indicators such as measures of morbidity, disability, and other outcomes. It appears that Mexican Americans are a long-living population primarily because of immigrant selection (Arias, 2010; Markides & Eschbach, 2005). Mexican immigrants arrive in the United States in relatively good health but lose their advantage with time in the United

States so that they become more disabled in late middle and old age than the non-Hispanic White population partly because of a lifetime of physical labor and substandard medical care (Markides & Gerst, 2011) as well as changes in health behavior with acculturation (Antecol & Bedard, 2006). In fact, data from the Hispanic Established population for the Epidemiological Study of the Elderly (Hispanic EPESE) have suggested high disability rates of older Mexican Americans have increased in recent years (Markides & Gerst, 2011). There were also significant increases in the prevalence of diabetes, hypertension, obesity, and cognitive impairment (Markides & Gerst, 2011). The increase in the prevalence of diabetes suggests better management of the disease by the medical establishment as well as by older Mexican Americans and their families (Beard, Al Ghatrif, Samper-Ternent, Gerst, & Markides, 2009). At the same time the increase in diabetes prevalence has been accompanied by increases in cognitive impairment (Markides & Gerst, 2011).

An analysis of the 2,000 United States Census disability rates showed that older African Americans and Native Americans were the most disabled among major ethnic groups followed by Hispanics, Asian Americans and non-Hispanic Whites (Markides, Eschbach, Ray, & Peek, 2007). Analysis by place of birth showed a foreign-born male advantage among Hispanics including Mexican Americans but not among females supporting the notion that most immigrant men were selected because they migrated for occupational reasons while many of the women migrated to be with their families (Markides *et al.*, 2007).

As mentioned in the previous section we have recently seen an increase in interest in the health of immigrant Blacks whose numbers have been rising in recent years (Elo, Mehta, & Huang, 2011; Hamilton & Hummer, 2011; Mehta, Sudharsanan, & Elo, 2014). Elo *et al.* (2011) used the 2,000 US census 5% Public Use Micro Data Sample (PUMS), also used by Markides *et al.* (2007) discussed above, and found that among persons aged 25 and above age-standardized disability rates were lower among all foreign-born subgroups than rates for native-born Blacks. Among foreign-born Blacks, the lowest rates were those for immigrants from Africa, followed by Caribbean origin non-Hispanic Blacks. They also found that the immigrant advantage was greater at lower levels of schooling among non-Hispanic African and Caribbean origin immigrants a pattern they also observed among Hispanics (Markides & Eschbach, 2005; Turra & Goldman, 2007). Elo *et al.* (2011) also found evidence of convergence of disability rates of immigrants with native rates with time in the United States supporting of the notion that immigrants adopt habits of the host environment with respect to diets and other health behaviors (Antecol & Bedard, 2006). A critical mechanism is increases in obesity according to Antecol and Bedard (2006).

Hamilton and Hummer (2011) used data on working-age immigrant and US-born Blacks for 1996–2010 from the Current Population Surveys to investigate the importance of region or country of origin. They found that Caribbean-born Blacks lose much of their health advantage relative to US-born Blacks after about 20 years in the United States as suggested by the convergence model discussed above by Antecol and Bedard (2006). However, African-born immigrants appear to maintain a health advantage over US-born Blacks beyond 20 years in the United States. Nevertheless all Black immigrants appear to be selected for good health as also found by others (see Elo *et al.*, 2011; Hummer *et al.*, 2014).

Mehta *et al.* (2014) more recently examined patterns and trends in disability and its determinants, among older people in major US racial and ethnic groups using National Health Interview Survey (NHIS) data for 2000–2010. As expected they found a foreign-born disability advantage among Hispanics and African Americans. However, the opposite was true for Asian Americans. As also suggested, in previous literature this finding is likely to result of compositional differences between native-born and foreign-born Asian Americans: Most native-born older Asian Americans are of Japanese and Chinese origins, whereas around half of foreign-born older Asian Americans are of Vietnamese, Filipino, or other less advantaged origins (Markides *et al.*, 2007). The authors found little evidence that African American to White disparities in disability changed from 2000 to 2010. At the same time they found some evidence that older Hispanic women appeared to be getting worse off relative to non-Hispanic White women possibly because of rising obesity rates among Hispanics both native-born as well as immigrants (Singh, Siahpush, Hiatt, & Timsina, 2011).

#### ETHNIC NEIGHBORHOODS AND IMMIGRANT ENCLAVES

In the search for mechanisms explaining immigrant health advantages there has been considerable interest in the role of immigrant or ethnic neighborhoods. Again the primary focus has been on Hispanics and Hispanic immigrants. With respect to overall mortality ethnic concentration has been found to be associated with lower mortality net of individual factors by LeClere, Rogers, and Peters (1997). Using data from the Hispanic EPESE, Eschbach, Ostir, Patel, Markides, and Goodwin (2004) found a significant association between Hispanic concentration in census tracts and total mortality of older Mexican Americans in the Southwestern United States. Moreover they found that ethnic concentration was also associated with lower prevalence of cancer, stroke, and hip fracture. Other analyses using the same data yielded similar results with respect to self-rated health (Patel, Eschbach, Rudkin, Peek, & Markides, 2003) and depressive symptoms (Ostir, Eschbach, Markides, &



Goodwin, 2004). All three analyses suggested the importance of cultural factors that may contribute to a health advantage of older Mexican Americans.

Are the above results on older Mexican Americans unique to them? Eschbach, Mahnken, and Goodwin (2005) analyzed data from the SEER program and the US Bureau of the Census and found that Hispanic concentration was associated at all ages with lower incidence of lung, breast, and colorectal cancer at the census tract level. However, there is some evidence that Hispanics living in neighborhoods with high Hispanic concentration are more likely to be diagnosed with late-stage colorectal, cervical, and breast cancer possibly because of poorer access to care in such communities (Reyes-Ortiz, Eschbach, Zhang, & Goodwin, 2008). More specifically with respect to immigrant concentration or immigrant "enclaves" Osypuk, Diez Roux, Hadley, and Kandula (2009) used data from the multi-Ethnic Study of Atherosclerosis (MESA) and found evidence that census tract immigrant concentration was associated with less consumption of high-fat foods among both Hispanic and Chinese Americans. In contrast immigrant concentration among Hispanics was associated with lower levels of physical activity possibly because of lower walkability and availability of recreational resources.

At best the evidence on immigrant enclave or ethnic neighborhood concentration is mixed and a search of mechanisms continues. There is also speculation that ethnic density might be more beneficial to older people who are more limited to the immediate neighborhood than to younger people who typically have a larger life space (Markides & Gerst, 2011).

#### CONVERGENCE TO NATIVE LEVELS IN THE UNITED STATES, AUSTRALIA, AND CANADA

A relatively consistent finding in the immigrant health literature in the United States is that immigrant health advantages appear to converge to native levels with time. Antecol and Bedard (2006), using data on all immigrants from the 1989 to 1996 National Health Interview Survey (NHIS), showed that immigrants arrive in the United States with lower average body Mass Index (BMI) levels than those of native-born Americans. They found that immigrant men appear to close one-third of the gap within 15 years and that women converge to native BMI levels within 10 years. Vega *et al.* (2009) found evidence of reductions in immigrant mortality advantages in subsequent generations most likely because of changes in health behavior and suboptimal medical care (see also, Achintya, Dey, & Wilson Lucas, 2006).

There has also been substantial attention to the importance of age at migration on health advantages and subsequent convergence levels to native levels. Angel, Angel, Dias Venegas, and Bonazzo (2010) used Hispanic

EPESE data and found that those immigrating in mature adulthood have a lower mortality than those immigrating as children. It has been suggested that those immigrating as children do not fare as well health-wise later in life because they are less likely to be selected by physical health status than those immigrating as adults. And, since they grow up in the United States they are more likely to adopt its health behaviors that are associated with poor health later in life (see Gubernskaya, Bean, & Van Hook, 2013). In addition, there is some literature suggesting that, at least among today's older immigrants, men were more selected than women because they were more likely to immigrate for occupational reasons while women were more likely to immigrate to follow their spouses (Markides *et al.*, 2007).

The convergence in the health of immigrants to native levels has also been observed in Canada and Australia. McDonald and Kennedy (2004) found that recent immigrants to Canada had better health and health behaviors than native-born Canadians especially those of non-European origin. They also suggested that the health status of immigrants tended to converge to native Canadian levels within approximately 10 years. They argued that such convergence to native levels was real and not the result of a convergence in screening and diagnosis of existing health problems. Australian data tend to be consistent with Canadian and American data. Biddle *et al.* (2007) at ages 20–64 found that immigrants had better health than native-born Australians. As in Canada immigrants from non-Western origins and non-English speaking Europe arrived in better health than immigrants from the United Kingdom and Canada who had fewer barriers to immigration. As in Canada and the United States they found that the health of immigrants appears to converge to native levels within approximately 10–20 years.

#### KEY ISSUES FOR FUTURE RESEARCH

There seems to be an emerging consensus that the physical health of immigrants (or most immigrants) to the United States and other developed nations is superior to the health of the native-born at entry. Major factors accounting for such an advantage include migration selection and better health behaviors. There is also an emerging consensus that the health of immigrants converges to native levels over time and with any mortality advantages disappearing by the next generation.

One fruitful area of inquiry is the influence of ethnic or immigrant neighborhoods often referred to as an *enclave effect*. A search for mechanisms associated with health advantages continues with supportive cultural factors thought to be important and possibly more important for older people. At the same time some ethnic communities appear to be characterized by factors that are not conducive to good health, including walkability and availability

of recreational resources. Clearly more research on such mechanisms must continue. Very important is to examine how changes in ethnic communities over time may impact health. Changes may be compositional with respect to population mix as well as socioeconomic with respect to availability of economic resources, as well as political and broader social factors.

Another area of inquiry is the meaning of social class among immigrant and ethnic populations in comparison to native-born populations. Many immigrants are of low socioeconomic status with respect to education, occupation, and income. Yet they appear to be socially engaged sometimes working two or three jobs, and often sending money to family members in their countries of origin. Is it possibly that low social class is less detrimental to the health of immigrants as it is to native-born populations?

We also must continue to examine trends in the evidence that the health of immigrants converges to native levels with time in the United States. Related is the need to monitor trends in immigration and the health of immigrants including factors in sending countries. For example, how is the obesity epidemic in Mexico influencing the health of current and future immigrants to the United States?

Critical is attention to why certain immigrant populations arrive at a healthy state but lose their advantages because of poor access to medical care. There are huge policy issues here, including immigration reform as well as health care reform currently under way.

Finally there is a need to reconsider the notion of an "immigrant health paradox." Immigrants are healthier because of selection forces related to physical, psychological, and behavioral advantages, such as low smoking rates. Given increasing globalization and rising immigration from developing to developed countries it is critical to better monitor how these trends influence public health outcomes as well as health and social policy outcomes in both sending and receiving societies.

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