Chapter 7
Immigration, Aging, and Health in the United States

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Given the rising numbers of immigrants to the United States, in recent decades there has been increasing interest in better understanding the health status and the health care needs of immigrants and how they impact the host societies' health and social service systems. Recent evidence has suggested the existence of a health advantage among immigrants, especially those from non-western origins, which has challenged our previous and often stereotypical notions regarding immigrants from poor countries. Early research in North America was almost exclusively focused on the negative impact of immigration on mental health (Malzberg 1967). The negative aspects of immigration were also the dominant theme of early studies in Europe (Friis et al. 1998). It is now commonly assumed that early research was often culturally biased, methodologically weak, and based on small numbers of immigrants (Friis et al. 1998; Markides 2001).

Recent studies, which include adequate numbers of immigrants and employ better study designs, provide compelling evidence that most immigrants to the United States and other western societies enjoy a health advantage. Below we focus on the health of immigrants to the United States, how their health changes over time, and we examine evidence regarding the association between aging and the health of immigrants. Since the majority of immigrants to the United States are from Mexico and Latin America, we give them particular attention. There has also been currently increasing interest in the health of immigrants of Asian origins, but studies of the influence of aging on health in such populations are lacking. Because of problems inherent in early research, we are unable to identify significant cohort differences in the impact of immigration on health. Although we may be unable to identify cohort differences in the health of immigrants, the volume of immigration is so much higher than it was just a few decades ago so that the impact of immigration on the overall health status of Americans as well as its impact on the health care system is considerably higher now.

Explanations of the health advantages of immigrants have focused on several major factors, including migration selection, return migration of less healthy people or "salmon bias," strong families and social networks, and better health behaviors. Some time ago Friis et al. (1998) proposed that the association between migration and health can be approached using the "stress-illness" model where immigration is a major life event conceptualized as a source of stress. At the same time, the process of acculturation into the host society can be a stressful experience that can impact physical and mental health. As immigrants become more acculturated and assimilated into the larger society, the level of stress they experience and its impact on health are reduced. It has also been suggested that immigrants arriving later in life often become linguistically and culturally isolated as

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their children become more acculturated into the large society, often leading to intergenerational frictions (Markides and Black 1995).

While immigrants arrive with better health status than the native-born, they appear to experience a convergence to native-born health status levels with time in the United States, and these health advantages disappear by the next generation. Reasons for convergence have focused on worsening health behaviors resulting from the stresses of acculturation (Friis et al. 1998), or "unhealthy assimilation," or the adoption of unhealthy behaviors (Antecol and Bedard 2006). With respect to the worsening of health status into old age, there has been some focus on the influence of physical labor over a life time accompanied by substandard medical care (Markides et al. 2008–2009), as well as on the impact of cumulative social and economic disadvantages over the life course (Wakabayashi 2009).

Below we review recent evidence regarding the health status of immigrants to the United States and evaluate the viability of explanations offered in the literature. We focus on major health status indicators such as mortality and chronic diseases and disabilities. We also examine how the health of immigrants changes with age and time in the United States. Special focus is given to the Hispanic population especially Mexican Americans on whom adequate data are available. We also refer to research in Canada and Australia which corroborates research findings in the United States.

Overview of Immigration Trends

Current international migration levels are at an all-time high, with 175 million persons (about 3% of the world's population) residing in a country that they were not born in (United Nations 2002; Jackson and Howe 2008). Most advanced western societies are receiving increasing numbers of immigrants, many of whom are arriving from nonwestern countries (Markides et al. 2008–2009). While immigrants tend to be relatively young, their large numbers will assure rising numbers of foreign-born older people who may have special health concerns. The United States, Canada, and Australia have been the three major immigrant destinations where most immigrants have gone and stayed, unlike some other European nations where return migration to the country of origin is common. In 2006, the United States received 1.2 million immigrants, Canada 250,000, and Australia 125,000 (Martin and Zürcher 2008). Although Canada and the United States make up only approximately 5% of the worlds' population, these two countries receive over half of the world's immigrants (Martin and Zürcher 2008).

In 2008, the United States had nearly 38 million persons that were foreign born (12.5% of the total populations), of whom approximately 12.3% were aged 65 years and older (Migration Policy Institute 2010). The immigration patterns to the United States have shifted dramatically in recent decades. Whereas immigrants used to be predominantly from Europe, increasing numbers are arriving from Latin America and Asia. In 1960, 75% of all immigrants to the United States were from Europe, less than 10% were from Latin America, and only 5% came from Asia. This is in stark contrast to 2008, where only 13% of immigrants were from Europe, over half (53.1%) were from Latin America, and 27.3% came from Asia (Migration Policy Institute 2010).

Mortality and Life Expectancy

A great deal of attention has been given recently to mortality and life expectancy among ethnic and minority populations in the United States. This literature has consistently shown higher mortality rates among African Americans at every age except at very advanced ages, typically 85 or 90 years and older when African Americans appear to have lower mortality rates than non-Hispanic whites.

The black/white mortality crossover has been controversial primarily because of questions about the quality of data for African Americans at advanced ages. Others feel that the crossover is real and can be explained in terms of greater selective survival among African Americans (Markides and Black 1995; Manton and Stallard 1997). That is, the few African Americans that survive to very advanced ages are "hardier" and experience lower mortality rates than non-Hispanic whites of the same age. A relatively new phenomenon has been the attention to the recent increase of foreign-born African Americans who appear to have quite favorable mortality rates. Favorable rates have been attributed primarily to immigrant selection forces including good health and good healthy behaviors (Hummer et al. 1999; Singh and Hiatt 2006).

The overall mortality disadvantage of African Americans has been attributed to socioeconomic forces including low education, low financial resources, as well as the stresses associated with racial prejudice and discrimination. In contrast, the negative effects of such socioeconomic forces have not translated into poorer health and mortality among most Hispanic/Latino populations who now together constitute the largest minority population in the United States at around 48 million. Some 25 years ago Markides and Coreil (1986) proposed an "epidemiological paradox" with respect to the health and mortality situation of Southwestern Hispanics who were overwhelmingly of Mexican origin. Data from around 1980 suggested that mortality rates for Southwestern Hispanics were similar to those of the non-Hispanic white population and were considerably lower than mortality rates of African Americans with whom they shared similar socioeconomic circumstances. This seemed paradoxical at that time because of the high rates of poverty among Mexican Americans and most other Hispanics given the established association between poverty and socioeconomic status with health and mortality. There were other risk factors that made similar mortality rates paradoxical including high rates of obesity, diabetes, and sedentary life styles among Mexican Americans especially at older ages. Mexican Americans had lower mortality rates from cardiovascular diseases and major cancers, especially among men. Explanations suggested included strong family supports, certain cultural practices, and health selective immigration. Hispanics were disadvantaged on certain health factors including diabetes and infectious and parasitic diseases (see also Hays-Bautista 1992; Vega and Amaro 1994), but overall they were in relatively good health.

By the 1990s, studies began showing a mortality advantage among Mexican Americans and other Hispanic groups. Puerto Ricans living on the mainland were an exception. The literature commonly referred to the epidemiological paradox as the "Hispanic Paradox" or "Latino Paradox." Franzini et al. (2001) performed a review of the literature over a 20-year period and concluded that the mortality advantage was most pronounced among infants and among older people. They suggested that the paradox might be explained by problems with vital statistics data, a healthy immigrant effect, and a "salmon bias," or return migration to Mexico by less healthy older people. They concluded that these three factors may explain part but not all of the mortality advantage. Abraido-Lanza et al. (1999) employed data from the National Longitudinal Mortality Study and found evidence of salmon bias. However it was too small to account for the mortality advantage. One study using the National Health Interview Survey – Multiple Cause of Death (NHIS-MCD) data set found evidence of selective outmigration of unhealthy Mexican Americans and argued that indeed such salmon bias explains the Mexican American mortality advantage (Palloni and Arias 2004). However, questions about limitations of the NHIS sample cautioned against such definitive conclusions (Markides and Eschbach 2005, 2011).

Hummer et al. (2007) examined a potential salmon bias in infancy. They employed data from the United States birth and infant death cohort files from 1995 to 2000 and found that death rates for infants born to Mexican immigrant women were approximately 10% lower than for infants born to non-Hispanic white U.S.-born women or to U.S.-born Mexican origin women. The large sample yielded stable rates for the first hour of life, first day, and first week. The authors concluded that favorable rates so early in life were unlikely to result from outmigration of immigrant women and their infants.

Perhaps the most definitive test of the salmon bias in old age was performed by Turra and Elo (2008) using data from the Master Beneficiary Record and the NUDIMENT data files of the Social Security Administration. They found higher mortality rates among foreign-born Hispanic beneficiaries living abroad than foreign-born beneficiaries living in the United States. At the same time, a significant number of older Hispanics living outside the United States appear to return to the United States when their health worsens and thus have high mortality rates. The authors note that the influence of salmon bias on Hispanic death rates in the United States is partially offset by the high mortality rates of Hispanic emigrants who return to the United States. They conclude that indeed a salmon bias exists but it is too small to account for the Hispanic mortality advantage (see, also, Abraido-Lanza et al. 1999).

Earlier we noted limitations of the NHIS-MCD data used by Palloni and Arias (2004). An enlarged public use file that included more years of survey from 1986 through 2000, with mortality follow-up through 2002 has recently become available. Borrell and Crawford (2009) used the data and found evidence corroborating earlier findings of low mortality among Hispanics. As in previous reports much of the advantage occurs in old age with findings being inconsistent at ages 25–44 regardless of nativity. As in previous studies Puerto Ricans had higher death rates than other Hispanic groups.

Eschbach et al. (2007) used vital registration data from Texas and California for 1999–2001 linked to 2000 Census population data to examine mortality at younger ages, namely at ages 15–44. Data presented by 5-year age groups showed a mortality advantage among foreign-born Hispanics of both genders relative to non-Hispanic whites. Among men the majority of the immigrant advantage was due to lower suicide rates and lower substance abuse (other than alcohol) than among non-Hispanic whites. At the same time, U.S.-born Hispanic men had higher death rates than non-Hispanic white men from both social and behavioral causes and chronic diseases. Social and behavioral causes were related to HIV and other sexually transmitted diseases, substance abuse, alcohol, and homicide. Female Hispanic immigrant advantages over non-Hispanic white women were attributable to social and behavioral causes but also to mortality from circulatory disease and major cancers. U.S.-born Hispanic women had higher death rates from homicide, HIV, and infectious and parasitic diseases than non-Hispanic white women and lower death rates from suicide, substance abuse, and unintentional accidents. No differences were observed with respect to chronic disease mortality. The authors concluded that the Hispanic mortality paradox at younger ages is primarily an immigrant phenomenon.

The inconsistency between these findings and those based on the NDI linkage discussed above (Borrell and Crawford 2009) may be related to the accumulation of mortality over many years in the latter and thus the inability of such studies to be responsive to period effects. For example, recent rates of homicide mortality and motor vehicle accidents showed greater declines among Hispanics than among non-Hispanic whites in Texas. Now younger Hispanics regardless of nativity have lower mortality from motor vehicle accidents a reversal from earlier patterns (Markides and Eschbach 2011).

The immigrant mortality advantage in the United States is also present in other immigrant populations (see Jasso et al. 2004; Singh and Siahpush 2002; Singh and Hiatt 2006; Cunningham et al. 2008). There is an overall significant immigrant advantage which may have increased in recent years from 2.3 years in life expectancy in 1979–1981 (76.2 vs. 73.9 years) to 3.4 years in 1991–2001 (80.9 vs. 76.6 years) (Singh and Hiatt). In 1999–2001, immigrants had significantly lower mortality from lung and esophageal cancer, COPD, HIV/AIDS, and suicide, but higher mortality from stomach and liver cancer. Among women estimated life expectancy at birth was the highest among U.S.-born Asian/Pacific Islanders (86.0 years), followed by immigrant Asian/Pacific Islanders (85.0 years), and Hispanic immigrant women (84.1 years). Among men Asian/Pacific Islanders had the highest life expectancy (80.7 years), followed by Hispanic immigrants (79.0), followed by U.S.-born Asian/Pacific Islanders (78.9), and by non-Hispanic white and black immigrants (both at 75.6). For each ethnic origin, there was an immigrant advantage (except for Asian/Pacific Islander women) which likely reflects compositional differences. This is especially the case at older ages

wherein immigrants are increasingly Filipino and Vietnamese while a substantial percent of the native born are of Japanese origin (see, also, Markides et al. 2007). Singh and Hiatt (2006) note that the largest nativity advantages were among blacks and Hispanics for both men and women. They attributed the immigrant advantage to health selection and better health behaviors including smoking and obesity, as well as lower chronic disease prevalence.

The large mortality advantages of Asian/Pacific Islanders led Lauderdale and Kestenbaum (2002) to suggest that very low mortality rates may very well be the result of healthy immigrant selection and relatively high socioeconomic status. At the same time, they raised the possibility that the rates may be understated because of underreporting of Asian/Pacific Islander race on death certificates. They employed the Master Beneficiary Record of the Social Security Administration as well as the NUDIMENT data files discussed earlier which avoid problems of misclassification of ethnicity. Elderly Asian Americans from six ethnic origins – Chinese, Filipinos, Indian, Japanese, Korean, and Vietnamese – were estimated to have lower death rates than those computed for elderly non-Hispanic whites. They raised the question of whether a "healthy immigrant" effect might account for the Asian mortality advantages but found inconsistent results. One issue is that older people of some Asian origins (Vietnamese, Filipino, Korean, and Indian) are overwhelmingly foreign born, so that meaningful comparisons with their native-born counterparts are not possible. As suggested earlier, comparing native-born and foreign-born mortality rates for all Asian origin groups lumped together is not advisable because of ethnic compositional differences between elderly foreign-born and native-born Asian Americans.

Physical Health and Disability

Much of the literature in the United States shows that most immigrants arrive with better health than native-born populations and experience lower mortality rates. Their health status appears to converge to native levels over time with any health advantages disappearing in the next generation. It has been suggested that such convergence might reflect improved access to health care, which can lead to increased diagnosis of preexisting conditions (Antecol and Bedard 2006; Jasso et al. 2004) thus leading to reduced reported health status. Data from Canada do not support this hypothesis. McDonald and Kennedy (2004) suggested that an observed convergence in Canada reflects actual convergence in physical health rather than a convergence in screening and diagnosis of existing health problems. They base this conclusion on data showing that immigrants' use of health care services converges with native-born levels faster than health outcomes do. An assimilation hypothesis suggests that since with time income and employment rates increase and at some point converge to native levels, one could predict that the health status of immigrants would improve (Antecol and Bedard 2006; Jasso et al. 2004; Sorlie et al. 1993). However, the evidence is that the opposite takes place with immigrants becoming less healthy with time in the country (Antecol and Bedard 2006; Cunningham et al. 2008; Cho et al. 2004; Stephen et al. 1994).

Explanations of such convergence have focused primarily on changes in health behaviors associated with increasing acculturation into the host society, including higher rates of smoking, changes in diet, and increasing rates of obesity (Cunningham et al. 2008; Markides 2001; Stephen et al. 1994). In fact obesity might be the central mechanism through which length of time since immigration leads to worsening health. Antecol and Bedard (2006) used data from National Health Interview Survey (NHIS) for 1989–1996 and found that male and female immigrants enter the United States with lower body mass index (BMI) levels than native-born men and women. They estimate that the BMI's of foreign-born women almost completely converge to native-born levels within 10 years while men close about one-third of the gap within 15 years. However, the convergence among females appears to be largely driven by Hispanics. There is also a convergence among Hispanic

males, but only with respect to overweight and not with respect to obesity (BMI 30+). Interestingly, black immigrants do not appear to converge to native BMI levels. These patterns appear to mirror those for health conditions, self-reported health, and activity limitations. Again the conclusion is that most of the convergence in BMI and overall health appears to take place among Hispanic immigrants. Importantly, most immigrants entering the United States in recent decades have come from Latin America, especially Mexico.

Huh et al. (2008) examined nativity differences in chronic conditions and other health indicators among Asian and Hispanic populations in the United States using NHIS data from 2000 to 2001. As expected foreign-born persons reported fewer chronic conditions (hypertension, asthma, heart disease, cancer, and diabetes) than U.S.-born non-Hispanic whites. They also found evidence that the initial health advantage of immigrants diminishes over time suggesting possible adverse effects of acculturation into American society. Frisbie et al. (2001) reached similar conclusions using data from the 1992–1995 NHIS. They found that immigrant health advantages were greatest for the first 5 years since immigration had declined consistently with time in the United States. The evidence was not uniformly positive in that Vietnamese immigrants had less than average health. It is possible that since Vietnamese-origin immigrants to the United States were mostly refugees, they were not subject to the same barriers as other immigrants.

Huh et al. (2008) caution that nativity is a crude indicator and may not fully capture the complexity of the acculturation process. While both Hispanic and Asian immigrants reported better physical health, they nevertheless were more likely to rate their health as being poorer than did non-Hispanic whites. This was especially so among Asian immigrants. While such a finding may suggest greater negative consequences of poor health among certain ethnic groups (Markides and Black 1995), it also cautions against relying only on self-rated health to study health disparities, which is often the case in the literature. Self-ratings of health have been found to be less valid among Hispanic immigrants (Finch et al. 2009) as well as among older Hispanics and African Americans who tend to be health pessimistic (Markides and Black 1995; Markides et al. 1997).

In recent years, there has been interest in understanding health disparities in old age using a cumulative advantage/disadvantage perspective (Crystal and Shea 2002; Dannefer 2003; O'Rand and Hamil-Luker 2005). Health advantages/disadvantages in old age are thought to result from accumulation of stressors over the life course. It has been found, for example, that the experience of economic strains early in life is associated with higher levels of disability, prevalence of serious medical conditions, depression, and poorer general health in later life (Kahn and Pearlin 2006; Lynch et al. 1997; Wakabayashi 2009). Conversely, it has also been found that people of high socioeconomic status are less likely to experience disability and morbidity as they age than persons of lower socioeconomic status (House et al. 1990, 1994). Thus, differences in socioeconomic status and economic and other stressors over the life course may explain poor health outcomes in old age in relatively long-living immigrant and ethnic populations such as Hispanics (Markides et al. 2008–2009).

Wakabayashi (2009) examined the viability of cumulative disadvantage/advantage theory to understand the health trajectories of immigrants using data from the Health and Retirement Study (HRS) for 1996, 1998, 2000, 2002, 2004, and 2006. She found that women immigrating after the age of 34 were more likely to have poor health trajectories with respect to limitations in activities of daily living possibly because they had less time to accumulate financial resources which would be protective of health in late life. More specifically it was Hispanic men and women regardless of age at immigration who experienced the most disadvantageous health trajectories with respect to reporting poor health because of limited opportunities to accumulate economic and other resources that would benefit health in late life. Thus, while Hispanic immigrants arrive with a health advantage, they exhibit worsening health profiles relative to non-Hispanic whites with time in the United States, a pattern observed with several large data bases, as we saw earlier. Similar data on health trajectories from middle into old age are not currently available on Asian-origin immigrants.

Trends in the Health of Older Mexican Americans

Of the major immigrant populations there has been more interest in the health of older Mexican Americans. The Hispanic Established Population for the Epidemiological Study of the Elderly (Hispanic EPESE) was launched in 1993–1994 when data were collected on a representative sample of 3,050 Mexican Americans aged 65 and over from the Southwestern United States (Texas, New Mexico, Colorado, Arizona, and California). Subjects have been followed every 2–3 years. By Wave 5 in 2004–2005, there were 1,167 surviving subjects from the original cohort who were then aged 75 and over. A new cohort of 902 Mexican Americans aged 75 years and over was drawn from the same region using similar procedures giving us the opportunity to examine trends in the health of very old Mexican Americans over an 11-year period.

It has been well-documented that the health of older Americans as well as the health of older people in other western societies began showing improvements in the mid-1980s (Crimmins et al. 1997; Manton 2008; Manton and Gu 2001; Freedman et al. 2002; Waidman and Liu 2000; Zunzunequi et al. 2006). This was a reversal from the 1970s and early 1980s, a period when increases in life expectancy were accompanied by increases in morbidity and disability. There is some recent evidence that the declines in old age disability and poor health in the United States may have stopped or may have reversed (Seeman et al. 2010). We have suggested elsewhere that the Mexican American population, much like Latin American and other developing countries' populations, are at a similar point in the epidemiological transition that the more advantaged western populations were in during the 1970s and early 1980s, a period of rising life expectancy accompanied by increases in the prevalence of chronic conditions and disabilities (Markides et al. 2011).

In one analysis using data from the Hispanic EPESE (Beard et al. 2009), we observed a significant increase in the prevalence of self-reported diabetes among Mexican Americans aged 75 years and over. Such an increase was attributed to better management of diabetes in older Mexican Americans and thus increased survival with the disease. Using the same data, we also found slight increases in hypertension prevalence over the 11-year period (Al Ghatrif et al. 2011). There was also a significant increase in awareness and control of hypertension. Our results suggest better management of chronic conditions among older Mexican Americans in recent years and increased survival to advanced ages. Below we examine whether there was also a corresponding increase in disability among Mexican Americans aged 75 years and over during the same time period.

Table 7.1 presents data on trends in disability and other health indicators using data from two cohorts of Mexican Americans aged 75 years and over from the Hispanic EPESE from 1993–1994 to 2004–2005. Bivariate comparisons were made for reporting any ADL disability (toileting, walking across a room, eating, transferring from bed to chair, bathing, and dressing). The table shows that the percent with any ADL disability increased from 20.2 to 29.7% among men and from 21.5 to 41.2% among women. Also shown are significant increases in prevalence of diabetes, hypertension, obesity, and cognitive impairment. The increase in disability can be attributed partly to increases in the prevalence of diabetes and cognitive impairment. No doubt they can also be attributed to increases in life expectancy and in frailty among very old Mexican Americans (Palloni 2007).

Further analysis by nativity status (not shown) showed that immigrant women were significantly less likely to self-report diabetes than were native-born women aged 75 years and over at Wave 5 in 2004–2005. However, immigrant women were more likely to be cognitively impaired using the Mini Mental State Examination (MMSE < 21). No such differences were observed among men. In both genders, both the foreign-born and native-born older Mexican Americans experienced significant increases from 1993–1994 to 2004–2005 in the prevalence of diabetes, obesity, cognitive impairment, and ADL disability. Thus, our data support the hypothesis of increases in morbidity and disability in a relatively disadvantaged population experiencing significant increases in life expectancy.

Table 7.1 Sociodemographic characteristics and prevalence of medical conditions in older Mexican American men and women in 1993–1994 and 2004–2005

	Men		Women	
	1993–1994 ($n=470$)	2004–2005 ($n=371$)	1993–1994 ($n=662$)	2004–2005 ($n=531$)
Age (mean ± SD)	80.9 ± 5.2	81.3 ± 4.7	81.0 ± 5.0	81.5 ± 5.4
Married	67.50	66.00	25.10	29.80
Chronic diseases				
Hypertension	57.00[a]	66.00	66.80[a]	72.60
Self-reported diabetes	21.30[b]	32.70	21.50[b]	38.10
Self-reported heart attack	14.60	13.40	13.40	10.10
Self-reported stroke	9.60	9.80	10.00	8.30
Self-reported cancer	6.60	8.40	6.80	7.30
Self-reported hip fracture	3.60	4.30	7.30	7.20
Any ADL limitation	19.90[b]	28.80	26.60[b]	42.30
Years of education (mean ± SD)	4.4 ± 3.9	4.9 ± 4.4	4.2 ± 3.7	5.1 ± 4.2
Obesity (BMI ≥ 30 kg/m^2)	17.90	22.40	26.70	28.90

[a] $p<0.05$
[b] $p<0.01$

Census Disability Rates for Older Hispanics by Nativity

While the Hispanic EPESE data are interesting and suggest important trends, they are limited only to the Mexican-origin population. A useful resource with data on large samples of older people from all major ethnic groups can be found in the 2000 United States Census. In a recent analysis, we computed disability rates for people 65 and by race/ethnicity and by type of Hispanic origin using the 2000 Census 5% public use micro data sample (PUMS) file, which includes data on approximately 1.8 million Americans aged 65 years and over (Markides et al. 2007). Rates were directly standardized to the total United States population of people aged 65 years and over in 2000 for ages 65–69, 70–74, 75–79, 80–84, 85–89, and 90+.

The 2000 Census obtained data on each person aged 5 years and over in the sampled households on six disabilities items (Stern 2004). Items were (1) *Sensory disability*, defined as blindness, deafness, or a severe vision or hearing impairment; (2) *Physical disability*, defined as a long-lasting condition which substantially limits one or more basic activities; (3) *Mental disability* referred to difficulty in learning, remembering, or concentrating; (4) *Self-Care disability* referred to difficulty in dressing and bathing; (5) *Going outside the home disability* asked about difficulty going outside the home alone to shop or to visit a doctor; (6) *Employment disability* asked about difficulty working at a job or business (persons aged 16 years or older). We used the first five items only and dropped the employment disability item because it has little relevance to most older people.

Our analysis showed that older Native Americans of both genders were the most disabled, followed by African Americans, Hispanics, Asian Americans, and Non-Hispanic whites. Among Hispanic groups, Puerto Ricans were the most disabled followed by those of Dominican origin, those of Mexican origin, and by Cuban, Central, and South American origin groups, the latter three having rather similar rates. As expected, the most favorable rates were for those whose origin was Spain (Markides et al. 2007).

Below we used the PUMS data to compute "any disability" rates (any of the five items) by nativity for major Hispanic groups at ages 65 and over. We had previously hypothesized (Markides et al. 2007, 2008–2009; Markides and Eschbach 2005) that there are likely to be gender differences in migration selection at least in the older generation. The rationale was that men immigrated for

occupational reasons while women more often immigrated to be with their spouses and their families. Thus, one would expect possible health advantages among men but not among women. Figures 7.1 and 7.2 present any disability rates by nativity for men and women, respectively. Rates were computed for Non-Hispanic whites, all Hispanics, and people of Mexican origin. Other Hispanic groups excluded because they were overwhelmingly immigrant in old age were Cubans, Central Americans, South Americans, and Dominicans. Puerto Ricans were also excluded because there are no immigrants among them since all are U.S. citizens. Thus migrating to the United States mainland from the island is not subject to any barriers and thus migration would not be as selective. Figure 7.1 indeed shows a small but noteworthy health advantage of foreign-born men among all Hispanics,

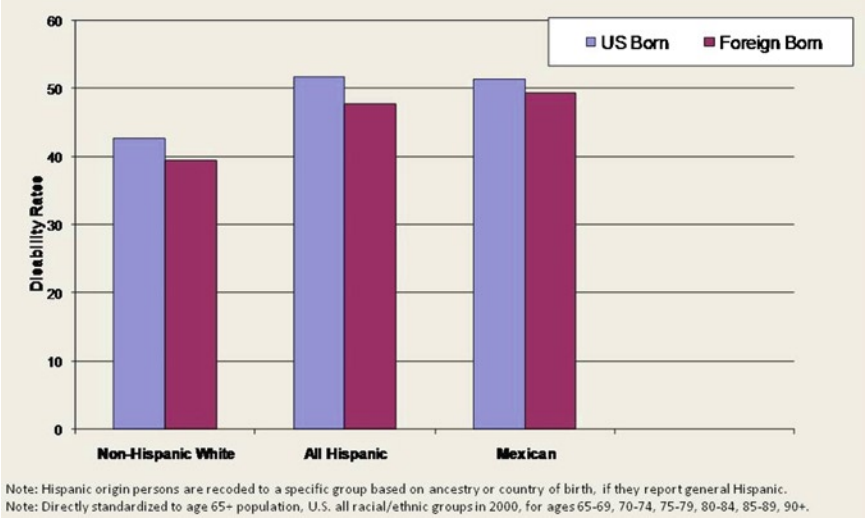

Fig. 7.1 Age-standardized census disability rates (percents) for U.S. born and foreign born males aged 65 years and over by type of Hispanic origin: United States Census, 2000

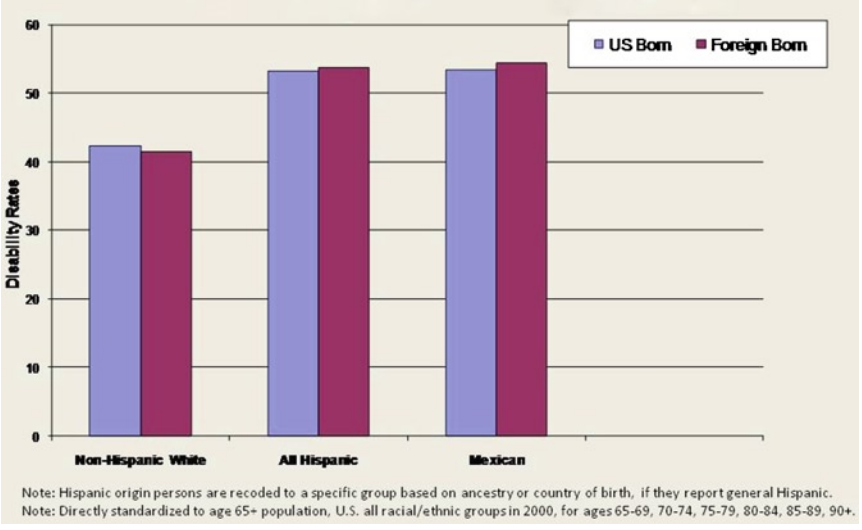

Fig. 7.2 Age-standardized census disability rates (percents) for U.S. born and foreign born females aged 65 years and over by type of Hispanic origin: United States Census, 2000

the Mexican origin, as well as among non-Hispanic whites. Figure 7.2 shows no nativity differences for the three groups giving support to the theory of gender differentials in migration selection in the older generations. Such differences are not thought to exist among younger immigrants in more recent years (Markides et al. 2007).

Conclusion

To summarize, it appears that while immigrants to the United States arrive with relatively good health and health behaviors, their health status appears to converge to native levels, a process that is more rapid among women than among men. A key mechanism of the convergence appears to be obesity. Such convergence is driven primarily by rising obesity rates among Hispanics. By old age Hispanics (and to a lesser extent other immigrants) appear to generally have more health problems than the general population even though they may experience favorable mortality rates. Poorer health can be attributed to a life-time of socioeconomic disadvantages as well as substandard medical care. The data lend support to cumulative disadvantage theory. Analysis of trends in the health of Mexican Americans aged 75 years and over from 1993–1994 to 2004–2005 using data from the Hispanic EPESE shows increases in the prevalence of obesity, diabetes, cognitive impairment, and ADL disability. The data suggest that Mexican Americans, like Latin American and other developing country populations, might be at a similar stage of the epidemiologic transition as were western nations during the 1970s and early 1980s when rising life expectancy was accompanied by increasing health problems and higher rates of disability. Finally, analysis of 2000 Census disability data on older Hispanics lend support to the hypothesis that immigrant health selection favors men over women at least at this generation of older people.

We began by noting the increased interest in the health of immigrants to the United States. The vast and rapidly increasing numbers of immigrants are having a major impact on American society. Because of their youth, they are changing the ethnic complexion of our schools, cities, as well as the occupational structure of both urban and rural areas. They are coming primarily from Latin America, especially from Mexico. Asian immigrants are moving primarily to the west coast where their presence and impact have been growing steadily. Immigration has been the topic of considerable political attention primarily because large numbers of immigrants are undocumented. There has also been considerable opposition to providing medical coverage to undocumented immigrants through public funds. The argument often is based, at least partially, on the notion that immigrants bring with them significant health problems and would constitute a burden on the health care system. As we have seen such stereotypical notions are not supported by the evidence. In fact, some of the healthiest people in the United States are immigrants originating in Mexico as well as Central and South America (Vega et al. 2009).

We also noted that much of the earlier literature in North America through the middle of the twentieth century gave great focus to the negative effects of immigration on mental health. This literature has been challenged more recently on the basis of cultural and scientific bias of much of the early research. In more recent decades, immigration has been viewed from a social stress-illness perspective wherein immigration is a major stressor (Friis et al. 1998). From such a social stress perspective, one would expect that immigrants, especially early on, would experience health problems resulting from the stresses of adjusting to the host society. There is no evidence that this is so because new immigrants, those in the United States less than 5 years, enjoy the greatest health advantage relative to the native born. Data from Canada and Australia show similar results. It could be argued that since most immigrants are young, it is unlikely that acculturative stresses will significantly influence their physical health in such a short time. However, an argument could be made that acculturative stresses are likely to have an impact on immigrant mental health.

This perspective has been dominant in the field. With respect to Mexican Americans, Escobar et al. (2000) examined the psychiatric and mental health literature and found no evidence in support

of the notion of a negative effect of acculturation on the mental health of Mexican Americans. In fact, the shorter the time since immigration and the lower the level of acculturation, the lower the prevalence of psychiatric disorders (see, also, Vega et al. 2009). It has also been found that the mental health advantages of foreign-born Mexican Americans may extend to foreign-born non-Hispanic whites (Grant et al. 2004). As with physical health, most major immigrant populations appear to enjoy mental health advantages over the native born. Again, healthy immigrant selection is likely a major factor in such advantages as is the protective influence of traditional Mexican culture retention (Escobar et al. 2000).

The good health of immigrants from poor countries has also challenged our traditional notions regarding the association of social class and socioeconomic status with health. It could be hypothesized that a significant number of immigrants in an ethnic population is likely to depress the usual inverse SES gradient in ethnic populations. In fact, this was the case in the mortality study using national data by Turra and Goldman (2007) who found a much lower SES gradient among Hispanics than among Non-Hispanic whites. Similar findings were obtained with respect to other health indicators and health behaviors in the Mexican-origin population using data from three studies. Goldman et al. (2006) found an absence of significant educational differentials for several health-related variables among Mexican-origin adults as well as among adolescents and infants. The absence of such differentials was especially present among immigrants. Both studies conclude that the Hispanic health advantage pertains primarily to lower SES people.

Again, immigrant health advantages disappear by the next generation, driven primarily by psychosocial factors related to health behaviors, substance abuse, HIV and other sexually transmitted diseases, as well as homicide (Eschbach et al. 2007). As also shown in an examination of differences in biological health profiles, the Hispanic Epidemiologic Paradox is primarily an immigrant phenomenon (Crimmins et al. 2007).

We also saw that immigrant health advantages appear to converge to native levels with time. This finding was also replicated in Canada (Chen et al. 1996; McDonald and Kennedy 2004; Gee et al. 2004) and Australia (Biddle et al. 2007). Because of a number of factors we outlined earlier, by the time immigrants reach old age, they do not exhibit any health advantages and at least most Hispanic populations appear to be more disabled than older non-Hispanic whites.

At present, older immigrants are having a relatively small influence on the larger society. However, their numbers are projected to increase dramatically between now and the middle of the century because of continuing high rates of immigration and relatively high life expectancies. If their morbidity and disability rates remain at the current high levels, the impact of older immigrants on the health care system, as well as on their families, is likely to be substantial. Increased attention by scholars and policy makers to the rapidly growing and rapidly aging immigrant population is paramount. An unresolved issue in the literature in the Hispanic population is the presence of high morbidity and disability among Hispanics in old age when most of the evidence suggests the existence of favorable mortality in old age. It would be highly important to monitor trends in life expectancy as well as in morbidity and disability at all ages and in all ethnic and immigrant populations as their presence and impact on the larger society are likely to grow steadily between now and the middle of the century. It is also possible that the Hispanic mortality and health advantage, driven by immigrants from Mexico and Central and South America, is a cohort phenomenon which may well disappear in the future. For example, obesity rates in Mexico are only slightly lower than obesity rates in the United States which raises the possibility that future immigrants may be less health selected in the years to come. Monitoring trends in the health of the Mexican population as well as in the health of other immigrant sending countries would be important to health and social policy in the United States.

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