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Feature Article

The Healthy Immigrant Effect and Aging in the United States and Other Western Countries

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Abstract

The rising number of immigrants to the United States and other western countries has been accompanied by rising interest in the characteristics of immigrants including their mortality risk and health status. In general, immigrants to the United States, Canada, and Australia enjoy a health advantage over the native populations, which has been coined the healthy immigrant effect. The purpose of this review is to summarize findings on aging and the immigrant health effect in the 3 most common immigrant destinations the United States, Canada, Australia, as well as in Europe. Much of the research in the United States has focused on the so-called Hispanic Paradox or the favorable health of Hispanics relative to non-Hispanic whites despite lower average socioeconomic status as well as other risk factors, with recent research beginning to pay attention to dietary and genetic factors. In all 3 countries, there is evidence of a health convergence of immigrants relative to the native-born population over approximately 10–20 years. By the time they reach old age, immigrants experience high rates of comorbidity and disability. Immigrant health selection appears to be the key reason explaining the immigrant health advantage. Immigrants to Europe also appear to be health selected but not as consistently as in the United States, Canada, and Australia. Immigrant enclaves appear to confer health advantages in the United States among older Hispanics but appear to have negative consequences in Europe. More attention needs to be given to the health and health care needs of the rising numbers of refugees to Europe as well as refugees in the Middle East, Africa, and elsewhere.

Keywords: Hispanic health, Immigration, Demography, Mexican American

The rising number of immigrants to the United States and other western countries during the end of the 20th century and beyond has been accompanied by increasing interest in their characteristics, most notably, their health status and care needs. Early research in the United States and Canada almost exclusively focused on the impact of migration itself on the mental health of immigrants (Malzberg, 1967). A similar picture was also present in Europe where early research focused largely on the negative aspects of immigration. It is now assumed that early research was often culturally biased, methodologically inadequate, and often based on small numbers of immigrants (Friis, Yngve, & Persson, 1998).

The quality of research on immigrant health in North America and in other western countries has improved considerably during the last couple of decades of the 20th century as well as during the 21st century. Years ago, Friis and colleagues (1998) suggested that the relationship between migration and health could be approached from a "stress-illness" model with migration conceptualized as a major stressful life event that can compromise physical and mental health. From this perspective, as immigrants age in their country of destination and become more assimilated and acculturated into the larger society, their level of stress declines and its impact on health and mental health is reduced (Friis et al., 1998).

While the above sounds plausible, by and large research demonstrates that immigrants to western countries tend to be relatively healthy or even healthier than native-born populations. The majority of the evidence in the United States, Canada, Australia, and to some extent Europe supports a healthy immigrant effect, which is especially present among recent (within 5 years or so of arrival to their country of destination) and younger immigrants. Explanations of the immigrant health advantage that have been given attention include migration selection of healthy people, "salmon bias" or return migration of less healthy people to their countries of origin in late life, strong families and social networks, and superior health behaviors.

It has also been established that the health of immigrants appears to converge to native levels within 10–20 years or so after arrival to the country of destination. In midlife, immigrants have a lower risk for poor health than the U.S.-born; however, by late life, there is evidence that many immigrant populations develop higher comorbidity and disability rates than their native-born counterparts of all ethnic origins. This decline in the health advantage as immigrants' age might be related to cumulative exposure to stress accompanying acculturation, experiences of discrimination, physically demanding jobs, health behaviors of the host society, and substandard medical care.

Later, we provide a general overview of the research on the healthy immigrant effect and aging in western countries with special focus on the United States, Australia, and Canada, the three traditional immigrant destinations. We also review some evidence from Europe and comment on the need to investigate the health status and health care needs of the many refugees that have moved to Europe in the last couple of decades. The literature on refugees overall does not support a healthy immigrant hypothesis.

Immigrant Health and Aging in the United States

In the United States, close to 14% of the population was born outside of the United States with about 26% of immigrants in the United States from Mexico, followed by 6% from India, and 5% from China/Hong Kong (Migration Policy Institute, 2018a). In terms of age, the same percentage of immigrants and U.S.-born adults are 65 years or older at about 15% and the top country of origin for older immigrants in the United States is again Mexico (Migration Policy Institute, 2018a). Hence, much of the research on immigrant health and aging in the United States has focused primarily on Hispanic immigrants, especially those from Mexico. Most research focuses on voluntary immigrants and there is convincing evidence that immigrants to the United States are healthier than the U.S.-born overall as well as the U.S.-born from their own ethnic origins, with the strongest evidence of an advantage found in mortality statistics (Mehta, Elo, Engelman, Lauderdale, & Kestenbaum, 2016). Given that a large body of this literature focuses on Hispanic immigrants, we focus on this literature first then discuss literature on other immigrant groups in the United States.

Hispanic Health and the Healthy Immigrant Effect

Over three decades ago, a Hispanic Epidemiologic Paradox was proposed based on the extant literature on Southwestern United States. Hispanics most of whom were of Mexican-origin (Markides & Coreil, 1986). After reviewing the literature on various health indicators, it was concluded that the health status of Hispanics in the Southwestern United States was more similar to the health status of non-Hispanic whites than that of African Americans with whom they shared similar socioeconomic conditions. The evidence was especially evident in infant, overall, and late-life mortality as well as in mortality from cardiovascular diseases and from certain cancers. On other indicators including diabetes and infectious and parasitic diseases, Hispanics were clearly disadvantaged relative to non-Hispanic whites. Explanations for this health advantage include migration and return-migration selection, misclassification of ethnicity on death certificates, sociocultural resources, diet, and genetics.

One proposed possible explanation for the health advantage that is inextricably linked to age was the salmon bias or return migration of less healthy immigrants to their country of origin in late life. An analysis suggested that a salmon bias existed, but it was not likely large enough to account for the mortality advantage of Hispanics (Abraído-Lanza, Dohrenwend, Ng-Mak, & Turner, 1999). A more definitive test of a salmon bias was performed by Turra and Elo (2008) who used data from the Master Beneficiary Record and NUDIMENT data files of the Social Security Administration. They found that foreign-born Social Security beneficiaries living abroad had higher mortality rates than their foreign-born counterparts living in the United States. Nevertheless, the difference was too small to account for the Hispanic mortality advantage. Moreover, there was evidence of a reverse salmon bias in that emigrants returning to the United States had high mortality rates partially offsetting the effects of the salmon bias. Many of these presumably return to the United States when their health declines to be close to their children and other sources of support.

Misclassification of ethnicity on death certificates, which is highly prevalent among Native Americans, has also been a concern among Hispanics. There was speculation that a Hispanic mortality advantage may be partially attributed to misclassifying Hispanic deaths as deaths to non-Hispanic whites. With progress in dealing with data artifact issues (Arias, Eschbach, Schauman, Bachlund, & Sorlie, 2010), the National Center for Health Statistics was able to publish official life tables by Hispanic origin for the first time in 2010 (Arias, 2010). The figures for 2006 showed approximately a two-and-a-half-year life expectancy advantage of

Hispanics of both genders over non-Hispanic Whites. Their advantage over non-Hispanic Blacks was much higher at over seven and a half years. There is also evidence that the mortality, and to a certain extent, health advantage is most pronounced for immigrant Hispanics relative to their U.S.-born counterparts (Cantu, Hayward, Hummer, & Chiu, 2013).

A significant part of the Hispanic Paradox and Hispanic immigrant health literature has investigated advantages conferred by Hispanic and/or immigrant neighborhoods or the often called ethnic "enclave" or "barrio" effect, especially relevant to late life. Analysis of the Hispanic EPESE data showed lower overall mortality among older Mexican Americans in high density Hispanic or immigrant neighborhoods suggesting the potential protective influence of cultural factors and informal support exchanges within the neighborhood in late life (Eschbach, Ostir, Patel, Markides, & Goodwin, 2004). Recent analyses also suggest that percent Latino or percent Spanish speaking confers advantages to Mexican American caregivers to older adults with dementia, perhaps through allowing for sharing caregiving activities and exchanges of social support, which aid with aging in place (S. M. Rote, Angel, & Markides, 2017).

As Medina-Inojosa, Jean, Cortes-Bergoderi, and Lopez-Jimenez (2014) have suggested the literature has often discussed other mechanisms such as diet and genetic predisposition (Balfour, Ruiz, Talavera, Allison, & Rodriguez, 2016; Daviglus et al., 2012; Gonzalez et al., 2016), but with no conclusive evidence presented. Young and Hopkins' (2014) recent review of the Hispanic Paradox literature suggested that a Hispanic mortality advantage in chronic obstructive pulmonary disease (COPD) and lung cancer persists after adjusting for confounding variables including smoking and sociodemographic factors. They acknowledge the possibility that genetic factors might be at work but suggest the possibility that diet might play a role. They argue that a diet rich in legumes (beans and lentils), which is high among people of Mexican origin, as well as other Hispanic origins, might partly explain the Hispanic Paradox. Legumes, which are very high in fiber, have been linked to attenuating systemic inflammation in large prospective studies of COPD and lung cancer (Il'yasova et al., 2005; Kony et al., 2004; Siemes et al., 2006; Thomsen et al., 2013; Walker et al., 2008). They note that high consumption of soy products (from soybeans) by Asian subjects have also been linked to low incidence of lung cancer and COPD.

Although lung cancer and COPD may play a role in the Hispanic Paradox, heart disease and overall cardiovascular disease mortality play a much larger role. While considerable attention has been given to immigrant health selection and superior health behaviors, including lower smoking rates, (Blue & Fenelon, 2011; Fenelon, 2013), little attention has been given to the influence of potential genetic factors. Horvath and colleagues (2016) posited whether epigenetic biomarkers of aging might be used to explain puzzling mortality rates including lower coronary heart disease and overall mortality among Hispanics than non-Hispanic whites in the United States despite a higher burden of cardio-metabolic risk factors. In discussing inconsistent findings with respect to available biomarkers of aging, they note that no studies have used epigenetic measures to assess differences in molecular aging by gender and ethnicity. There is evidence, they suggest, that epigenetic clock measures capture significant aspects of biological age. For example, the epigenetic age of blood has been independently associated with all-cause mortality (Christiansen et al., 2016; Marioni et al., 2015; Perna et al., 2016). Also, offspring of Italian semi-supercentenarians have been found to have blood with lower epigenetic age than age-matched controls (Horvath et al., 2015). With this background, Horvath and colleagues (2016) analyzed blood, saliva, and brain samples from seven racial/ethnic groups and found that Hispanics of Mexican ancestry (recruited from ongoing studies in California) had lower rates of intrinsic aging in blood but higher rates of extrinsic epigenetic aging rates than did non-Hispanic whites. The findings of lower intrinsic epigenetic aging among Hispanics were validated by analysis of a saliva data set (Costello, Cockburn, Bronstein, Zhang, & Ritz, 2009). The implication of the earlier findings is consistent with research exploring the possibility that the immune system of Hispanics might differ from that of non-Hispanic whites (e.g., Dowd, Aiello, & Alley, 2009; Dowd, Zajacova, & Aiello, 2009). These new findings are promising in addressing puzzling findings regarding Hispanic health and mortality rates. As the authors note the significance of their epigenetic aging findings with regard to the Hispanic and other epidemiologic paradoxes await further elaboration in future research (Horvath et al., 2016).

Hispanic Health: Convergence and Variations

There is also evidence that the health advantage of most immigrant groups, especially Mexican immigrants, declines with time in the United States and may even become a health disadvantage in old age (Markides & Gerst, 2011). The convergence to native levels with time in the United States has been explained primarily in terms of an "acculturation" perspective with focus on adoption of poorer health behaviors or "unhealthy assimilation" (Antecol & Bedard, 2006). At the same time, there has been attention to the influence of the stresses that accompany acculturation, including the experience of discrimination, difficulties adjusting to a new society, often physically demanding occupations, and substandard medical care (S. Rote & Markides, 2015).

There has also been considerable interest in how age at migration influences mortality rates of Hispanic immigrants. Using National Health Interview Survey—National Death Index linked files from 1997 to 2009 Holmes, Driscoll, and Heron (2015) found that a mortality advantage among

the foreign-born is only observed among those migrating after the age of 24. No advantage was found among those migrating as children under the age of 18. It has been speculated that because those migrating as children do so with their parents they are less health selected than their parents who are migrating for employment opportunities. At the same time, those coming to the United States as children are more likely to adopt the health behaviors of their U.S.-born peers. Late-life immigrants, on the other hand, tend to emigrate for family reunification rather than occupational opportunities and may also be less health selected than younger immigrants (Angel et al., 2001).

As Mexican immigrants have recently begun to move to new destinations outside the Southwestern United States, there has been some attention to their health status compared with those moving to or living in traditional destinations. Fenelon (2016) used the NHIS-LMF data and found that Mexican immigrants to new destinations have significantly lower mortality rates than those in traditional gateways thus raising questions regarding the often-found health advantage of living in ethnic or immigrant enclaves. At the same time, some of the advantages of immigrants to new destinations can be attributed to their more recent migration. It has also been suggested that "negative acculturation" of Mexican immigrants to ethnic enclaves is also slowed by living in substantially Mexican environments (Bostean, 2013; Eschbach et al., 2004; Riosmena & Massey, 2014).

Although most of the research on the Hispanic mortality advantage has focused on the Mexican origin population (or all Hispanics combined), there has recently been attention to other Hispanic origin groups. Fenelon, Chinn, and Anderson (2017) used the NHIS-LMF pooled data for 1990–2009 to examine adult mortality among 12 Hispanic origin groups as well as non-Hispanic whites. Data for ages 65 and older show that all foreign-born groups exhibit a mortality advantage over non-Hispanic whites. They also found that U.S.-born Puerto Ricans have the highest mortality rates among Hispanic subgroups, which has long been suggested in the literature. Part of the story is that Puerto Ricans are not subject to the same degree of migration selection because they are not subject to the same barriers to migration as other immigrant groups given their U.S. citizenship status (Markides & Gerst, 2011).

Other U.S. Immigrants Groups

Although much of the research on immigrant health and aging in the United States has focused on the Mexican origin population, there has been an increase in recent years in attention to other populations of Latin American and Caribbean origin as well as populations of Asian origin. Overall there has been evidence suggesting a health and mortality advantage of the overall immigrant population (Dupre, Gu, & Vaupel, 2012; Singh, Rodriguez-Lainz, & Kogan, 2013; Singh & Siahpush, 2002). Ruiz, Steffen, and Smith (2013) conducted a systematic review and meta-analysis of 58 studies (more than 4.6 million participants) and found an estimated 17.5% lower mortality rate for Hispanics compared with other groups. In addition, Americans of Asian origin had significantly lower mortality rates than other ethnic groups including Hispanics (see also Cortes-Bergoderi et al., 2013, for a review of studies of cardiovascular mortality).

Similarly, a recent mortality/life expectancy analysis on only older adults was performed by Mehta and colleagues (2016) who used linked Social Security and Medicare data to estimate life tables for persons 65 and older by region of birth. For the period of 2000–2009, they found that the foreign-born older adults enjoyed a 2.4-year life expectancy advantage relative to the United States born. Findings by region of origin suggested that the immigrant advantage in life expectancy was highest for Asian origin populations (South Central Asia, Eastern Asia, Southwest Asia), as well as for immigrants from South America. The timing of United States arrival (based on Social Security card applications) was an important factor in accounting for variation, with more recent immigrants having lower mortality than earlier immigrants which is consistent with previous findings (e.g. Markides & Gerst, 2011; Sing & Siahpush, 2002). They also found evidence that the mortality/health advantages of immigrants decline with time in the United States as has been reported in previous research (Antecol & Bedard, 2006; Jasso, Massey, Rosenwig, & Smith, 2004; Mutchler, Prakash, & Burr, 2007). At the same time what appears to be a duration effect is actually an age at arrival effect. There have been suggestions that persons arriving in old age may be positively health selected in that they are able to make such a major transition. However, most of the evidence suggests that immigrants arriving in old age do so to be with family after widowhood or declining health (Markides & Gerst, 2011; Tienda, 2017).

Another interesting finding in the analysis by Mehta and colleagues is that the difference in life expectancy between immigrants and those at their regions of origin are greatest for Africa and Asia both of which are far from the United States, findings that are consistent with previous work on immigrant health selection (Akresh & Frank, 2008; Dupre et al., 2012; Elo, Mehta, & Huang, 2011; Feliciano, 2005). Mehta and colleagues concluded that in areas of high immigrant concentration, such as California and New York City (Preston & Elo, 2014), high overall life expectancy is attributable largely to large proportions of immigrants. Nevertheless, there has been concern regarding declining health of immigrants with time in the United States that has been attributed to negative acculturation (e.g., changes in health behaviors) as well as a lifetime of substandard medical care especially among those

from lower educational and occupational backgrounds (Antecol & Bedard, 2006; Markides & Gerst, 2011).

Immigrant Health and Aging in Canada

In Canada, immigrants represent more than 20% of the population (Statistics Canada, 2017). The immigrant population is older than the population in general with one in five immigrants aged 65 or older (Kembhavi, 2012). A large share are long-term immigrants from Europe. Among recent immigrants, the majority are economic immigrants born in Asia (the Philippines, India, and China) (Statistics Canada, 2017). Data from Canada have long supported the existence of a healthy immigrant effect and corroborate evidence in the United States for health outcomes. Similar to findings in the United States, the healthy immigrant effect is most pronounced for mortality with more variation in findings for morbidity (Vang, Sigouin, Flenon, & Gagnon, 2017). The healthy immigrant in Canada is most evident among recent immigrants, immigrants from non-European origins, and immigrants in early adulthood and midlife.

In a recent review, Gushulak, Pottie, Hatcher Roberts, Torres, and DesMeules (2011) concluded that only recent immigrants to Canada have better health than the native-born of all ethnic origins while there appears to be a decline in their health advantage over time. This finding had been replicated in numerous analyses focused on chronic conditions and disability including by Chen, Ng, and Wilkins (1996), McDonald and Kennedy (2004), and Gee, Kobayashi, and Prus (2004) which have suggested that within 10–20 years immigrant health converges below levels for the Canadian-born. These findings are also consistent with the evidence from the United States reviewed previously. Reasons for the healthy immigrant effect include that healthy people are more likely to immigrate, and many migrate for occupational reasons which require a level of good health. Also, immigrants to Canada (as well as elsewhere) must pass medical screenings before being admitted (Chen et al., 1996).

Age is an important factor that is related to variations in health outcomes for immigrants in Canada. Recently, Vang and colleagues (2017) using a life-course perspective reviewed 78 Canadian studies and found that the immigrant health advantage was most evident in adulthood rather than childhood or late life (Newbold, 2017). Late-life immigrants, in particular, did not differ from the Canadian-born on chronic conditions or poor mental health but did report worse self-rated health and more physical disability. These findings are also confirmed by Kwak (2018) who found that unlike adolescents and working-aged adults, older immigrants (aged 65–74) did not exhibit a healthy immigrant effect. These findings largely support the idea of healthy immigrant selection with working-aged adults being the most health selected since they migrate for occupation reasons. Supporting the convergence hypothesis, Kwak (2018) also found the health advantage of immigrants was only present in recent, working-aged immigrants; long-term working-aged immigrants reported more psychological distress and worse adaptation than same-aged recent immigrants. There is also evidence that among late-life immigrants, duration effects shape health outcomes.

Focusing on disentangling age and duration, Gee and colleagues (2004) using data from the Canadian Community Health Survey found that in midlife recent immigrants (within 10 years) had better health than long-term immigrants and similar health as the Canadian-born. In old age, however, recent immigrants had poorer health than the Canadian-born. This disadvantage in late life was mostly explained by economic factors and health behaviors. These findings are consistent with research findings in the United States that older immigrants often migrate to be near their children because of declining health or widowhood (Markides & Gerst, 2011). Supporting this idea, there is evidence that recent immigrant older adults in Canada need more help with meal preparation, housework, and finances than nonimmigrant and long-term immigrant older adults (Turcotte & Schellenburg, 1999). Recent immigrant older adults also tend to rely more heavily on family members and less on government assistance for disability-related support in late life (Turcotte & Schellenburg, 1999).

Immigrant Health and Aging in Australia

Along with the United States and Canada, Australia has been a major immigrant destination during the 20th century and continues as such in the 21st century. In 2016, the immigrant population in Australia made up of about 28% of the total population (Migration Policy Institute, 2016), and the older immigrant population represents more than 30% of all adults 65 years and older living in Australia (Australian Institute of Health and Welfare, 2018). Although most immigrants in Australia are from the United Kingdom, recent decades have seen a shift with more immigrants arriving from India and China (Migration Policy Institute, 2018b). Among older immigrants, about 70% were born in non-English speaking countries (Australian Institute of Health Welfare, 2018). Evidence from Australia also supports a healthy immigrant effect, and it is most pronounced for those who have migrated from non-English speaking countries and for economic reasons.

Biddle, Kennedy, and McDonald (2007) used data on immigrants to Australia aged 20–64 from three national surveys which supported that immigrants had better health (self-reported chronic conditions) than the Australian-born population. Upon arrival, immigrants from non-English speaking and non-European countries report better health in comparison to immigrants from English-speaking countries such as Canada and the United Kingdom. They also found that the health of immigrants converges to the health of native-born Australians within 10–20 years, very much like the case in the United States and Canada. In terms of

age of arrival, they found that childhood arrival was unrelated to health for immigrants in Australia.

A longitudinal analysis of the Household, Income, and Labor Dynamics in Australia (HILDA) survey found that immigrants from both English-speaking and non-English speaking countries reported less risk for chronic conditions than the Australian-born population (Jatrana, Pasupuleti, & Richardson, 2014). They also found that both these groups converge to native-born levels after 20 years, which is consistent with findings from Canada and the United States reviewed earlier. As in other studies, the convergence is consistent with changes in health behaviors ("negative acculturation"), and possibly experience of acculturative stress in the form of discrimination and barriers to accessing medical services.

In a more in-depth analysis of age of arrival, Chiswick, Lee, and Miller (2008) used data from the Longitudinal Survey of Immigrants to Australia to investigate the correlates of the health status of immigrants to Australia. They found that older age of arrival was associated with poorer self-rated health. Their study also had a special focus on the type of visa used to enter the country. They found that immigrant health is the poorest for refugees followed by those migrating for family reunification purposes and best for voluntary "economic" migrants. Though not empirically tested in the study, it does lend support to the idea that reason for migration is important to consider especially when examining age differentials in health among immigrants.

Similarly, Chiswick and colleagues (2008) utilized the same data and found that visa type was associated with self-rated health with the poorest health reported by refugees and immigrants migrating for family reunification. Importantly, regardless of visa type immigrants report poorer health over time supporting the convergence hypothesis. They also found that younger immigrants report better health than older immigrants. In contrast to the beneficial "ethnic enclave" effect found among Hispanic immigrants in the United States, Chiswick and colleagues (2008) found that living in ethnic neighborhoods of one's ethnic background was associated with poorer health which is similar to some evidence in Europe.

Immigrant Health and Aging in Europe

Migration within Europe is common with more than 30% of immigrants in 2010 migrating from other European countries (Vargas-Silva, 2012). In terms of non-European migration, in 2017 more than 10% of the population in Europe were international migrants and about 13% of international migrants were more than 65 years old or older (United Nations, 2017). The health of immigrants in Europe is less consistent with variation based on selection factors, immigration policy, health behaviors of the host country, and integration of immigrants in the host country. For example, the mortality advantage of immigrants is observed in Europe, albeit less consistently as in the countries reviewed previously given the differences between countries (Moullan & Jusot, 2014). Anson (2004) found that immigrants to Belgium have lower mortality risk than the native-born population despite disparities in economic resources and work opportunities. One exception to this trend was for immigrants from Africa who did not exhibit a mortality advantage.

Self-rated health is the most common health measure in research on immigrant health in Europe, and most studies find that immigrants report worse self-rated health than native-born populations, especially in France, the Netherlands, Belgium, Sweden, and in aggregate data from multiple European countries (Hemminki, 2014; Sole-Auro & Crimmins, 2008). These results hold for samples of adults 50 years and older (Sole-Auro & Crimmins, 2008). Exceptions to these trends include Italy and Spain wherein there are no significant differences in health by immigrant status (Hemminki, 2014; Sand & Gruber, 2018; Sole-Auro & Crimmins, 2008). Research in Germany has shown that health advantages of immigrants are only present at younger ages and that, similar to findings in other countries, over-time immigrants report a steeper decline in health satisfaction regardless of socioeconomic gains (Ronellenfitsch & Razum, 2004).

Most research finds that country of origin, more so than the country of destination, influences immigrant health status in Europe (Huijts & Kraaykamp, 2012; Sole-Auro & Crimmins, 2008). More recently, Sand and Gruber (2018) used the Survey of Health, Aging and Retirement in Europe (SHARE) to examine immigrant and nativity status differences in well-being in persons 50–85 years old. They found that the difference was most pronounced in the Netherlands and Denmark. They also found that immigrants from Northern/Central Europe reported similar well-being as the native-born; however, Eastern European, Southern European, and non-European immigrants report lower levels of well-being than the native-born. In terms of age, within the older population migrants showed lower levels of well-being than the native-born. The data also show a convergence in late life at the age of 78 wherein differences between immigrants and the native-born are no longer significant.

Experiences with violence and political oppression in immigrants' country of origin results in worse health upon arrival in the country of destination (Huijts & Kraaykamp, 2012). In Europe, immigrants' health status and health behaviors are influenced by the health status of inhabitants in their country of destination, exposure to discrimination, and the ability to integrate socially with natives (Huijts & Kraaykamp, 2012). There is also some evidence that living in large immigrant communities hampers the social integration of immigrants and is associated with poorer health which is opposite to the ethnic enclave or barrio effects found in the United States. Much of the European research is limited by small numbers and a reliance on self-rated health which has been shown to be biased in studies of immigrants in the United States. And much of the research has paid minimal attention to the health of older immigrants. And despite the fact the European press has

often made the case that that immigrants, including refugees, might be a solution to the aging population of Europe, immigrants of all ages continue to face significant and rising anti-immigrant sentiment and discrimination.

Conclusion

A growing literature on immigrant health and aging has consistently found that voluntary "economic" immigrants to the United States, Australia, and Canada, and to a lesser extent to Europe, appear to be healthier than native populations. Researchers have proposed several explanations for this health advantage, including healthy immigrant selection, health-promoting behaviors, and sociocultural resources. From the extant literature, immigrant health selection appears to the main explanation for the immigrant health advantage, which is typically more clearly observed in mortality than in other measures of health. A recent analysis of immigrant mortality by age in the United States, France, and the United Kingdom has found that the most consistent pattern explaining an immigrant mortality advantage is "in-migration selection" with poor support for the "out-migration selection" hypothesis. The mortality advantage appears to peak around age 45 with a mortality convergence with natives taking place at older ages (Guillot, Khlat, Elo, Solignak, & Wallace, 2018).The so-called Hispanic Paradox in the United States continues to draw serious attention with more recent studies beginning to pay attention to dietary behaviors and genetic resiliency. Interestingly, immigrant enclaves appear to confer health advantages in the United States among Hispanics/Latinos especially in old age but appear to have negative consequences in Europe and Australia where immigrants living in ethnic enclaves appear to experience difficulties integrating in the larger society.

While immigrants arrive in reasonably good health, there appears to be a convergence to native levels within approximately 10–20 years in the United States, Australia, and Canada. More mixed evidence appears in Europe possibly because of small numbers and other data limitations. This leveling or convergence has been attributed to "acculturation" or the adoption of poorer health behaviors of the larger society or "unhealthy assimilation" (Antecol & Bedard, 2006). Another perspective focuses on stress exposure, including the experience of discrimination, difficulties adjusting to a new society, and often physically demanding occupations and substandard medical care that can have a cumulative effect on health throughout the life course until late life (S. Rote & Markides, 2015). In the United States, it has been documented that older immigrants from Mexico benefit from living in heavily Hispanic neighborhoods ("barrio effect") because of the positive influence of the cultural resources available. There is also evidence that older immigrants from India who move to high tech areas such as Silicon Valley in California to be near their children become socially isolated by living in mostly white suburbia (Markides & Gerst, 2011). We also saw there is some evidence from Europe that immigrants of all ages may not benefit by living in ethnic neighborhoods as it subjects them to high levels of discrimination while, at the same time they do not enjoy the benefits of integrating into the greater community (Huijts & Kraaykamp, 2012). Chiswick and colleagues found evidence of the same effect of living in ethnic communities in Australia (Chiswick et al., 2008). Given the high rates of disability and disease for immigrants in late life, recent research has focused on what these health trends mean for immigrant families and communities. It appears that caregivers to immigrant Hispanic older adults are especially involved in care provision and may face unique challenges (Angel, Rote, Brown, Angel, & Markides, 2014; S. Rote, Angel, & Markides, 2015). More research is needed on how families address and manage older immigrant health needs in all western countries.

Finally, there have been changes in the diversity of immigrant populations in the United States, Canada, and Australia, with the largest growth in immigrants from Asia, especially China and India (Migration Policy Institute, 2016). Given these changes to the immigrant population, this will require greater attention to their health status and uncovering whether the same processes account for a mortality advantage and age-related convergence with these growing immigrant groups. As has been established in Europe and elsewhere refugees are much less heath selected than other immigrants and experience more psychological and physical problems, especially those arriving in the older years. Needless to say, very little is known regarding refugees in the Middle East, Africa, and elsewhere. Given the rise in immigration over the 20th and 21st centuries, better understanding of these trends in immigrant health in both sending and receiving nations is important to shape the discourse on social, economic, and health policy related to immigration (Lindert, Ehrenstein, Priebe, Mielck, & Brähler, 2009; Porter & Haslam, 2005), including the contribution of immigrants and refugees in addressing the population aging problem especially in Europe.

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Conflict of Interest

None reported.

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