

**Examining Inter-Ethnic Mortality and Life Expectancy Differentials among Asians in the
United States**

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Abstract: Even as the fastest growing racial/ethnic group in the United States, Asians remain an underrepresented and understudied group. Moreover, research on Asians in the United States has been limited to traditional immigrant destinations. Thus, a gap exists in our understanding of the variations in mortality patterns among Asian ethnic groups. This study addresses that gap by examining the variations in key health indicators among the six largest Asian ethnic groups in the United States—Chinese, Filipinos, Asian Indians, Vietnamese, Koreans, and Japanese. Utilizing data from the Multiple Cause of Death File (2016) and the American Community Survey (2012-2016), we analyze health differentials among disaggregated Asian groups at national and subnational levels. This study focuses on socioeconomic status, geography, and nativity as key factors to explicate the patterns of health inequality among various Asian groups. More importantly, it highlights the heterogeneity of the communities subsumed under the monolithic Asian category.

INTRODUCTION

Asians now comprise the fastest growing racial group in the United States, experiencing a population growth rate of 43% between 2000 and 2010 (Hoeffel, Rastogi, Kim, and Shahid 2012). However, investigations of their health remain scarce. Historical aggregation and the pervasive notion of Asians as model minorities facing few problems has led to a very limited understanding of the varying experiences of diverse Asian ethnic groups in the United States. While often presented as a homogenous group, the health experiences of Asian communities are situated along ethnic, socioeconomic, and geographic inequalities. Moreover, research on Asians in the United States has been limited to traditional and gateway immigrant destinations in the American West and Hawaii (Ibrahim 1991). Consequently, a gap exists in our understanding of the variations in key health indicators among Asian ethnic groups. This study addresses part of that gap by examining the patterns in mortality and life expectancy at birth among the six largest Asian ethnic groups in the country (Chinese, Filipinos, Asian Indians, Vietnamese, Koreans, and Japanese) at the national and regional levels.

To our knowledge, this is the first study to investigate the life expectancies of disaggregated Asian groups at a sub-national level. Its theoretical contribution lies in its emphasis on the intersection of ethnicity (in addition to race), socioeconomic status (SES), geography, and nativity to explicate patterns of health inequality within the larger ‘Asian’ category. Furthermore, it contributes to the migration literature by testing the applicability of current migration theories to disaggregated Asian populations. Considering that an overwhelming majority of Asians/Asian-Americans in the United States are foreign-born, examining the effects of social factors associated with immigration is key to understanding the

health patterns of the group. Thus this study draws from the migration literature and applies current knowledge on other immigrant groups—particularly Latino immigrants—in the United States in order to develop predictions regarding the distribution of health outcomes among the largest Asian ethnic groups in the country. Therefore, it offers a snapshot of the general patterns of health differentials among the largest Asian groups in country and highlights the heterogeneity of the communities subsumed under the monolithic Asian category.

BACKGROUND

THE ASIAN POPULATION IN THE UNITED STATES

As of 2010, 17.3 million people in the United States consider themselves Asian, accounting for approximately 5.6% of the American population (Hoeffel, Rastogi, Kim, and Shahid 2012).

While often considered a mono-cultural group, the 17 million people who comprise the Asian category can trace their histories to a broad and diverse group of nations in the Asian continent and Pacific islands. The Office of Management and Budget (OMB) categorized all people from the following world regions under the term Asian: Far East, Southeast Asia, and the Indian Subcontinent (Hoeffel, Rastogi, Kim, and Shahid 2012). Based on this categorization, people who are considered Asian include: Chinese, Japanese, Koreans, Vietnamese, Filipinos, Malaysians, Asian Indians, Thai, Pakistanis, among others. Additionally, the Asian/Asian-American people can be found among different regions around the country. In 2010, approximately 75% of all Asians in the United States resided in the following ten states: California, New York, Texas, New Jersey, Hawaii, Illinois, Washington, Florida, Virginia, and

Pennsylvania. Notably, the Asian/Asian-American population experienced its fastest growth in the South (Hoeffel, Rastogi, Kim, and Shahid 2012). Considering their rapid growth and variegated experiences, Asian/Asian-American communities warrant more close attention from researchers. More importantly, health research on these communities must disaggregate data and consider the effect of the long and complex history of Asian immigration in explicating variations in health outcomes today.

ASIAN IMMIGRATION

Asians first began settling in the United States in the mid-19th century with the arrival of Chinese, Japanese, and Filipino laborers working in railroads, farms, and plantations in the American West (Takaki 1998; Portes and Rumbaut 2014; Boyd 1971). The earliest influx of large numbers of Asians came between 1849-1852 with the arrival of laborers from South China, many of whom were driven out by economic and political instability at home and were drawn to the labor opportunities resulting from the development of the American West and the gold rush in California (Portes and Rumbaut 2014). These mostly male early Chinese immigrants were a source of cheap labor at railroads, mines, and farms in the West (Boyd 1971; Portes and Rumbaut 2014; Takaki 1989). With growing economic insecurity, the racialized tension against Chinese workers led to the passage of the Chinese Exclusion Act of 1882, barring the entry of Chinese people into the United States for sixty-one years (Lee 2002; Ting 1995). Following the Chinese Exclusion Act, Chinese workers were replaced by Japanese laborers to fill agricultural work in Hawaiian sugarcane plantations and Californian farms (Boyd 1971; Portes and Rumbaut 2014). As the Japanese population grew, they began to face the same anti-Asian discrimination faced by the Chinese immigrants before them. The anti-Japanese sentiment led to the

Gentlemen's Agreement of 1908 between the United States and Japan, in which Japan agreed to issue passports to the United States only to non-laborers (Boyd 1971). Unfortunately, the hostility faced by early Japanese immigrants did not attenuate, and it later contributed to the forced internment of Japanese and Japanese Americans following the attack on Pearl Harbor. Similar to the Chinese and Japanese before them, thousands of Filipinos also immigrated as laborers recruited to work in sugar and pineapple plantations in Hawaii, and eventually to the mainland United States as workers and some as students called "Pensionados" (Boyd 1971; Posadas and Guyotte 1990; Takaki 1989). Due to laws that prohibited the movement of people of Asian origin—except for Filipinos who were still under American rule—into the United States, the Chinese, Japanese, and Filipinos would account for the early Asian immigrant population in the United States until the late 1960's (Boyd 1974; Ong, Bonacich, and Cheng 1994; Portes and Rumbaut 2014; Ting 1995).

With the signing of the Hart-Cellar Act of 1965, the United States witnessed a renewal of Asian immigration. After 1965, the proportion of immigrants coming from Asia rose sharply as some of the most important sending countries became the Philippines, Korea, and Vietnam (Keely 1971; Massey 1990). Through occupational preference, immigrants from India, Korea, and the Philippines began entering the country in more significant numbers (Boyd 1974). Research also shows that relative to their pre-1965 and native-born counterparts, the new group of Asian immigrants were more skilled and educated, and they were more likely to occupy professional and managerial positions (Hirschman, Wong, and Morrison 1986; Yang 1999). These post-1965 Asian immigrants filled professional positions where there was a shortage of skilled labor, from STEM jobs such as engineering and scientific research, to healthcare-related positions (Ong, Bonacich, and Cheng 1994). These highly skilled and highly educated

immigrants would comprise a large portion of the new wave of Asian immigrants in the United States. As will be expanded later, most of the Asian groups in the present study are members of the post-1965 migration wave—a factor that may help patterns explain their health today.

THE MODEL MINORITY MYTH

Following the new wave of immigration from Asia, the image of Asians in America also began to evolve. Beginning in the 1960's media portrayals—in the *New York Times* and *U.S. News and World Report*—of Asian success stories became prominent, depicting Asian Americans as academic overachievers, law abiding citizens, and successful small business owners who overcame adversity to achieve the American Dream (Espiritu 1992; Shim 1998; Kawai 2005; Kao 1995; Kitano and Sue 1973). These success stories touting Asian American achievement often emphasized the ability of Asian groups, particularly the Japanese and Chinese, to succeed in the United States on their own hard work and motivation, in contrast to African Americans and Latino Americans. Subsequently, the stereotypes associated with the model minority myth such as high educational attainment and high income have been attributed to all Asian/Asian-American sub-groups in the United States; and it contributed to the pervasive use of a pan-Asian category in research. Thus, it was used to maintain a racial hierarchy that pitted minority communities against each other. While the model minority myth is not directly related to the health outcomes of Asian/Asian-American sub-groups, recognizing its persistence is critical in understanding the justification for the neglect of Asian/Asian-American issues.

LITERATURE REVIEW

ASIAN & ASIAN-AMERICAN HEALTH

In the United States the leading causes of death include: heart disease, cancer, stroke, chronic obstructive pulmonary disease, diabetes, and other chronic health conditions (US Burden of Disease Collaborators 2013). Among those of Asian origin, causes of death vary by ethnicity but follow similar patterns as those seen among the general United States population (Howard, Peace, & Howard 2014; Barnes, Adams, & Powell-Griner 2008). Although they experience high rates of chronic diseases, Asians as a group continue to die at later ages relative to their white counterparts, particularly from causes such as cancer and heart disease (Acciai, Noah, and Firebaugh 2015). Additionally, according to existing studies, Asians as an aggregate enjoy the longest life expectancy of any racial group in in the United States, and they are said to benefit from a mortality advantage over other racial groups (Accai, Noah, and Firebaugh 2015; Elo and Preston 1997; Singh and Hiatt 2006). Asians as a group outlive their white counterparts by nearly 8 years on average (Acciai, Noah, and Firebaugh 2015). More than a decade ago Singh and Miller (2004) published findings demonstrating longer life expectancies for U.S.-born and foreign born Asian-Americans as an aggregate, compared to their white counterparts to support the notion of an Asian advantage in health. Interestingly, Singh and Miller (2004) also show that the difference in life expectancy for Asian immigrants compared to their United States-born co-ethnics had a range of less than two years for Asians as an aggregate and for the following ethnic groups: Chinese, Japanese, and Filipinos. But they did find a larger gap in life expectancy by gender. However, the same study also failed to incorporate data on one of the largest Asian

ethnic groups in the country—Asian Indians. More recently, Acciai, Noah, and Firebaugh (2015) found that regardless of the cause of death, Asians tend to outlive whites, thus causing the life expectancy gap between the two racial groups. While the overwhelming evidence supports the Asian mortality advantage hypothesis, it offers a limited view of Asian/Asian-American health.

Notwithstanding their mortality advantage, research shows great variation in the cause-specific mortality rates among Asian/Asian-American sub-groups; and their risks for specific conditions such as cancer, heart disease, and stroke vary greatly by ethnic group (Jose et al. 2014; Frisbie, Cho, and Hummer 2001; Hastings et al. 2015). Hastings et al. (2015) found that among Chinese, Korean, and Vietnamese men, cancer was the leading cause of death; while for Filipino, Asian Indian, and Japanese men, it was heart disease. Among women, Hastings et al. (2015) found that cancer was the leading cause of death for Chinese, Korean, Vietnamese, Filipino, and Japanese, but not for Asian Indians. Further, research on other measures of health among Asians find significant ethnic differences in outcomes. John et al. (2012) found that Chinese and Vietnamese are more likely to report fair/poor physical and mental health compared to Filipinos. Additionally, Staimez and colleagues (2013) offer evidence pointing to heterogeneity in cardiometabolic risk factors among different Asian ethnic groups. They found that among Chinese, South Asians/Asian Indians, Filipinos, Koreans, and Vietnamese, Filipinos had the highest mean BMI, and Asian Indians had the highest rate of diabetes. The aforementioned ethnic variations in health outcomes suggest that significant differences in life expectancy are also likely to exist. In the following sections, we synthesize key concepts and findings in the medical sociology and migration literatures in order to identify the factors that may determine the patterns of mortality and life expectancy among Asian ethnic groups in the United States.

WHERE MIGHT INEQUALITIES EXIST?

The vast scientific literature in health and international migration cannot be covered sufficiently here. Therefore, we focus on three key concepts that have been consistently identified in the literature as explanatory factors for health differentials among Asians in the United States. Considering space limitations, the following sections broadly describe three themes that may explicate the patterns of life expectancy inequality that may be found in the data. The factors described below tie findings in medical sociology to dominant theories in international migration, and they undergird our expectations for results.

SES INEQUALITY

In most sociological research, socioeconomic status (SES) refers to one's social location, which is generally determined by occupation, income, education, and wealth (Krieger, Williams, and Moss 1997). A sizeable body of research implicates SES as a contributor to inequalities across a range of health outcomes and across diverse communities (Ross, Masters, and Hummer 2012; Maty, Leung, Lau, and Kim 2011; Farmer and Ferraro 2005; Pollitt, Rose, and Kaufman 2005; Preston and Taubman 1998). The literature suggests that SES influences the accumulation of the material conditions necessary for survival and longevity, as well as an individual's ability to control life conditions (Marmot 2002; Lynch, Smith, Kaplan, and House 2000; Kawachi and Kennedy 1999). SES has also been identified as a fundamental cause of health (Link and Phelan 1995; Luftey and Freese 2005; Phelan, Link, and Tehranifar 2010; Phelan et al. 2004).

Fundamental causality suggests that SES produces health inequality due to its association with an individual's access and ability to employ flexible resources—such as money and education—

in order to avoid disease, minimize its effects, and ultimately delay death (Link and Phelan 1995; Phelan, Link, Tehranifar 2010). Individuals with high SES are more likely to have health insurance, have money to purchase medicine, have greater access to transportation in order to seek care, and have more knowledge on healthy behaviors (Phelan et al. 2004). Consequently, gaps in survivorship are largest among ‘preventable diseases’ for which knowledge and treatment are available to those who can afford them.

The foregoing suggests that individuals with higher SES would have better health outcomes and longer life expectancies. Unfortunately, most of the literature on the relationship between SES and health are not drawn from studies on Asians/Asian-Americans. Nonetheless, these patterns may obtain among Asians/Asian-Americans. Research shows that Asian American/Pacific Islander’s (AAPI) suffer from large intra-group disparities in income and educational attainment, with many Southeast Asian groups faring worse than those of East Asian heritage (Lopez, Ruiz, and Patten 2017; U.S. Bureau of the Census 1995). Studies in which Asian groups are investigated by ethnic group show that great inequality exists among them. Groups with origins in Southeast Asia—including Vietnamese—exhibit lower incomes and lower educational attainment relative to other Asian groups (Sakamoto, Goyette, and Kim 2009; Fong 2008; Takei and Sakamoto 2008; Kao and Thompson 2003). The development of ethnic niches partly explains the SES disparity among Asian ethnic groups, as described below.

Given the positive selection of post-1965 voluntary migrants, most of the Asian groups in this study are more likely to be highly educated and skilled. Thus, they are also likely to obtain high-paying and high-status jobs. Evidence of the aforementioned trend can be found in the overrepresentation of particular Asian ethnic groups in certain jobs. For example, we find that Filipinos occupy a large proportion of nursing positions in the United States, as the Philippines

continues to export them in large numbers (Choy 2003, 2010). Asian Indians on the other hand, occupy desirable positions in the medical field and engineering, as India continues to export medical doctors and engineers around the world (Wang 2010; Adkoli 2006). The examples of Filipinos and Asian Indians demonstrate the importance of ethnic niches among Asian groups. Immigrants fill job openings that have been left open by economic changes; and ethnic niches develop as co-ethnic employment opportunities and network hiring close job opportunities to other groups (Light and Bonacich 1988; Waldinger and Lichter 2003). As ethnic niches develop, certain jobs and professions begin to be associated with particular groups. While ethnic niches occupied by Filipinos and Asian Indians afford them high occupational status, good incomes, and good access to health care, occupational heterogeneity exists among other groups.

Vietnamese are overrepresented in the lower paying and lower status nail salon industry, as operators and workers (Eckstein and Nguyen 2011). Additionally, the Chinese and Koreans have found success as entrepreneurs working in ethnic enclaves (Light and Bonacich 1988). A potential consequence of self-employment is limited access to health services—partly attributable to insurance under-coverage.

Considering the literature that links SES to health outcomes as well as the literature pointing to the income and educational gaps between various Asian ethnic groups, it follows that groups such as Vietnamese/Vietnamese-Americans will have lower life expectancies relative to the other groups of interest. Importantly, the literature also suggests that Asian Indians and Filipinos will have the longest life expectancies in this study as a result of their high SES.

THE EFFECT OF NATIVITY

The majority of people who identify as Asians in the United States today, descended from or are members of the immigration wave following the 1965 Hart-Cellar Act. According to Pew Research Center estimates, approximately 60% of the country's Asian population and nearly 75% of Asian adults in the United States are foreign-born (Lopez, Ruiz, and Patten 2017). Considering that such a large proportion of Asians/Asian-Americans are foreign-born, how might nativity influence their health? Although an in-depth investigation of mortality and life expectancy differentials by nativity is beyond the scope of the present study, the extensive literature on the subject warrants close attention.

Immigrants arrive to the United States with lower income levels and face barriers to health care access. Thus, they are expected to experience poorer health outcomes than the native-born population. However, research demonstrates that immigrants exhibit better health outcomes than their native-born counterparts—thus resulting in a so-called ‘immigrant health paradox’ (Abraido-Lanza et al. 1999; Abraido-Lanza, Chao, and Florez 2005; Franzini, Ribble, and Keddie 2001; Markides and Eschbach 2005; Urquia, O’Campo, and Heaman 2012). Among various racial groups, foreign-born individuals have been found to have lower risks for mortality relative to the native-born, with Asian immigrant adults exhibiting the lowest risks for death compared to other groups, including native-born whites (Hummer et al. 1999; Singh and Siahpush 2001, 2002; Singh and Hiatt 2006; Cunningham, Ruben, and Narayan 2008). Among Asians, immigrants have lower odds of being obese and/or overweight than the U.S. born (Popkin and Udry 1999; Lauderdale and Rathouz 2000); and immigrants from some Asian countries also exhibit lower risks for particular types of cancers (Cunningham, Ruben, and Narayan 2008). Although the aforementioned trends are not consistent among all immigrant

groups, they suggest that foreign-born Asians will exhibit better health than their U.S. born co-ethnics.

Immigrant Selectivity

According to the Immigrant Health Advantage (IHA) theory, immigrants arrive to the United States with better health vis-à-vis the native-born U.S. population; but their health deteriorates with duration of residency in the United States. One explanation for the IHA is the effect of immigrant selective migration. Compelling evidence suggests that migrant self-selection may explain the relatively better health exhibited by recent immigrants (Kennedy et al. 2015; Riosmena et al. 2017; Jasso et al. 2004; Rubalcava et al. 2008). Riosmena et al. (2017) found statistically significant evidence of a self-selection effect among both low-skilled and high-skilled immigrants. Jasso et al. (2004) compared life expectancies between immigrants and non-migrants in their native countries and found that immigrants from some Asian countries experience an approximately 10-year advantage relative to their non-migrant co-nationals. Their findings support the claim that immigrants who enter the United States are self-selected for good health. Why might this be the case?

Immigrant selection occurs on multiple levels for various characteristics, such as education, skill, age, gender, and health, among others. However, scholars continue to debate the extent to which present-day immigrants fare better compared to the population in their countries of origin. Political rhetoric often offers a bleak perspective, suggesting that the immigrants arriving to the United States today do not represent the best of the population of origin. However, some scholars argue that immigrant labor force success evinces the high selectivity of the newcomers (Chiswick 1978). Moreover, some scholars posit an important point that relative

deprivation motivates international migration (Stark and Bloom 1985; Stark and Taylor 1991). As such, immigrants from households who do not fall favorably in the origin society's income distribution and whose income aspirations cannot be satisfied by domestic opportunities, are more likely to pursue economic opportunities abroad. Arguing that immigrants represent the most motivated and ambitious segment of their countries of origin, Portes and Rumbaut (1996) contend that all immigrants, regardless of legal status, are positively selected on multiple factors. They suggest that only people who are more educated and have been exposed to the possibilities of an American lifestyle are more likely to immigrate.

Therefore, the aforementioned scholars argue that positive selection for multiple factors—including health—occurs among contemporary immigrants. Corroborating evidence has been presented by other scholars as well. Feliciano (2005) found that immigrants to the United States are positively selected for education. However, she notes that the degree of selectivity varies substantially depending on the country of origin and time. In regard to health selectivity, researchers have found significant evidence to support the claim that immigrants generally (Kennedy et al. 2015), and Asian immigrants in particular, benefit from immigrant selectivity (Frisbie, Cho, and Hummer 2001). Thus, positive migration stream selectivity is a key factor that may partly explain the patterns of health differentials that we might observe among various Asian ethnic groups.

Notwithstanding the evidence presented above, other scholars argue that not all immigrants are positively selected. Lee (1966) contends that the context of migration significantly influences the selection of immigrants. Immigrants who are motivated by pull factors in the United States are more positively selected than immigrants who are motivated by push factors in the country of origin. Moreover, the process of international migration carries

burdensome costs to the immigrant. Therefore, Lee (1966) also posits that immigrants who face the greatest barriers to migrate are more likely to be positively selected for multiple characteristics. In studying labor market success, Chiswick (1999) found a direct relationship between migration costs and favorable migrant selection—thus supporting Lee (1996's) position.

However, it should be noted that the influence of migration stream selectivity applies mostly to voluntary migrants. Involuntary migrants, such as refugees and asylum seekers, do not face the same obstacles to entry as voluntary migrants, thus reducing the significance of migration stream selectivity on their health outcomes. In this study, the selectivity of the migration streams remains important because the groups under study largely entered the country as voluntary migrants—with the exception of the early wave of Vietnamese migrants who arrived as refugees and asylum seekers following the Vietnam War (Alperin and Batalova 2018). However, unlike in the past, recent Vietnamese immigrants arrive as voluntary migrants, largely through family reunification and some through employment channels (Alperin and Batalova 2018).

Acculturation and Health

Another factor to consider in discussing migration-related health outcomes is the effect of acculturation. Scholars ascribe the convergence in health outcomes between immigrants and the native-born to acculturation (Abraido-Lanza, Echeverria, and Florez 2016; Abraido-Lanza, Chao, and Florez 2005; Franzini, Ribble, and Keddie 2001). While contemporary understanding of acculturation has drifted from the one-dimensional and unidirectional conceptualization of early theories (Alba and Nee 1997), there exists an implicit assumption in the acculturation and health literature that an immigrant's values, beliefs, and behaviors change with greater

acculturation such that immigrant adopts harmful behaviors from the native-born over time (Abraido-Lanza, Echeverria, and Florez 2016; Savage and Mezuk 2014). These unhealthy behaviors include an increased consumption of high-fat and low-nutrient food and an increasingly sedentary lifestyle. It may also include the adoption of other behaviors such as smoking and risky sexual behaviors. Thus the literature suggests that duration in the United States may reduce the health advantages conferred by migration stream selectivity. Further, if we consider acculturation as an intergenerational process (Alba and Nee 1997), then we might observe a relative health disadvantage among Asian groups with large second and later generation populations—such as Japanese and Chinese—compared to groups with larger first generation members.

Early studies on acculturation and health among Asians/Asian-Americans found support for the deleterious effect of acculturation on health (Marmot and Syme 1976; Marmot 1983). However, recent work by Lu and colleagues (2016) suggests that among Chinese, Vietnamese, and Hmong adults, those who identify as ‘westernized’ or bicultural are less likely to be diagnosed with hypertension compared to those who identify as ‘very Asian.’ Moreover, Singh and Miller (2004) also found that Asian immigrants as a whole have higher life expectancies than United States-born co-ethnics. However, they note that United States-born Chinese, Filipino, and Japanese live longer than their foreign-born counterparts, contradicting common assumptions about the ‘immigrant health advantage’ (Singh and Miller 2004). The contradiction noted above may reflect differences in the strengths of migrant stream selectivity. As Lee (1966) noted, strong positive selectivity occurs among groups who face the greatest barriers to entry. As such, the Chinese, Filipinos, and Japanese may face fewer barriers and less costs to entering the United States compared to other Asian groups. Therefore, immigrant selectivity remains an

important explanation for Asian groups' characteristics and health trajectories. However, considering that an investigation of the differences in life expectancy between the foreign-born and native-born is beyond the scope of this study, we do not expressly examine the relationship between nativity and mortality and life expectancy in this paper. Rather, we incorporate nativity in examining the effect of geographic differences in immigrant composition on life expectancy differentials, as described in the following section.

DOES PLACE MATTER?

Although the Immigration Act of 1965 eased the restrictions on migration into the United States, the movement from one country to another was still associated with heavy migration costs due to opportunity costs of foregone income, monetary costs related to travel, and psychological costs due to the relocation to a foreign setting (Massey 1990). In order to minimize those migration costs, immigrants relocate to areas settled by co-ethnics, which have traditionally been in metropolitan areas. Demonstrating the importance of urban areas as gateways for immigrants is the fact that in 2002 more than 90 percent of immigrants lived in metropolitan areas (Marrow 2005). These popular immigration destinations include California, New York, Texas, Florida, Illinois, and New Jersey—where 67% of all immigrants to the United States lived in 2000 (Harrow 2005). This is of no surprise as the aforementioned states are also home to large metropolitan areas—and the country's largest cities: New York, Los Angeles, and Chicago—where jobs are plenty and co-ethnics are present. For Asian immigrants, these destinations have traditionally been in the West and the Northeast. However, immigrants are now dispersing beyond the traditional destination cities, and they are increasingly moving to the suburbs (Alba et al. 1999; Marrow 2005). As mentioned previously, in 2010 the states with the largest Asian

populations were: California, New York, Texas, New Jersey, Hawaii, Illinois, Washington, Florida, Nevada, and Pennsylvania (Hoeffel, Rastogi, Kim, and Shahid 2012). Notably, significant Asian populations now reside in the Midwest and the South.

The health disparities literature consistently demonstrates that place matters for health outcomes. Extant research shows that when comparing states, life expectancies can vary by nearly 7 years for men and women (NRC and IOM 2013). Wilmoth, Boe, and Barbieri (2010) found that when compared to its European peers, the United States suffers from greater geographic inequalities in mortality. Moreover, large regional differences in disease control, medical treatment, and other risks contribute to geographic health inequalities across the United States (Hayward, Pienta, and McLaughlin 1997; Geronimus et al. 1996). Murray and colleagues (2006) found that while a racial gap exists between Blacks and Whites with regard to life expectancy and mortality rates, intra-racial inequality also exists based on region. Those who live in the South have higher mortality rates and lower life expectancies regardless of race. Further, macro-level studies show that Southern states maintain some of the highest rates of diseases such as obesity and HIV in the United States (Fenelon 2013; Levi, Segal, Rayburn, and Martin 2015; CDC 2016). Therefore, regardless of race living in the South is associated with poor health outcomes.

Research on this topic emphasizes the importance of the social context of the immigrant destination in order to promote well-being (Eschbach et al. 2004). Studies on Mexican immigrants have shown that ethnic enclaves offer a protective effect attributed to the good mental and physical health produced by co-ethnic social support (Markides and Esbach 2005). Therefore, it follows that immigrants who settle in less established destinations—as is the case with Asian groups who reside in Southern states—forego the protective health benefits of the

ethnic enclaves. However, it is important to note that the immigrants who settle in ethnic enclaves are also the ones who are more likely to need the social, economic, and health resources available there (Portes and Rumbaut 1990). Consequently, the immigrants who settle in traditional destinations are also more likely to be those with low skills and social capital. On the other hand, those who settle in less established destinations may be more skilled, more educated, and benefit from those factors.

Therefore, the geographic disadvantage that is often associated with the South may not be pronounced among the Asian groups in this study because of the strong protective effect of migration stream selectivity. As such, Asian groups who reside in non-traditional destinations, including the South and Midwest, benefit from positive selection for multiple factors that affect health outcomes. Recently, Fenelon (2017) published findings on Mexican immigrants that demonstrate a health advantage among those who live in non-traditional and new destinations, contradicting long-held assumptions about the advantages of ethnic enclaves. We suspect that similar findings will be found among the Asian groups in the present study. Asians/Asian-Americans who reside in new destination regions—such as the Midwest and the South—will have longer life expectancies than Asians in traditional destinations, particularly in Western and Pacific states such as California, Washington, and Hawaii.

HYPOTHESES

Based on the literature described above, we test following hypotheses.

Hypothesis 1: Life expectancy among the different ethnic groups follow a gradient determined by socioeconomic status. Ethnic groups with high household incomes and

educational attainment (e.g. Asian Indians and Filipinos) will exhibit the longest life expectancies.

Hypothesis 2: We anticipate that there will be geographic differences in life expectancy, such that Asian groups living in the South will have higher life expectancies than those living in the West.

DATA & METHODS

DATA

This study utilizes mortality data from the ‘All Counties’ Multiple Cause of Death File from the National Vital Statistics System for the year 2016. Additionally, population denominators are obtained from the American Community Survey (ACS) 5-year population estimates (2012-2016), which contains data on disaggregated Asian ethnic groups. In order to maintain consistency, we use population denominators for all analyses from the same dataset.

METHODS

First, in order to describe the age structure of the respective Asian ethnic groups, we present population pyramids for each ethnic group at the national level, utilizing data from the American Community Survey. Then, we compute life expectancy (e_0) for Asians in the United States as an aggregate and for each of the six Asian groups of interest. The analyses are conducted on national and regional (i.e. traditional or new immigrant destination) levels. In regard to regional-level analyses, we compute life expectancies for the four geographic regions used in the United

States Census—West, South, Midwest, and Northeast¹. The West region incorporates all states in divisions 8 and 9 (including Alaska and Hawaii). Considering that the vast majority of Asians residing in the Western states reside in California, Hawaii, Washington, and Alaska—all of which are Asian immigrant gateway states (Takaki 1989)—we consider the Western region a traditional immigrant destination. On the other hand, we consider Southern and Midwestern states such as Georgia, Arizona, Nevada, Minnesota, and North Carolina—wherein fewer than 100,000 people of Asian descent lived in 1990 (U.S. Census Bureau 1993)—that have experienced rapid Asian population within the last few decades as recent Asian immigrant destinations. Therefore, we consider the Southern and Midwestern regions recent/new immigrant destination.

We compute life expectancies (e_0) using abridged standard life tables (Preston, Hueveline, and Guillot 2001). We use Coale and Demeny's (Preston, Hueveline, and Guillot 2001) method to calculate values of ${}_n a_x$ for ages below 5. For the remaining age groups, we assume that ${}_n a_x = n/2$. We will also present graphs of the age-specific death rates for each ethnic group at the national and regional levels in order to demonstrate the effect of the mortality schedules on the differences in life expectancy between the ethnic groups.

By employing the aforementioned analytical methods, we can accomplish the following:

- (a.) we can compare the life expectancies of individual ethnic groups at each level of analysis;
- and (b.) we can demonstrate the effect of SES, geography, and nativity (indirectly) on life expectancy among Asian ethnic groups.

¹ For more information, see U.S. Census Bureau Geographic Terms and Concepts.

PRELIMINARY RESULTS

POPULATION PYRAMIDS

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The population pyramids above demonstrate the national level age structures of the Asian groups of interest. Figure 1 demonstrates that the Chinese have a relatively high proportion of adults, with large numbers of people in their twenties. Asian Indians have an interesting population pyramid (figure 2), showing a large proportion of people between the ages of 25 and 45. Compared to the Chinese, a larger proportion of Asian Indians are below the age of 10 and a smaller proportion are above the age of 65. Thus Asian Indians are a younger population compared to the Chinese. Among Filipinos, figure 3 demonstrates a large proportion of the population below the age of 50. Additionally, a larger proportion of Filipina females are over 65

years old. Figure 4 shows that a large percentage (approximately 10%) of Vietnamese males and females are between ages 40 and 44. Among Koreans, the largest proportion of the population are under 45 years old, with the age group 40 to 44 having the largest proportion of the population. Lastly, figure 6 shows a Japanese population that is older than the other ethnic groups in this study. Whereas as less than 3% of the male or female populations of the other ethnic groups are 85 years and older, nearly 6% of Japanese females are nearly 4% of Japanese males fall within that age group. Moreover, compared to the other ethnic groups, a smaller proportion of the Japanese population are under 45 years old.

LIFE EXPECTANCY

National Level

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Figure 7 describes the inter-ethnic variation in life expectancy among Asians at the national level. Among Asian males, Chinese exhibited the longest life expectancy at approximately 86.4 years. The Chinese male life expectancy in 2016 is nearly 1 year longer than the life expectancy for aggregated Asian males ($e_0=85.44$). With the exception of Chinese males, life expectancy for individual ethnic groups was below the aggregated life expectancy among males. Moreover, Vietnamese males exhibited the shortest life expectancy at 83.17 years—a disadvantage of more than 3 years relative to Chinese males. The latter finding is consistent with the expectations set above regarding the potential effect of SES inequality. However, although Asian Indian and

Filipino males enjoy the highest education and income levels among the 6 groups under study, their life expectancy did not surpass that of Chinese males. Asian Indian and Filipino males also did not have a very large life expectancy advantage over Vietnamese males. Among females, Chinese also have the longest life expectancy at 92.71 years, while Asian Indians had the shortest at approximately 87 years. Unlike males, in which the gap between the longest and shortest life expectancies is approximately 3 years, the gap between Filipino and Asian Indian females is nearly 6 years. Additionally, figure 7 shows that Vietnamese females enjoy a nearly 2-year life expectancy advantage over Asian Indian females. The gap between Vietnamese and Asian Indian females is surprising given that Vietnamese have the lowest median household income of the six ethnic groups under study, while Asian Indians enjoy the highest levels of education and median household incomes. Therefore, at the national level we find partial support for hypothesis 1: mortality rates and life expectancy among the different ethnic groups follow a gradient determined by socioeconomic status.

Aggregated Asian Groups at the Regional Level

{Figure 8 right about here}

Figure 8 describes the variations in life expectancy at birth for Asians as an aggregate in the United States for the year 2016. The findings presented in figure 8 show that among Asian males, life expectancy was highest among those residing in the Northeast region, at approximately 88 years, and lowest among those residing in the West ($e_0=84.21$). Furthermore, Northeast-region Asian males could expect to live more than 1 year longer than the expected life

expectancy for Asian males at the national level. On the other hand, Asian males residing in the West could expect a 1.2-year reduction in life expectancy compared to Asian males nationally. Asian males in the West also have a 3.6-year life expectancy disadvantage compared to Northeast-region Asian males. Figure 8 also demonstrates that the life expectancy among Asians in the South was a little over 87 years. Therefore, Asian males in the South can expect to live more than 3 years longer than Asian males in the West, on average.

Furthermore, figure 8 shows that among Asian females, the regional gap in life expectancy is much smaller. While the life expectancy at birth for Asian females in the Northeast could not be computed due to data suppression in the dataset, it can be deduced from the findings presented above that the Northeast had the highest life expectancy at birth among Asian females in 2016. The life expectancy for all Asian females in the United States in 2016 was 89.75 years, while the longest regional life expectancy presented above is the South ($e_0=90.76$). At the aggregate level, the findings presented in figure 8 offer support for hypothesis 2: that Asians living in the South will have higher life expectancies than those living in in the West.

DISCUSSION

The preliminary findings presented above demonstrate the heterogeneity of the Asian/Asian-American population in the United States. At the aggregated and level, we found that Asians who live in the South experience relatively better health compared to those living in the West—a traditional Asian immigrant destination region. This suggests that the Southern health disadvantage described in the current health literature (Levi, Segal, Rayburn, and Martin 2015;

Murray et al. 2006) may not apply to all groups. As the migration literature described above, the Asian groups in this study are a highly selected group. Moreover, the Asians who now reside in non-traditional destinations, in the Midwest and the South, are likely to be more positively selected for health and SES, thus affording them a life expectancy advantage over Asian groups who live in the West. Although the findings support the hypothesis that Asian groups who reside in recent Asian immigrant destinations benefit from a longevity advantage, the magnitude of the advantage varies by ethnic group. Most studies on geographic health inequality—and health disparities in general—are based on Black/White comparisons. The findings presented above highlight the limitations and inapplicability of some explanations for geographic health disparities. Contextualized immigration-related factors must be considered in future research in order to capture the nuances of health inequality.

Moreover, the data also demonstrate that females have longer life expectancies and smaller inter-regional life expectancy gaps compared to males. Therefore, regional effects on life expectancy are less pronounced among females than males. This finding is consistent with existing studies on the male-female-health-survival paradox, which notes that while females do worse than males in regard to disability and many health outcomes, they tend to exhibit lower death rates than males (Crimmins et al. 2010; Nathanson 1975; Oksuzyan Bronnum-Hansen, and Jeune 2010; Case and Paxson 2005). However, scholars have yet to come to a consensus on how to explicate this paradox. The male-female survival paradox, coupled with this study's findings, suggests that at the aggregate level, investigating life expectancy and mortality differentials among Asian males may reveal more meaningful insights into the effects of various social factors on health outcomes.

At the disaggregated level, the findings provide more nuance to our understanding of Asian/Asian-American health as well as health patterns in the United States in general. Given the corpus of research on the link between SES and health, we expected to find long life expectancies among Asian Indians and Filipinos, and shorter life expectancies among Vietnamese. The findings among males at the national level confirm the expectation that the group with the lowest relative SES would have the shortest life expectancy. However, figure 7 also shows that Asian Indians and Filipinos do not have a significant advantage over the other ethnic groups. Notwithstanding the large gaps in median household incomes between Asian ethnic groups (Lopez, Ruiz, and Patten 2017), SES does not seem to afford a significant advantage to the Asian groups in this study. This also suggests that the SES gradient in health (Marmot et al. 1991) is not a good predictor of Asian/Asian-American health trajectories—at least for the largest groups.

Figure 7 presents another surprising finding—a nearly 6-year gap in life expectancy between Chinese and Asian Indian females. Asian Indians have the highest median household income in the United States, at approximately \$100,000 per year (Lopez, Ruiz, and Patten 2017), yet Asian Indian females exhibited a shorter life expectancy than Vietnamese females—the group with the lowest median household income in this study. Again, this finding reveals the shortcomings of existing theories regarding SES and health. Other factors may exert a greater influence on the health outcomes of Asian ethnic groups in the United States.

LIMITATIONS

Unfortunately, the findings are limited by the lack of data on other Asian ethnic groups, including many Southeast Asians—many of whom arrived as involuntary migrants—who may

exhibit more significant health disadvantages than the groups included in this study. Thus, the life expectancy differentials presented above do not fully capture the health disparities within the Asian racial category. Additionally, the calculated life expectancies may be an underestimation or an overestimation when compared to other findings. This discrepancy may be an effect of underestimated or overestimated population denominator data from the ACS estimates. Moreover, considering the concentration of Asian populations and occurrences of death in Western state, geographic analyses based on traditional versus recent Asian immigration destination status could not be conducted at the state level.

CONCLUSION

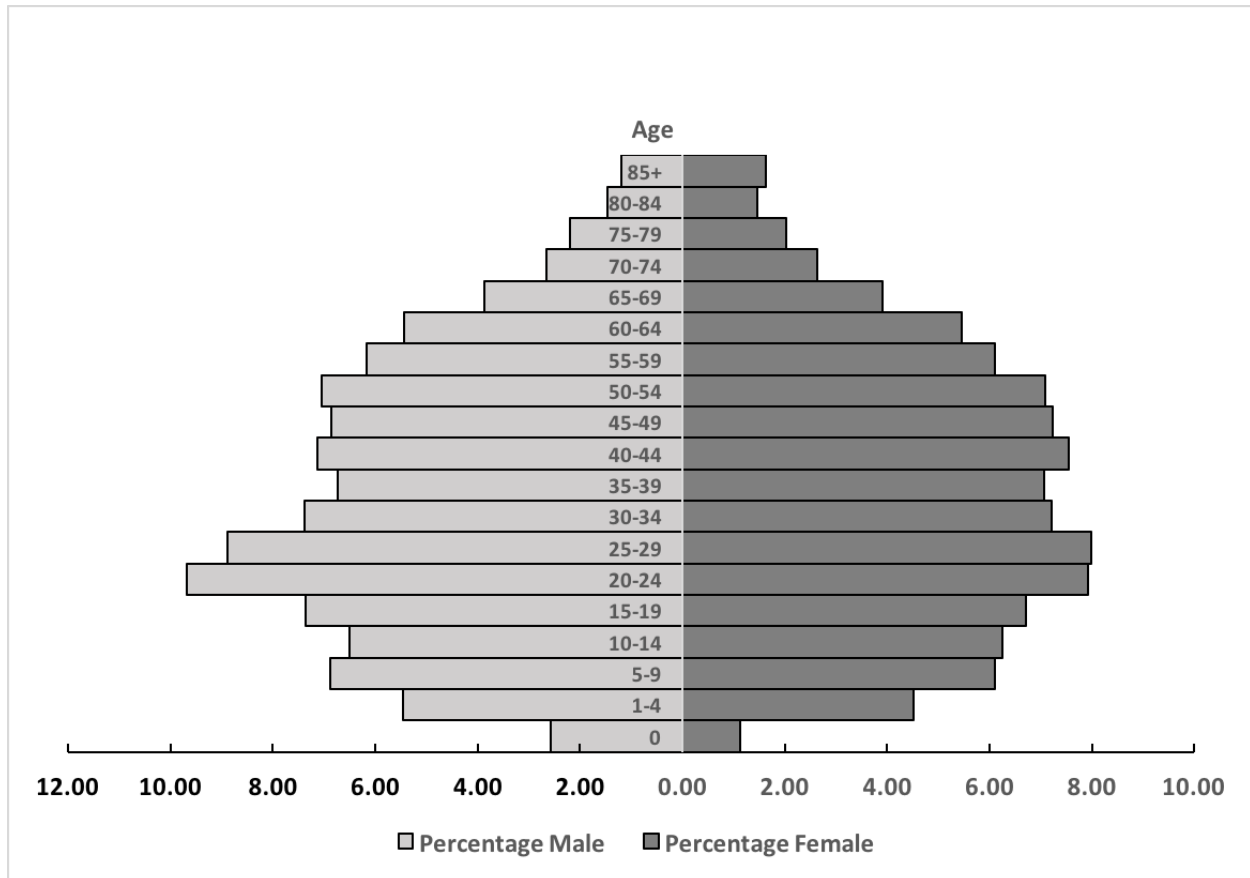
In this study, we examined the variations in life expectancy among the six largest Asian ethnic groups in the United States—Chinese, Filipino, Asian Indian, Vietnamese, Korean, and Japanese. We applied key theories from the migration literature in order to investigate the effects of three key factors—nativity, SES, and geography—on life expectancy at the national, regional, and state levels. The preliminary demographic analyses revealed two key findings. First, that the SES health gradient that has been applied to other groups do not explain the health differences among the six largest Asian ethnic groups in the United States. Second, the findings reveal that contrary to extant knowledge regarding the health disadvantages of living in the South, Asians (aggregated) in the South actually enjoy a life expectancy advantage over co-ethnics in other regions. They also highlight the ineffectiveness of existing health theories in explicating health inequality among Asian ethnic groups. The findings—particularly the results based on geography—suggest that migration theories may better explain the current state of health among

Asian groups in the country. Thus future research should incorporate these theoretical perspectives in order to interrogate the mechanisms that produce these inequalities.

Given the findings presented above regarding life expectancy differentials at the national level and life expectancy differentials by region for aggregated Asians, the next step in this project is to investigate variations for individual ethnic groups at the regional level. Doing so would allow us further examine whether or not the findings presented in figure 8 hold for individual ethnic groups. Thus we would be able to demonstrate the life expectancy advantage or disadvantage afforded to individual groups by living in non-traditional Asian immigrant destinations. Lastly, we would present figures representing age-specific death rates in order to demonstrate mortality differentials that contribute to variations in life expectancy among the groups in the study.

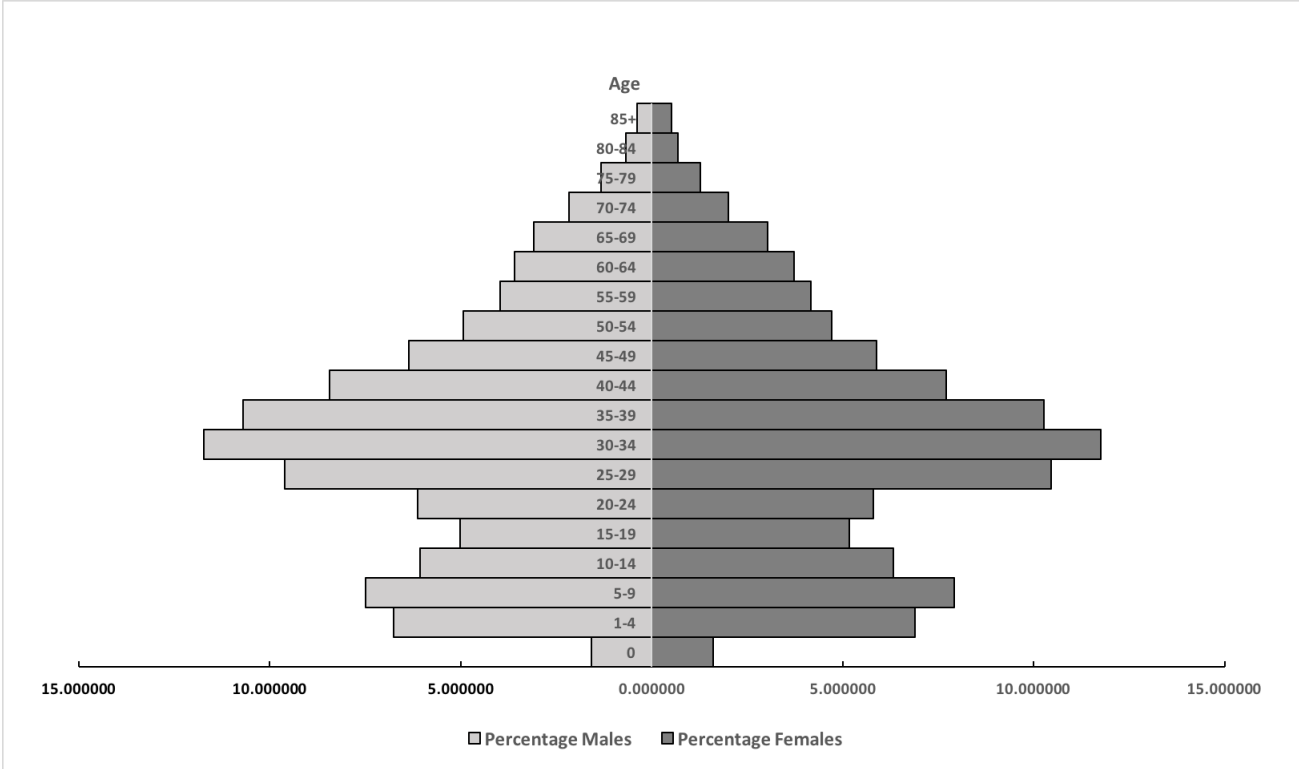
FIGURES

Figure 1. Population Pyramid for Chinese in the USA, 2016



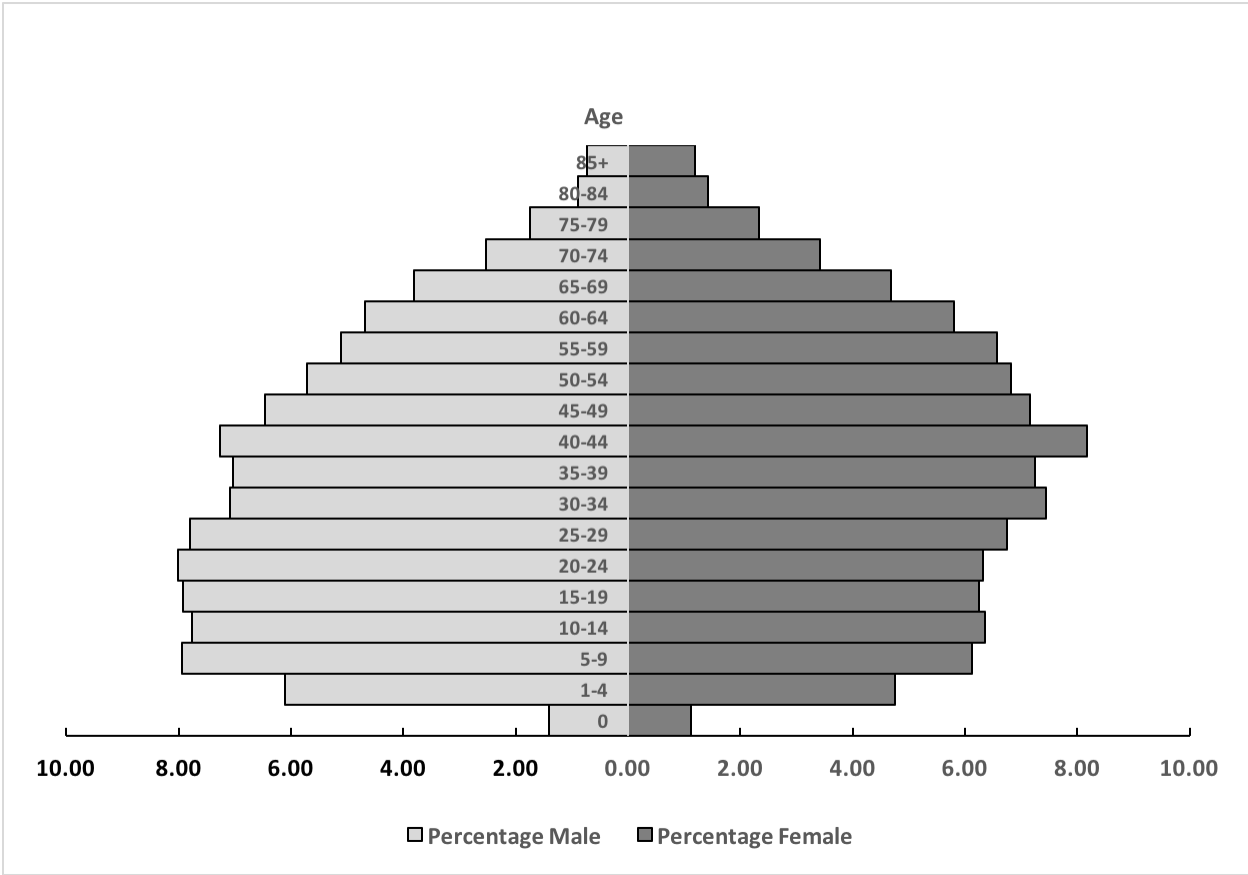
Note: Calculations made by the author. Source: American Community Survey 5-Year Estimates (2012-2106)

Figure 2. Population Pyramid for Asian Indians in the USA, 2016



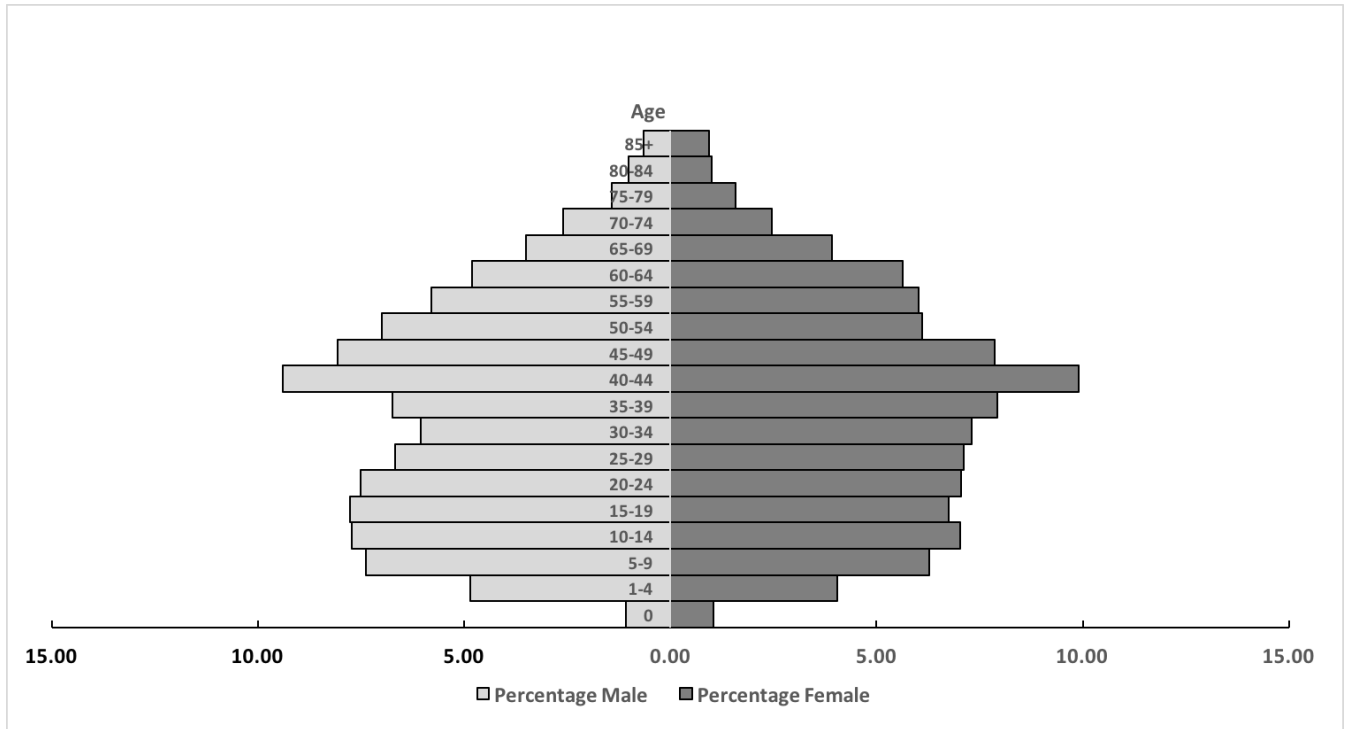
Note: Calculations made by the author. Source: American Community Survey 5-Year Estimates (2012-2106)

Figure 3. Population Pyramid for Filipinos in the USA, 2016



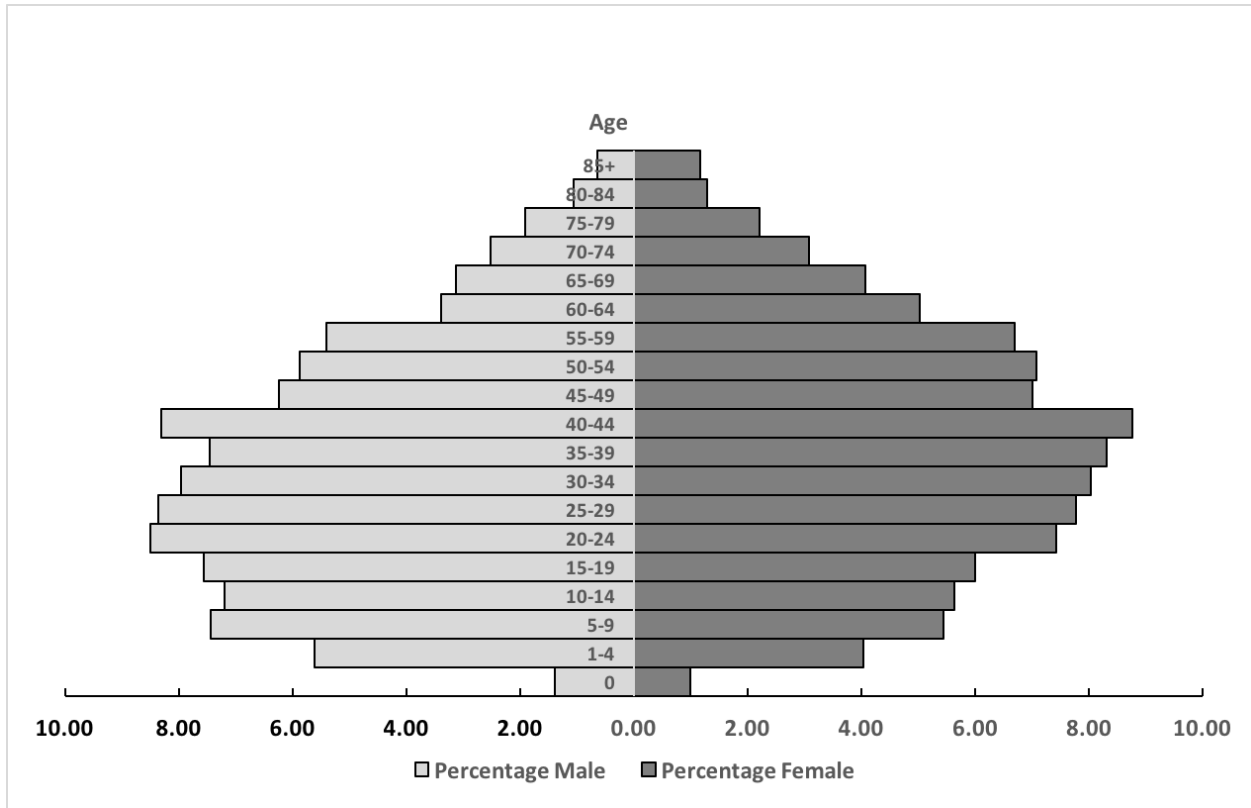
Note: Calculations made by the author. Source: American Community Survey 5-Year Estimates (2012-2106)

Figure 4. Population Pyramid for Vietnamese in the USA, 2016



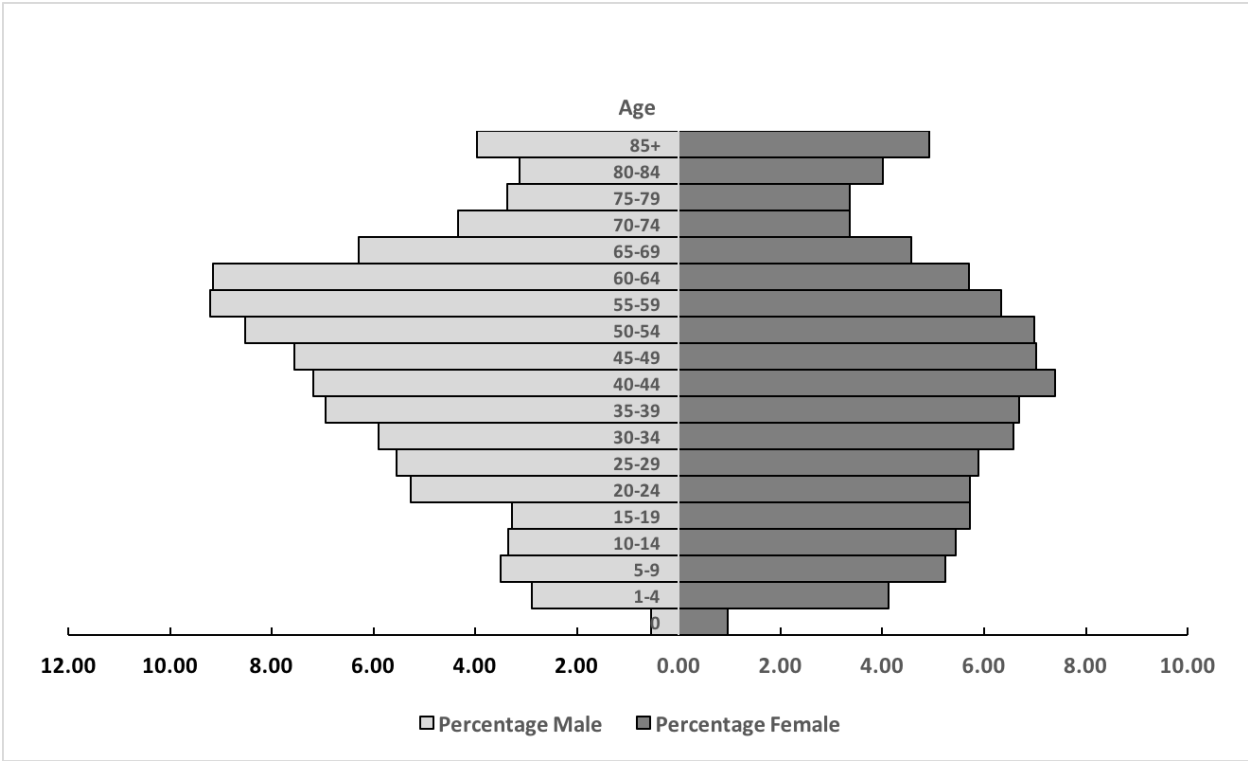
Note: Calculations made by the author. Source: American Community Survey 5-Year Estimates (2012-2106)

Figure 5. Population Pyramid for Koreans in the USA, 2016



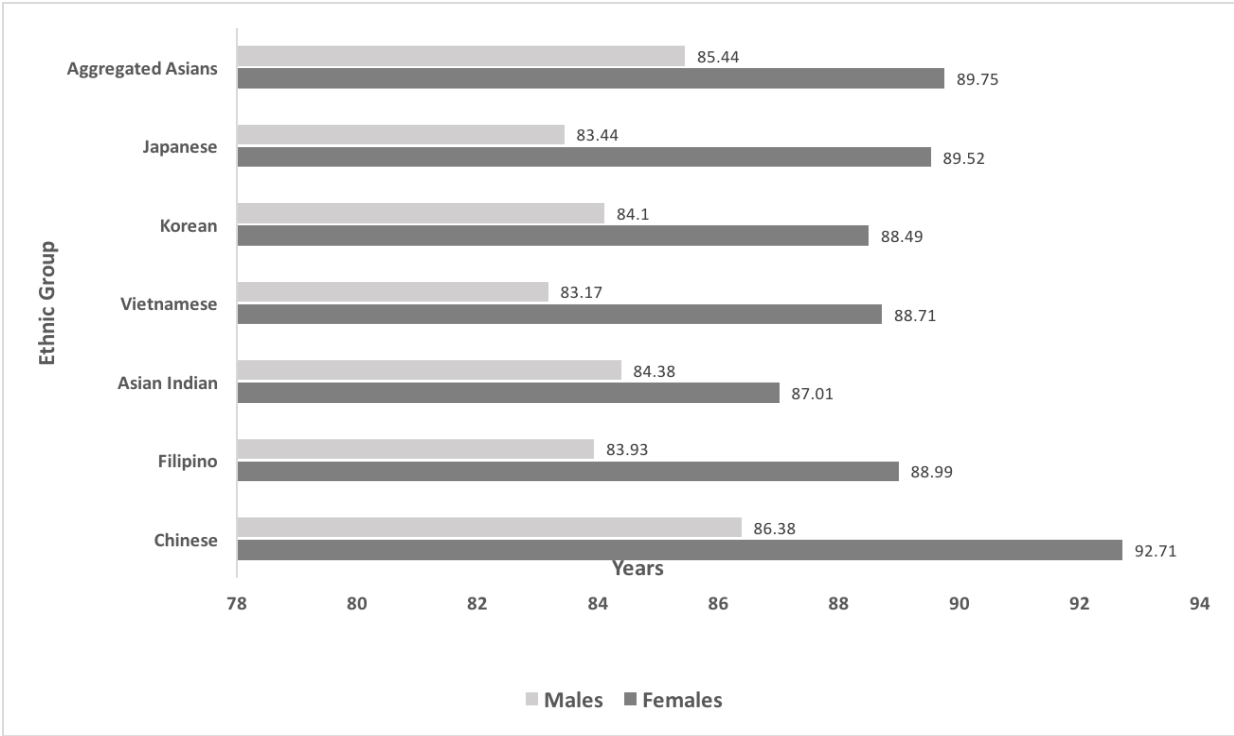
Note: Calculations made by the author. Source: American Community Survey 5-Year Estimates (2012-2106)

Figure 6. Population Pyramid for Japanese in the USA, 2016



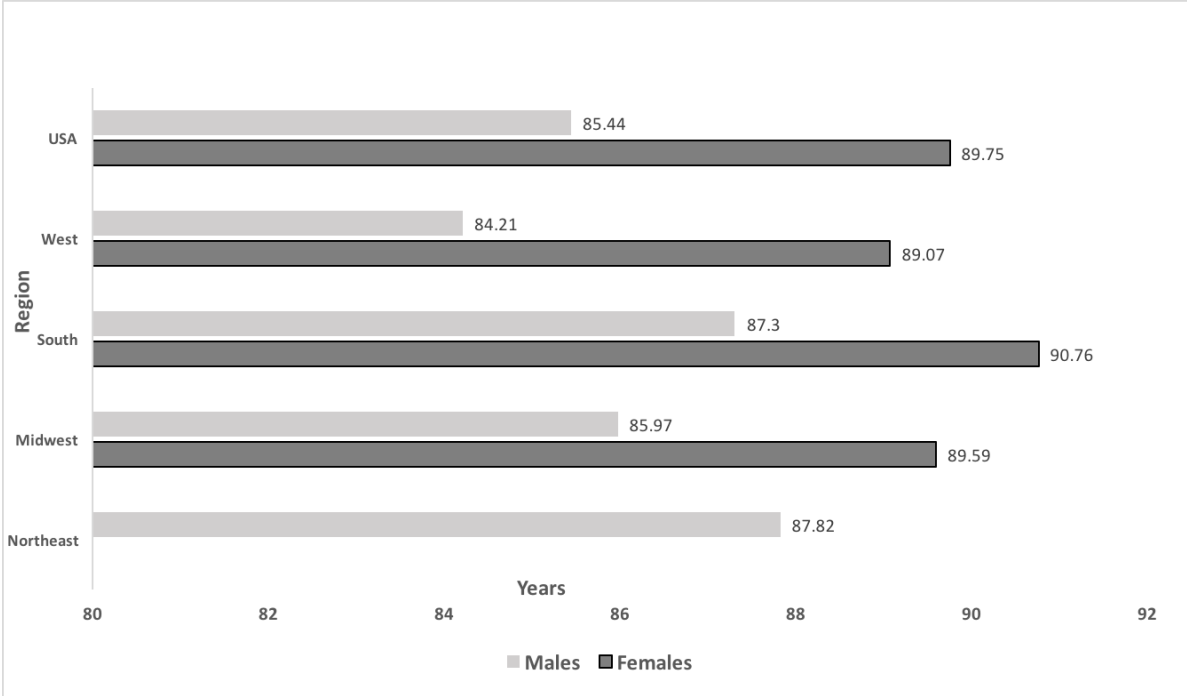
Note: Calculations made by the author. Source: American Community Survey 5-Year Estimates (2012-2106)

Figure 7. National Level Life Expectancy, 2016



Note: Calculations made by the author. Sources: Multiple Cause of Death File (2016) & American Community Survey 5-Year Estimates (2012-2016)

Figure 8. Life Expectancy of Aggregated Asians by Region, 2016



Note: Calculations made by the author. Sources: Multiple Cause of Death File (2016) & American Community Survey 5-Year Estimates (2012-2016)

REFERENCES

- Abraído-Lanza, Ana F., Armbrister, Adria N., Florez, Karen R., and Aguirre, Alejandra. 2006. "Toward a Theory-Driven Model of Acculturation in Public Health Research." *American Journal of Public Health* 96(8): 1342-1346.
- Abraído-Lanza, Ana F., Maria T. Chao, and Karen R. Flórez. 2005. "Do Healthy Behaviors Decline with Greater Acculturation? Implications for the Latino Mortality Paradox." *Social Science and Medicine* 61(6): 1243–1255.
- Abraído-Lanza, Ana F., Echeverria, Sandra E., and Karen R. Florez. 2016. "Latino Immigrants, Acculturation, and Health: Promising New Directions in Research." *Annual Review of Public Health* 37: 219-236.
- Abraído-Lanza, Ana F., Dohrenwend, Bruce P., Ng-Mak, Daisy S., and Blake Turner. 1999. "The Latino Mortality Paradox: A Test of the 'Salmon Bias' and Healthy Migrant Hypotheses." *American Journal of Public Health* 89(10): 1543-1548.
- Acciai, Francesco, Noah, Aggie J., & Firebaugh, Glenn. 2015. "Pinpointing the Sources of the Asian Mortality Advantage in the United States." *Journal of Epidemiology and Community Health*, 69(10):1006–1011.
- Adkoli, B.V. 2006. "Migration of Health Workers: Perspective from Bangladesh, India, Nepal, Pakistan, and Sri Lanka." *Regional Health Forum* 10(1):49-58.
- Akresh, Illana R. and Frank, Reanne. 2008. "Health Selection Among New Immigrants." *American Journal of Public Health* 98(11): 2058-2064.
- Alba, Richard D., Logan, John R., Sults, Brian J., Marzan, Gilbert, and Zhang, Wenquan. 1999. "Immigrant Groups in the Suburbs: A Reexamination of Suburbanization and Spatial Assimilation." *American Sociological Review* 64(3): 446-460.
- Alba, Richard and Nee, Victor. 1977. "Rethinking Assimilation Theory for a New Era of Immigration." *International Migration Review* 31(4): 826-874.
- Alperin, Elijah and Jeanne Batalova. 2018. *Vietnamese Immigrants in the United States*. Migration Policy Institute. Washington, D.C.
- Bonacich, Edna and I. Light. 1988. *Immigrant Entrepreneurs*. Berkeley, CA: University of California Press.
- Bonilla-Silva, Eduardo. 2018. *Racism without Racists: Color-Blind Racism and the Persistence of Racial Inequality in the United States, Fifth Edition*. Lanham, MD: Rowman & Littlefield Publishers, Inc.
- Borjas, George J. 1987. Self-Selection and the Earnings of Immigrants." *The American Economic Review* 77(4): 531-553.
- Boyd, Monica. 1971. "Oriental Immigration: The Experience of the Chinese, Japanese, and Filipino Populations in the United States." *The International Migration Review* 5(1):48-61.
- Case, A. and C. Paxson. 2005. "Sex Differences in Morbidity and Mortality." *Demography* 42(2): 189-214.
- Centers for Disease Control and Prevention. 2005. *Social Determinants of Health Working Group*. Atlanta.
- Centers for Disease Control and Prevention. 2016. "Lifetime Risk of HIV Diagnosis."

- Chang, Robert S. 1993. "Toward and Asian American Legal Scholarship: Critical Race Theory, Post-Structuralism, and Narrative Space." *California Law Review* 81(5): 1241-1323.
- Chiswick, Barry R. 1999. "Are Immigrants Favorably Self-Selected?" *The American Economic Review* 89(2): 181-185.
- Choy, Catherine Ceniza. 2010. "Nurses Across Borders: Foregrounding International Migration in Nursing History." *Nursing History Review* 18:12-28.
- Choy, Catherine Ceniza. 2003. *Empire of Care: Nursing and Migration in Filipino American History*. Durham, NC: Duke University Press.
- Clark, Rodney, Anderson, Norman, Clark, Vernessa, and Williams, David R. 1999. "Racism as a stressor for African Americans: A Biopsychosocial Model." *American Psychologist* 54(10): 805-816.
- Collins, Patricia Hill. 2015. "Intersectionality's Definitional Dilemmas." *Annual Review of Sociology* 41:1-20.
- Cosman, Jeralynn Sittig, Cosman, Ronald E., James, Wesley L., Campbell, Carol R., Blanchard, Troy C., and Cosby, Arthur G. 2007. "Persistent Clusters of Mortality in the United States." *American Journal of Public Health* 97(12):2148-2150.
- Crenshaw, Kimberle, Gotanda, Neil, Peller, Gary, and Thomas, Kendall. 1995. *Critical Race Theory: The Key Writings that Formed the Movement*. New York, NY: The New Press.
- Crimmins, Eileen M., Kim, Jung Ki, and Aida Sole-Auro. 2010. "Gender Differences in Health: Results from SHARE, ELSA, and HRS." *European Journal of Public Health* 21(1): 81-91.
- Cunningham, Solveig A., Ruben, Julia D., and K.M. Venkat Narayan. 2008. "Health of Foreign-Born People in the United States: A Review." *Health and Place* 14(4): 623-635.
- Eckstein, Susan and Thanh-Nghi Nguyen. 2011. "The Making and Transnationalization of an Ethnic Niche: Vietnamese Manicurists." *International Migration Review* 45(3): 639-674.
- Elo, Irma T. and Preston, Samuel H. 1997. "Racial and Ethnic Differences in Mortality at Older Ages." Pp 10-42 in *National Research Council (US) Committee on Population*, edited by LG Martin and BJ Soldo. Washington (DC): National Academies Press.
- Eschbach, Karl et al. 2004. "Neighborhood Context and Mortality among Older Mexican Americans: Is There a Barrio Advantage?" *American Journal of Public Health* 94(10): 1807-1811.
- Espiritu, Yen Le. 1992. *Asian American Panethnicity: Bridging Institutions and Identities*. Philadelphia: Temple University Press.
- Farmer, Melissa M. and Ferraro, Kenneth F. 2005. "Are Racial Disparities in Health Conditional on Socioeconomic Status?" *Social Science and Medicine* 60(1):191-204.
- Feliciano, Cynthia. 2005. "Educational Selectivity in U.S. Immigration: How Do Immigrants Compare to Those Left Behind?" *Demography* 42(1): 131-152.
- Feliciano, Cynthia. 2005. "Does Selective Migration Matter? Explaining Ethnic Disparities in Educational Attainment among Immigrants' Children." *International Migration Review* 39(4): 841-871.
- Fenelon, Andrew. 2013. "Geographic Divergence in Mortality in the United States." *Population and Development Review* 39(4): 611-634.
- Fenelon, Andrew. 2017. "Rethinking the Hispanic Paradox: The Mortality Experience of Mexican Immigrants in Traditional Gateways." *International Migration Review* 51(3): 567-599.
- Fong, Timothy P. 2008. *The Contemporary Asian American Experience: Beyond the Model*

- Minority*. Upper Saddle River, NJ: Prentice Hall.
- Frisbie, W. Parker, Cho, Youngtae, and Hummer, Robert A. 2001. "Immigration and the Health of Asian and Pacific Islander Adults in the United States." *American Journal of Epidemiology* 153(4):372-380.
- Gee, Gilbert. 2007. "A Nationwide Study of Discrimination and Chronic Health Conditions Among Asian Americans." *American Journal of Public Health* 97(7): 1275-1282.
- Gee, Gilbert and Ford, Chandra L. 2011. "Structural Racism and Health Inequities. Old Issues, New Directions." *DuBois Review* 8(1):115-132.
- Geronimus, Arline T., Bound, John, and Lisa J. Neidert. 1996. "On the Validity of Using Census Geocode Characteristics to Proxy Individual Socioeconomic Characteristics." *Journal of the American Statistical Association* 91(434): 529-537.
- Gordon, Milton. 1961. "Assimilation in America: Theory and Reality." *Daedalus* 90(2):263-285.
- Gordon, Milton. 1964. *Assimilation in American Life*. New York: Oxford University Press.
- Graham, Louis, Brown-Jeffy, Shelly, Aronson, Robert, and Stephens, Charles. 2011. "Critical Race Theory as Theoretical Framework and Analysis Tool for Population Health Research." *Critical Public Health* 21(1): 81-93.
- Hastings, Katherine G., Jose, Powell O., Kapphahn, Kristopher I., Frank, Ariel T. H., Goldstein, Benjamin A., Thompson, Caroline A., Eggleston, Karen, Cullen, Mark R., and Palaniappan, Latha P. 2015. "Leading Causes of Death among Asian American Subgroups (2003–2011)." *PLoS ONE* 10(4): e0124341.
- Hayward, Mark D., Pienta, Amy M., and Diane K. McLaughlin. 1997. "Inequality in Men's Mortality: The Socioeconomic Status Gradient and Geographic Context." *Journal of Health and Social Behavior* 38(4): 313-330.
- Hummer, Robert A., Rogers, Richard G., Nam, Charles B., and Felecia B. LeClere. 1999. "Race/Ethnicity, Nativity, and U.S. Adult Mortality." *Social Science Quarterly* 80(1): 136-153.
- Hirschman, Charles and Wong, Morrison G. 1986. "The Extraordinary Education Attainments of Asian Americans: A Search for Historical Evidence and Explanations." *Social Forces* 65(1):1-27.
- Hirschman, Charles and Wong, Morrison G. 1984. "Socioeconomic Gains of Asian Americans, Blacks, and Hispanics:1960-1976." *American Journal of Sociology* 90(3):584-607.
- Hoeffel, Elizabeth M., Rastogi, Sonya, Kim, Myoung Ouk, and Shahid, Hasan. 2012. "The Asian Population: 2010." United States Census Bureau
- Ibrahim, Michel A. 1991. "Editorial: The Health Risks of Asian Americans." *American Journal of Public Health* 81(11):1391-1393.
- Jasso, Guillermina, Massey, Douglas S., Rosenzweig, and James P. Smith. 2004. "Immigrant Health: Selectivity and Acculturation." *Institute for Fiscal Studies Working Paper* 4(23).
- John, Dolly A., de Castro, A.B., Martin, Diane P., Duran, Bonnie, and David T. Takeuchi. 2012. "Does an Immigrant Health Paradox Exist Among Asian Americans? Associations of Nativity and Occupational Class with Self-Rated Health and Mental Disorders." *Social Science and Medicine* 75: 2085-2098.
- Jose, Powell O., Frank, Ariel T. H., Kapphahn, Kristopher I., Goldstein, Benjamin A., Eggleston, Karen, Hastings, Katherine G., Cullen, Mark R., Palaniappan, Latha P. 2014. "Cardiovascular Disease Mortality in Asian Americans." *Journal of the American College of Cardiology* 64(23):2495-2497.

- Kandula, Namratha R., Kersey, Margaret, and Lurie, Nicole. 2004. "Assuring the Health of Immigrants: What the Leading Health Indicators Tell Us." *Annual Review of Public Health* 25:357-376.
- Kao, Grace and Thompson, J.S. 2003. "Racial and Ethnic Stratification in Educational Achievement and Attainment." *Annual Review of Sociology* 29:417-442.
- Kawachi, Ichiro and Kennedy, B.P. 1999. "Income Inequality and Health: Pathways and Mechanisms." *Health Services Research* 34(1):215-227.
- Kennedy, Steven, Kidd, Michael P., McDonald, James T., and Nicholas Biddle. 2015. "The Healthy Immigrant Effect: Patterns and Evidence from Four Countries." *Journal of International Migration and Integration* 16(2): 317-332.
- Lee, Everett S. 1966. "A Theory of Migration." *Demography* 3(1): 47-57.
- Lee, Jennifer, and Frank D. Bean. 2010. *The Diversity Paradox: Immigration and the Color Line in Twenty-First Century America*. New York: Russell Sage Foundation.
- Levi J, Segal LM, Rayburn J, Martin A. The state of obesity: Better policies for a healthier America 2015. Washington, DC: Trust for America's Health and Robert Wood Johnson Foundation; 2015b.
- Light, Ivan and Edna Bonacich. 1988. *Ethnic Entrepreneurs: Koreans in Los Angeles, 1965-83*. Berkeley and Los Angeles: University of California Press.
- Link, Bruce G. and Jo Phelan. 1995. "Social Conditions as Fundamental Causes of Disease." *Journal of Health and Social Behavior* Extra Issue: Forty Years of Medical Sociology: The State of the Art and Directions for the Future :80-94.
- Lopez, Gustavo, Ruiz, Neil G., and Eileen Patten. 2017. "Key Facts about Asian Americans, A Diverse and Growing Population." Pew Research Center. Accessed at <http://www.pewresearch.org/fact-tank/2017/09/08/key-facts-about-asian-americans/>.
- Lu, Xiaoxiao, Sim, Hwa J., Juon, Hee-Soon, and Sunmin Lee. 2016. "Hypertension among Asian Americans: Associations with Measures of Acculturation." *American Journal of Health Studies* 31(3): 132-142.
- Luftey, Karen and Jeremy Freese. 2005. "Toward some Fundamentals of Fundamental Causality: Socioeconomic Status and Health in the Routine Clinic Visit for Diabetes." *American Journal of Sociology* 110(5): 1326-1372.
- Lynch, John W., Smith, George D., Kaplan, George, and Smith, James S. 2000. "Income Inequality and Mortality: Importance to Health of Individual Income, Psychosocial Environment, or Material Conditions." *British Medical Journal* 320(7243):1200-1204.
- Malmussi, Davide, Borrell, Carme, and Joan Benach. 2010. "Migration-Related Health Inequalities: Showing the Complex Interactions Between Gender, Social Class, and Place of Origin." *Social Science and Medicine* 71: 1610-1619.
- Markides, Kyriakos S., and Karl Eschbach. 2005. "Aging, Migration, and Mortality: Current Status of Research on the Hispanic Paradox." *The Journals of Gerontology* 60(2): S68-S75.
- Massey, Douglas S. 1990. "The Social and Economic Origins of Immigration." *The Annals of the American Academy of Political and Social Science* 510(1):60-72.
- Massey, Douglas S., Arango, Joaquin, Hugo, Graeme, Kouaouci, Ali, Pellegrino, Adela, and J. Edward Taylor. 1994. "An Evaluation of International Migration Theory: The North American Case." *Population and Development Review* 20(4): 699-751.
- Marrow, Helen B. 2005. "New Destinations and Immigrant Incorporation." *Perspectives on Politics* 3(4): 781-799.

- Marmot, Michael. 2002. "The Influence of Income on Health: Views of an Epidemiologist." *Health Affairs* 21(2):31-46.
- Marmot, Michael G. et al. 1991. "Health Inequalities among British Civil Servants: The Whitehall II Study." *The Lancet* 337(8754): 1387-1393.
- Murray, Christopher J.L., Kulkarni, Sandeep C., Michaud, Catherine, Tomijima, Niels, Bulzacchelli, Maria T., Landrriorio, Terrell J., and Majid Ezzati. 2006. "Eight Americas: Investigating Mortality Disparities across Races, Counties, and Race-Counties in the United States." *PLOS Medicine* 3(12): e545.
- Nathanson, CA. 1975. "Illness and the Feminine role: a Theoretical Review." *Social Science and Medicine* 9(2):57-62.
- National Center for Health Statistics. *Survey Description, National Health Interview Survey, 2015*. Hyattsville, Maryland. 2016.
- Nee, Victor and Sanders, Jimmy. 1985. "The Road to Parity: Determinants of the Socioeconomic Achievements of Asian Americans." *Ethnic and Racial Studies* 8(1):75-93.
- NRC and IOM (National Research Council and Institute of Medicine). U.S. health in international perspective: Shorter lives, poorer health. Washington, DC: The National Academies Press; 2013
- Omi, Michael and Howard Winant. 2015. *Racial Formation in the United States, Third Edition*. New York, NY: Routledge.
- Ong, Paul, Bonacich, Edna, and Cheng, Lucie. 1994. *The New Asian Immigration in Los Angeles and Global Restructuring*. Philadelphia: Temple University Press.
- Oksuzyan, Anna, Bronnum-Hansesn, Henrik, and Bernard Jeune. 2010. "Gender Gap in Health Expectancy." *European Journal of Ageing* 7(4): 213-218.
- Phelan, Jo C., Link, Bruce G., Diez-Roux, Ana, Kawachi, Ichiro, and Bruce Levin, "Fundamental Causes of Social Inequalities in Mortality: A Test of the Theory." *Journal of Health and Social Behavior* 45: 265-285.
- Pollitt, Ricardo A., Rose, Kathryn M. and Kaufman Jay S. 2005. "Evaluating the Evidence for Models of Life Course Socioeconomic Factors and Cardiovascular Outcomes: A Systematic Review." *BMC Public Health* 20(5):7-7.
- Portes, Alejandro and Rumbaut, Ruben. 2014. *Immigrant America: A Portrait*. Irvine: University of California Press.
- Preston, Samuel H. and Taubman P. 1998. "Socioeconomic Differences in Adult Mortality and Health Status." in *Demography of Aging*, edited by L.G. Martin and S.H. Preston. Washington, D.C: National Academy Press.
- Riosmena, Fernando, Kuhn, Randall, and Warren C. Jochem. 2017. "Explaining the Immigrant Health Advantage: Self-Selection and Protection in Health-Related Factors Among Five Major National-Origin Immigrant Groups in the United States." *Demography* 54: 175-200.
- Ross, Catherine, Masters, Ryan, and Hummer, Robert. 2012. "Education and the Gender Gaps in Health and Mortality." *Demography* 49:1157-1183.
- Rubaclava, Luis N., Teruel, Graciela M., Thomas, Duncacn, and Noreen Goldman. 2008. "The Health Migrant Effect: New Findings from the Mexican Family Life Survey." *American Journal of Public Health* 98(1): 78-84.
- Sakamoto, Arthur, Goyette, Kimberly A., and Kim, ChangHwan. 2009. "Socioeconomic Attainments of Asian Americans." *Annual Review of Sociology* 35:255-276.
- Savage, Jeanne E. and Brian Mezuk. 2014. "Psychosocial and Contextual Determinants of

- Alcohol and Drug Use Disorders in the National Latino and Asian American Study.” *Drug and Alcohol Dependence* 139: 71-78.
- Shim, Doboo. 1998. “From Yellow Peril through Model Minority to Renewed Yellow Peril.” *Journal of Communication Inquiry* 22(4):385-409.
- Singh, Gopal K. and Hiatt, Robert A. 2006. “Trends and Disparities in Socioeconomic and Behavioural Characteristics, Life Expectancy, and Cause-Specific Mortality of Native-Born and Foreign-Born Populations in the United States, 1979-2003.” *International Journal of Epidemiology* 35(4):903-919.
- Singh, Gopal K. and Miller, Barry A. 2004. “Health, Life Expectancy, and Mortality Patterns Among Immigrant Populations in the United States.” *Revue Canadienne De Sante Publique* 95(3):14-21.
- Singh, Gopal K. and Siahpush, Mohammad. 2001. “All-Cause and Cause-Specific Mortality of Immigrants and Native Born in the United States.” *American Journal of Public Health* 91(3):392-399.
- Srinivasan, Shobha and Guillermo, Tessie. 2000. “Toward Improved Health: Disaggregating Asian American and Native Hawaiian/Pacific Islander Data.” *American Journal of Public Health* 90(11): 1731-1734.
- Staimez, Lisa R., Weber, Mary Beth, Narayan, K.M.V., and Reena Oza-Frank. 2013. “A Systematic Review of Overweight, Obesity, and Type 2 Diabetes among Asian American Subgroups.” *Current Diabetes Review* 9(4): 312-331.
- Stark, Oded and J. Edward Taylor. 1991. “Migration Incentives, Migration Types: The Role of Relative Deprivation.” *The Economic Journal* 101(408):1163-1178.
- Stark, Oded and David E. Bloom. 1985. “The New Economics of Labor Migration.” *American Economic Review* 75:173-178.
- Takei, I. and Sakamoto, Arthur. 2008. “Poverty Among Asian Americans: Evidence from the 2000 Census.” Presented at Annual Meeting American Sociological Association. Boston, MA.
- Takaki, Ronald T. 1998. *Strangers from a Different Shore: A History of Asian Americans*. Boston: Little Brown and Company.
- Urquia, Marcelo L., O’Campo, Patricia J. and Heaman. 2012. “Revisiting the Immigrant Paradox in Reproductive Health: The Roles of Duration of Residence and Ethnicity.” *Social Science and Medicine* 74(10): 1610-1621.
- U.S. Census Bureau. 2012. *The Asian Population: 2010*.
- Waldinger, Roger and Michael I. Lichter. 2003. *How the Other Half Works: Immigration and the Social Organization of Labor*. Berkeley, CA: University of California Press.
- Wang, Qinfang. 2010. “How Does Geography Matter in the Ethnic Labor Market Segmentation Process? A Case Study of Chinese Immigrants in the San Francisco CMSA.” *Annals of the Association of American Geographers* 100(1): 182-201.
- Williams, David R. 1997. “Race and Health: Basic Questions, Emerging Directions.” *Annals of Epidemiology* 7(5): 322-333.
- Williams, David R. and Collins, Chiquita. 1995. “US Socioeconomic and Racial Differences in Health: Patterns and Explanations.” *Annual Review of Sociology* 21: 349-386.
- Williams, David R., John, Dolly A., Oyserman, Daphna, Sonnega, John, Mohammed, Selina A., and Jackson, James S. 2012. “Research on Discrimination and Health: An Exploratory Study of Unresolved Conceptual and Measurement Issues.” *American Journal of Public Health* 102: 975-78.

- Williams, David R., Mohammed, Selina A., Leavell, Jacinta, and Collins, Chiquita. 2010. "Race, Socioeconomic Status, and Health: Complexities, Ongoing Challenges, and Research Opportunities." *Annals of the New York Academy of Sciences* 1186: 69-101.
- Wilmoth, John R., Boe, Carl, and Magali Barbieri. 2010. "Geographic Differences in Life Expectancy at Age 50 in the United States Compared with Other High-Income Countries," in Eileen Crimmins, Samuel H. Preston, and Barney Cohen (eds.), *International Differences in Mortality at Older Ages: Dimensions and Sources*. Washington, DC: National Academies Press, pp. 333-366.
- Xie, Yu and Goyette, K.A. 2003. "Social Mobility and the Educational Choices of Asian Americans." *Social Science Research* 32:467-498.
- Yang, Philip Q. 1999. "Quality of Post-1965 Asian Immigrants." *Population and Environment* 20(6):527-544.