THE HEALTH CONSEQUENCES OF ASIAN IMMIGRANT INTEGRATION

by

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CHAPTER 1

Introduction

The Asian immigrant population in the United States has grown considerably within the past fifty years. Between 1970 and 2000, the number of immigrants from Asia increased on average 4% per year. This steady immigrant flow has fueled the growth of the overall Asian American population; between 2000 and 2010, Asians were the fastest growing racial/ethnic group in the United States with a 43.3% percentage increase that outpaced even Hispanics (Humes, Jones, & Ramirez, 2011).

As the Asian American population composes a more substantial segment of American society, the importance of identifying forces driving their overall health patterns becomes more significant as well. At first glance, the health status of Asians appear very positive, as their health outcomes are very similar, or even superior to, native-born Whites. Compared to other racial groups, Asians have lower prevalence of chronic diseases, the longest life expectancy and favorable maternal and child outcomes (NCHS, 2008; OMH, 2009). Their positive health patterns are statistically accounted for by behavioral factors, such as a lower likelihood of smoking and drinking, or higher economic resources (Rogers, Hummer, & Nam, 2000). Behaviors and resources may empirically explain the Asian health advantage, but their prominence in the public health

literature obscures a full account of health influences arising from contextual and environment factors.

A favorable health profile does not preclude Asian Americans from the negative health consequences of a socially stratified society. As with other racial groups, Asians have undergone social classifications that are predicated on the racial hierarchy that creates and enforces social order. Racial categorization is a marker of the inequalities in power and status, as American society has historically organized access to goods and resources along racial lines (Smedley & Smedley, 2005). The eventual health impacts of racialization can operate through racial residential segregation, experiences of racial discrimination or inequitable medical access and care. These stressors and barriers can erode health advantages as Asian immigrants interact with American society.

Asian Americans occupy a unique space within the racial hierarchy. One on hand, they have long experienced negative social consequences of racialization. The earliest Asian immigrants in the late 19th century were subject to segregation, racial violence and eventual legal exclusion from the United States. The historical nadir of their marginalization was the internment of Japanese Americans during World War II. Current views of Asian Americans are less overtly negative, but are still informed by stereotypes that depict Asians as un-American, foreign and untrustworthy. These views are further fueled by national anxiety over the economic rise of Asian countries, first Japan, then China and India.

On the other hand, Asians have access to educational and material resources that are similar to those of the White American majority. The college graduation rates for

many Asian ethnic groups are well above the national average, as are the median household incomes and percent in professional occupations (Census, 2011; Crissey, 2009). This duality forces us to acknowledge that the health impacts of racial classification cannot be approximated by socioeconomic (SES) measures. Instead, we must explicitly consider how the social, economic and political forces that have determined a group's content, importance and meaning (Omi & Winant, 1994), uniquely impact health.

Migration and integration are the central pieces by which we understand Asian Americans' place in the American social hierarchy. Migration has established their favorable population-level SES characteristics, but has also formed their status as outsiders. Salient forces of migration and integration include immigration policy, labor market conditions and coethnic communities. These forces create the context in which Asian immigrants must operate in the United States, as well as underlie the population's characteristics. For example, immigration policy plays an important role in understanding the current demographic and socioeconomic features of Asian Americans, as it establishes definitive criteria for who can enter the United States (Park & Park, 2005). Accordingly, different eras of immigration policy have affected the characteristics of the Asian population by setting various occupational or educational requirements. Likewise, the occupational opportunities immigrants encounter in the labor market can impact their subsequent socioeconomic status and available resources. Such a structural analysis can expand our understanding of health production to include larger contextual factors.

In this dissertation, I examine the roles of migration and integration in influencing the health trajectories of Asian immigrants. Health trajectories refer to the changing health status of Asian immigrants as they spend more time in the United States. They are of particular interest to public health researchers, as they provide insight into the larger experiences of Asian immigrants in the United States and how they may affect health. Currently, health trajectories are interpreted though a lifestyle and behavioral framework that has shaped the majority of Asian American health literature. When we apply a structural perspective, it widens our interpretive lens to create a more complex picture of integration that considers several dimensions across which Asian immigrants are being incorporated into American society. Specifically, I identify and test social determinants of Asian immigrant health that originate from the historical and structural forces that have surrounded their economic, social and cultural integration into the United States.

My dissertation is arranged by the following chapters. Chapter 2 is a critical review of the literature on health trajectories among Asian immigrants. Chapters 3 and 4 are my two empirical papers in which I test two aspects of health trajectories.

In Chapter 2, I review the current knowledge of health trajectories among Asian immigrants. I then discuss acculturation theory, which is the most prevalent interpretation of health trajectories. Acculturation theory assumes that as immigrants spend more time in the United States, they adopt Western behaviors while simultaneously shedding their ethnic lifestyles; worsening health is a consequence of poor diets and other harmful lifestyle changes. I argue that the lifestyle and behavioral assumptions inherent in the

acculturation theory exclude explicit consideration of contextual factors that shape the larger experiences of Asian immigrants in the United States.

I then present a model of understanding health trajectories that incorporates social determinants of health that arise from structural forces. This model, called Contexts of Disease, begins with a discussion of several ways in which Asian immigrants are being incorporated into American society: economic, social and cultural. Economic integration involves their employment and occupational trajectories. Social integration is immigrants' incorporation into American social structure that is racially stratified. Cultural integration involves immigrants' changing cultural identity, which is expressed in one's cultural practices, values and identification. These aspects of integration produce health-related stressors and coping mechanisms that impact health outcomes. For example, economic integration can offer material resources that offer better access to medical care, social integration can produce stressful experiences of racial discrimination and cultural integration can develop co-ethnic social networks.

These processes can interact in a number of ways, but I detail two examples of contexts of disease: one is the intersection of economic and social integration and the other is the intersection of social and cultural integration. I end my paper with a discussion of how economic, social and cultural integration processes and their related health outcomes can vary across different groups of Asian immigrants. I discuss potential differences among different entry cohorts, Asian ethnicities, and gender.

The following two chapters empirically test aspects of my framework. Chapter 3 examines how groups of Asian immigrants entering the United States in different cohorts

may have unique health trajectories. I use Portes and Zhou's segmented assimilation theory as the theoretical framework for this paper. They suggest that an immigrant's integration depends largely on the circumstances that surround migration: pre-migration characteristics and features of the receiving country, such as domestic policies, societal reception and co-ethnic communities. Likewise, the health resources and detriments that immigrants accrue from the various dimensions of integration will vary according to such contexts of reception.

Between 1965 and 2000, Asian immigration was marked by distinct periods that were impacted by certain immigration policies and had specific societal reception and varying levels of co-ethnic support. I hypothesize that cohorts entering under different periods would have demographic and health profiles that reflect the circumstances of entry. For example, more recent cohorts would have better educational status and baseline health because of restrictive immigration policies that favored the highly-skilled. This selectivity could extend to health, as high educational attainment and migration involves fitter and healthier individuals. I further hypothesize that immigrants entering under separate periods would have unique health trajectories, in other words, that the effect of duration would vary across cohorts.

I use the 1995-2005 waves of the National Health Interview Survey as the primary analytic dataset for this paper. The NHIS is a repeated cross-sectional survey with a nationally representative sample; this design enables me to create cohorts and follow them through the survey waves. This quasi-cohort analysis provides a unique way to examine both cohort and duration effects simultaneously in the same sample. My

analysis includes three physical health outcomes: disability, fair/poor self rated health and obesity based on BMI.

Chapter 4 examines one of the contexts of disease examples I detail in my critical literature review, the intersection of economic and social integration. Economics research has found that immigrants earn more with increasing duration in the United States. Economic assumptions about SES as a Fundamental Cause of Disease would suggest that these rising material resources would translate into improving health trajectories for longer-term immigrants, as high socioeconomic status (SES) can provide better health care access, reduce one's exposure to health risks or facilitate one's residence into a better neighborhood. This viewpoint does not consider potential stressors that emerge from Asian immigrants' social integration, such as racial discrimination or barriers to upward mobility, such the glass ceiling. When we consider social integration alongside economic integration, health trajectories are better understood within a socio-ecological stress and coping framework, in which the stressors and related resources arise from these dimensions of integration. While Asian immigrants may be earning higher incomes with longer residence, they are also exposed to stressors that originate from their marginalized status as non-White, foreign born. I hypothesize that because of regular and continued engagement in the stress and coping process, longer term immigrants will display the weakest relationship between income and physical health measures. I also hypothesize that this pattern will differ across Asian ethnicities, as the unique immigration histories and co-ethnic resources will differentially impact the stress and coping process.

I use the 2005-2007 waves of the American Community Survey (ACS) to conduct my analyses. This survey only includes one measure of physical health, disability status. This measure assesses one's sensory, physical, cognitive, self-care, mobility and work limitations.

Instead of focusing on a single disease outcome in my empirical papers, I used measures of general physical health. These measures align with the World Health Organization (WHO) definition of health as a "state of complete physical, emotional and social well-being, and not merely the absence of disease or infirmity," (WHO, 1946). Because I suggest that structural factors impact the entire health profile of Asian immigrants, my measures are accordingly broad enough to include a range of possible illnesses that can reflect the overall state of population health. I propose three measures to assess general physical health: self-rated health, disability, and body mass index (BMI).

Self-rated health - This is commonly a single-item measure that asks respondents to rate their overall health as excellent, very good, good, fair or poor. The measure assesses health across a broad range of illnesses and is understood as "a summary statement about the way in which numerous aspects of health, both subjective and objective, are combined within the perceptual framework of the individual respondent," (Tissue, 1972). Self-rated health has been found to be a predictor of mortality, health utilization behaviors, and disability (Benyamini & Idler, 1999; Ferraro, Farmer, & Wybraniec, 1997; Idler & Benyamini, 1997; Idler & Kasl, 1995).

Disability - This outcome refers to limitations in tasks and roles that are caused by one or more health conditions (Pope & Tarlov, 1991). It is a useful measure of overall

health because it encompasses specific health problems (disease or condition, a missing extremity or organ, or any type of impairment), as well as disorders not always thought of as health-related problems (i.e., alcoholism, drug dependency or reaction, senility, depression, retardation) (IHIS, 2010). Disability is detrimental to one's quality of life and is predictive of mortality (Scott, Macera, Cornman, & Sharpe, 1997).

Obesity - This is a measure of body composition that is a strong risk factor for chronic diseases, including Type II diabetes, gallbladder disease, high blood pressure and osteoarthritis (Must et al., 1999). While the accuracy of self-reported height and weight varies by sociodemographic characteristics (namely, age, ethnicity and gender) (Engstrom, Paterson, Doherty, Trabulsi, & Speer, 2003), the limited work on Asian Americans suggests that this will not impact their BMI classification (Brunner Huber, 2007). Including BMI will also provide a useful counter point to current interpretations of health trajectories. Overweight/obesity or increasing BMI are the most-often studied health outcomes in relation to a duration effect, most likely because of the close connection to diet and exercise, two central factors in the lifestyle and behavior framework. If my findings lend support to the role of contextual factors, I can offer alternative interpretations of changing BMI.

Together, my three dissertation papers narrate a story about the structural influences on Asian immigrant health trajectories. In doing so, I hope to demonstrate how health can be produced from historical and contextual factors that are not typically associated with physical health outcomes. This will expand our understanding of health

as a state of well-being, as well as the interconnected roles of policy, community and individuals in shaping it.

References

Benyamini, Y., & Idler, E. L. (1999). Community studies reporting association between self-rated health and mortality - Additional studies, 1995 to 1998. *Research on Aging, 21*(3), 392-401.

Brunner Huber, L. R. (2007). Validity of self-reported height and weight in women of reproductive age. *Maternal and Child Health, 11*, 137-144.

Census. (2011). *Money Income of Households--Median Income by Race and Hispanic Origin in Current and Constant (2008) Dollars*. National Statistical Abstract: Current Population Survey, Census Bureau

Crissey, S. R. (2009). *Educational Attainment in the United States: 2007*. Washington, DC: Census Bureau.

Engstrom, J. L., Paterson, S. A., Doherty, A., Trabulsi, M., & Speer, K. L. (2003). Accuracy of self-reported height and weight in women: an integrative review of the literature. *Journal of Midwifery & Women's Health, 48*(5), 338-345.

Ferraro, K. F., Farmer, M. M., & Wybraniec, J. A. (1997). Health trajectories: Long-term dynamics among Black and White adults. *Journal of Health and Social Behavior, 38*(1), 38-54.

Humes, K. R., Jones, N. A., & Ramirez, R. R. (2011). *Overview of Race and Hispanic Origin: 2010*. Washington DC: Census Bureau.

Idler, E. L., & Benyamini, Y. (1997). Self-rated health and mortality: A review of twenty-seven community studies. *Journal of Health and Social Behavior, 38*(1), 21-37.

Idler, E. L., & Kasl, S. V. (1995). Self-Ratings of Health - Do They Also Predict Change in Functional Ability. *Journals of Gerontology Series B-Psychological Sciences and Social Sciences, 50*(6), S344-S353.

IHIS. (2010). FLGOOUT: How difficult to go out to events without special equipment. *NHIS Codebook*, 2010, from http://www.ihis.us/ihis-action/variables/FLGOOUT

Must, A., Spadano, J., Coakley, E. H., Field, A. E., Colditz, G., & Dietz, W. H. (1999). The Disease Burden Associated With Overweight and Obesity. *JAMA, 282*(16), 1523-1529.

NCHS. (2008). *Health, United States, 2008*. Hyattsville, MD: National Center for Health Statistics.

OMH. (2009). Asian American/Pacific Islander Profile. Retrieved October 16, 2009, from http://www.omhrc.gov/templates/browse.aspx?lvl=2&lvlid=53

Omi, M., & Winant, H. (1994). *Racial Formation in the United States from the 1960s to the 1990s*. New York: Routledge.

Pope, A. M. D., & Tarlov, A. (1991). *Disability in America: Towards a National Agenda for Prevention*. Washington, DC: National Academies Press.

Rogers, R. G., Hummer, R. A., & Nam, C. (2000). *Living and Dying in the USA: Behavioral, Health, and Social Differentials of Adult Mortality*. San Diego, CA: Harcourt Press.

Scott, W. K., Macera, C. A., Cornman, C. B., & Sharpe, P. A. (1997). Functional health status as a predictor of mortality in men and women over 65. *Journal of Clinical Epidemiology, 50*(3), 291-296.

Smedley, A., & Smedley, B. D. (2005). Race as biology is. fiction, racism as a social problem is real - Anthropological and historical perspectives on the social construction of race. *American Psychologist, 60*(1), 16-26.

Tissue, T. (1972). Another Look At Self-rated Health Among the Elderly. *Journal of Gerontology, 27*(1), 91-94.

WHO. (1946). Preamble to the Constitution of the World Health Organization as adopted by the International Health Conference, New York, 19-22 June, 1946; signed on 22 July 1946 by the representatives of 61 States (Official Records of the World Health Organization, no. 2, p. 100) and entered into force on 7 April 1948.

CHAPTER 2 CRITICAL LITERATURE REVIEW

Introduction

Immigration has historically been one of the main political and social issues in the United States. Within the past 40 years, however, the country has seen a dramatic increase in immigration that is unlike any previous era. Accordingly, there is a growing body of literature on the health status and health needs of these contemporary immigrants (Kandula, Kersey, & Lurie, 2004). Of particular interest to public health researchers are immigrants' health trajectories once they have settled in the United States, as these patterns represent the health consequences of integration processes. Acculturation has dominated the public health literature as the primary influence on health trajectories. The health impacts of acculturative processes have been largely conceptualized through individual-level behavioral changes that represent the extent to which immigrants adopt unhealthy "Western" lifestyles and shed ethnic resources that are thought to be health-protective, such as social networks and ethnic diets (Abraido-Lanza, Armbrister, Florez, & Aguirre, 2006; Salant & Lauderdale, 2003).

The emphasis on individual-level change can diminish the significance of other dimensions of integration. Immigrants are not only changing their behavior, but are becoming incorporated into American society across many levels. Social, economic and cultural aspects of integration have been examined in other disciplines, but their health

impacts have not been widely explored. These forms of integration may also contribute to a more complete understanding of immigrant health patterns, as they better incorporate structural factors that influence all aspects of incorporation into the United States.

For Asian Americans, factors that influence immigrant health are critical to understanding overall population-level health patterns, as the population is primarily foreign-born. In this critical literature review, I will review our current knowledge on Asian immigrant health trajectories and discuss their popular interpretations. I will then present new framework for understanding population-level Asian immigrant health trajectories called Contexts of Disease that is guided by principles of social determinants of health. A social determinants perspective considers key determinants of health status to be cultural, social and economic factors, over such individual-level factors such as medical care inputs or utilization (Dunn & Dyck, 2000). This framework augments our understanding by casting a wider net for identifying health influences to include economic, social and cultural dimensions of integration processes that have not previously been considered in health trajectories. My discussion of the framework ends with a consideration of how contexts of disease can vary across groups with different contexts of reception into the United States.

Asian Immigrant Health Trajectories

Much of our current knowledge on immigrant health trajectories comes from the body of literature that examines the relationship between duration of residence in the United States and health. This literature provides a descriptive overview of Asian immigrants' health patterns as they spend more time in the United States. Duration

represents processes of integration that progress with longer residence in the United States. There are several kinds of health trajectories we can expect: immigrant health profiles can improve with increased residence in the United States, such that those with longer duration have lower disease prevalence than more recent immigrants; they can worsen such that those with longer duration have higher disease prevalence than recent immigrants; or they can remain relatively stable, controlling for other factors.

This section examines 43 quantitative studies of Asian immigrants that assess the effect of years in the United States on health outcomes. The studies were located through a key word search using "Asian", "immigrant", "duration" and "health" on Pubmed and Google Scholar journal databases. Additional studies were identified through a citation search of frequently cited papers duration and health among Asians (Cho & Hummer, 2001; Frisbie, Cho, & Hummer, 2001).

Findings from the Current Literature

Notably, there is some evidence for changing health status with increased residence in some health outcomes, but not others. There is little evidence that mental health, as measured by symptoms of psychological distress, depressive symptoms, or mood or anxiety disorders, worsens with longer U.S. residence (Dey & Wilson Lucas, 2006; Diwan, Jonnalagadda, & Gupta, 2004; W. H. Kuo, 1976; Marshall, Schell, Elliott, Berthold, & Chun, 2005; Mossakowski, 2007; Zhang & Ta, 2009).

On the other hand, physical health outcomes, such as BMI, number of chronic conditions, self-rated health and disability, appear to show some evidence of a duration effect in aggregated Asian populations, such that there is a higher likelihood of worsening

health across these measures with longer US residence (de Castro, Gee, & Takeuchi, 2008b; Dey & Wilson Lucas, 2006; Frisbie et al., 2001; Goel, McCarthy, Phillips, & Wee, 2004; Lauderdale & Rathouz, 2000; Y. Park, Neckerman, Quinn, Weiss, & Rundle, 2008; Roshania, Venkat Narayan, & Oza-Frank, 2008; Sanchez-Vaznaugh, Kawachi, Subramanian, Sanchez, & Acevedo-Garcia, 2008; Singh & Miller, 2004; Singh & Siahpush, 2002; Zhang & Ta, 2009). Even within a single physical health outcome, however, support for the trend varies across different measures. For example, in studies of disability in nationally-representative samples of aggregated Asians, the negative duration effect is seen in bed days and work disability (Dey & Wilson Lucas, 2006; Frisbie et al., 2001; Ro & Gee, 2009; Singh & Siahpush, 2002), but not consistently in mobility, activity and self-care limitations (Frisbie et al., 2001; Mutchler, Prakash, & Burr, 2007; Ro & Gee, 2009; Singh & Miller, 2004). The majority of these studies were conducted with large-scale, nationally representative samples, suggesting that the heterogeneity is not due to sampling biases or methodological differences, but because of underlying variation in the duration effect. While this variation does not itself cast doubt on acculturation, the inconsistencies suggest complexity within duration's health effect.

Even within the relatively robust physical health patterns, health trajectories appear to vary by sample and sociodemographic characteristics. While the majority of physical health studies were conducted on nationally-representative samples of the aggregated Asian population, some studies used non-random community-based samples of specific Asian ethnicities and did not find evidence of worsening health with increased time in the United States. For example, poorer self-rated health was associated with

longer duration in a nationally-representative sample of aggregated Asians (Frisbie et al., 2001), yet this relationship was not present among a sample of Korean older adults affiliated with Florida-area churches and senior centers (Jang, Kim, & Chiriboga, 2005). The differences across populations can arise from the weaker methodology of the smaller non-random samples, but can also be suggestive of heterogeneity in integration experiences across Asian ethnicity, ages, age at migration and gender.

Age and gender are two such characteristics that have been shown to moderate health trajectories in nationally-representative datasets. Lauderdale & Rathouz (2000) found that the effect of duration on the odds of obesity and overweight differed across men and women; women had higher odds for more substantial weight gain. Increasing years in the United States was associated with a higher odds for overweight among men and obesity among women. Two studies found a moderating effect of current age on the relationship between duration and disability status; a relationship between longer duration and poorer disability outcomes was more pronounced among younger immigrants (Ro & Gee, 2009), but did not exist among elderly Asian immigrants (Mutchler et al., 2007). Current age may mitigate the differences in health between elderly short-term and longer-term immigrants, as the natural aging process may overtake any health benefit of a shorter duration.

Years in the United States provide a broad view of health trajectories, yet they do not offer insight into actual health risks or health-related processes that are occurring with increased residence. Health behaviors are one potential mechanism that can lead to changing health with duration, but they have not been widely researched. Fewer studies

still consider these changing health patterns with a health outcome. The few available studies suggest longer term-immigrants consume fewer vegetables, yet exercise more and smoke more or less, depending on gender. The methodological limitations of these studies weaken their conclusions; the majority of these studies used non-random samples with small, unique populations (Misra, Patel, Davies, & Russo, 2000; Parikh, Fahs, Shelley, & Yerneni, 2009; Taylor et al., 2007). For example, one study sampled respondents from a member directory of a national organization of Punjabi Indians. However, the few studies that have used nationally-representative datasets confirm some of the findings from smaller studies (Kandula & Lauderdale, 2005). The health behaviors that appear to be related to increased duration (i.e., more exercise, yet unhealthier diet) oppose one another, leaving little clarity about the nature of the actual health outcomes that can be predicated on these behaviors.

Implications of Findings

Patterns in the published literature expose the many gaps in our understanding of health trajectories and health-related integration processes among Asian immigrants. Our comprehension of the nature of health trajectories may be sparse, but this review also points to future directions.

First, health trajectory patterns vary across health outcomes. While there does not appear to be a significant relationship between mental health and duration, duration is most robustly associated with physical health outcomes in the empirical literature, particularly BMI, chronic conditions and self-rated health. Although there were differences across these general physical health outcomes in the preliminary data

analyses, they may still be a more useful starting point for investigating a new framework over specific disease outcomes, as health behavior mechanisms or other more proximal health risk factors have not yet been convincingly identified. There some is evidence of changing health behaviors with increased years of U.S. residence, yet these studies have some methodological limitations and interpretation weaknesses.

Further, there is no one clear health trajectory pattern, as the relationship between duration and health varies widely in different analytic scenarios across health outcomes, groups and diverse demographic characteristics. If we understand years in the United States to represent processes of integration that impact health trajectories, it seems that Asian immigrants have a complex picture of integration. If acculturation was indeed the chief process, we would expect to see negative relationship, whereby increasing duration is associated with worsening health. Instead, the literature implies that duration can represent other processes that may have different health impacts. Ascribing duration-associated health variation to acculturation alone overlooks these potentially important processes. Future research should consider the role of these alternative pathways and better elucidate their role in immigrant integration and subsequent health patterns.

Finally, there is heterogeneity in the duration effect within the population of Asian immigrants. In the empirical literature, age and gender appear to moderate the effect. Younger immigrants and men display a more positive relationship between duration and health outcomes compared to older immigrants and women. Another important source of heterogeneity is across Asian ethnic groups. While the absence of an obvious duration pattern among the different Asian ethnic groups could be due to smaller

sample sizes that reduce statistical power, it is also possible that ethnic differences encompass influential differences in immigration history, diet, regional concentration, labor market patterns and sociodeomographic characteristics. Future research should consider whether such can factors impact health trajectories.

Acculturation and Health Trajectories

Acculturation is the most prevalent explanation for changing health trajectories associated with integration, yet it falls short in elucidating the complexity we see in the literature. First, it assumes that all groups experience the same advancement towards Anglo-conformity and does not consider variations from this integration process. Secondly, pathways between acculturation and health outcomes have been limited to individual-level behaviors. Finally, its definition and measurement throughout the literature have been vague, leaving few clear health-related mechanisms. In this section, I review the literature on acculturation and health and offer critiques of acculturation theory that underscore the need for a more comprehensive understanding of Asian immigrant integration and subsequent health outcomes.

Acculturation is formally defined as a process of change that two societies and their respective individuals undergo when they come into contact (Moyerman & Forman, 1992). Early definitions considered dynamic changes in both immigrants and the receiving society. Robert Park (1928) was among the first social scientists to suggest that migration was inevitably accompanied by social change. The migrant would be "emancipated" from the social norms of his home society and eventually would "learn to look upon the world in which he was born and bred with something of the detachment of

a stranger". With this new enlightenment, migrants would break down historical and traditional bonds of their new countries and expedite a new social order. Out of this conceptualization came one of the classic definitions of acculturation from Redfield, Linton, and Herskovits (1936) who said it was a "phenomena which result when individuals having different cultures come into first-hand continuous contact, with subsequent changes in the original culture patterns of either or both groups".

Park's protégée, Milton Gordon (1964), identified three potential assimilation outcomes: Anglo-Conformity, The Melting Pot and Cultural Pluralism. While Gordon initially conceived a variety of possible outcomes, he came to assume that acculturation primarily involved Anglo-Conformity, or change on the part of an immigrant group in the direction of middle-class Anglo culture (Alba & Nee, 1997). His viewpoint heavily influenced subsequent scholarship and Anglo-Conformity has become the prevalent framework for acculturation as it is studied in social sciences today (Salant & Lauderdale, 2003).

Marmot and Syme (1976) were among the first to consider the health effects of this process. They examined the role of acculturative factors in predicting rates of coronary and heart disease (CHD) among Japanese Americans living in California. Their work was preceded by a series of articles from the Ni-Hon-San Studies, a collaborative study in Japan, Hawaii and California that documented a gradient of coronary heart disease among Japanese men; men in Japan had the lowest rates, Japanese in Hawaii had intermediate rates and Japanese in California had the highest. This gradient was not fully explained by differences in behavioral risk factors, such as diet or smoking (Marmot et

al., 1975; Worth, Kato, Rhoads, Kagan, & Syme, 1975). Marmot and Syme hypothesized that this gradient could be explained by the loss of protective Japanese cultural features due to increasing acculturation.

In their sample of Japanese-American men, they measured acculturation in three ways: culture of upbringing, cultural assimilation and social assimilation. They found that each of the acculturation measures was associated with increasing prevalence of CHD, net of dietary preferences, smoking and other CHD risk factors. Out of the acculturative measures, culture of upbringing had the strongest effect on CHD; those respondents reporting a more Japanese upbringing had lower odds for CHD. They concluded that social and cultural factors play an important role on the etiology of CHD and that the retention of non-Western cultural values may be protective.

Marmot and Syme's analysis was novel in its emphasis on the influence of social and cultural factors, over and above typical physiological risk factors associated with CHD (serum cholesterol levels, blood pressure, body weight). However, subsequent scholarship has not expanded upon these early findings to improve our understanding of the relationship between acculturation and health. As a result, many of the limitations of this landmark study have become emblematic of the shortcomings of the larger field.

One limitation was their placement of Japanese and Western culture at two ends of a continuum with immigrants invariably becoming more Westernized at the expense of their Japanese cultural orientation. The complexity in the health trajectory empirical literature casts doubt on this linear progression. Even within Marmot and Syme's study, we see evidence of a complex picture of integration and health outcomes. They created

an acculturation typology by crossing culture of upbringing by social assimilation, resulting in three categories: 1) traditional (traditional upbringing/no social assimilation), 2) intermediate (traditional upbringing/social assimilation, Western upbringing/no social assimilation) and 3) non-traditional (Western upbringing/social assimilation) groups. They found a gradient of CHD prevalence that progressively increased from traditional, intermediate and non-traditional. However, their definition of acculturation may be better exemplified by the intermediate group, as they experienced the *highest degree of cultural change* as they moved from a traditional upbringing to social assimilation. The prevalence of CHD for the intermediate group was lower than the non-traditional group, however.

A related limitation was their assumption that much of the health impacts emerged from behaviors that reflected immigrants' changing lifestyles. This lifestyle and behavioral interpretation has become the standard way by which to understand acculturation's health effects. A commonly cited definition in public health research describes acculturation as "process whereby immigrant change their behavior and attitudes towards those of the host society," (Rogler, Cortes, & Malgady, 1991). While behaviors are certainly immediate health influences, this narrow view of acculturation is problematic because it disregards contextual factors that shape the social and political landscape that determine the kind of lifestyle and subsequent behaviors immigrants will adopt.

Gordon's conceptualization of immigration was essentially an optimistic one; he believed that immigrants would naturally progress through stages that would eventually

lead to assimilation. This suggests that acculturation is progressive; an individual begins with cultural acculturation and ends with complete assimilation, the latter characterized by the "absence of value and power conflict" with the host society (Hazuda, Stern, & Haffner, 1988). There are some historical precedents to his theory, such as German, Italian, and Irish immigrants who migrated to the United States in the late 19th century and have become interwoven in American society (Alba & Nee, 1997). There is no mention, however, of structural or social barriers that might impede this progression, leading one to assume that as individuals adopt "American" ways of life and understanding, they will seamlessly integrated into mainstream society.

Waters (1999) denies such a benign view of the social landscape and suggests that immigrants are thrust into a racial hierarchy that has been forged through historical struggle and maintained by enduring discrimination. In other words, we cannot separate the immigrant experience from issues of race and power that dominate social hierarchies. Likewise, Bhatia and Ram (2001) argue that unless we consider the existing class and racial structures of the host society when considering acculturation, "we undervalue the asymmetrical relations of power and the inequities and injustices faced by certain immigrant groups as a result of their nationality, race or gender." Their arguments were preceded by Shibutani and Kwan (1965), who argue that how a person is treated in a society depends "not on what he is" but on the "manner in which he defined". In their view, immigrant cultural change, as conceptualized by increasing acculturation, is impeded by limitations that originate from the fundamental color line between Whites and non-Whites.

As public health researchers move towards ecological understandings of health that highlight the dynamic interplay between individuals and their social and physical environments, the lifestyle and behavior framework that assumes progression towards Anglo norms appears incomplete. Conflating health trajectories with acculturation bolsters two assumptions about Asian immigration integration that promote Gordon's simplistic acculturation process. First is the inevitability and linearity of acculturation. This process is thought to operate at a linear pace that can be approximated in year intervals and advances in a similar fashion across different Asian sub groups, ages and genders. The second assumption is that Asian immigrant health (and any associated changes) is largely a product of individual behaviors and cultural beliefs, keeping much of the discussion of immigrant health at this level of understanding.

The field has grown considerably since Marmot and Syme's study was first published. Hunt et al. (2004) document over a six-fold increase in the acculturation literature on Medline in the thirty-year period between 1970 and 2000. The upsurge in the literature has not demonstrated a convincing pattern between acculturation and health or a common explanation of why it would affect health (Salant & Lauderdale, 2003).

The messiness of the acculturation and health literature can stem from the ambiguity of the acculturation concept itself. While the concept has been part of the national lexicon for nearly as long as the history of American immigration itself (Glazer, 1993), it remains notoriously vague and dynamic. The concept is rarely articulated clearly in empirical work and is presumed to be implicitly and commonly understood. As Hunt et al. (2004, p. 974) state in their critical review of acculturation in Hispanic health

research, “Fuller delineation of the concept is left to a presumed understanding of what constitutes a culture, which traits should be ascribed to the ‘mainstream’ versus the ethnic culture, and what adapting to a new cultural system might entail”. Similar critiques have been leveled at the construct in Asian immigrant health research (Salant & Lauderdale, 2003).

The wide range of proxy measures for acculturation reflects the field’s lack of definitional convergence; the concept has been measured as language proficiency, social contacts or relationships, nativity, duration of residence in new country, cultural participation and “western lifestyle” (Salant & Lauderdale, 2003). Each of these measures is assumed to be a mechanism by which acculturation affects health, but the array of measures suggests that there are a host of mechanisms that acculturation initiates, some of which have contradictory hypotheses on health outcomes. On one hand, increased acculturation is thought to lead to better health outcomes, as immigrants consume healthier foods, exercise more and experience fewer barriers to care with increased familiarity of the United States. Conversely, acculturation is also hypothesized to lead to worse health outcomes, as immigrants experience more social or health disadvantages with greater integration into the United States. Further, with increasing acculturation, they also adopt unhealthy habits and lifestyles that are associated with poor health in American society (Abraido-Lanza et al., 2006; Takeuchi, Hong, Gile, & Alegría, 2007). The range of measures and potential theoretical pathways produce different results, leaving few robust theories about the relationship of acculturation on health.

Assuming that acculturation drives Asian immigrant health trajectories without considering the drawbacks in the acculturation literature obscures our identification of the specific integration processes that impact immigrant health. Given the variety of acculturation measures, we do not gain any specific knowledge of specific health-related processes when we simply attribute any changes in immigrant health to "acculturation" or "changing lifestyles". It is unclear whether more years in the United States assumes that respondents have changed their diets, acquired better language skills, achieved social mobility, shed ethnic identity or adopted other "westernized" lifestyle changes. In this way, we perpetuate the pervasiveness of acculturation without adding any specific knowledge of heath-risks or resources immigrants accrue.

New Framework for Understanding Asian Immigrant Integration

In light of the shortcomings of the extant literature, I develop a new social determinants of health framework of understanding Asian immigrant health trajectories that stands in contrast to popular lifestyle and behavioral frameworks that are closely tied to acculturation theory. This new framework, called Contexts of Disease, assumes that Asian immigrants' health trajectories are produced within the structural constraints of their place in the new American society, their interactions with non-immigrants, their labor experiences and their developing ethnic identity. These forces manufacture health risks, buffers and resources that are jointly experienced by Asian immigrants to impact their overall health patterns.

The framework begins with the identification of several dimensions across which Asian immigrants experience integration. The idea that integration can occur across

several dimensions is not new; Gordon (1964) identified seven dimensions of assimilation: cultural/behavioral, structural, marital, identificational, attitude receptional, behavior receptional, and civic. While his original typology has fallen out of favor (Alba & Nee, 1997), identifying multiple components of integration considers specific health-related resources and risks across multiple aspects of the immigrant experience. I identify three dimensions of integration that may be related to health outcomes among Asian immigrants: economic, social and cultural. Economic integration involves their employment and occupational trajectories. Social integration is immigrants' incorporation into American social structure that is racially stratified. Cultural integration involves immigrants' changing cultural identity, which is expressed in one's cultural practices, values and identification.

I explore the health consequences of these processes through a concept called Contexts of Disease, which are formed from the intersecting resources and stressors from each form of integration. These contexts of disease arise from social-ecological theories of health, which suggest that proximal health influences arise from individual's adaptation to their surroundings. I also use stress and coping theories to explain how resources and barriers from integration processes can produce health outcomes. I provide two examples for Asian immigrants and discuss their potential health outcomes.

I end my framework with a discussion of how integration experiences can differ across groups of immigrants with alternative characteristics. I use Portes and Zhou's segmented assimilation as a guiding theory to explain why different groups experience alternate integration. This theory suggests that contexts of reception, such as policies of

the host government, the values and prejudices of the receiving society, and the characteristics of the coethnic community, determine the kinds of integration experiences immigrants will have. For Asian immigrants, this might be best illustrated in different year of entry cohorts, as these cohorts entered under unique U.S. immigration policy eras, geopolitical circumstances and societal receptions. Other potentially salient group differences are Asian ethnicity and gender.

Dimensions of Integration

Economic Integration

The economic integration of immigrants considers their economic and work trajectories as they spend more time in the United States. The economic integration of immigrants has been considerably researched in the economics literature. Among the first researchers to consider immigrants' wage earnings over time was Barry Chiswick (1978). Using the 1970 Census, he found that the foreign-born appeared to have a particular pattern of wage earnings with increasing duration in the United States. While they experienced an initial decline in wage earnings in the first five years after immigrating, over time, their wages increased, eventually surpassing the native born in 11 or 12 years.

Chiswick's work combined all immigrants to the U.S., but his patterns have been replicated in studies of individual Asian ethnic groups as well. Zhou and Kamo used the 1980 Census to examine wage assimilation, analyzing the Chinese and Japanese groups only. They found that Chinese immigrants had similar wage assimilation patterns as Chiswick's model, but the Japanese immigrants did not. The explained the difference by

employment circumstances; many Japanese immigrants were for Japanese companies abroad, making their wages high upon entry to the United States. The Chinese, in the other hand, represented a common model of wage assimilation found among immigrants (Zhou & Kamo, 1994). More recently, Akresh found support for Chiswick's model of wage assimilation among all immigrants in the baseline survey of the New Immigrant Survey (NIS), but did not stratify Asian immigrants (2007).

Some have called Chiswick's analysis and others that have used similar methods into question, primarily due to their use of cross-sectional data to infer a time-related pattern. Borjas, in particular, questioned Chiswick's findings after using a quasi-cohort analysis to examine earnings patterns over time. Using the 1970 and 1980 censuses, Borjas argued that the higher wages that longer-term immigrants enjoyed was due to changes in the human capital and occupational skills between newer and older immigrants (Borjas, 1985). In particular, newer immigrants (those entering the U.S. after 1970) did not experience the same levels of wage assimilation compared to their older counterparts. Borjas suggested this was due to the declining "quality" of newer immigrants.

Despite the heated debate, Borjas' quasi-cohort model still suggests wage increase among immigrants, although not at the same speed as Chiswick's models. This was especially the case for Asian immigrants, who still displayed substantial within-cohort increases of up to 20% between the 1970 and 1980 censuses (Borjas, 1985). While Borjas' analysis does not suggest complete wage assimilation with native-Whites, the

within-cohort increases that were commensurate with more years in the United States still suggest an underlying process whereby immigrants increase their earnings with duration.

Others have adopted Borjas' quasi-cohort analysis and have found similar within-cohort increases for Asian immigrants. Lalonde and Topel (1991) replicated his findings in the 1980 Census and found that Asian immigrants experienced higher wages with increasing duration in the United States, but did not reach convergence with native-born Whites because of their substantial disadvantage immediately post-migration. Scheoni (1997) found that a combined sample of Chinese, Korean and Japanese immigrants from the 1970, 1980 and 1990 Censuses experienced substantial wage increases with duration, eventually surpassing the wages of native-born Whites. Filipino also experienced wage increases, but did not converge with native-born Whites. Central to this debate is whether the foreign-born reach the same wage levels as Whites; what does not appear to be in dispute is the increase in earnings over time.

One of the most commonly accepted explanations for wage assimilation is the human capital argument (Akresh, 2007; Borjas, 1985; Chiswick, 1986). Human capital is the set of intangible resources embedded within individuals that influence their future income (Becker, 1962). Examples of human capital include education or on-the-job training. According to this theory, the initial depression in earnings is due to a period of resource-intensive investment in human capital that commences upon arrival to the United States (Chiswick, 1986). During this period, immigrants are learning job skills that are specific to the U.S. labor market, such as English language skills, US-specific professional skills, and professional contacts. Because of selective migration (such that

talented economic migrants are motivated to migrate for better occupational rewards in the United State vis-a-vis their home countries) these immigrants possess an advantage in the acquisition and application of human capital. As a result, immigrants can readily transfer their newly acquired human capital characteristics towards securing better occupational opportunities, which can be seen in their improved employment status, occupation and wage.

Social Integration

The social integration of Asian immigrants involves their integration into a racialized social hierarchy and the experiences and encounters associated therein. This dimension of integration can range from immigrants' growing understanding of the American social hierarchy (Waters, 1999), to their personal encounters and relationships with members of the host society (Massey, 1981). Consistent across this range is the role of national understandings of citizenship and migrants' rights in determining the nature of these interactions (Ager & Strang, 2008). In this way, the social integration of Asian immigrants must consider how the racial formation of Asians, that is, the "Asian race", has developed into a salient social construct (Omi & Winant, 1994). Such racialization constructs a distinct group that is attributed with certain value-laden characteristics and stereotypes (Griffith, Johnson, Ellis, & Schulz, 2010).

As immigrants enter a new society, their identity as foreigners quickly intersects with the social and racial hierarchy (Waters, 1999). Throughout history, immigrants have been targets of hostility and suspicion, particularly during periods of economic hardship or war. Immigrants from southern and Eastern Europe in the early 1900's were heavily

ostracized upon entering the United States (Alba & Nee, 2003). While obvious hostility may not be as evident today, recent policies, such as Arizona's racial profiling law, English-only statutes, limitations to immigrants' education and social services, and other anti-immigrant policies, are underwritten by individuals and organizations with strong nativist sentiments (Hing, 1997).

This racial hierarchy is complicated by the centrality of the immigrant story in America's narrative of national history. The United States is routinely referred to as a country of immigrants; this representation has given rise to enduring notions about the nature of the United States. Geronimus and Thompson identify one such ideology, the "American Creed", which proposes that success is available to individuals who are committed to hard work and have the determination to succeed (2004). This 'American Creed' ideology props up notions of personal responsibility and hard work, which are underscored by the assumption of equality for those who try hard. Immigrants fully embrace America as a land of opportunity (Espiritu, 1994), which motivates them towards sacrifice and hard work.

For Asian immigrants, the juxtaposition of the American Creed ideal and the racialized social hierarchy have been defining features in their racialization process; that is, the creation of the Asian race as a salient construct with value-laden characteristics that are used to classify and arrange social relationships. On the one hand, their educational and occupational achievement is held as proof of the validity of the American Creed. This 'model minority' stereotype is a widely-held view of Asian Americans that emphasizes the role of cultural values in their perceived economic and academic success

(Suzuki, 1977). Although this stereotype can lead to favorable judgment by the White in-group, it is simultaneously linked to ostracism by both Whites and non-Whites.

This phenomenon, called "racial triangulation", situates Asians between Whites and non-Whites in the racial landscape. On one hand, Asians are viewed as competent and hard-working, but their citizenship is continually in question. The continual use of the "model minority" label maintains a degree of differentiation of Asians from Whites, despite their similar educational and occupational achievements (Chang, Tugade, & Asakawa, 2006). Further, Whites' valorization of Asians as a successful minority relative to other racial groups fosters fractious inter-racial relationships, perpetuating a zero–sum mentality whereby only a single racial group can operate successfully within the American racial landscape (C. J. Kim, 1999). Asians are lauded for their dutiful commitment, yet they are concurrently viewed as having few or no barriers to their success, controlling too much economic power and working too hard to succeed. This has resulted in inaccurate interpretations of Asian American "culture" (i.e., deferential, authoritarian) and increased frictions among other racial groups who are simultaneously vilified for their poor work ethic (C. J. Kim, 1999; Lee, 2000).

Research on attitudes towards Asian Americans provides a glimpse into the complex racial landscape in which Asian immigrants must operate. While the model minority trope implies that Asians have few experiences of discrimination and barriers to integration, empirical work on Americans' views of Asians suggest otherwise. Lin and colleagues found that Asians were viewed as having high competence but low sociability. Among their sample, low sociability was the driving factor behind rejection of Asian

Americans, as measured by high scores on an anti-Asian stereotypes scale and social and cultural avoidance of Asians (Lin, Kwan, Cheung, & Fiske, 2005). In the 2000 General Social Surveys, Asians consistently had the most social distance with other racial groups. Among White respondents, only 6% expressed compatibility with Asian groups, compared to 15% for Blacks and 13% for Hispanics. Thirty-two percent of Whites considered Asians the group they had the least in common with, the highest out of all racial groups (Smith, 2001). Similarly, a Los Angeles Times poll found that over half of Black and Latino respondents and over forty percent of Whites considered Asians "inscrutable". Asians are not viewed as facing any racial discrimination; less than 20% of all respondents in the Los Angeles Times poll thought that Asians faced any barriers to equal opportunities. White respondents believed Asians had fewer barriers than did their own fellow whites. In fact, White, Black and Latino respondents reported that Asians held too much economic power and worked the hardest to succeed- even more than Whites (Lee, 2000).

One outcome of Asian immigrants' social integration is experiences of racial discrimination. Contrary to beliefs that Asians do not experience discrimination, reports of discrimination suggest that it is a common experience in their interpersonal exchanges. In a Commonwealth Foundation survey, 18% of Asians believed that they would have received medical better care had they been of a different race or ethnic group. The National Latino and Asian American Survey (NLAAS), the first national psychiatric epidemiological study that solely surveyed Latinos and Asians, found that over ten percent of the Asian sample reported frequently feeling that they are treated with less

courtesy than others. Nearly 18% of the Asian sample reported that they are sometimes or often disliked because of their race. The rates vary among the different ethnicities, with certain groups like the Filipinos, having higher discrimination prevalence than others. Over 20% of the total Asian sample in the California Health Interview Survey (CHIS) reported experiencing poor treatment because of their race in a medical setting sometimes or often (Gee & Ro, 2009).

Cultural Integration

This form of integration concerns cultural identity development, which focuses on the individual-level experiences of immigrants and considers their adaptation of personal values and beliefs as they interact with American society. Expressions of cultural identity can include cultural practices, values and identification (Schwartz, Unger, Zamboanga, & Szapocznik, 2010). Cultural practices are the lifestyle choices and behaviors such as language use, media preferences, social affiliations, and cultural customs and traditions. Cultural identification is the attachment to a cultural group and the positive esteem derived from it. This aspect has been explored in other concepts as ethnic identity, which is generally seen as having self-identification, feelings of belongingness and connection to a group, a sense of shared values and attitudes towards one's ethnic group (Phinney, Horenczyk, Liebkind, & Vedder, 2001).

As immigrants first enter the United States, they encounter a new environment with distinctive characteristics that order routines of daily living, such as language use or communication patterns. Qualitative works and literature have aptly chronicled the loneliness, fear and alienation that often accompany immigration (Constantine,

Kindaichi, Okazaki, Gainor, & Baden, 2005; Yoon, Lee, Koo, & Yoo, 2010). Kim describes the feelings this way:

> Some of the surprises may awaken or shaken strangers previously taken-for-granted self-concepts and collective ethnic identity and bring the anxiety of temporary rootlessness. Strangers in a new environment are confronted with situations in which their mental and behavioral habits are called into question, and they are forced to suspend or even abandon their identification with the cultural patterns that have symbolized who they are and what they are. (2001, p. 50)

Early researchers coined the phrase "culture shock" (Oberg, 1960), which has become a popular term to describe social difficulties and psychological reactions to unfamiliar cultural environments. In her model of cross-cultural adaptation, Kim (2001) uses tenants of ecological systems theory to suggest that these factors create environmental fluctuation to which immigrants must respond in order to achieve an overall "fit" between the individual and the environment. She goes on to propose that as immigrants confront environmental challenges and adapt to their immediate surroundings, they in turn develop their cultural identities. This process encompasses a dynamic negotiation between one's original cultural orientations and the demands of the new environment.

Several psychological models of cultural identity development that have been applied to Asian Americans detail this process further (Uba, 1994, Phinney 1989). For example, Uba applies the Minority Identity model to Asian Americans and identifies five stages of ethnic identity development: Conformity; Dissonance; Resistance and Immersion; Introspection; and Synergetic Articulation and Awareness (Uba, 1994). This

and similar models were developed primarily for heuristic use in clinical settings and are not meant to classify individuals by personality sub-types. Instead, they view ethnic identity as a positive resource that is achieved after serious consideration of one's affiliation with a marginalized group.

Contexts of Disease

While I have articulated economic, cultural and social integration separately, these processes do not occur in isolation from one another. Some researchers have suggested that different dimensions of integration occur chronologically, most often with economic integration preceding social and cultural integration (Bean & Stevens, 2003). It is possible that economic integration may facilitate certain social and cultural experiences, but a temporal ordering is difficult to establish. Instead, immigrants are simultaneously undergoing occupational-related development while interacting with American society and developing their cultural identities.

Likewise, the respective health resources and risks from each dimension of integration are simultaneously experienced. In this way, the physical health effects of integration may best be understood in the interactive or cumulative effects of economic, social and cultural integration. The processes of integration create contexts of disease which are the collective health-related resources and barriers that result from the economic, social and cultural integration. For example, economic integration can produce material resources, such as residence in wealthier neighborhoods or access to better medical care. Social integration can produce social mobility resources, such as

social capital, or stressors, such as experiences of racial discrimination. Cultural integration can provide such resources as co-ethnic identity.

Contexts of disease can be understood through the combination of two interpretive frameworks: social-ecological theories of health and stress and coping theories. Social-ecological theories of health have their roots in ecology, which asserts that living organisms continually adapt to meet the changing demands of their environments. Social-ecological theories integrate social and biological reasoning to explain how individuals "embody" historically and politically-produced environments in their health behaviors and well-being (Krieger, 2001a, 2001b). The social and physical environment can serve as a symbolic stimulus, leading individuals to alter their behaviors, norms and problem-solving actions to avoid any potential harm.

Stress and coping theories also rely on this dynamic relationship and assert that the environment can be a source of harmful contaminants or stressors (Moos, 1979). These stressors produce health outcomes by impacting health directly or initiate coping behaviors that have eventual health impacts.

Stressors can directly impact health by activating a physiological 'flight or fight' response that releases hormones, which in turn raise heart rate and blood pressure, suppress the immune system and alter brain activity (McEwen & Seeman, 1999). When such responses are perpetually maintained or accumulate over the lifecourse, they create 'wear and tear' on the body and have a greater negative health impact (McEwen & Seeman, 1999). Measures such as allostatic load, an array of biomarkers that are associated with a prolonged stress response, have been associated with increased risk for

decreased mental and physical functioning and cardiovascular disease (Seeman, Singer, Rowe, Horwitz, & McEwen, 1997).

Coping responses are behavioral, emotional and social responses to stressors that manage or alter the source of the stress and regulate stressful emotions (Folkman & Lazarus, 1980). Coping strategies can directly harm health, such as through drug or alcohol use (Chae, Takeuchi, Barbeau, Bennett, Lindsey, & Krieger, 2008; Chae, Takeuchi, Barbeau, Bennett, Lindsey, Stoddard et al., 2008; Jackson & Knight, 2006). Coping strategies can also indirectly lessen the effect of the stressor and its eventual health impact. Syme first articulated this concept in relation to the contextual factors that surround Black Americans and play a role in their higher prevalence of hypertensions vis-à-vis Whites: "Those with hypertension seem to be faced with demanding social situations in which aspirations are blocked, in which meaningful human intercourse is restricted, and in which the outcome of important events in uncertain," (1979, p. 96). He suggested some that individuals in demanding situations must employ prolonged and high-effort coping responses to attempt to control their environment.

This framework is inspired by Geronimus, James, Walters and Peasron, who have adapted socioecological stress and coping models to take into account how communities of color contend with stressors that arise from larger structural barriers. Geronimus' weathering hypotheses considers how social inequity and racialized ideologies result in African Americans' disproportionate exposure to stress (Geronimus & Thompson, 2004). James identifies John Henryism (JH) as a high-effort coping strategy that some African Americans utilize when confronted with stressors. It is an outgrowth of larger ideology

that took hold of African Americans after Emancipation, where freed slaves adopted high effort coping in order to create a new American identity, express core American values of "hard work", "self-reliance" and "freedom", and resist new forms of oppression (James, 1994). The JH hypothesis states that continuous, high-effort coping with demanding psychosocial stressors could compromise health among those with lower SES, as environmental demands will exceed personal coping resources. Walters and Simoni's indigenist model of Native women's health situates the stress-coping paradigm within the larger context of Native women's status as a colonized people. This unequal distribution of power leads to large-scale instances of discrimination, which empirical evidence indicates impacts Native women's health trajectories (Walters & Simoni, 2002). Pearson's (2008) Shine Sociocultural and Structural Framework of Race/Ethnicity and Health identifies several health valences across a variety of domains, including ethnoracial assignment, ethnic identity, high-effort coping and social and economic resources. He suggests that the combination of these positive or negative health valences produce overall health status across different populations.

There has been some empirical exploration of these hypotheses among immigrant populations (Haritatos, Mahalingam, & James, 2007; Wildsmith, 2002), yet the specific barriers and resources that surround Asian immigrants require a unique model. While these studies were novel in their attempts to expand the immigrants' stress process to incorporate the larger context, these hypotheses were developed for specific populations with their unique histories in mind. For example, a high level of John Henryism is hypothesized to lead to worse cardiovascular outcomes for Black Americans with fewer

material resources. For immigrants, however, the coupling of John Henryism and material resources may propel immigrants to better health outcomes. Indeed, Haritatos and colleagues (2007) found that John Henryism was predictive of better reports of self-rated health, somatic symptoms and physical health functioning among Chinese and Asian Indian immigrants. They found that high levels of JH mediated perceived stress that was associated with worse outcomes for their three health measures. While weathering, John Henryism and the indigenist models may not be fully applicable to Asian immigrants, we can draw inspiration from their emphasis on the contextual to develop a stress and coping process that is more directly related to the Asian immigrant experience.

The health outcomes of varying context of disease are best illustrated in examples that demonstrate the interconnected nature of economic, social and cultural forms of integration. For the remainder of the section, I will detail several examples and hypothesize how health outcomes may emerge.

Economic and Social Integration

The intersection between economic and social integration raises doubts whether material resources from increasing economic means will confer benefits to groups that have been historically marginalized. The resources that are assumed to accompany higher SES may not have the same benefit for some groups if, for example, their social position limits their access to certain goods or services or if the path to upward social mobility takes such a toll on their health that it counteracts any resource-related benefits (Pearson, 2008).

As previously discussed, immigrants' earnings have been shown to increase as they spend more time in the United States. The human capital theory attributes this increase to improving job skills that are readily applied to occupational situations. Those who consider SES a Fundamental Cause of Disease connect this process to better health outcomes; increasing SES is beneficial for health, as higher SES can create resources that protect health and promote salubrious behaviors (Link & Phelan, 1995). Higher SES can provide opportunities to settle in neighborhoods that have better access to health-promoting resources, including safe neighborhoods, nutritious foods, health services, and leisure. Higher-income neighborhoods also do not have the toxins and other pollutants that are direct health risks.

This sequence of events relies heavily on economistic assumptions. Geronimus and Thompson (2000) describe economism as a deeply entrenched American ideology that emphasizes the role of personal agency in placing individuals within social hierarchies that lead to differential material outcomes. According to this view, "individuals choose to invest in their human capital to best position themselves to engage the market and fulfill their personal responsibilities" (2000, p. 252). Thus, economic forces are the primary vehicle by which health is formed and material resources are the most significant health influences.

When we consider the social integration of Asian immigrants alongside their economic integration, we see that the road to upward economic status contains barriers that are unforeseen in the economism narrative. Their high educational and occupational achievement does not always translate into upward social mobility and proportionate

financial compensation. First, there appears to be a limit to how high Asians can advance through employee ranks. While a large percentage of the male API workforce is professional (23%), a substantially smaller percentage was in executive-managerial positions (14%). White male Americans, however, have fewer professionals (14%) but more of them advance to become executives or managers (17%) (Woo, 1994). In the National Institutes of Health, Asian scientists make up 21.5% of the tenure-track researchers, yet only 9.2% are senior investigators (tenured researchers) (Mervis, 2005).

Further, Asians do not appear to be compensated commensurate with their education. While Asians as a whole have median incomes that are equivalent to White Americans, their financial standing does not reflect their higher educational attainment. Asians are often overeducated compared to Whites in the same occupational position (Barringer, Takeuchi, & Xenos, 1990). Finally, Asians earn less over their lifetime compared to White employees with the same educational attainment (with the exception of advanced degrees) (Day & Newburger, 2002). Nativity may factor into the earnings differential; Iceland found that foreign-born Asian men are disadvantaged relative to native-born non-Hispanic white men, although the finding vary by nation of origin (Iceland, 1999). Further delineating this point, Zhen and Xie found that foreign-born men who were educated in Asia had the highest wage penalty, suggesting a devaluing of Asian education (2004).

Many of these occupational barriers can be traced back to their social integration. One contributing factor to blocked occupational mobility are perceptions that Asian workers are passive and unsuitable for managerial positions (Fernandez, 1998) or better

equipped for technical rather than people-oriented work (Woo, 1994). Friedman and Krackhardt (1997) suggest that social capital is the mechanism that transforms human capital into workplace gains; the combination of discrimination, preference for other co-ethnic workers and language factors exclude Asian immigrants from informal networks that can boost their career mobility.

As Asian immigrants experience barriers in the workplace, they also continue to encounter discrimination in other areas that can counteract the benefit of material resources. For example, better health care access is thought to be a benefit of higher SES, but clinical settings are not escapes from racial profiling and differential treatment. On average, Asian patients wait longer for transplants and are given fewer analgesics and they consistently report being less satisfied with their care (Ezenwa, Ameringer, Ward, & Serlin, 2006; Klassen, Klassen, Ron, Frank, & Marconi, 1998; Lauderdale, Wen, Jacobs, & Kandula, 2006). Higher income is also thought to provide access to better residential neighborhoods without harmful environment exposures. Asian immigrants may not have the same access to these areas, however, as there is evidence to suggest that they encounter discrimination when trying to purchase a home (Turner, Ross, Bednarz, Harbig, & Lee, 2003). Further, living racially heterogeneous neighborhoods may also invite more experiences of interpersonal discrimination.

The positive SES-health relationship is considered one of the most robust in health, but the pervasiveness of such barriers questions whether increasing socioeconomic status can produce health-promoting resources for Asian immigrants in the same way they have been shown to do among non-Hispanic Whites. The SES-health

relationship is modest or non-existent for Asian immigrants in BMI (Lauderdale & Rathouz, 2000; Sanchez-Vaznaugh et al., 2008) and fair or poor self-rated health (Acevedo-Garcia, Bates, Osypuk, & McArdle, 2010; Kimbro, Bzostek, Goldman, & Rodriguez, 2008) compared to non-Hispanic Whites. These findings are often attributed to cultural characteristics serve as protective factors across the socioeconomic spectrum, but an alternative interpretation is that stressors and discrimination can counteract health resources among the wealthier and higher educated.

Increasing wages in the face of constant barriers suggests that Asians may employ high-effort coping over extended periods of time to reach their wage levels. A unique stressor that may applicable to Asian immigrants' economic and social integration is goal-striving stress, which is related to unfulfilled aspirations (W. Kuo, 1976). This concept is similar to the frustrated expectations model that Vega, Kolody and Valle (1987, p. 516) apply to depression among Mexican women. They define frustrated expectations as a stress that arises from circumstances in which "goals of material success are collectively valued and endorsed, but where the institutional means of attainment is reduced or unavailable to some people".

Kuo suggests that as immigrants become more upwardly mobile, they experience higher degrees of goal-striving stress. As they have higher levels of aspirations due to socialization experiences in a new society, they are simultaneously unable to overcome the consequences of discrimination (1976). He measured goal-striving stress as the discrepancy between an individual's aspirations and their actual socioeconomic

achievements and found it to be a significant predictor of depression among Chinese Americans.

Since Kuo, there have been few explorations of similar topics among Asian immigrants. Some researchers have tested the health effects of alternative forms of aspiration and achievement discrepancy, such as underemployment or economic opportunity. Underemployment and unemployment have been shown to be positively associated with depressive disorder (Beiser & Hou, 2001). Shin et al measured the degree of change in occupational prestige as the result of migration and did not find any relationship between it and depression in their sample of Korean immigrants (Shin, Han, & Kim, 2007). In the National Latino and Asian American Study (NLAAS), economic opportunity was measured by one item, "How do you feel about the economic opportunity you have had in the U.S.?" de Castro, Gee and Takeuchi (2008a) found that respondents who reported favorable economic opportunity had significantly higher odds for better self-rated health, lower odds of smoking and lower BMI.

Social and Cultural Integration

Another context of disease example is the intersection between social and cultural integration. Social integration considers how immigrants are incorporated into a racialized social hierarchy and cultural integration considers how immigrants internalize their experiences in a new country to form new identities. Social-ecological theories would suggest that the social integration serves as a context to stimulate certain forms of cultural integration. Nagel describes their relationship this way:

> "While an individual can choose from among a set of ethnic identities, that set is generally limited to socially and politically defined ethnic categories with varying degrees of stigma or advantage attached to them." (1994, p. 156)

There are several well-known social constructionist approaches to cultural or ethnic identity development, such as selective assimilation and reactive ethnicity (Portes & Zhou, 1993), that acknowledge the interplay between social classification and self-determined identity. These ideas share the view that, "ethnic boundaries, identities, and cultures are negotiated, defined and produced through social interaction inside and outside ethnic communities" (Nagel, 1994, p. 152).

For Asian immigrants, this means making sense of racialized stereotypes related to the model minority myth and perpetual foreignness. Asian immigrants also encounter previously unknown classifications, such as a pan-Asian identity or racial minority. These group distinctions are externally applied to Asian immigrants and contain political and social implications.

There are several potential outcomes to the social construction of cultural identity. The first is that immigrants form alternative subgroups that arise from repeated encounters with discrimination. Pearson's (2008) ethno-racial assignment and ethno-racial identity exemplify this view. Ethno-racial assignment involves the external attribution of characteristics and classifications and their economic, political and social significance. Ethno-racial identity consists of individually-established beliefs, values and practices that represent a counter-cultural orientation from external assignment. According to this model, individuals use ethnic resources to resist and offset the constraints imposed by racial assignment.

Another outcome is identity rejection, in which immigrants create distance between their external categorization and personal affiliations with them. One key force in this process is internalized racism, which is the subtle processes by which racial inequality shapes the way that the oppressed think of themselves and other members of their group (Pyke & Dang, 2003). Shwalbe and colleagues try to supersede the potential victim-blaming mentality that internalized racism can provoke by conceptualize it as an adaptive strategy (Schwalbe et al., 2000). By disassociating with their ethnic identities, individuals can protect themselves against the negative stereotypes and create a positive self-identity (Pyke & Dang, 2003).

A final potential outcome is a bicultural identity. Portes and Zhou use the term "selective assimilation" to describe the outcome by which immigrants choose certain aspects of their ethnic identity that will provide the best opportunities to build resources and reflect one's connections to both American and Asian ethnic identities (Schwartz et al., 2010). This process is based on traits they perceive to be adaptive and conducive to social mobility. Bean suggests that selective assimilation occurs among immigrants of higher socioeconomic status, as they have access to co-ethnic networks that provide social and economic resources that are not available in other non-ethnic networks (Bean & Stevens, 2003).

The health effects of this process emerge from the intersection between stressors that arise from social integration and coping resources from cultural identity development. One of the primary stressors from social integration is experiences of racial discrimination. Racial discrimination has been repeatedly demonstrated to be

associated with poorer health outcomes among Asian immigrant populations. Nearly all of the 59 studies identified in a recent review paper on reported discrimination and mental health outcomes among Asian Americans found a negative relationship between the two; the more discrimination respondents report, the higher their risk for poor mental health outcomes (Gee, Ro, Shariff-Marco, & Chae, 2009). Discrimination seemed to have a similar pattern in physical health outcomes, although some studies did not have significant findings, particularly when birth weight and blood pressure were the outcomes in question (Brown, 2006; Shiono, Rauh, Park, Lederman, & Zuskar, 1997). Poorer health behaviors, such as decreased medical utilization, smoking, alcohol use, high-risk sexual activity, have been shown to associated with higher reports of discrimination (Chae, Takeuchi, Barbeau, Bennett, Lindsey, & Krieger, 2008; Chae, Takeuchi, Barbeau, Bennett, Lindsey, Stoddard et al., 2008; Chae & Yoshikawa, 2008).

The resources that emerge from cultural integration can moderate discrimination's health effects on Asian immigrants. There is some evidence to suggest that a strong ethnic identity is directly related to better mental health outcomes (Phinney et al., 2001; H.C. Yoo & Lee, 2005), but it and other related psychosocial resources arising from cultural identities may have a more profound health impact by acting as buffers from the stressors that arise from social integration.

A strong ethnic identity can provide a buffer against racism-related stressors by reinforcing positive associations with one's ethnic group after an experience of racial discrimination. Conversely, individuals with low ethnic identity may not have the psychological resources (i.e., clarity, knowledge, and pride of their ethnic group) to deal

with recurring instances of racial discrimination. On the other hand, a strong ethnic identity can heighten the negative impact of racism, as it may invoke a stronger reaction among those with a very salient ethnic identity. Individuals with high ethnic identity may be more rejection-sensitive than individuals with low ethnic identity because they are more likely to identify and invest in that particular group affiliation.

Among Asians, there is empirical evidence to support both the positive and negative buffering effects of ethnic identity. Strong ethnic identity significantly decreased the relationship between perceived racial discrimination and depression (Cassidy, O'Connor, Howe, & Warden, 2004; Mossakowski, 2003; Noh, Beiser, Kaspar, Hou, & Rummens, 1999) and between racial discrimination and adverse coping behaviors, such as smoking and drinking (Chae, Takeuchi, Barbeau, Bennett, Lindsey, & Krieger, 2008; Chae, Takeuchi, Barbeau, Bennett, Lindsey, Stoddard et al., 2008). In contrast, Asians with higher levels of ethnic identity reported more negative affect after imagining racially discriminatory scenarios than those with lower ethnic identity (H. C. Yoo & Lee, 2008).

Another important moderator emerging from cultural integration is social networks and resultant social support. Group affiliation is a key factor underlying cultural identity and individuals with a strong cultural identity may be more active in co-ethnic networks that can provide important social resources. Strong social networks can impact health in three ways: 1) by influencing health-related behaviors; 2) influencing access to services and amenities; and 3) affecting psychosocial processes. These influences appear to be protective of health; there are positive associations between social

networks and all-cause mortality, stroke and infectious diseases (Kawachi & Berkman, 2000).

Another outcome of social networks is social support. Empirical evidence suggests that social support buffers the effects of stress among Asian immigrants. Social support has been shown to enhance the well-being of immigrants, especially when they perceive high levels of discrimination in their new country (Jasinskaja-Lahti, Liekind, Jaakkola, & Reuter, 2006). Social support, in the form of emotional support, appeared to buffer the effect of discriminatory stressors among Filipinos (Gee et al., 2006). Ethnic support has been shown to have an interactive effect between perceived stress on depressive symptomatology for Koreans living in Canada (Noh & Avison, 1996).

Strong social support may also produce certain types of coping that counteract the negative effects of discrimination. In Asian immigrants; problem-based coping was more effective in reducing the mental health impacts of perceived discrimination, but only among those with strong social support (Noh & Kaspar, 2003).

Different Integration Experiences

As demonstrated in the empirical literature, much of the complexity surrounding health trajectories is due to variation across groups with different socioeconomic, ethnic or demographic characteristics. One possible explanation for this heterogeneity is that groups can differ in their experiences of integration, resulting in discrete health trajectories. Portes and Zhou's segmented assimilation theory (1993) posits that contemporary immigrants can experience different integration paths by virtue of varying contexts of reception. Some important contextual factors that determine such patterns are

government policies, conditions of the host labor market, social context (including immigrants' assigned racial attributes, geographical concentration and social mobility ladders) and co-ethnic communities. These determine where immigrants will find themselves in the social hierarchy and the subsequent environment in which they will assimilate towards. Different contexts of reception also avail resources that can hinder or facilitate certain integration outcomes. The table below provides examples of how three influential modes of incorporation, governmental policies, societal reception and co-ethnic communities, may impact immigrants' economic, cultural and social integration.

Table 2-1. Contexts of Reception and Influences on Integration Processes

		Contexts of Reception		
		Governmental Policies	***Societal Reception***	***Co-ethnic communities***
Dimensions of Integration	***Economic Integration***	Determines human capital characteristics	Facilitates or hinders occupational mobility	Provides alternative employment opportunities outside the primary labor market
	Social Integration	Reinforces or reflects larger public sentiment towards immigrants	Experiences of racial discrimination	Buffers against hostile experiences
	Cultural Integration	Prohibits certain cultural practices	Reactive cultural identity development	Promotes cultural identity development

Government policies represent federal immigration policy, visa regulations, government assistance or state-level policies that address undocumented immigration. Immigration policy can impact economic integration by determining who can enter the United States and the characteristics they should have. For example, employee-sponsored (H-1B) visas are issued to employers in certain industries and can lead to high concentrations of foreign-born workers in such fields as high-tech or engineering. Social integration can be affected by anti-immigrant policies that attempt to curtail social

services for immigrants or criminalize undocumented immigrants. These policies both validate and encourage larger public sentiments regarding immigration and foster an anti-immigrant climate. Policies can also directly impact the cultural integration of immigrants by prohibiting or stigmatizing certain cultural behaviors. For example, English-only policies can curtail immigrants' use of native languages.

Societal reception represents the values and prejudices of the receiving society. Some groups have been exempted from the traditional prejudice aimed at the foreign-born; Portes and Zhou cite Cuban refugees during 1960 and 1980 as one such group (Portes & Zhou, 1993). For Asian immigrants, societal reception can impact economic integration by producing occupational barriers, such as discriminatory hiring practices or block upward mobility. It can impact social integration by fostering experiences of racial discrimination. Finally, societal reception can impact cultural integration by encouraging immigrants to form their cultural identities as they are mindful of what may or may not be acceptable. Light and Rosenstein (1995) have termed this "reactive ethnicity", which is a response to their involuntary designation as outsider, lower-status groups; they seek to preserve the group's endangered collective self-esteem by enhancing solidarity.

Co-ethnic communities provide resources that immigrants utilize as they progress through economic, social and cultural integration. Immigrants who join well-established and diversified ethnic groups have access to invaluable moral and material resources. Strong co-ethnic communities with economic diversity can open up immigrants' occupational options by providing opportunities away from primary labor market. They can also impact immigrants' social integration by shielding immigrants from racial

discrimination by limiting social and professional contacts to those within the co-ethnic community. They can also provide tangible means for immigrants to retain their cultural identity through larger social networks of co-ethnics, access to ethnic foods and organized cultural activities.

Modes of incorporation are dynamic and can vary across periods of time and groups of Asian immigrants. I discuss three factors that can alter integration experiences: entry cohorts, Asian ethnicity and gender. Each of factors not only produce separate groups that are compositionally varied, but have symbolic meanings that can alter integration processes by virtue of the kinds of resources that individuals in certain groups derive from the various modes of incorporation.

Cohorts

Year of entry cohorts signify unique periods of Asian immigrant integration that differ in the types of people immigrating, countries of origin, pre-migration characteristics, circumstances of entry and the social and cultural community that await them. One influential factor in the creation of separate cohorts is immigration policy. Immigration policy has influenced much of the Asian immigrant population's demographic and socioeconomic features, as immigration policy establishes hard-line criteria for who can enter the United States (Hing, 1993; E. Park & Park, 2005). Immigration policy can vary in response to the political climate, suggesting that it may be a distal contributor to health differences across segments of the Asian population by altering the distribution of pre-migration characteristics that can shape subsequent integration.

While the Asian health literature has long called for disaggregating by Asian ethnicity to account for the wide variation in cultural and socioeconomic characteristics within the population (Lin-Fu, 1988), year of entry cohorts not only encompass differences in these characteristics, but also identifies immigration policy and contexts of reception as sources of such variation. Furthermore, the different ethnicities are likely clustered within certain cohorts, as certain periods of immigration were more amenable to particular countries of origin.

Immigration policy in the early 19th century played an obvious role in controlling the characteristics of the Asian immigration population by restricting the entry of Asian women or immigrants from certain countries completely. More contemporary immigration policy works less obviously, but can still create distinct groups across time. I identify five post-1965 Asian immigrant cohorts: the First Professional Wave (1966-1976); the First Family Reunification Wave (1978-1991); the Refugee Wave (1976-1988); the Second Professional Wave (1992-2005); and the Second Family Reunification Wave (1998-2005).

First Professional Wave (1966-1976)

The first contemporary wave of Asian immigrants entered the United States immediately following the enactment of the 1965 Immigration Act that dissolved national preferences. A defining feature of this cohort is their high educational and occupational achievement, as required by the newly-established immigration statutes. Asian immigrants quickly became the largest group to enter under the third preference category for professionals. Eighty-six percent of Indian immigrants and 74% of Filipino

immigrants who entered in the United States between 1965 and 1975 held professional occupations prior to immigration. In contrast, the total percent of Americans in a professional occupation during the same time period was between 25 and 29% percent. The Asian professional immigrants were predominantly health workers, principally doctors and nurses; 67% of Indians and Filipino and 75% of Korean professional immigrants were in the health field (Liu, 1992). High-tech personnel, mainly engineers were also highly represented, among the Chinese-speaking countries in particular (Liu, 1992).

These immigrants entered during a receptive government era and non-prejudiced social context. The passage of the Immigration Act of 1965 was widely hailed as an achievement on par with the Civil Rights Act (Zolberg, 2006, pg. 332). The legislation was thought to better represent American values of equality than the previous national quotas which favored White European immigrants. Further, the marginal presence of immigrants contained large-scale anti-immigrant hostility; 1965, the foreign-born represented only 5% of the population, the lowest level since the 19th century.

As the first substantial cohort of Asian immigrants, the coethnic communities for these immigrants were weak. The existing Asian American communities were primarily Japanese and Chinese immigrant stock who had first come to the United States in the early part of the 19th century. The majority of these professionals arrived in the United States with their immediately families, however. Immigrants coming in as family families tend to further minimize dependency upon pre-existing social networks (Liu, Ong, & Rosenstein, 1991).

First Family Reunification Wave (1978-1991)

The second cohort represented the first visible immigration boom after the 1965 Act and was composed of the immediate and extended families of the First Professional Wave members. As naturalized citizens, members of the first cohort could now sponsor their family members for family reunification visas, as stipulated in the 1965 Amendments. The family reunification visas facilitated the "chain migration" that drove the exponential increase in Asian immigrants during this period. Between 1961 and 1970, there were 427,000 Asian immigrants admitted to the United States. From 1971 to 1980, the admitted Asian immigrant population jumped to over 1.5 million, a 250% increase (INS). While family reunification was also a widely-used entry route in the previous cohort, the sheer size increase of Asian immigrants during this period made the family reunification contingent substantially larger.

While most of this cohort still had higher levels of educational and occupational attainment than the U.S. average, their human capital resources were considerably lower compared to the First Professional Wave. The percent of Asian Indian immigrants who held a professional occupation prior to immigration between 1980 and 1984 was 50%, compared to 86% in 1970-1974. Filipinos also saw a drop from 74% to 30% in this same time period. Less than 20% of Koreans held professional occupations, the lowest percent in the 35-year span between 1965 and 2000. Some of the drop may be attributed to government-imposed restrictions on employment visas enacted just prior to this period (Min, 2006a). Further, the family reunification visas did not hold any economic or occupational stipulations, enabling more heterogeneity in human capital characteristics.

The government and societal context was decidedly less favorable during this period. An economic downturn in the early 1970's precipitated two amendments in 1976 that introduced restrictions on employment preference visas. The Eilberg Act required immigrants to have a solid job offers before receiving visas and required employers to demonstrate that the certification of a foreign worker had no adverse effects on Americans workers (Liu, 1992). The Health Professions Educational Assistance Act required foreign medical professionals to get job offers from American companies, take the TEOFL and get U.S. medical licenses. These policies represented the growing perception that the ever-increasing immigration population threatened American jobs. The rise of Japanese manufacturing and automobile industries in the face of American decline further antagonized Asian immigrants, who were perceived to embody the Asian economic threat. In 1982, Vincent Chin was murdered outside of Detroit by two unemployed autoworkers who yelled racial slurs while they pummeled him to death.

Despite the rising hostility, Asian immigration continued to expand and co-ethnic communities strengthened as the population grew and concentrated in certain metropolitan area. There was a marked increase in immigrant population in along the coasts, such as in Los Angeles and New York (Min, 2006b). These co-ethnic communities became important sources of social support, as well as economic-related resources, as they provided employment opportunities through networks or the ethnic economy.

Refugee Wave (1976-1988)

After the Vietnamese Civil War, millions of Southeast Asian refugees were displaced in camps throughout Southeast Asia. The U.S. involvement in the war and other geopolitical activities in the surrounding region including Cambodia and Laos, ultimately facilitated the entry of millions of Vietnamese, Vietnamese-Chinese, Laotian, Cambodian and Hmong refugees into the United States. In 1976, 14,000 Southeast Asian refugees entered the United States and the numbers grew steady with each passing year, reaching 167,000 at its peak in 1980. 1.4 million refugees were ultimately resettled in the United States (Haines, 2001).

The earliest refugees came directly into the United States and represented more educated populations from Vietnam, as they were in positions of influence in the former pro-Western governments. The later and more numerous refugees, however, were war exiles from Cambodia, and ethnic Lao and Hmong fleeing government persecution in Laos and Thailand. Most of these refugees escaped in boats to neighboring countries, coining the term "boat people". The group had lower levels of formal education and suffered from higher levels of post-traumatic stress and had other low levels of human capital. Immigrants who entered in this cohort continue to have the highest levels of poverty compared to other Asian ethnic groups.

This cohort received strong government support. As the Vietnam War ended and the American-supported governments in Cambodia, Laos and Vietnam fell, Congress acted quickly to ensure that former allies could resettle directly into the United States. Early acts were passed in 1975, 1977 and 1978 that facilitated easier U.S. entry and

subsequent naturalization for refugees and established domestic resettlement programs. The policies culminated in the comprehensive 1980 Refugee Act, which removed refugees from the worldwide numerical restrictions and brought the United States refugee law in accord with international standards (Haines, 2001). The social reception was mixed, however. Within policy circles, the refugees were viewed as strong allies against communism in the Cold War. The general public was less supportive; public opinions polls showed that over half of surveyed Americans opposed Asian resettlement to the United States, fearing loss of jobs and increased public spending (Bolin, 2005).

The coethnic community for these refugees was weak; resettlement policies explicitly dispersed the refugees throughout the country to avoid the formation of ethnic enclaves and to lessen the impact of large numbers of refugees in one geographic area. The actual resettlement efforts were conducted by voluntary agencies (volags), such as the United States Catholic Conference, the International Rescue Committee, and Church World Service, who arranged sponsorships for the refugees and took care of their initial needs upon arriving in the United States. These volags sought to provide support and material support for the incoming refugees and incorporate them into the communities in which they were brought.

Second Professional Wave (1992-2005)

This wave was influenced by an overhaul in immigration policy in 1990 that expanded employment-based immigration. The Immigration Act of 1990 tripled the number of employment-based visas from 54,000 to 140,000 and increased the employment-based preferences from two categories to five. The act also created 195,000

temporary work visas (H visas), which proved to be a popular avenue by which to adjust to permanent resident status. For example, 58% of Indian H1-B workers adjusted their status between 2000 and 2003. Not surprisingly, the proportion Asian immigrants who held professional positions in their home countries increased from the previous cohort, reaching 46% in 2001-2005 (Min, 2006a).

Asian Indians comprised a large percent of this cohort. Strides in Indian education, particularly technical training institutes, prepared many Indian computer programmers, computer technologists and engineers to immigrate under the new H1-B visas. This cohort saw a moderate decline of immigration from South Korea, Taiwan and Hong Kong, as significant economic and social improvements in these countries reduced the motivation for educated, middle-class citizen to emigrate (Min, 2006a). This period also saw a spike in Chinese status adjusters after Tiananmen Square, as President George Bush issued an executive order to facilitate the adjustment of Chinese foreign students to permanent residency between 1993 and 1994.

The human characteristics of this sample are similar to the first professional wave. Instead of health professionals, however, this wave shifted to more scientific and technical professionals (Sana, 2010).

The government policies and societal context that surrounded this cohort were increasingly hostile. At the federal level, two 1996 laws sought to enhance punitive measures against non-resident immigrants and reduce immigrants' eligibility for social programs. The 1996 Illegal Immigration Reform and Immigrant Responsibility Act (IIRIRA) and increased the number of aliens subject to mandatory detention and

increased the crimes for which non-citizens could be deported. The 1996 Personal Work and Responsibility Act (PWRORA) barred new legal immigrants from federally funded assistance programs for their first five years in the U. S. State policy was markedly more severe. California's Proposition 187 in 1994 proposed ending education, nonemergency health care, and other public services for undocumented immigrants and required police and government workers to report suspected undocumented immigrants. While the new laws were meant to address illegal immigration, they effectively blurred the lines between "legal" and "illegal" immigrants and reflected the public's resentment towards immigrants at large.

Second Family Reunification Wave (1998-2005)

This wave reflects the chain migration that followed the refugee wave. Refugees were eligible to naturalize two years after their arrival, enabling their sponsorship of family members. Refugee visas declined since 1994, but the numbers of Vietnamese, Cambodian and Laotian immigrants grew through family reunification (Haines, 2001).

The human capital characteristics of this cohort are unclear. While the refugee wave was characterized by low levels of human capital, and the subsequent family reunification cohorts may have similar characteristics if they were also coming from displacement camps outside their countries of origin. The government and societal context of this cohort were similar to those experienced by the concurrent Second Professional Wave.

The coethnic community surrounding these immigrants is strong. While refugees were initially settled in disparate parts of the country, a significant amount of secondary

migration occurred within a few months, mainly to California and Texas, the two states that now have the largest Southeast Asian populations. The geographic concentration of this cohort to these states suggests that they migrate to areas with established co-ethnic communities.

Integration Differences across Cohorts

While these cohorts have been identified from a historical and policy perspective, I have not located empirical data that investigates their potential integration differences. Some work in the economic literature has investigated differences in economic outcomes across visa status. Jasso and colleagues (1998) examined whether changes in immigration policy between 1972 and 1995 affected the numbers of employment visas versus spousal visas and the skill levels of entering immigrants. Using a panel data set constructed from immigration records obtained from the Immigration and Naturalization Service (INS) between 1972 and 1995, they found that rising immigrant skill during this period was due in part to the increase of employment visas and changing immigration policies.

Other research has not considered policy directly, but has examined the impact of visa status on economic outcomes, such as wage or occupation. Immigrants from the Eastern Hemisphere (the majority of whom were from Asian counties) who entered under employment visas had higher wages immediately following immigration compared to family reunification immigrants. However, with increased time in the United States, this differential shrinks (Jasso & Rosenzweig, 1995). A similar pattern holds for refugees; Cortes (2004) found that while refugees had lower wages and work fewer hours in 1980 than other immigrants, this differential disappeared in 1990. Combined, these studies

suggest that immigrants who enter under different policy regimes have varied socioeconomic patterns of integration. None of these studies explicitly examined Asian immigrants however, so the question of whether Asian immigrant cohorts that have been shaped by separate policy eras are different in their socioeconomic and health profiles remains an empirical one.

In general, the role of immigration policy is not widely considered as a factor in Asian immigrant health trajectories. There is even less discussion of the potential effect of the most recent changes to immigration policy in the 1990s. Any mention of immigration law and practice on health outcomes is only discussed in terms of its effect on Asian Americans' trust in governmental institutions and the potential ramifications on Census participation and health-related data (Srinivasan & Guillermo, 2000). Part of the reason for this absence of research is due to the lack of information on visa status in datasets with health outcomes. Large, representative datasets such as the Decennial Census, American Community Survey, the National Latino and Asian American Survey, the National Health Interview Survey and the California Health Interview Survey do not include visa information.

While cohort differences have not been explicitly explored, some research has considered how refugees differ from the rest of Asian immigrants, drawing particular attention to the poorer socioeconomic status and worse health profile of Laotians, Hmong and Cambodians. In the 2000 Census, these groups had over three times the odds for a physical disability and over six times the odds for mental disability compared to the Japanese (Ro & Gee, 2009). Many studies have documented their higher-than-U.S.

average rates of depression, trauma and other mental disorders (Hsu, Davies, & Hansen, 2004; Kinzie et al., 1990; Kroll et al., 1989). Laotians have median incomes levels around $10,000, far below other groups such as the Japanese. Sixty-three percent of Hmong live in poverty compared to 6% of Filipinos (Srinivasan & Guillermo, 2000). Little work has been done to distinguish the family and work visa cohorts in this regard, however. Further, this work tends to highlight health disparities within the Asian population over the historical role of immigration policy. While some researchers have attributed the socioeconomic and health profiles of these groups to their refugee status (Hsu et al., 2004; Lin-Fu, 1988), they do not expand their explanation to consider how immigration policies may have influenced the potentially favorable characteristics of other Asian groups as well.

Gender

The different integration experiences between men and women lie in the separate social and cultural ideals of gender that organize opportunities and shape life chances (Hondagneu-Sotelo, 1994). Much like other social categories such as race or ethnicity, gender classifies individuals within a historically and socially determined unequal power structure (Llacer, Zunzunegui, del Amo, Mazarrasa, & Bolumar, 2007). Gender is an important source of differences in overall health patterns among Asian immigrants; men and women have different prevalence of chronic disease, health care utilization and diets (Choe, 2009; Park Tanjasiri & Nguyen, 2009). For immigrants, however, gender may play an even more unique role in their integration processes and subsequent health

outcomes as immigrant men and women experience shifting social roles both within the household and in their new society.

The earliest and most influential immigration studies, developed separately from gender issues; researchers often viewed the migrant as male or gender-less (Pessar, 1999). More recent work has amended this early omission and has demonstrated that experiences of migration and gender are closely intertwined. First, women have initiated and composed the bulk of post-1965 Asian migration. Between 1975-1980, when Asian immigration was growing most rapidly, working-age women outnumbered men in immigrants from China, the Philippines, Taiwan, Korean, Burma, Indonesia, Japan and Thailand (Salazar Parrenas, 2003). This created a chain effect whereby women who had already secured U.S. residence, such as Korean military brides and Filipina nurses, often served as visa sponsors for their extended families, making the maternal family more prominent in the United States (K. Park, 1997).

Secondly, the act of migration modifies gender roles within the family and domestic sphere. In her study of Korean immigrant business owners, Park (1997) finds that traditional Korean gender roles are first disrupted in the migration process itself, as the majority of immigration is female-initiated and maintained. This has shifted the hierarchies of traditional Korean families, which typically revolve around the husband's relatives. Having more maternal relatives enables Korean women to utilize family resources to share the burden of cooking, childcare and housework. The traditional arrangement is further upended in business ownership, as women must also participate in the business and work alongside their husbands. Labor participation provides a stronger

sense of independence and satisfaction among the female Korean immigrants. In Korea, women are not expected to work after child-bearing age, leaving them financially dependent on their husbands or other male family members. Park concludes that the employment factor has been revolutionary for Korean immigrant women and has established new gender consciousness that manifests itself in growing self-esteem, autonomy, freedom and equality.

More recent research has examined how gendered roles permeate all aspects of the daily operations of immigrant integration, such as patterns of labor incorporation, ethnic enclaves, citizenship, sexuality, and ethnic identity (Hondagneu-Sotelo, 2000). In matters related to economic integration, the labor market has been segmented by gender, with certain occupations characterized as feminine and masculine. The informal service sector, such as paid domestic work, child care, garment and electronic assembly has relied heavily on female employees, particularly immigrant women of color (Espiritu, 1999).

Within their social integration, immigrant women may have experiences of gender discrimination on top of racial discrimination. The relationship between health, race and gender discrimination is a complex one, as women simultaneously experience their racial and gender identities and the two forms of discrimination may not be fully disentangled from one another (Moradi & Subich, 2003). These dual roles can compound stressors and their negative health effects. Further, immigrant men's experiences with racial discrimination and marginalization may introduce additional

stressors within marriage, even culminating in domestic abuse (Dasgupta, 2000). Min recounted a story of marital discord arising from a husband's social status concerns:

> "Five years ago, he left home after a little argument with me and came back two weeks later. He wanted to get respect from me. But a real source of the problem was not me but his frustration over low status."

Women are also more likely to utilize their networks within their co-ethnic communities than are men (Billings & Moos, 1981). These social relationships not only provide material resources but are also forms of social support to cope with immigration-related difficulties.

These differences are borne out in the different health trajectories between men and women. Smoking and drinking have been one of the most studied health outcomes when examining gender differences, likely because they represent changing ideas about gender norms. While smoking and drinking prevalence is lower among Asian immigrant women than men, duration appears to have a more positive effect on smoking and drinking among Asian immigrant women (Choi, Rankin, Stewart, & Oka, 2008; Maxwell, Bernaards, & McCarthy, 2005). Duration is associated with more substantial weight gain among women compared to men (Lauderdale & Rathouz, 2000).

Asian Ethnicity

Ethnicity is a social construct that encompasses personal identity and group affiliation. It is distinct from racial classifications, which have been developed historically through systems of social stratification and are often externally applied (Ford & Harawa, 2010). Different Asian ethnic groups may experience alternative integration processes on account of their distinct social and lifestyle characteristics, such as common

geographic origins, family patterns, language, values, cultural norms, religious traditions, literature, music, dietary preferences and employment patterns (Williams, 1997). These factors may be more proximal to health outcomes, as they are influential on attitudes towards medical services, diet and health-risk behaviors (i.e., violence, substance use, smoking).

Health differences among Asian ethnic groups have been well-documented. Filipinos have the highest rates of hypertension among the Asian ethnic groups, even surpassing the rate for White Americans. Koreans have the highest levels of current smoking status, smoking at a rate comparable to White Americans (Islam, Trinh-Shevrin, & Rey, 2009). Rates of cervical cancer incidence among Vietnamese women are more than two and a half times higher than rates for women of any other racial or ethnic group (Parker, Davis, Wingo, Ries, & Heath, 1998).

A common refrain within public health research on Asian Americans has been to disaggregate the population into separate Asian ethnicities when conducting quantitative analysis to account for such heterogeneity (Srinivasan & Guillermo, 2000). Researchers have suggested a bimodal distribution of socioeconomic and health characteristics within the Asian population (Lin-Fu, 1988). Classifying Asians into a single group in statistical analyses masks such heterogeneity and biases results to the null. Further, when Asians are combined into a single pan-ethnic group, it suggests similar characteristics and lifestyles among the Asian respondents. Ultimately, culture is dynamic and what constitutes broad understandings of the Asian "culture" are continually in flux (Pfeffer,

1998). Outside of the shared racialized experience, there are few common "cultural" characteristics, such as language, social networks, or diet across Asian ethnicities.

Disaggregating by Asian ethnicity may also account for separate immigration histories. While year-of-entry cohorts most clearly delineate the contexts of immigration history for subsequent integration and health patterns, ethnicity can also be proxy for this, as populations from different countries of origin entered in the United within certain time periods. For example, the Japanese have one of the longest histories of immigration to the United States, but their immigration peaked in the 1970's and has declined the decades since. As a result, this population has low linguistic isolation and is predominantly American-born (Hing, 1993). This is in contrast to the Vietnamese, many of whom entered as refugees in the 1970's and 1980's, during political unrest in Southeast Asia. Their incorporation into the United States was heavily governed by refugee resettlement policies, which determined where they could live and the type of government support available to them (Hing, 1993). For datasets that lack information that cannot easily classify by year of entry cohorts, ethnicity or country of origin may provide a reasonable substitute.

Finally, ethnicity has a strong bearing on the development of a cultural identity, as Asians tend to self-identify more with their ethnic identity than a pan-ethnic one. In the debate between using "Latino" or "Hispanic", Yankauer suggests that the ideal solution is to ask the members themselves (1987). A similar argument can be made for Asians; self-identification is important because socially constructed categories are largely applied externally. Self-identification gauges the extent to which an individual has internalized a

label and consequently acquires the resources and drawbacks associated therein. While a nationally-representative survey has yet to be conducted, Lien and colleagues surveyed 1218 Asian immigrants residing in the metropolitan areas of Los Angeles, New York, Honolulu, San Francisco and Chicago (Lien, Conway, & Wong, 2003). They found that when Asian immigrants are given the choice of identifying as ethnic-specific or pan-ethnic, they tend to identify foremost with their ethnicity. This is not surprising; throughout the history of Asian immigration, groups from different Asian countries went through lengths to distinguish themselves from one another, most often when one group was the target of discriminatory policies (Takaki, 1993).

Conclusion

This review provides an overview of our current knowledge of Asian immigrant health trajectories and develops a new framework that identifies new economic, social and cultural influences on health patterns. The framework expands upon popular lifestyle and behavior explanations for Asian immigrant health patterns in three ways. First, it incorporates structural influences on health. Second, it identifies specific aspects of integration that are not typically associated with health and produces health-related pathways. Third, it attempts to identify sources of group variation in integration experiences and subsequent health trajectories.

Aspects of the framework have been carefully studied in economics, demography, sociology and psychology, but it has yet to be considered in public health. The validity of the framework can be securely established with empirical work that demonstrates the

significance of economic, social and cultural factors on Asian immigrant health trajectories.

References

Abraido-Lanza, A. F., Armbrister, A. N., Florez, K. R., & Aguirre, A. N. (2006). Toward a theory-driven model of acculturation in public health research. *Am J Public Health, 96*(8), 1342-1346.

Acevedo-Garcia, D., Bates, L. M., Osypuk, T. L., & McArdle, N. (2010). The effect of immigrant generation and duration on self-rated health among US adults 2003-2007. *Social Science & Medicine, 71*(6), 1161-1172.

Ager, A., & Strang, A. (2008). Understanding Integration: A Conceptual Framework. *Journal of Refugee Studies, 21*(2), 166-191.

Akresh, I. (2007). US immigrants' labor market adjustment: Additional human capital investment and earnings growth. *Demography, 44*(4), 865-881.

Alba, R., & Nee, V. (1997). Rethinking assimilation theory for a new era of immigration. *International Migration Review, 31*(4), 826-874.

Alba, R., & Nee, V. (2003). *Remaking the American Mainstream: Assimilation and Contemporary Immigration* Cambridge: Harvard University Press.

Barringer, H. R., Takeuchi, D. T., & Xenos, P. (1990). Education, Occupational Prestige, and Income of Asian Americans. *Sociology of Education, 63*(1), 27.

Bean, F., & Stevens, G. (2003). *America's Newcomers and the Dynamics of Diversity*. New York, NY: Russell Sage Foundation.

Becker, G. S. (1962). Investment in Human-Capital: A Theoretical Analysis. *Journal of Political Economy, 70*(5), 9-49.

Beiser, M., & Hou, F. (2001). Language acquisition, unemployment and depressive disorder among Southeast Asian refugees: a 10-year study. *Social Science & Medicine, 53*(10), 1321-1334.

Bhatia, S., & Ram, A. (2001). Rethinking 'acculturation' in relation to diasporic cultures and postcolonial identities. *Human Development, 44*(1), 1-18.

Billings, A. G., & Moos, R. H. (1981). The role of coping responses and social resources in attenuating the stress of life events. *Journal of Behavioral Medicine, 4*(2), 139-157.

Bolin, T. (2005). *Public Opinion on Immigration in America*: Merage Foundation.

Borjas, G. J. (1985). Assimilation, Changes in Cohort Quality, and the Earnings of Immigrants. *Journal of Labor Economics, 3*(4), 463-489.

Brown, C. (2006). The Relation between Perceived Unfair Treatment and Blood Pressure in a Racially Ethnically Diverse Sample of Women. *American journal of epidemiology, 164*(3), 257-262.

Cassidy, C., O'Connor, R. C., Howe, C., & Warden, D. (2004). Perceived discrimination and psychological distress: The role of personal and ethnic self-esteem. *Journal of Counseling Psychology, 51*(3), 329-339.

Chae, D. H., Takeuchi, D. T., Barbeau, E. M., Bennett, G. G., Lindsey, J., & Krieger, N. (2008). Unfair treatment, racial/ethnic discrimination, ethnic identification, and smoking among Asian Americans in the National Latino and Asian American study. *American Journal of Public Health, 98*(3), 485-492.

Chae, D. H., Takeuchi, D. T., Barbeau, E. M., Bennett, G. G., Lindsey, J. C., Stoddard, A. M., et al. (2008). Alcohol disorders among Asian Americans: associations with unfair treatment, racial/ethnic discrimination, and ethnic identification (the national Latino and Asian Americans study, 2002-2003). *Journal of Epidemiology and Community Health, 62*(11), 973-979.

Chae, D. H., & Yoshikawa, H. (2008). Perceived group devaluation, depression, and HIV-Risk behavior among Asian gay men. *Health Psychology, 27*(2), 140-148.

Chang, E. C., Tugade, M. M., & Asakawa, K. (2006). Stress and Coping Among Asian Americans: Lazarus and Folkman's Model and Beyond. In P. T. P. Wong & L. C. J. Wong (Eds.), *Handbook of Multicultural Perspectives on Stress and Coping* (pp. 439-447). Dordrecht, Netherlands: Kluwer Academic Publishers.

Chiswick, B. R. (1986). Human Capital and the Labor Market Adjustment of Immigrants: Testing Alternative Hypotheses. *Migration, Human Capital and Development, 4*, 1-26.

Cho, Y. T., & Hummer, R. A. (2001). Disability status differentials across fifteen Asian and Pacific Islander groups and the effect of nativity and duration of residence in the U.S. *Soc Biol, 48*(3-4), 171-195.

Choe, J. H. (2009). The Health of Men. In C. Trinh-Shevrin, N. Islam & M. Rey (Eds.), *Health Issues in the Asian American Community* (pp. 162-198). San Francisco: Jossey-Bass.

Choi, S., Rankin, S., Stewart, A., & Oka, R. (2008). Effects of Acculturation on Smoking Behavior in Asian Americans: A Meta-Analysis. *Journal of Cardiovascular Nursing, 23*(1), 67-73 10.1097/1001.JCN.0000305057.0000396247.f0000305052.

Cohen, S., & Wills, T. A. (1985). Stress, Social Support, and the Buffering Hypothesis. *Psychological Bulletin, 98*(2), 310-357.

Constantine, M. G., Kindaichi, M., Okazaki, S., Gainor, K. A., & Baden, A. L. (2005). A Qualitative Investigation of the Cultural Adjustment Experiences of Asian International College Women. *Cultural Diversity and Ethnic Minority Psychology, 11*(2), 162-175.

Cortes, K. E. (2004). Are Refugees Different from Economic Immigrants? Some Empirical Evidence on the Heterogeneity of Immigrant Groups in the United States. *Review of Economics and Statistics, 86*(2), 465-480.

Dasgupta, S. D. (2000). Charting the Course: An Overview of Domestic Violence in the South Asian Community in the United States. *Journal of Social Distress and the Homeless, 9*(3), 173-185.

Day, J. C., & Newburger, E. C. (2002). The Big Payoff: Educational Attainment and Synthetic Estimates of Work-Life Earnings. Publication P23-210. Washington DC: US Bureau of the Census.

de Castro, A. B., Gee, G. C., & Takeuchi, D. T. (2008a). Examining Alternative Measures of Social Disadvantage Among Asian Americans: The Relevance of Economic Opportunity, Subjective Social Status, and Financial Strain for Health. *Journal of Immigrant and Minority Health*.

de Castro, A. B., Gee, G. C., & Takeuchi, D. T. (2008b). Job-related stress and chronic health conditions among Filipino immigrants. *J Immigr Minor Health, 10*(6), 551-558.

Dey, A., & Wilson Lucas, J. (2006). Physical and Mental Health Characteristics of U.S. and Foreign-Born Adults: United States 1998-2003. *Advance Data, no. 369*, Hyattsville, MD. National Center for Health Statistics.

Diwan, S., Jonnalagadda, S. S., & Gupta, R. (2004). Differences in the Structure of Depression Among Older Asian Indian Immigrants in the United States. *Journal of Applied Gerontology, 23*(4), 370-384.

Dunn, J. R., & Dyck, I. (2000). Social determinants of health in Canada's immigrant population: results from the National Population Health Survey. *Social Science & Medicine, 51*(11), 1573-1593.

Espiritu, Y. L. (1994). Introduction In P. Ong, E. Bonacich & L. Cheng (Eds.), *The New Asian Immigration in Los Angeles and Global Restructuring*. Philadelphia: Temple University Press.

Espiritu, Y. L. (1999). Gender and Labor in Asian Immigrant Families. *American Behavioral Scientist, 42*(4), 628-647.

Ezenwa, M. O., Ameringer, S., Ward, S. E., & Serlin, R. C. (2006). Racial and Ethnic Disparities in Pain Management in the United States. *Journal of Nursing Scholarship, 38*(3), 225-233.

Fernandez, M. (1998). Asian Indian Americans in the Bay Area and the Glass Ceiling. *Sociological Perspectives, 41*(1), 119.

Folkman, S., & Lazarus, R. S. (1980). An Analysis of Coping in a Middle-Aged Community Sample. *Journal of Health and Social Behavior, 21*(3), 219-239.

Ford, C. L., & Harawa, N. T. (2010). A new conceptualization of ethnicity for social epidemiologic and health equity research. *Social Science & Medicine, 71*(2), 251-258.

Friedman, R. A., & Krackhardt, D. (1997). Social Capital and Career Mobility. *The Journal of Applied Behavioral Science, 33*(3), 316-334.

Frisbie, W. P., Cho, Y. T., & Hummer, R. 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, G. C., Chen, J., Spencer, M. S., See, S., Kuester, O. A., Tran, D., et al. (2006). Social support as a buffer for perceived unfair treatment among Filipino Americans: differences between San Francisco and Honolulu. *Am J Public Health, 96*(4), 677-684.

Gee, G. C., & Ro, A. E. (2009). Racism and Health among Asian and Pacific Islander Americans: Historical Roots and Contemporary Evidence. In C. Trinh-Shevrin, N. Islam & M. Rey (Eds.), *Health Issues in the Asian American Community*. San Francisco, CA: Jossey-Bass.

Gee, G. C., Ro, A. E., Shariff-Marco, S., & Chae, D. (2009). Racial Discrimination and Health Among Asian Americans: Evidence, Assessment, and Directions for Future Research. *Epidemiologic Reviews, 31*(1), 130-151.

Geronimus, A. T. (2000). To mitigate, resist, or undo: addressing structural influences on the health of urban populations. *Am J Public Health, 90*(6), 867-872.
Geronimus, A. T., & Thompson, J. P. (2004). To Denigrate, Ignore or Disrupt: Racial Inequality in Health and the Impact of a Policy-Induced Breakdown of African American Communities. *Du Bois Review, 1*(2), 247-279.
Glazer, N. (1993). Is Assimilation Dead? *Annals of the American Academy of Political and Social Science, 530*, 122-136.
Goel, M. S., McCarthy, E. P., Phillips, R. S., & Wee, C. C. (2004). Obesity among US immigrant subgroups by duration of residence. *Jama, 292*(23), 2860-2867.
Gordon, M. (1964). *Assimilation in American Life: The Role of Race, Religion, and National Origins*. New York: Oxford University Press.
Griffith, D., Johnson, J., Ellis, K., & Schulz, A. (2010). Cultural context and a critical approach to eliminating health disparities. *Ethnicity and Disease, 20*(1), 71-76.
Haines, D. (2001). Southeast Asian Refugees. In J. Ciment (Ed.), *Encyclopedia of American Immigration*. Armonk, NY: Sharpe.
Haritatos, J., Mahalingam, R., & James, S. A. (2007). John Henryism, self-reported physical health indicators, and the mediating role of perceived stress among high socio-economic status Asian immigrants. *Social Science & Medicine, 64*(6), 1192.
Hazuda, H. P., Stern, M. P., & Haffner, S. M. (1988). Acculturation and Assimilation among Mexican Americans: Scales and Population-Based Data. *Social Science Quarterly, 69*(3), 687-706.
Hing, B. O. (1993). *Making and Remaking Asian America through Immigration Policy 1850-1990*. Stanford: Stanford University Press.
Hing, B. O. (1997). *To Be an American: Cultural Pluralism and the Rhetoric of Assimiliation*. New York: New York University Press.
Hondagneu-Sotelo, P. (1994). *Gendered Transitions: Mexican Experiences of Immigration*. Berkeley: University of California Press.
Hondagneu-Sotelo, P. (2000). Feminism and Migration. *The ANNALS of the American Academy of Political and Social Science, 571*(1), 107-120.
Hsu, E., Davies, C. A., & Hansen, D. J. (2004). Understanding mental health needs of Southeast Asian refugees: Historical, cultural, and contextual challenges. *Clinical Psychology Review, 24*(2), 193-213.
Hunt, L. M., Schneider, S., & Comer, B. (2004). Should "acculturation" be a variable in health research? A critical review of research on US Hispanics. *Social Science & Medicine, 59*(5), 973-986.
Iceland, J. (1999). Earnings returns to occupational status: Are Asian Americans disadvantaged? *Social Science Research, 28*(1), 45-65.
Islam, N., Trinh-Shevrin, C., & Rey, M. (2009). Towards a Contextual Understanding of Asian American Health. In C. Trinh-Shevrin, N. Islam & M. Rey (Eds.), *Health Issues in the Asian American Community*. San Francisco, CA: Jossey-Bass.
Jackson, J. S., & Knight, K. (2006). Race and Self-Regulatory Health Behaviors: The Role of the Stress Reponse and and the HPA Axis in Physical and Mental Health

Disparities. In K. W. Schaie & L. L. Carstensen (Eds.), *Social Structures, Aging, and Self-Regulation in the Elderly* New York, NY: Springer Publishing.
James, S. A. (1994). John Henryism and the health of African-Americans. *Cult Med Psychiatry, 18*(2), 163-182.
Jang, Y., Kim, G., & Chiriboga, D. A. (2005). Health, healthcare utilization, and satisfaction with service: barriers and facilitators for older Korean Americans. *J Am Geriatr Soc, 53*(9), 1613-1617.
Jasinskaja-Lahti, I., Liekind, K., Jaakkola, M., & Reuter, A. (2006). Perceived discrimination, social support networks, and psychological well-being among three immigrant groups. *Journal of Cross-Cultural Psychology, 37*(3), 293-311.
Jasso, G., & Rosenzweig, M. R. (1995). Do Immigrants Screened for Skills do Better Than Family Reunification Immigrants? *International Migration Review, 29*(1), 85-111.
Jasso, G., Rosenzweig, M. R., & Smith, J. (1998). The Changing Skill of New Immigrants to the United States: Recent Trends and their Determinants. National Bureau of Economic Research.
Kandula, N. R., Kersey, M., & Lurie, N. (2004). Assuring the health of immigrants: What the leading health indicators tell us. *Annual Review of Public Health, 25*, 357-376.
Kandula, N. R., & Lauderdale, D. S. (2005). Leisure time, non-leisure time, and occupational physical activity in Asian Americans. *Ann Epidemiol, 15*(4), 257-265.
Kawachi, I., & Berkman, L. (2000). Social Cohension, Social Capital and Health. In L. Berkman & I. Kawachi (Eds.), *Social Epidemiology* (pp. 174-190). New York, NY: Oxford University Press.
Kim, C. J. (1999). The Racial Triangulation of Asian Americans. *Politics Society, 27*(1), 105-138.
Kim, Y. Y. (2001). *Becoming Intercultural: An Integration Theory of Communication and Cross-cultural Adaptation*. Thousand Oaks, CA: Sage Publications.
Kimbro, R. T., Bzostek, S., Goldman, N., & Rodriguez, G. (2008). Race, ethnicity, and the education gradient in health. *Health Affairs, 27*(2), 361-372.
Kinzie, J. D., Boehnlein, J. K., Leung, P. K., Moore, L. J., Riley, C., & Smith, D. (1990). The prevalence of posttraumatic stress disorder and its clinical significance among Southeast Asian refugees. *Am J Psychiatry, 147*(7), 913-917.
Klassen, A. C., Klassen, D. K., Ron, B., Frank, R. G., & Marconi, K. (1998). Factors Influencing Waiting Time and Successful Receipt of Cadaveric Liver Transplant in the United States 1990 to 1992. *Medical Care, 36*(3), 281-294.
Krieger, N. (2001a). A glossary for social epidemiology. *Journal of Epidemiology and Community Health, 55*(10), 693-700.
Krieger, N. (2001b). Theories for social epidemiology in the 21st century: an ecosocial perspective. *International Journal of Epidemiology, 30*(4), 668-677.
Kroll, J., Habenicht, M., Mackenzie, T., Yang, M., Chan, S., Vang, T., et al. (1989). Depression and posttraumatic stress disorder in Southeast Asian refugees. *Am J Psychiatry, 146*(12), 1592-1597.

Kuo, W. (1976). Theories of Migration and Mental-Health - Empirical Testing on Chinese-Americans. *Social Science & Medicine, 10*(6), 297-306.
Kuo, W. H. (1976). Theories of Migration and Mental-Health - Empirical Testing on Chinese-Americans. *Social Science & Medicine, 10*(6), 297-306.
Lalonde, R. J., & Topel, R. H. (1991). Immigrants in the American Labor-Market - Quality, Assimilation, and Distributional Effects. *American Economic Review, 81*(2), 297-302.
Lauderdale, D. S., & Rathouz, P. J. (2000). Body mass index in a US national sample of Asian Americans: effects of nativity, years since immigration and socioeconomic status. *Int J Obes Relat Metab Disord, 24*(9), 1188-1194.
Lauderdale, D. S., Wen, M., Jacobs, E., & Kandula, N. (2006). Immigrant Perceptions of Discrimination in Health Care: The California Health Interview Survey 2003. *Medical Care, 44*(10), 914-920.
Lee, T. (2000). Racial Attitudes and the Color Line(s) at the Close of the Twentieth Century. In P. Ong (Ed.), *The State of Asian Pacific America: Transforming Race Relations, A Public Policy Report* (Vol. 4). Los Angeles: LEAP, Asian Pacific American Public Policy Institute and UCLA Asian American Studies Center.
Lien, P., Conway, M. M., & Wong, J. (2003). The contours and sources of ethnic identity choices among Asian Americans. *Social Science Quarterly, 84*(2), 461-481.
Light, I., & Rosenstein, C. (1995). *Race, Ethnicity and Entrepreneurship in Urban America*. Hawthorne, NY: Aldine De Gruyter.
Lin-Fu, J. S. (1988). Population characteristics and health care needs of Asian Pacific Americans. *Public Health Rep, 103*(1), 18-27.
Lin, M. H., Kwan, V. S. Y., Cheung, A., & Fiske, S. T. (2005). Stereotype content model explains prejudice for an envied outgroup: Scale of anti-Asian American stereotypes. *Personality and Social Psychology Bulletin, 31*(1), 34-47.
Link, B. G., & Phelan, J. (1995). Social Conditions As Fundamental Causes of Disease. *Journal of Health and Social Behavior, 35*, 80-94.
Liu, J. M., Ong, P. M., & Rosenstein, C. (1991). Dual Chain Migration: Post-1965 Filipino Immigration to the United States. *International Migration Review, 25*(3), 487-513.
Llacer, A., Zunzunegui, M. V., del Amo, J., Mazarrasa, L., & Bolumar, F. (2007). The contribution of a gender perspective to the understanding of migrants' health. *Journal of Epidemiology and Community Health, 61*(Suppl 2), ii4-ii10.
Marmot, M. G., & Syme, S. L. (1976). Acculturation and coronary heart disease in Japanese-Americans. *Am J Epidemiol, 104*(3), 225-247.
Marmot, M. G., Syme, S. L., Kagan, A., Kato, H., Cohen, J. B., & Belsky, J. (1975). EPIDEMIOLOGIC STUDIES OF CORONARY HEART DISEASE AND STROKE IN JAPANESE MEN LIVING IN JAPAN, HAWAII AND CALIFORNIA: PREVALENCE OF CORONARY AND HYPERTENSIVE HEART DISEASE AND ASSOCIATED RISK FACTORS. *Am. J. Epidemiol., 102*(6), 514-525.

Marshall, G. N., Schell, T. L., Elliott, M. N., Berthold, S. M., & Chun, C. A. (2005). Mental health of Cambodian refugees 2 decades after resettlement in the United States. *Jama, 294*(5), 571-579.

Massey, D. S. (1981). Dimensions of the New Immigration to the United-States and the Prospects for Assimilation. *Annual Review of Sociology, 7*, 57-85.

Maxwell, A. E., Bernaards, C. A., & McCarthy, W. J. (2005). Smoking prevalence and correlates among Chinese- and Filipino-American adults: Findings from the 2001 California Health Interview Survey. *Preventive Medicine, 41*(2), 693-699.

McEwen, B. S., & Seeman, T. (1999). Protective and Damaging Effects of Mediators of Stress: Elaborating and Testing the Concepts of Allostasis and Allostatic Load. *Annals of the New York Academy of Sciences, 896*(Socioeconomic Status and Health in Industrial Nations: Social, Psychologcal, and Biological Pathways), 30-47.

Mervis, J. (2005). A glass ceiling for Asian scientists? Asian scientists are a major presence in U.S. biomedical research tabs. So why do so few hold leadership positions?(News Focus). *Science, 310*(5748), 606(602).

Min, P. G. (2006a). Asian Immigrants: History and Contemporary Trends. In P. G. Min (Ed.), *Asian Americans: Contemporary Trends and Issues, Second Edition*. Thousand Oaks: Sage Publications.

Min, P. G. (2006b). Settlement Patterns and Diversity. In P. G. Min (Ed.), *Asian Immigrants: History and Contemporary Trends*. Thousand Oaks, CA: Sage Publications.

Misra, R., Patel, T. G., Davies, D., & Russo, T. (2000). Health promotion behaviors of Gujurati Asian Indian immigrants in the United States. *J Immigr Health, 2*(4), 223-230.

Moos, R. H. (1979). Social-ecological perspectives on health. In G. Stone, F. Cohen & N. E. Adler (Eds.), *Health Psychology: A Handbook* (pp. 523-548). San Francisco: Jossey-Bass.

Moradi, B., & Subich, L. M. (2003). A Concomitant Examination of the Relations of Perceived Racist and Sexist Events to Psychological Distress for African American Women. *The Counseling Psychologist, 31*(4), 451-469.

Mossakowski, K. N. (2003). Coping with Perceived Discrimination: Does Ethnic Identity Protect Mental Health? *Journal of Health and Social Behavior, 44*(3), 318-331.

Mossakowski, K. N. (2007). Are immigrants healthier? The case of depression among Filipino Americans. *Social Psychology Quarterly, 70*(3), 290-304.

Moyerman, D. R., & Forman, B. D. (1992). Acculturation and Adjustment - a Meta-Analytic Study. *Hispanic Journal of Behavioral Sciences, 14*(2), 163-200.

Mutchler, J. E., Prakash, A., & Burr, J. A. (2007). The demography of disability and the effects of immigrant history: older Asians in the United States. *Demography, 44*(2), 251-263.

Nagel, J. (1994). Constructing Ethnicity - Creating and Recreating Ethnic-Identity and Culture. *Social Problems, 41*(1), 152-176.

Noh, S., & Avison, W. R. (1996). Asian immigrants and the stress process: a study of Koreans in Canada. *J Health Soc Behav, 37*(2), 192-206.
Noh, S., Beiser, M., Kaspar, V., Hou, F., & Rummens, J. (1999). Perceived racial discrimination, depression, and coping: a study of Southeast Asian refugees in Canada. *J Health Soc Behav, 40*(3), 193-207.
Noh, S., & Kaspar, V. (2003). Perceived discrimination and depression: moderating effects of coping, acculturation, and ethnic support. *Am J Public Health, 93*(2), 232-238.
Omi, M., & Winant, H. (1994). *Racial Formation in the United States from the 1960s to the 1990s*. New York: Routledge.
Parikh, N. S., Fahs, M. C., Shelley, D., & Yerneni, R. (2009). Health behaviors of older Chinese adults living in New York City. *J Community Health, 34*(1), 6-15.
Park, E., & Park, J. (2005). *Probationary Americans*. New York: Routledge.
Park, K. (1997). *The Korean American Dream: Immigrants and Small Business in New York City*. Ithaca, NY: Cornell University Press.
Park, R. E. (1928). Human Migration and the Marginal Man. *The American journal of sociology, 33*(6), 881.
Park Tanjasiri, S., & Nguyen, T.-U. (2009). The Health of Women. In C. Trinh-Shevrin, N. Islam & M. Rey (Eds.), *Health Issues in the Asian American Community*. San Francisco, CA: Jossey-Bass.
Park, Y., Neckerman, K. M., Quinn, J., Weiss, C., & Rundle, A. (2008). Place of birth, duration of residence, neighborhood immigrant composition and body mass index in New York City. *Int J Behav Nutr Phys Act, 5*, 19.
Parker, S. L., Davis, K. J., Wingo, P. A., Ries, L. A. G., & Heath, C. W. (1998). Cancer statistics by race and ethnicity. *CA: A Cancer Journal for Clinicians, 48*(1), 31-48.
Pearson, J. A. (2008). Can't Buy Me Whitenss: New Lessons from the Titanic on Race, Ethnicity and Health. *Du Bois Review, 5*(1), 27.
Pessar, P. R. (1999). The Role of Gender, Households and Social Networks in the Migration Process: A Review and Appraisal. In C. Hirschman, P. Kasinitz & J. DeWind (Eds.), *The Handbook of International Migration: The American Experience*. New York, NY: The Russell Sage Foundation.
Pfeffer, N. (1998). Theories of race, ethnicity and culture. *Bmj, 317*(7169), 1381-1384.
Phinney, J. S., Horenczyk, G., Liebkind, K., & Vedder, P. (2001). Ethnic Identity, Immigration, and Well-Being: An Interactional Perspective. *Journal of Social Issues, 57*(3), 493-510.
Portes, A., & Zhou, M. (1993). The New Second Generation: Segmented Assimilation and Its Variants. *Annals of the American Academy of Political and Social Science, 530*, 74-96.
Pyke, K., & Dang, T. (2003). "FOB" and "Whitewashed": Identity and Internalized Racism Among Second Generation Asian Americans. *Qualitative Sociology, 26*(2), 147-172.

Redfield, R., Linton, R., & Herskovits, M. J. (1936). Memorandum for the Study of Acculturation. *American Anthropologist, 38*(1), 149-152.

Ro, A., & Gee, G. C. (2009). *Disability status differentials across 18 Asian and Pacific Islander ethnic groups in the U.S. : The added dimensions of immigration.* Paper presented at the Population Association of America, Detroit, MI.

Rogler, L. H., Cortes, D. E., & Malgady, R. G. (1991). Acculturation and mental health status among Hispanics. Convergence and new directions for research. *Am Psychol, 46*(6), 585-597.

Roshania, R., Venkat Narayan, K. M., & Oza-Frank, R. (2008). Age at Arrival and Risk of Obesity Among US Immigrants. *Obesity (Silver Spring)*.

Salant, T., & Lauderdale, D. S. (2003). Measuring culture: a critical review of acculturation and health in Asian immigrant populations. *Soc Sci Med, 57*(1), 71-90.

Salazar Parrenas, R. (2003). Asian Immigrant Women and Global Restructuring, 1970s-1990s. In S. Hune & G. M. Nomura (Eds.), *Asian/Pacific Islander American Women*. New York, NY: New York University Press.

Sana, M. (2010). Immigrants and natives in U.S. science and engineering occupations, 1994–2006. *Demography, 47*(3), 801-820.

Sanchez-Vaznaugh, E. V., Kawachi, I., Subramanian, S. V., Sanchez, B. N., & Acevedo-Garcia, D. (2008). Differential effect of birthplace and length of residence on body mass index (BMI) by education, gender and race/ethnicity. *Social Science & Medicine, 67*(8), 1300-1310.

Schoeni, R. F. (1997). New evidence on the economic progress of foreign-born men in the 1970s and 1980s. *Journal of Human Resources, 32*(4), 683-740.

Schwalbe, M., Godwin, S., Holden, D., Schrock, D., Thompson, S., & Wolkomir, M. (2000). Generic Processes in the Reproduction of Inequality: An Interactionist Analysis. *Social Forces, 79*(2), 419-452.

Schwartz, S. J., Unger, J. B., Zamboanga, B. L., & Szapocznik, J. (2010). Rethinking the Concept of Acculturation Implications for Theory and Research. *American Psychologist, 65*(4), 237-251.

Seeman, T., Singer, B., Rowe, J. W., Horwitz, R. I., & McEwen, B. S. (1997). Price of adaptation--allostatic load and its health consequences: MacArthur studies of successful aging. *Archives of internal medicine, 157*(19), 2259.

Shibutani, T., & Kwan, K. M. (1965). *Ethnic Stratification: A Comparitive Approach*. New York: The Macmillan Company.

Shin, H. S., Han, H.-R., & Kim, M. T. (2007). Predictors of psychological well-being amongst Korean immigrants to the United States: A structured interview survey. *International Journal of Nursing Studies, 44*(3), 415-426.

Shiono, P. H., Rauh, V. A., Park, M., Lederman, S. A., & Zuskar, D. (1997). Ethnic differences in birthweight: the role of lifestyle and other factors. *Am J Public Health, 87*(5), 787-793.

Singh, G. K., & Miller, B. A. (2004). Health, life expectancy, and mortality patterns among immigrant populations in the United States. *Can J Public Health, 95*(3), I14-21.
Singh, G. K., & Siahpush, M. (2002). Ethnic-immigrant differentials in health behaviors, morbidity, and cause-specific mortality in the United States: an analysis of two national data bases. *Hum Biol, 74*(1), 83-109.
Smith, T. W. (2001). Intergroup Relations in a Diverse Society: Data from the 2000 General Social Survey. GSS Topical Report No. 32. National Opinion Research Center, University of Chicago.
Srinivasan, S., & Guillermo, T. (2000). Toward improved health: disaggregating Asian American and Native Hawaiian/Pacific Islander data. *Am J Public Health, 90*(11), 1731-1734.
Suzuki, B. H. (1977). Education and the Socialization of Asian Americans: A Revisionist Analysis of the "Model Minority" Thesis. *Amerasia, 4*(2), 23-51.
Syme, S. L. (1979). Psychosocial Determinants of Hypertension. In G. Onesti & C. Klimt (Eds.), *Hypertension Determinants, Complications and Intervention*. New York: Grune & Stratton.
Takaki, R. (1993). *Strangers from a Different Shore: A History of Asian Americans*. New York, NY Little, Brown and Company.
Takeuchi, D. T., Hong, S., Gile, K., & Alegría, M. (2007). Developmental Contexts and Mental Disorders among Asian Americans. *Research in Human Development, 4*(1&2), 49-69.
Taylor, V. M., Yasui, Y., Tu, S. P., Neuhouser, M. L., Li, L., Woodall, E., et al. (2007). Heart disease prevention among Chinese immigrants. *J Community Health, 32*(5), 299-310.
Turner, M., Ross, S., Bednarz, B., Harbig, C., & Lee, S. (2003). *Discrimination in Metropolitan Housing Markets*. Retrieved. from.
Vega, W. A., Kolody, B., & Valle, J. R. (1987). Migration and mental health: an empirical test of depression risk factors among immigrant Mexican women. *Int Migr Rev, 21*(3), 512-530.
Walters, K. L., & Simoni, J. M. (2002). Reconceptualizing Native Women's Health: An "Indigenist" Stress-Coping Model. *Am J Public Health, 92*(4), 520-524.
Waters, M. (1999). *Black Identities: West Indian Immigrant Dreams and American Realities*. Cambridge: Harvard University Press.
Wildsmith, E. M. (2002). Testing the weathering hypothesis among Mexican-origin women. *Ethn Dis, 12*(4), 470-479.
Wilkinson, R. G., & Marmot, M. (2003). *Social Determinants of Health: The Solid Facts, 2nd Edition*. Copenhagen: Denmark: World Health Organization Regional Office for Europe.
Williams, D. R. (1997). Race and health: basic questions, emerging directions. *Ann Epidemiol, 7*(5), 322-333.
Woo, D. (1994). The Glass Ceiling and Asian Americans. Department of Labor

Worth, R. M., Kato, H., Rhoads, G. G., Kagan, A., & Syme, S. L. (1975). EPIDEMIOLOGIC STUDIES OF CORONARY HEART DISEASE AND STROKE IN JAPANESE MEN LIVING IN JAPAN, HAWAII AND CALIFORNIA: MORTALITY. *Am. J. Epidemiol., 102*(6), 481-490.

Yankauer, A. (1987). Hispanic/Latino--what's in a name? *Am J Public Health, 77*(1), 15-17.

Yoo, H. C., & Lee, R. M. (2005). Ethnic Identity and Approach-Type Coping as Moderators of the Racial Discrimination/Well-Being Relation in Asian Americans. *Journal of Counseling Psychology, 52*(4), 497.

Yoo, H. C., & Lee, R. M. (2008). Does Ethnic Identity Buffer or Exacerbate the Effects of Frequent Racial Discrimination on Situational Well-Being of Asian Americans? *Journal of counseling psychology, 55*(1), 63.

Yoon, E., Lee, D., Koo, Y. R., & Yoo, S. K. (2010). A Qualitative Investigation of Korean Immigrant Women's Lives. *Counseling Psychologist, 38*(4), 523-553.

Zhang, W., & Ta, V. M. (2009). Social connections, immigration-related factors, and self-rated physical and mental health among Asian Americans. *Soc Sci Med, 68*(12), 2104-2112.

Zhen, Z., & Xie, Y. (2004). Asian-Americans' Earnings Disadvantage Reexamined: The Role of Place of Education. *The American Journal of Sociology, 109*(5), 1075.

Zhou, M., & Kamo, Y. (1994). An Analysis of Earnings Patterns for Chinese, Japanese, and Non-Hispanic White Males in the United-States. *Sociological Quarterly, 35*(4), 581-602.

CHAPTER 3 – EMPIRICAL PAPER 1

Cohort Differences in Health Trajectories

Introduction

Scholarship on immigrant integration into the United States has long been influenced by classic definitions of assimilation that assume a unidirectional progression towards American lifestyles. Gordon's early work on Anglo-Conformity (1961) describes change on the part of an immigrant group in the direction of middle-class Anglo culture. This assumes that as immigrants interact more with American host society, they will shed their ethnic origins and conform in language, culture and identity towards an Anglo-Protestant core culture. Anglo-Conformity shaped subsequent scholarship and became the prevalent framework for understanding integration in the social sciences (Alba & Nee, 2003). This viewpoint has also been applied to studying the health consequences of integration. Changes in immigrant health over duration are believed to be the result of lifestyle and behavior changes that reflect the progression towards dominant American culture (Salant & Lauderdale, 2003).

Other work, however, has proposed a more complex picture of integration that acknowledges heterogeneity across experiences in the United States. Most recognizable among these is segmented assimilation theory, which suggests that the circumstances surrounding migration, the resources that immigrants bring with them and the conditions

of the host country can shape the social standing of immigrants. Consequently, immigrants proceed along integration paths that reflect their social standing; they may display progression towards the White middle class, or they can display "downward assimilation" patterns that mirror those of marginalized groups (Portes & Rumbaut, 1990; Portes & Zhou, 1993).

There have been other similar arguments for complex integration experiences that depend on how an immigrant is received and the resources available to them as they adjust to American society (Alba & Nee, 2003; Nee, Sanders, & Sernau, 1994; Waters, 1999). Common across these views is the emphasis on structural constraints and contextual influences on the nature of immigrant integration. More specifically, they identify aspects of the circumstances of migration and contexts of reception that set immigrants on an integration path that reflects the stratified nature of American society.

As the scholarship on immigrant integration develops, public health research has also demonstrated heterogeneity in immigrants' physical health trajectories. Some groups have displayed worsening physical health with duration, while others do not show any duration effect or only display effects among certain outcomes (Cho & Hummer, 2001; Lauderdale & Rathouz, 2000; Mutchler, Prakash, & Burr, 2007). The inconsistent relationship between duration and physical health outcomes aligns well with emerging work that argues for divergent integration experiences. Bridging these strands of research, it would appear that disparate health trajectories arise from separate integration experiences.

The pathways by which integration impacts health trajectories can be understood through the stress and coping framework. Migration and subsequent integration are inherently stressful experiences that encompass both major life events and daily hassles. Several scholars have identified unique migration-related stressors that impact immigrants in addition to general life stressors, such as racial discrimination, language difficulties, cultural adjustment and goal-striving stress (Kuo, 1976; Noh & Avison, 1996; Takeuchi et al., 2007). The physical effects of stress exposure have been well-documented (McEwen & Seeman, 1999; Seeman, Singer, Rowe, Horwitz, & McEwen, 1997). Certain factors can mitigate or exacerbate the impact of stress among immigrants, such as co-ethnic social support, material resources or cultural identity (Chae et al., 2008; Noh, Beiser, Kaspar, Hou, & Rummens, 1999; Noh & Kaspar, 2003). Throughout their integration processes, immigrants must encounter and cope with stressors; health trajectories represent the accumulation of this process.

Divergent integration experiences can create differential stress and coping processes. I argue that two underlying factors that drive separate integration paths, circumstances of migration and contexts of reception, can impact the stress and coping process in two ways. First, changing circumstances of migration can determine the resources immigrants bring with them and their baseline health upon entry to the United States. This is primarily seen through changing immigration policy and geopolitical circumstances. Immigration policy sets criteria for who can enter the United States; as the stipulations of immigration policy change, so can the characteristics of incoming immigrants (Gee & Ford, 2011). Immigration policies that favor the highly-skilled

ensure that immigrants enter the United States with high human capital resources, such as education and professional skills. Such policies may also be indirectly preferencing healthier migrants, as high educational and occupational achievement is conditional on health. Further, geopolitical changes in the sending countries in areas such as access to medicine, better nutrition, or the presence or absence of widespread conflict, can alter population-level health patterns (Jasso, Massey, Rosenzweig, & Smith, 2004). Incoming migrants' health can reflect such shifts. Selective migration has been well-studied in immigration health, but it has not been considered as a factor in health trajectories.

Second, contexts of reception can alter the types of integration-related stressors immigrants encounter and resources available to them. Some important contexts of reception in this regard are the societal reception of immigrants, domestic policies of the host country, labor market conditions and co-ethnic communities (Portes & Rumbaut, 1990). Contexts of reception reflect the host country's larger views towards immigrants and can determine immigrants' interpersonal interactions, as well as the nature of domestic policies and labor market conditions (Ager & Strang, 2008). If immigrants are negatively received, this may result in discriminatory hiring or similarly closed labor markets and compel restrictive domestic policies that limit immigrants' resources.

Taken together, selective migration and the disparate stress and coping process can produce unique health trajectories among different groups of immigrants. For example, positively health-selected immigrants who enter the United States with a favorable societal reception and a robust labor market may have an easier time securing financial stability and experience higher upward social mobility. If immigrants can

utilize such material and social resources to improve medical access and avoid certain health risks, they can experience improving health trajectories. Conversely, positively health-selected immigrants who enter the United States under negative societal reception and closed labor markets may have more difficulty securing upwards social mobility and the associated resources that can translate to better health outcomes. The strength to overcome such barriers may exact a physical toll on their health, ultimately resulting in worsening trajectories. While these immigrants may have better physical health at baseline, the cumulative assaults on health will not enable the same health gains over time as immigrants entering under more favorable contexts of reception.

Cohorts

One useful way to study the health impacts of divergent integration paths is through separate year of entry cohorts. Cohorts encompass historical changes in migration circumstances as well as changing contexts of reception. Asian immigrants may be a particularly useful group to study in this regard, as there are several distinct cohorts who have entered after the 1965 Immigrant Act. I identify four cohorts of Asian immigration during this modern era of immigration. Each is briefly described below.

First Professional Wave (1966-1976)

The 1965 Immigration Act dissolved national preferences and ushered in a new wave of Asian immigration. A defining feature of these immigrants is their high educational and occupational achievement, as required by the newly-established immigration statutes. This was particularly seen among Asian Indian and Filipino immigrants; 86% of Indian immigrants and 74% of Filipino immigrants who entered in

the United States between 1965 and 1975 held professional occupations prior to immigration (Liu, 1992). These immigrants entered during a receptive government and social context. The passage of the Immigration Act of 1965 was widely hailed as an achievement on par with the Civil Rights Act. The legislation was thought to better represent American values of equality than the previous national quotas which favored White European immigrants. Further, the marginal presence of immigrants contained large-scale anti-immigrant hostility; in 1965, the foreign-born represented only 5% of the population, the lowest level since the 19th century (Zolberg, 2006).

Family Reunification Wave (1978-1991)

This was the first visible immigration boom and was composed of the immediate and extended families of the immigrants of the First Professional Wave. This cohort gained entry through family reunification visas, which were not subject to worldwide quotas. While most incoming migrants still had higher levels of educational and occupational attainment than the U.S. average, their human capital resources were considerably lower compared to their predecessors (Min, 2006).

The government and social context was decidedly less favorable during this period. An economic downturn in the early 1970's precipitated two amendments in 1976 that introduced restrictions on employment preference visas, the Eilberg Act and the Health Professions Educational Assistance Act (Liu, 1992). These policies represented the growing perception that the increasing immigration population threatened American jobs.

Southeast Asian Refugees (1976-1988)

The U.S. involvement in the Vietnamese Civil war and other geopolitical activities in the surrounding region ultimately facilitated the entry of millions of Vietnamese, Vietnamese-Chinese, Laotian, Cambodian and Hmong refugees into the United States during this wave. The earliest refugees came directly into the United States and represented more educated populations from Vietnam, as they were in positions of influence in the former pro-Western governments. The later and more numerous refugees, however, were war exiles and had lower levels of formal education and suffered from higher levels of post-traumatic stress and other disorders (Nicholson, 1997).

Refugees received strong government support. The 1980 Refugee Act removed refugees from the worldwide numerical restrictions and brought the United States refugee law in accord with international standards (Haines, 2001). The social reception was mixed, however. Public opinions polls showed that over half of surveyed Americans opposed Asian resettlement to the United States, fearing loss of jobs and increased public spending (Bolin, 2005).

Second Professional Wave (1992-2005)

The Immigration Act of 1990 represented an overhaul in immigration policy whose aim was to encourage more high-skill migrants; the act tripled the number of employment-based visas, increased the employment-based preferences, and created the temporary work visas (H visas) (Jasso, Rosenzweig, & Smith, 2000). The H-visa proved to be a popular avenue by which Asian immigrants adjusted to permanent resident status, Asian Indian workers in particular. Strides in Indian education, particularly technical

training institutes, prepared many Indian computer programmers, computer technologists and engineers to immigrate under the new H1-B visas. Conversely, there was a moderate decline of immigration from South Korea, Taiwan and Hong Kong, as significant economic and social improvements in these countries reduced the motivation for educated, middle-class citizen to emigrate (Min, 2006).

The contexts of reception during this era were increasingly hostile. At the federal level, two 1996 laws sought to enhance punitive measures against non-resident immigrants and reduce immigrants' eligibility for social programs, the Illegal Immigration Reform and Immigrant Responsibility Act and the Personal Work and Responsibility Act (PWRORA) (Fix & Passel, 2002). State policy was markedly more severe. California's Proposition 187 in 1994 proposed ending education, nonemergency health care, and other public services for undocumented immigrants and required police and government workers to report suspected undocumented immigrants (Hing, 1997). While the new laws were meant to address illegal immigration, they reflected the public's resentment towards immigrants at large.

Aims and Hypotheses

I assume that health trajectories are driven by the stress and coping process and that the relationship between duration and health exposes the health impacts of this process. Changing circumstances of migration and contexts of reception can alter the stress and coping process across different cohorts of immigrants. The aim of this paper is to explore the health impact of divergent integration experiences among separate cohorts of Asian immigrants.

Hypothesis 1. The First and Second Professional Waves will have higher levels of education and lower levels of self-employment compared to other cohorts, reflecting stipulations of concurrent immigration policy. I also expect the Second Professional Wave to have higher proportions of Asian Indian and Filipino immigrants, as these immigrants are more likely to be able to secure employment visas because of their stronger command of English (Min, 2006).

Hypothesis 2. Both the First and Second Professional Waves will have better baseline health than other cohorts, reflecting health selectivity during these periods.

Hypothesis 3. Longer duration will be associated with worsening health. The majority of cohorts have encountered negative social reception that can produce stressors and barriers to upward mobility that take a cumulative toll on health.

The stress and coping view of the health impact of integration is a departure from the majority of public health research, which attributes changing health trajectories to behaviors that result from more Westernized lifestyles. While behaviors are certainly proximal influences on health, they are not sole determinants of health trajectories. I additionally control for health behaviors to examine whether health influences arise from duration over and above health behaviors.

Hypothesis 4. The relationship between longer duration and worsening health will grow stronger from earlier to more recent cohorts, reflecting growing negative social reception.

Methods

An ideal exploration of cohort and duration effects would follow distinct cohorts of immigrants over the course of many years and examine differences both within and across cohorts (Lauderdale, 2001). While there is no dataset currently available that contains a large enough sample size of Asian immigrants to test the duration effect longitudinally, there are methods that enable a quasi-cohort analysis using multiple waves of cross-sectional data. While the subjects are not interviewed repeatedly, a sample of a cohort of immigrants that entered the U.S. in a certain year and are in a certain duration group in the first dataset can be reproduced in the following datasets.

This method has precedent in economics and demography (Borjas, 1985; Myers & Lee, 1996), but has not been used widely in the public health literature. Two exceptions are Antecol and Bedard (2006) and Kaushal (2009). They combined multiple waves of the National Health Interview Survey to create cohorts of immigrants and follow them through several survey iterations. Antecol and Bedard examined self-rated health, health conditions, activity limitation and BMI among Latino immigrants and Kaushal analyzed obesity among Asian immigrants. I used these studies to inform my analytic plan.

Data and Sample

The sample was all single-race Asian adults over the age of 18 from the 1995-2005 waves of the National Health Interview Surveys (NHIS). The NHIS is an annual nationwide in-person survey of approximately 40,000 households conducted by the National Center for Health Statistics (NCHS) (CDC, 2010). The NHIS was the most

suitable dataset for this analyses because it is the only nationally-representative and repeated cross-sectional dataset with a sizeable Asian sample.

In the publicly-available data, some of the Asians respondents can be further identified by their specific Asian ethnicity: Chinese, Filipino or Asian Indian. Koreans, Japanese, Vietnamese and smaller subgroups are classified into an "Other Asian" category. This analysis examined Asian as an aggregated sample, controlling for the available ethnicities. I did not disaggregate Asians into individual ethnicities, as I hypothesized that different ethnicities are clustered by cohorts.

The dataset was downloaded from the Integrated Health Interview Series (IHIS), which provides harmonized data and documentation for the NHIS. The IHIS facilitates cross-time comparisons of the NHIS by coding variables identically across time and re-weighting the survey weights according to the waves included in a given sample (Ruggles et al., 2010). All analyses were matched to the appropriate samples and weights, depending on the availability of the variables across survey waves and the sample universe.

Measures

Outcomes

There were three general physical health outcomes measured in this paper: disability, self-rated health, and obesity. Because I suggested that structural factors impact the entire health profile of Asian immigrant cohorts, my measures were accordingly broad enough to include a range of possible illnesses that can reflect the overall state of population health. I chose to focus on overall measures of well-being to

align with the World Health Organization (WHO) definition of health as a "state of complete physical, emotional and social well-being, and not merely the absence of disease or infirmity," (WHO, 1946).

Like all health measures in the NHIS, each outcome measure was obtained through self-report. While this may raise validity concerns about the measures, other work has established their validity with objectively measured health outcomes among other Asian American samples (Brunner Huber, 2007; Ro, 2010).

Disability– This outcome refers to limitations in tasks and roles that one is expected to be able to do that are caused by one or more health conditions (Pope & Tarlov, 1991). It is a useful measure of overall health because it encompasses specific health problems (disease or condition, a missing extremity or organ, or any type of impairment), as well as disorders not always thought of as health-related problems (i.e., alcoholism, drug dependency or reaction, senility, depression, retardation) (IHIS, 2010). Disability is detrimental to one's quality of life and is predictive of mortality (Scott, Macera, Cornman, & Sharpe, 1997).

Disability was analyzed as a binary variable that indicated whether a person is limited in any way. This was a recoded variable from a series of questions about limitations in working, mobility and memory, and the presence of physical conditions. An affirmative response to any of these questions indicated that the person had a limitation. This question wording was changed after 1996; to account for the effect of potential question wording differences, I included only the 1997-2005 waves of the survey in analyses with this measure.

Fair/Poor Self-Rated Health – Self-rated health assesses health across a broad range of illnesses and is understood as "a summary statement about the way in which numerous aspects of health, both subjective and objective, are combined within the perceptual framework of the individual respondent," (Tissue, 1972). It has been found to be a predictor of mortality, health utilization behaviors, and disability (Benyamini & Idler, 1999; Ferraro, Farmer, & Wybraniec, 1997; Idler & Benyamini, 1997; Idler & Kasl, 1995).

Self-rated health measured respondents' self-reported general health on a five-point Likert scale that had the following responses: "Excellent", "Very good", "Good", "Fair" and "Poor", along with an unrated "unknown" category. The question wording was consistent throughout 1995 to 2005. This outcome was dichotomized; respondents who answered fair or poor were coded as 1, all others 0.

Obesity – This is a measure of body composition that is a strong risk factor for chronic diseases, including Type II diabetes, gallbladder disease, high blood pressure and osteoarthritis (Must et al., 1999).

Obesity was calculated by self-reported heights and weights using the standard formula (weight in kilograms divided by the square of the height in meters). In accordance to the suggested guidelines by IHIS, I restricted the height range to 59 and 76 inches and the weight range to 98 to 289 pounds to account for the changing top and bottom codes across different survey waves of the NHIS. I categorized BMI according to the CDC-issued guidelines for obese.

Key Independent Variables

Cohorts - Because of data limitations on visa status and country of origin, I identified cohorts only through years of entry. This was a series of indicator variables that represented the years an immigrant entered the United States. There were six different year-of-entry cohorts that were examined in the analyses: Pre-1980, 1981-1985, 1986-1990, 1991-1995, 1996-2000, 2001-2005. Respondents were categorized into these cohorts by their years of U.S. residence in a given survey year.

The table below details how the cohort coding corresponds to the historical Asian immigrant cohorts I previously discussed.

Table 3-1. Historical Cohorts and Corresponding Year of Entry Cohorts

First Professional Wave	Family Reunification Wave	Refugee Wave	Second Professional Wave
Pre-1980	1981-1985 1986-1990	1981-1985 1986-1990	1991-1995 1996-2000 2001-2005

The year of entry cohorts did not exactly match the historical cohorts, but they offer a rough approximation of their boundaries. While this coding scheme contains some limitations in examining historical waves of Asian immigration, it enables an examination of overall health trends across different time periods.

Nativity/Duration - This variable designated the nativity and years of U.S. residence for the sample. The variable was divided into the following categories: US-born, 0-4 years, 5-9 years, 10-14 years and over 15 years duration. This coding scheme was used in previous studies (Cho & Hummer, 2001; Frisbie, Cho, & Hummer, 2001).

The inclusion of a US-born comparison group separates age trends from duration trends. I used US-born Asians as a reference group because of similarities in educational, employment, economic and residential characteristics with the Asian foreign-born. Similar patterns across these common health confounders can narrow down differences between the foreign-born and US-born comparison groups to migration-related factors. Because US-born Asians may also experience the consequences of negative societal reception, I re-ran my analyses with a US-born, non-Hispanic White comparison group and obtained similar results.

Health Behaviors

I included three health behavior variables, smoking, alcohol use and exercise. Smoking was included as a binary variable that indicated whether a person was current smoker. Alcohol was a binary variable that indicated whether a respondent was a moderate or heavy drinker. I used the CDC guidelines for alcohol use and categorized moderate or heavy drinkers as current drinkers who drank more than one drink per sitting for women and two drinks for men (USDA & DHHS, 2005). Exercise was a binary variable that indicated whether a respondent engaged in the CDC-recommended levels of physical activity (moderate physical activity at least 5 times a week for 30 minutes or vigorous physical activity at least 3 times a week for 20 minutes) (CDC, 2005).

Sociodemographic variables

Sociodemographic variables were first examined as outcomes in Hypothesis 1. Indicator variables for Chinese ethnicity, Filipino ethnicity, Asian Indian ethnicity,

college graduate and self-employed/working without pay for a family business were tested as outcomes.

For the remaining multivariate models, I included ethnicity, gender and age as sociodemographic controls. Because of the quasi-cohort design, I controlled for characteristics that either remained constant through the survey waves (i.e, gender) or did not have a differential effect through time; for example, everyone in the sample aged at the same rate and thus had the same age effect.

Cohort Coding

I was not able to recreate the same five-year year-of-entry cohorts across every survey year from 1995-2005 due to the categorical coding of years of U.S. residence in the NHIS (0-4 years, 5-9 years, 10-14 years, 15 plus). To classify respondents into cohorts, I utilized a weighting strategy whereby I calculated the likelihood that a respondent was in a cohort (pre- 1980, 1981-1985, 1986-1990, 1991-1995, 1996-2000, 2001-2005) based on their years of U.S. residence in a given survey year. I derived the weights using the Current Population Survey (CPS), which contains information on an immigrant's year of entry in single or double year intervals. For each NHIS survey year between 1995-2005, I used the CPS to calculate the percent of Asian immigrants who entered the U.S. in a given year.

Table 3-2 demonstrates my weighting process with an example. In the NHIS survey year 2002, an immigrant who is categorized as having 5-9 years of U.S. residence entered in the United States between 1993 and 1997. This interval straddles the 1991-1995 and 1996-2000 cohorts. According to the CPS, 15% of Asian immigrants with 5-9

years duration in 2002 entered in 1997, 20% of these immigrants entered in 1996, 22% in 1995 and so on. To calculate the likelihood that the respondent was in the 1991-1995 cohort, I summed the prevalence for 1993, 1994 and 1995, the three years of overlap between the actual year-of-entry interval and the analysis cohort (in gray). I then created a duplicate copy of the observation. One observation received a weight of .65 to correspond to the likelihood of being in the 1991-1995 cohort. The second copy received a weight of .35 to represent its likelihood of being in the 1996-2000 cohort. This cohort weight was multiplied by the person weight in the complex survey weighting scheme for a new person weight. For the full weighting scheme, see Appendix A.

Table 3-2. Weighting Example for NHIS Survey Year 2002, 5-9 years of U.S. Residence

Years in the US	Year of Entry	Distribution from CPS
3	1999	0
4	1998	0
5	1997	0.15
6	1996	0.2
7	1995	0.22
8	1994	0.25
9	1993	0.18
10	1992	0
11	1991	0
12	1990	0
13	1989	0
14	1988	0
Weight for 1991-1995 cohort		0.65
Weight for 1996-2000 cohort		0.35

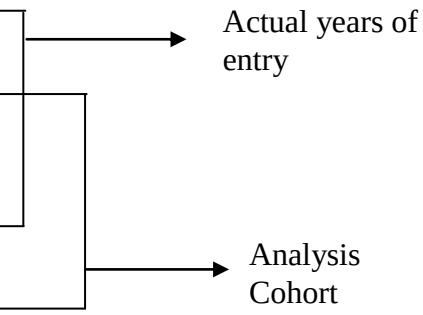


Table 3-3 displays the sample sizes and cohorts represented in the 11-year period included in this analysis, weighted by the CPS-derived cohort weights.

To check the robustness of the findings among this sample, I performed the analyses across an additional sample that used the 1995-2005 NHIS waves, but did not use CPS weights to classify respondents into cohorts. Instead, a duration category for a given cluster of survey waves was coded in same cohort group. For example, all respondents with 0-4 years duration during the 1995, 1996, 1997 and 1998 waves were coded as entering the United States between 1991 and 1995. As a result, neighboring cohorts have overlapping years, but the general pattern across cohorts should remain the same. This method has been used in previous research examining cohort effects (Antecol & Bedard, 2006; Kaushal, 2009). This additional sample produced similar results for the analyses presented.

Analyses

All analyses were conducted on Stata version 11.2. I also accounted for the ACS complex survey design using Stata's svy function that accounted for person weights, strata and cluster design effects.

Model 1- Sociodemographic differences across cohorts

This model examined differences in sociodemographic characteristics across cohorts. I conducted separate regression models for each sociodemographic outcome using the following model:

$$Y_i = \beta_1 X_i + \beta_2 C_i + + \beta_3 N_i + \varepsilon_i$$

Where Y was the log odds of having a college degree, being Chinese, Filipino, or Asian Indian or being self-employed or an unpaid family worker. X represented a vector of covariates (age, gender, US-born, nativity by gender interaction), C represented

dummy variables for each of the cohorts, with the 1986-1990 cohort as baseline. Using this reference group enabled comparisons between cohorts representing the Family Reunification/Refugee waves versus the First and Second Professional waves. N was a series of dummy variables for the nativity/duration categories. With the addition of the duration indicator variables, the cohort regression coefficients provided the cohort's demographic profile at baseline (0-4 years duration) compared to the 1986-1990 cohort. The regression coefficients for N represent the relative comparison of each duration group to the 0-4 year group across the entire foreign-born sample.

Model 2 – Baseline health differences across cohorts and duration effects

This model was nearly the same as the previous one, except with disability, self-rated health or obesity as the outcome. It provided estimates for baseline health across cohorts as well as the effects of years in the United States across the foreign-born sample, controlling for cohort baseline health differences. Y was the predicted health outcome, X was a vector of covariates and C represented dummy variables for each of the cohorts, with the 1986-1990 cohort as the reference group. N was a series of dummy variables for the nativity/duration categories.

$$Y_i = \beta_1 X_i + \beta_2 C_i + \beta_3 N_i + \varepsilon_i$$

Additional models included health behavior variables of smoking, alcohol use and exercise.

Model 3 – Duration difference across cohorts

The final model examined the duration effect among different cohorts.

$$Y_i = \beta_1 X_i + \beta_2 N_i + \varepsilon_i$$

Where Y represented the predicted physical health outcomes and N was the available duration effects for each cohort. I conducted the model separately for each cohort. To examine differences in duration effects across cohorts, I compared the strength and direction of the duration coefficients to one another.

Results

Sample Characteristics

Table 3-4 illustrates the sample's demographic and health characteristics by cohort. While the percent of high school graduates across all cohorts is above the national average of 84% in the same period (Newburger & Curry, 2000), the most recent cohorts had the highest percentages with over 90% with a high school education. The same was also true for college graduation; the most recent cohorts had well over 50% college graduates. There were some occupational patterns as well; the earliest cohorts had the highest rates of self-employment and this decreased with more recent cohorts.

Table 3-5 provides the prevalence of health outcomes for each cohort and duration sample, along with the prevalence for a gender and age-matched comparison group from the US-born Asian sample. These matched comparison groups enable some distinction between age and duration patterns among the foreign-born, as age is confounded with duration. If the ratio of the US-born to foreign-born prevalence remains constant across duration categories, we can assume that differences among the duration groups are due to aging.

Within each cohort, the prevalence of each health condition rises with longer duration. For example, the prevalence of disability for the cohort entering between 1991

and 1995 grew from 1.8%, 4.0% to 4.4% over the respective duration groups. The corresponding matched comparison groups also rose within cohorts across all outcomes, suggesting that some of this upward trend is due to age. For disability and obesity, however, the ratio of the US-born and foreign-born prevalence decreases within each cohort, implying that duration may increase prevalence over and above the aging effect. For self-rated health, however, the ratios remain consistent, suggesting that the upward trend in reporting fair/poor health across duration categories may be due to increasing age.

Regression Results

Demographic Characteristics

The regression results for the demographic characteristics confirmed the bivariate findings that cohorts differ across Asian ethnicity, education and occupational status (Table 3-6). These patterns coincide with the hypothesized effects of immigration policy. Two of the cohorts corresponding to the Second Professional Wave (1996-2000, 2001-2005) were more likely to have a college education and were less likely to be self-employed than the cohort representing the Family Reunification/Refugee waves (1986-1990, reference). These cohorts were also more likely to be Asian Indian and less likely to be Filipino or Chinese, reflecting changes in countries of origin as occupation concentration in employment visas shifted from healthcare to the high-tech industry.

Cohort Baseline Health Status and Duration Effects

Disability. The odds for baseline disability status relative to the cohort representing the latter Family Reunification/Refugee waves (1986-1990, reference) did not differ across cohorts.

Among the duration categories, the odds of disability increased compared to the 0-4 year reference group. The odds ratios for the 5-9 and 10-14 year categories were 1.70 and 1.69, respectively, and the 15+ year odds was the highest at 1.9. Table 3-7 provides the regression results for this model.

Self-Rated Health. There were only minor baseline health differences in fair/poor self-rated health. The cohorts representing the Second Professional Wave (1991-1995, 1996-2000 and 2001-2005) had lower odds for fair/poor self-rated health compared to the 1986-1990 reference group, but only the 1996-2000 cohort was significantly lower.

There was no duration pattern across the cohorts. None of the duration categories had a significantly different odds ratio for fair/poor self-rated health than the 0-4 year reference group.

Obesity. The cohorts corresponding to the First Professional Wave (Pre-1980) and the beginning of the Family Reunification/Refugee wave (1981-1985) had significantly lower odds for obesity compared to the 1986-1990 reference group. Other cohorts displayed higher odds, but were not significantly different. The duration categories displayed an upward trend whereby the longest term duration category had the highest odds for being overweight or obese relative to the 0-4 year group.

To determine whether the cohort and duration patterns were driven by health behaviors, I included health behaviors in the previous analyses (results not shown). While the health behaviors themselves were related to the health outcomes, their inclusion did not change the cohort and duration patterns. This is particularly important for the duration results, which suggests that there are other health-related factors that progress with longer residence in the United States over and above changing health patterns.

Duration Differences across Cohorts

I was not able to examine full duration patterns across all of the cohorts because of the time period of the NHIS survey waves. Instead, I constructed partial duration analyses for the 1981-1985, 1985-1990, and 1991-1995 and 1996-2000 cohorts. The first two cohorts corresponded to the Family Reunification/Refugee wave (1981-1985, 1986-1990) and the latter two corresponded to the Second Professional wave (1991-1995, 1996-2000). The results are listed in Table 3-9.

Disability. In the previous set of results, the odds of disability increased with longer duration. This pattern was present across all of the examined cohorts, yet did not reach significance. One exception was the 1991-1995 cohort, in which 5-9 year group was significantly higher than the 0-4 year reference group.

Self-Rated Health. The only cohort that displayed a significant duration effect was the 1986-1990 cohort. Longer-term immigrants reported lower odds for fair/poor self-rated health compared to more recently arrived immigrants. Both the 10-14 year and

15 years plus categories had lower odds for reporting fair/poor self-rated health than the 5-9 year baseline group (OR=0.79, 0.75, respectively).

Obesity. For all cohorts, the odds for obesity increased with longer duration. The only exception was the 1996-2000 cohort, in which the obesity odds for the 0-4 year and 5-9 year group did not significantly differ from one another.

Discussion

This paper examined differences in health trajectories among cohorts of Asian immigrants. I contended that changing circumstances of migration and contexts reception would impact immigrants' stress and coping processes that proceed with integration.

I first argued that circumstances of migration would change the characteristics of incoming migrants. This could impact the stress and coping process by altering potential coping resources immigrants bring with them and their baseline health status. My results supported this, as some cohorts appeared to have unique demographic and health profiles.

Both the First and Second Professional Waves were shaped by immigration policies that preferenced the highly-skilled. The 1965 Immigration Act created visa preference categories for certain occupations and the 1990 Immigration Act increased employment-based visas and created a temporary visa for high-skilled workers. The results pointed to a stronger impact of the 1990 Act in demographic characteristics, however. Cohorts corresponding to the Second Professional Wave were more likely to be college educated and less likely to be self-employed compared to Family Reunification and Refugee waves. The only cohort corresponding to the Second

Professional Wave that did not have significantly higher college attainment or lower self-employment was the 1991-1995 cohort. This group straddled the Family Reunification/Refugee Wave and the Second Professional Wave and their characteristics may reflect a lag between enactment of the policy and resulting shift in immigrant characteristics. The First Professional Wave did not show any significant differences in college graduation compared to the reference group.

While the 1990 Act coincided with demographic differences, it did not appear to impact cohort health selectivity to the same extent. In fair/poor self-rated health, there was some indication that the Second Professional Wave had lower odds for this outcome, yet only one of the three corresponding cohorts had significantly lower odds than the reference group. Cohorts did not differ in their baseline disability status. The "healthy immigrant effect" has argued that immigrants are positively selected on health compared to their native country counterparts, as the act of migration requires physical robustness (Abraido-Lanza, Dohrenwend, Ng-Mak, & Turner, 1999). Perhaps immigrants across all cohorts have already been undergone positive health selection to such a degree that changes in immigration policy may not have noticeably affected their disability or self-rated health profiles.

There were baseline differences in obesity, but these seem to point to the salience of geopolitical circumstances in the sending countries over immigration policy influence. Earlier cohorts displayed significantly lower odds of obesity and odds steadily increased with more recent cohorts. This finding coincides with other research that has documented a global increase in BMI in the past 30 years (Caballero, 2007). Such an

increase is often attributed to urbanization and the globalization of food production and marketing (Caballero, 2007). These changes characterize Asian countries particularly well. Common sending countries, such as India, China, Korea and Taiwan, have seen accelerated economic growth , accompanied by equally rapid dietary shifts in the past fifty years (Yoon et al., 2006). The rise of obesity across cohorts suggests that the health effects of obesity have yet to pose a barrier to migration.

I also argued that contexts of reception were a driving force of integration experiences and that the accumulated impact of associated stressors would result in worsening health with duration. Negative societal reception may give rise to stressors such as racial discrimination, blocked labor market opportunities or nativist domestic policies that can accumulate over US residence and take a physiological health toll. This duration analysis was more rigorous than traditional duration analyses, as I controlled for baseline cohort effects as well as considered the potential mediating effect of health behaviors. In both disability and obesity, groups with longer duration displayed higher odds compared to the most recently arrived immigrants, even after controlling for smoking, alcohol use and exercise. This finding implies that regardless of different baseline health status, factors related to integration negatively impact health over and above changing health behaviors.

When coupled with other previously published research, this finding reveals the salience of stress and coping processes in shaping immigrant health trajectories. Uppaluri et al. (2001) found that Asian immigrants report more stress as they live longer in the United States. Potential immigration-related stressors, such as racial

discrimination, adjustment stress, and language use are regularly associated with negative health outcomes (Gee, Ro, Gavin, & Takeuchi, 2008; Takeuchi et al., 2007). This viewpoint can provide a useful counter point to the widespread assumption that health trajectories are driven by changing health behaviors. Instead, it appears that societal stressors also have a direct influence on immigrant health patterns.

Finally, I suggested that changes in reception would create differential stressors and resources across cohorts, which would be seen in dissimilar health trajectories. In disability and obesity, there were no clear differences across cohorts. While not all of the duration patterns reached significance, they maintained the same pattern throughout. The lack of significant effects within cohorts could be due to smaller sample sizes and not to any true differences in the duration patterns. The similar disability and obesity trajectories indicate that stressors are consistent across all cohorts and that all immigrants experience their negative effects. Immigrants in the Second Professional Wave should have better theorized resources against stressors due to their higher educational and occupational characteristics, but the limited datas preclude any definitive conclusions. I was only able to examine duration patterns among two cohorts corresponding to this wave, the 1991-1995 and 1996-2000 cohorts. Of these, only the latter showed significantly higher college attainment or occupational patterns. Within this cohort, there were no significant differences between more recent and older duration groups, although it is unclear whether this is due to the protective effect of their more favorable demographic characteristics or because of their relatively short tenure in the United States.

Fair/poor health did not display any obvious relationships in baseline cohort health or duration. The divergence between the self-rated health findings from those of disability and obesity are not necessarily contradictory. Self-rated health may not reflect the stress and coping processes of negative reception, but rather reflect changing subjective perceptions of health. Self-rated health is a personal assessment of well-being. For immigrants, this may inherently invoke comparisons with their health status in their native countries. Within individual cohorts, the 1986-1990 cohort displayed lower reports of fair/poor self-rated health with increased duration. The cohort entering between 1986-1990 corresponds to the Family Reunification and Refugee waves and include years with some of the highest influx of refugees. The improving health with duration for this cohort may represent improvement in health assessment after receiving asylum and securing long-term residence in the United States.

The analysis contained limitations. First, there is an inherent confounding problem with cross-sectional data between period, duration and cohorts. I could not include all three variables in a multivariate model, as the three are fully predictive of one another. Because I was interested in duration and cohorts, I assumed that potential period effects between 1995 and 2005 acted uniformly across all cohorts.

Secondly, I could not distinguish cohorts beyond year of entry in the NHIS. Some of the immigration policy eras and geopolitical events only affected certain groups. The analysis could have been more precise if I identified cohorts by year of entry and country of origin or Asian ethnicity, but the NHIS does not collect country of origin information and in the waves I included it the analysis, Asian ethnicity is only available

for Chinese, Filipino and Asian Indian groups. As a result, some year of entry cohorts may have encompassed more than one unique group, diluting the impact of the external influences in which I was interested. I cannot directly establish the health effects of the various policy eras, but can only interpret my findings in light of the contextual factors present in the various cohorts.

Finally, I was not able identify specific aspects of the stress and coping process that may have driven the health trajectory patterns, such as co-ethnic social support or racial discrimination. These variables would have provided a much fuller picture of the divergent integration experiences across cohorts and their connection to health.

This paper indicates the importance of considering structural and contextual factors in shaping the health trajectories of immigrants. Immigrants are not only changing as they spend more time in the United States, but they are also migrating with varied characteristics and encountering different circumstances. This paper is the first to my knowledge to explicitly consider the role of cohorts in health trajectories. The findings suggest that factors that shape unique cohorts: immigration policy, geopolitical events and societal reception, are influential aspects of immigrant health trajectories and should be more widely considered.

Table 3-3. Asian Sample Sizes, by Year of Entry Cohort and Survey Years

	Survey Year										
	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Pre-1980	705	386	262	612	555	486	445	525	523	471	564
1981-1985	322	180	135	335	305	257	234	256	296	291	323
1986-1990	327	171	129	295	293	301	262	302	267	278	299
1991-1995	402	207	156	345	357	317	283	326	304	310	393
1996-2000	0	41	66	187	208	347	317	313	278	275	298
2001-2005	0	0	0	0	0	0	67	107	167	195	239

Table 3-4. Sample Characteristics by Cohort

	Cohorts Entering					
	Pre-1980	1981-1985	1986-1990	1991-1995	1996-2000	2001-2005
Age	46	45	42	37	35	34
High School Graduate	87.4%	87.5%	87.1%	85.4%	89.5%	91.6%
College Graduate	43.2%	42.6%	43.2%	42.2%	52.2%	57.2%
Self Employed	11.0%	10.4%	8.9%	6.5%	3.4%	1.6%
Chinese	21.3%	21.4%	22.6%	21.7%	20.8%	20.2%
Filipino	21.9%	20.9%	19.8%	17.9%	13.5%	14.6%
Asian Indian	12.8%	14.2%	17.6%	20.0%	30.4%	33.2%
Other Asian	44.1%	43.4%	40.0%	40.5%	35.3%	32.1%

Table 3-5. Prevalence of Health Outcomes for Cohort/Duration Groups, Matched by Age and Gender to US Born Asians

	Disability			Fair/Poor Health			Obesity		
	FB Asian	US Born Asian	Ratio (USBA /FBA)	FB Asian	US Born Asian	Ratio (USBA /FBA)	FB Asian	US Born Asian	Ratio (USBA /FBA)
Entering Pre 1980									
15+ Years	7.3	12.0	1.7	32.9	33.5	1.0	6.9	14.5	2.1
Entering 1981-1985									
10-14 Years	4.9	9.8	2.0	29.0	29.0	1.0	5.3	12.9	2.4
15+ Years	7.4	12.2	1.7	32.4	33.7	1.0	6.9	14.5	2.1
Entering 1986-1990									
5-9 Years	2.6	8.6	3.3	26.8	27.4	1.0	3.4	12.8	3.8
10-14 Years	3.9	9.0	2.3	30.8	28.6	0.9	6.0	14.4	2.4
15+ Years	7.6	12.7	1.7	34.1	33.8	1.0	7.7	14.8	1.9
Entering 1991-1995									
0-4 Years	1.8	5.1	2.9	24.0	22.8	0.9	2.9	11.8	4.1
5-9 Years	4.0	7.5	1.9	26.2	26.4	1.0	3.1	13.0	4.2
10-14 years	4.4	8.6	2.0	29.3	28.2	1.0	5.8	13.5	2.3
Entering 1996-2000									
0-4 Years	1.6	5.8	3.6	21.6	23.0	1.1	3.6	11.9	3.3
5-9 Years	2.1	7.1	3.4	28.6	25.0	0.9	3.3	12.8	3.9
Entering 2001-2005									
0-4 Years	2.4	5.5	2.3	23.7	23.2	1.0	2.8	13.1	4.6

Table 3-6. Cohort Differences in Sociodemographic Characteristics

	College Graduate				Self Employed			
	OR	95% CI			OR	95% CI		
Cohorts								
US Born	1.00	0.78	1.27		0.14	0.06	0.30	***
Pre-1980	0.94	0.86	1.02		2.44	2.00	2.98	***
1981-1985	0.94	0.86	1.03		2.03	1.65	2.49	***
1986-1990		Ref.				Ref.		
1991-1995	1.00	0.90	1.12		0.46	0.34	0.63	***
1996-2000	1.42	1.21	1.66	***	0.20	0.12	0.32	***
2001-2005	1.72	1.35	2.20	***	0.08	0.04	0.16	***

	Asian Indian				Filipino				Chinese		
	OR	95% CI			OR	95% CI			OR	95% CI	
Cohorts											
US Born	0.53	0.37	0.78	***	1.45	1.01	2.07	*	0.77	0.55	1.07
Pre-1980	0.69	0.61	0.78	***	1.06	0.94	1.20		1.04	0.92	1.18
1981-1985	0.76	0.68	0.85	***	1.02	0.91	1.15		1.01	0.90	1.14
1986-1990		Ref.				Ref.				Ref.	
1991-1995	1.27	1.08	1.51	**	0.96	0.81	1.14		0.92	0.79	1.07
1996-2000	2.46	1.94	3.12	***	0.75	0.57	0.99	**	0.89	0.70	1.14
2001-2005	2.88	2.07	3.99	***	0.89	0.61	1.31		0.88	0.61	1.28

*** p<.001, ** p<.05, * p<.01

College graduate model controlled for Asian ethnicity, gender, age, duration and nativity/gender interaction
Self-employed model with employed only, controlled for Asian ethnicity, gender, age, duration and nativity/gender interaction
Asian Indian, Filipino and Chinese models included controls for gender, age, duration and nativity/gender interaction

Table 3-7. Cohort Differences and Duration Differences in Physical Health Outcomes

	Disability				Fair/Poor SRH				Obesity			
	OR	95% CI			OR	95% CI			OR	95% CI		
Cohorts												
US Born	2.23	1.23	4.04	**	0.77	0.62	0.96	**	3.66	1.89	7.07	**
Pre-1980	1.05	0.92	1.18		1.01	0.92	1.10		0.76	0.63	0.91	***
1981-1985	1.05	0.92	1.20		0.99	0.90	1.09		0.82	0.68	0.99	**
1986-1990		Ref.				Ref.				Ref.		
1991-1995	1.17	0.92	1.48		0.94	0.83	1.06		1.03	0.71	1.49	
1996-2000	0.90	0.61	1.31		0.81	0.69	0.96	**	1.28	0.76	2.14	
2001-2005	0.98	0.49	1.95		0.81	0.62	1.07		1.01	0.49	2.09	
Duration												
0-4 Years		Ref.				Ref.				Ref.		
5-9 Years	1.70	1.12	2.58	**	1.06	0.90	1.26		1.03	0.64	1.65	
10-14 Years	1.69	1.03	2.76	**	0.95	0.79	1.15		2.18	1.24	3.84	**
15+ Years	1.90	1.13	3.21	**	0.85	0.68	1.06		3.18	1.74	5.81	***

*** p<.001, ** p<.05, * p<.01

Models controlled for Asian ethnicity, gender, age and nativity/gender interaction

Table 3-8. Duration Effects within Cohorts

	Disability				Fair/Poor Health				Obesity			
	OR	95% CI			OR	95% CI			OR	95% CI		
Cohort 1981-1985												
10-14 Years		ref.				ref.				ref.		
Over 15 Years	1.02	0.61	1.73		0.87	0.72	1.07		1.63	0.99	2.67	*
Cohort 1986-1990												
5-9 Years		ref.				ref.				ref.		
10-14 Years	1.18	0.71	1.98		0.79	0.66	0.95	**	2.28	1.17	4.45	**
Over 15 yrs	1.27	0.78	2.05		0.75	0.62	0.90	***	3.09	1.74	5.50	***
Cohort 1991-1995												
0-4 Years		ref.				ref.				ref.		
5-9 Years	1.96	1.13	3.39	**	0.97	0.78	1.20		1.16	0.61	2.19	**
10-14 Years	1.68	0.87	3.21		0.98	0.77	1.24		2.07	1.05	4.09	**
Cohort 1996-2000												
0-4 Years		ref.				ref.				ref.		
5-9 Years	1.52	0.92	2.51		1.13	0.91	1.40		0.93	0.48	1.81	

*** p<.001, ** p<.05, * p<.01

Models controlled for Asian ethnicity, gender and age

References

Abraido-Lanza, A. F., Dohrenwend, B. P., Ng-Mak, D. S., & Turner, J. B. (1999). The Latino mortality paradox: a test of the "salmon bias" and healthy migrant hypotheses. *Am J Public Health, 89*(10), 1543-1548.

Ager, A., & Strang, A. (2008). Understanding Integration: A Conceptual Framework. *Journal of Refugee Studies, 21*(2), 166-191.

Alba, R., & Nee, V. (2003). *Remaking the American Mainstream: Assimilation and Contemporary Immigration* Cambridge: Harvard University Press.

Antecol, H., & Bedard, K. (2006). Unhealthy assimilation: why do immigrants converge to American health status levels? *Demography, 43*(2), 337-360.

Benyamini, Y., & Idler, E. L. (1999). Community studies reporting association between self-rated health and mortality - Additional studies, 1995 to 1998. *Research on Aging, 21*(3), 392-401.

Bolin, T. (2005). *Public Opinion on Immigration in America*: Merage Foundation.

Borjas, G. J. (1985). Assimilation, Changes in Cohort Quality, and the Earnings of Immigrants. *Journal of Labor Economics, 3*(4), 463-489.

Brunner Huber, L. R. (2007). Validity of self-reported height and weight in women of reproductive age. *Maternal and Child Health, 11*, 137-144.

Caballero, B. (2007). The Global Epidemic of Obesity: An Overview. *Epidemiologic Reviews, 29*(1), 1-5.

CDC. (2005). Adult Participation in Recommended Levels of Physical Activity --- United States, 2001 and 2003 (Vol. 54, pp. 1208-1212): Morbidity and Mortality Weekly Report, CDC.

Chae, D. H., Takeuchi, D. T., Barbeau, E. M., Bennett, G. G., Lindsey, J., & Krieger, N. (2008). Unfair treatment, racial/ethnic discrimination, ethnic identification, and smoking among Asian Americans in the National Latino and Asian American study. *American Journal of Public Health, 98*(3), 485-492.

Cho, Y. T., & Hummer, R. A. (2001). Disability status differentials across fifteen Asian and Pacific Islander groups and the effect of nativity and duration of residence in the U.S. *Soc Biol, 48*(3-4), 171-195.

Ferraro, K. F., Farmer, M. M., & Wybraniec, J. A. (1997). Health trajectories: Long-term dynamics among Black and White adults. *Journal of Health and Social Behavior, 38*(1), 38-54.

Fix, M. E., & Passel, J. F. (2002). The Scope and Impact of Welfare Reform's Immigrant Provisions, *Assessing the New Federalism*. Washington, DC: The Urban Institute.

Frisbie, W. P., Cho, Y. T., & Hummer, R. 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, G. C., & Ford, C. L. (2011). Structural Racism and Health Inequities. *Du Bois Review: Social Science Research on Race, 8*(01), 115-132.

Gee, G. C., Ro, A., Gavin, A., & Takeuchi, D. T. (2008). Disentangling the Effects of Racial and Weight Discrimination on Body Mass Index and Obesity Among Asian Americans. *American Journal of Public Health, 98*(3), 493-500.

Gordon, M. (1961). Assimilation in America - Theory and Reality. *Daedalus, 90*(2), 263-285.
Haines, D. (2001). Southeast Asian Refugees. In J. Ciment (Ed.), *Encyclopedia of American Immigration*. Armonk, NY: Sharpe.
Hing, B. O. (1997). *To Be an American: Cultural Pluralism and the Rhetoric of Assimiliation*. New York: New York University Press.
Idler, E. L., & Benyamini, Y. (1997). Self-rated health and mortality: A review of twenty-seven community studies. *Journal of Health and Social Behavior, 38*(1), 21-37.
Idler, E. L., & Kasl, S. V. (1995). Self-Ratings of Health - Do They Also Predict Change in Functional Ability. *Journals of Gerontology Series B-Psychological Sciences and Social Sciences, 50*(6), S344-S353.
IHIS. (2010). *FLGOOUT: How difficult to go out to events without special equipment*, 2010, from http://www.ihis.us/ihis-action/variables/FLGOOUT
Jasso, G., Massey, D., Rosenzweig, M., & Smith, J. (2004). Immigrant Health: Selectivity and Acculturation. In N. Anderson, N. Bulatao & B. Cohen (Eds.), *Critical Perspectives on Racial and Ethnic Differences in Health in Late Life* (pp. 227-266). Washington, DC: The National Academies Press.
Jasso, G., Rosenzweig, M. R., & Smith, J. (2000). The Changing Skill of New Immigrants to the United States: Recent Trends and their Determinants. In *Issues in the Economics of Immigration* (pp. 185-222). Chicago, IL: University of Chicago Press.
Kaushal, N. (2009). Adversities of acculturation? Prevalence of obesity among immigrants. *Health Econ, 18*(3), 291-303.
Kuo, W. (1976). Theories of Migration and Mental-Health - Empirical Testing on Chinese-Americans. *Social Science & Medicine, 10*(6), 297-306.
Lauderdale, D. S. (2001). Education and survival: Birth cohort, period, and age effects. *Demography, 38*(4), 551-561.
Lauderdale, D. S., & Rathouz, P. J. (2000). Body mass index in a US national sample of Asian Americans: effects of nativity, years since immigration and socioeconomic status. *Int J Obes Relat Metab Disord, 24*(9), 1188-1194.
Liu, J. M. (1992). The Contours of Asian Professional, Technical and Kindred Work Immigration, 1965-1988. *Sociological Perspectives, 35*(4), 673-704.
McEwen, B. S., & Seeman, T. (1999). Protective and Damaging Effects of Mediators of Stress: Elaborating and Testing the Concepts of Allostasis and Allostatic Load. *Annals of the New York Academy of Sciences, 896*(Socioeconomic Status and Health in Industrial Nations: Social, Psychologcal, and Biological Pathways), 30-47.
Min, P. G. (2006). Asian Immigrants: History and Contemporary Trends. In P. G. Min (Ed.), *Asian Americans: Contemporary Trends and Issues, Second Edition*. Thousand Oaks: Sage Publications.
Must, A., Spadano, J., Coakley, E. H., Field, A. E., Colditz, G., & Dietz, W. H. (1999). The Disease Burden Associated With Overweight and Obesity. *JAMA, 282*(16), 1523-1529.

Mutchler, J. E., Prakash, A., & Burr, J. A. (2007). The demography of disability and the effects of immigrant history: older Asians in the United States. *Demography, 44*(2), 251-263.
Myers, D., & Lee, S. W. (1996). Immigration cohorts and residential overcrowding in southern California. *Demography, 33*(1), 51-65.
Nee, V., Sanders, J. M., & Sernau, S. (1994). Job Transitions in an Immigrant Metropolis: Ethnic Boundaries and the Mixed Economy. *American Sociological Review, 59*(6), 849-872.
Newburger, E. C., & Curry, A. (2000). *Educational Attainment in the United States: March 1999*. Washington, DC: Census Bureau.
Nicholson, B. L. (1997). The influence of pre-emigration and postemigration stressors on mental health: A study of Southeast Asian refugees. *Social work research*.
Noh, S., & Avison, W. R. (1996). Asian immigrants and the stress process: a study of Koreans in Canada. *J Health Soc Behav, 37*(2), 192-206.
Noh, S., Beiser, M., Kaspar, V., Hou, F., & Rummens, J. (1999). Perceived racial discrimination, depression, and coping: a study of Southeast Asian refugees in Canada. *J Health Soc Behav, 40*(3), 193-207.
Noh, S., & Kaspar, V. (2003). Perceived discrimination and depression: moderating effects of coping, acculturation, and ethnic support. *Am J Public Health, 93*(2), 232-238.
Pope, A. M. D., & Tarlov, A. (1991). *Disability in America: Towards a National Agenda for Prevention*. Washington, DC: National Academies Press.
Portes, A., & Rumbaut, R., G. (1990). *Immigrant America: A Portrait*. Berkeley, CA: University of California Press.
Portes, A., & Zhou, M. (1993). The New Second Generation: Segmented Assimilation and Its Variants. *Annals of the American Academy of Political and Social Science, 530*, 74-96.
Ro, A. (2010). *The Health Consequences of Asian Immigrant Integration: A Dissertation Proposal.* University of Michigan, Ann Arbor, MI.
Ruggles, S., Alexander, J. T., Genadek, K., Goeken, R., Schroeder, M. B., & Sobek, M. (2010). *Integrated Public Use Microdata Series: Version 5.0 [Machine-readable database]*. Minneapolis. MN: University of Minnesota.
Salant, T., & Lauderdale, D. S. (2003). Measuring culture: a critical review of acculturation and health in Asian immigrant populations. *Soc Sci Med, 57*(1), 71-90.
Scott, W. K., Macera, C. A., Cornman, C. B., & Sharpe, P. A. (1997). Functional health status as a predictor of mortality in men and women over 65. *Journal of Clinical Epidemiology, 50*(3), 291-296.
Seeman, T., Singer, B., Rowe, J. W., Horwitz, R. I., & McEwen, B. S. (1997). Price of adaptation--allostatic load and its health consequences: MacArthur studies of successful aging. *Archives of internal medicine, 157*(19), 2259.
Takeuchi, D. T., Zane, N., Hong, S., Chae, D. H., Gong, F., Gee, G. C., et al. (2007). Immigration-related factors and mental disorders among Asian Americans. *Am J Public Health, 97*(1), 84-90.

Tissue, T. (1972). Another Look At Self-rated Health Among the Elderly. *Journal of Gerontology, 27*(1), 91-94.
Uppaluri, C., Schumm, L., & Lauderdale, D. (2001). Self-Reports of Stress in Asian Immigrants: Effects of Ethnicity and Acculturation. *Ethnicity & Disease, 11*(1), 107.
USDA, & DHHS. (2005). Dietary Guidelines for Americans. Chapter 9 – Alcoholic Beverages (pp. 43-46): United States Department of Agriculture, United States Department of Health and Human Services.
Waters, M. (1999). *Black Identities: West Indian Immigrant Dreams and American Realities*. Cambridge: Harvard University Press.
WHO. (1946). Preamble to the Constitution of the World Health Organization as adopted by the International Health Conference, New York, 19-22 June, 1946; signed on 22 July 1946 by the representatives of 61 States (Official Records of the World Health Organization, no. 2, p. 100) and entered into force on 7 April 1948.
Yoon, K.-H., Lee, J.-H., Kim, J.-W., Cho, J. H., Choi, Y.-H., Ko, S.-H., et al. (2006). Epidemic obesity and type 2 diabetes in Asia. *The Lancet, 368*(9548), 1681-1688.
Zolberg, A. (2006). *A Nation by Design: Immigration Policy and the Fashioning of America*. Cambridge, MA: Harvard University Press.

CHAPTER 4 – EMPIRICAL PAPER 2

Economic and Social Integration among Asian Immigrants

Introduction

This paper examines the influences of economic and social integration on the health trajectories of Asian immigrants. As Asian immigrants spend more time in the United States, their incomes also increase (Chiswick, 1978; Schoeni, 1997). At first glance, Asian immigrants' rising economic fortunes with increased duration would indicate improving health trajectories. The positive socioeconomic status (SES) and health relationship is considered one of the most robust in the public health literature (Kaplan & Keil, 1993) and some have described SES as a Fundamental Cause of Disease (Link & Phelan, 1995). Individual with higher socioeconomic status are thought to have better health outcomes because lifestyle and material resources help them avoid certain health risks, such as noxious environmental exposures, while facilitating access to health promoting factors, such as health care and healthier foods (Adler & Newman, 2002).

Many studies among Asian American samples have demonstrated a positive SES and health relationship (Williams, 1999). Others studies, however, have found a weaker or non-existent relationship among Asian immigrant samples (Acevedo-Garcia, Bates, Osypuk, & McArdle, 2010; Kimbro, Bzostek, Goldman, & Rodriguez, 2008; Lauderdale & Rathouz, 2000; Sanchez-Vaznaugh, Kawachi, Subramanian, Sanchez, & Acevedo-Garcia, 2008) compared to non-Hispanic Whites. While the SES-health relationship

remains largely positive among Asian American samples, variation in the relationship, especially among the foreign-born, suggests the presence of additional factors that can complicate the widely-held belief that more economic resources leads to better health.

The belief that SES is a fundamental cause of disease relies on economistic assumptions that the health benefits of material resources can prevail over other health risks (Geronimus & Thompson, 2004). This viewpoint fails to acknowledge that some risks may be simply unavoidable in certain populations. For Asian immigrants, integration processes introduce unique health risks that can complicate the conventional wisdom of the SES-health gradient. In particular, when we consider their integration into a racialized social hierarchy, it is questionable whether Asian immigrants can enjoy health benefits that arise from these material resources to the same degree as other white, non-immigrant groups. Language barriers, underemployment, racial discrimination, cultural adjustment and the glass ceiling suggest that Asian immigrants experience considerable barriers to their upward socioeconomic mobility concurrently with their rising economic profile. The majority of the SES literature has yet to jointly consider the processes by which immigrant obtain their economic status alongside other additional social stressors or barriers.

Aspects of both stress and coping and socio-ecological theories can provide a useful framework by which to understand the health consequences of concurrent economic and social integration. Socio-ecological theories posit that changes in the social and physical environment prompt individuals to adapt in order to maintain a comfortable equilibrium (Krieger, 2001). Stress and coping theories also rely on this dynamic relationship, but conceptualize some of the environmental changes as sources of

stress that can either take a direct impact on health or can elicit coping reactions that have an eventual health impact (Monat & Lazarus, 1991).

For Asian immigrants, these stressors and barriers from their social environment can directly counteract resource-related health benefits. For example, higher economic resources are thought to increase access to medical care, but poorer care on account of provider biases can negate any medical utilization advantages. Barriers can also produce unique life events or chronic stressors that have a cumulative negative effect on health. Racial discrimination and goal-striving stress are examples of two social stressors that have been negatively associated with poorer physical and mental health outcomes among Asian populations (Gee, Ro, Shariff-Marco, & Chae, 2009; Kuo, 1976). Regular encounters such with barriers can mean that Asian immigrants employ long-term coping strategies to address and mitigate their stressful effects. Further, their upward economic integration in the face of social barriers suggests their coping requires regular and sustained high effort. Syme (1979) described high-effort coping as the attempt to control one's environment in the face of "demanding social situations in which aspirations are blocked, in which meaningful human intercourse is restricted, and in which the outcome of important events in uncertain".

The health consequences of the stress and coping processes will be seen most readily in the longest-term immigrants; if we consider years in the United States to represent exposure to barriers to upward social mobility, those with longer duration periods will have the most opportunity to raise their earnings, yet they will also have the longest contact with potentially health-degrading processes. There is some evidence to suggest that Asian immigrants with longer duration have worse health outcomes than

those with shorter residence in self-reported physical health measures (Cho & Hummer, 2001; Frisbie, Cho, & Hummer, 2001). This negative duration effect is not fully robust across different health measures and populations, but it is a useful starting point by which to explore whether immigrants experience negative cumulative effects of stress. In this way, duration may moderate the relationship between socioeconomic status and health such that immigrants with longer duration will experience less positive health outcomes with higher economic measures.

These hypothesized patterns of economic integration and related health outcomes are not applicable to all Asian ethnic groups, however. First, the economic integration patterns of different immigrant groups differ. Asian immigrant groups who came to the United States as economic migrants, such as Korean and Chinese, have faster economic assimilation periods than refugee groups like the Vietnamese or other Southeast Asian groups (Chiswick, 1978; Cortes, 2004). Secondly, Asian ethnic groups may have separate social integration experiences. For example, South Asians have faced unique racial discrimination after September 11th because of anti-Muslim sentiment (Prashad, 2003). Finally, Asian ethnic groups may cope with barriers to social mobility in different ways. For economic migrants, work is the primary motivation for immigration, which may make the role of employee or worker very salient and heighten the appraisal of occupational barriers. Refugees, on the other hand, may have alternate roles that arise from their political histories that alter their coping responses to occupational barriers. To account for potential heterogeneity, I will consider Asian groups separately.

Disaggregation will also confirm whether the economic and social integration trends are reflecting the experience of different groups within the aggregated Asian

population or a simultaneous effect. Some research has confirmed increasing wage with duration among specific Asian ethnic groups (Schoeni, 1997), but the majority of the work has been conducted on the aggregated Asian population (Stewart & Dixon, 2010). The same is true for worsening health with duration (Cho & Hummer, 2001; Frisbie et al., 2001). It is possible that the economic and health integration patterns of a few Asian ethnic groups are driving the trends for the aggregated population. For example, Asian Indian and Chinese immigrants may be earning higher incomes with duration, which drives the wage trend when Asians are examined as an aggregated population. Likewise, the worsening health with duration may only represent the health trajectories of certain ethnic groups. For example, Vietnamese may be experiencing more frequent racial discrimination than other Asian ethnic groups and undergo the associated poorer health outcomes, which may be driving the declining health trend in the aggregated population.

Aims and Hypotheses

In sum, this paper aims to establish the relationship between economic measures and general health measures accounting for unique factors among the foreign-born (e.g., duration in the United States). This analysis will additionally consider how the SES-health relationship differs across Asian ethnic groups, given their unique immigration histories. The hypotheses are:

Hypothesis 1

Economic measures will be negatively associated with disability for the aggregated Asian sample. While there has been some variation in the SES-health relationship among the foreign-born, the overall relationship among Asian American samples has proven to be positive and I expect my sample to follow the positive trend.

Hypothesis 2

Immigrants with longer duration will have poorer general health outcomes in the aggregated Asian sample. If we consider duration to represent stress and coping processes that exhibit a negative impact on health, I expect immigrants with longer residence to have worse health than more recent immigrants.

Hypothesis 3

The household income and general physical health relationship will be modified by length of U.S. residence, such that longer-term immigrants will not experience as strong of a negative relationship between increasing household income and disability as shorter-term immigrants.

Hypothesis 4

The interaction between household income and duration will be different among different Asian ethnic groups; economic migrants (Korean and Chinese) will demonstrate the moderation effect, but groups with larger refugee populations (Vietnamese) will not, as unique histories of immigration and experiences in the United States may alter subsequent economic patterns.

Methods

Data

The data were from the 2005-2007 waves of the American Community Survey (ACS), an annual survey conducted by the Census Bureau. The survey is sent to a nationally-representative sample of American households and collects information on demographic, economic, housing, social and financial characteristics. The ACS is a useful dataset by which to examine the research questions because of its large Asian

sample and detailed Asian ethnic breakdowns. The ACS is publicly-available in one, three and five-year intervals; I used a three-year interval to ensure a sizeable sample for each Asian ethnicity while also avoiding potential confounding period effects in data aggregated across several years. I downloaded the data from the Integrated Public Use Microdata Series (IPUMS), which provides harmonized data and documentation for the American Community Surveys (Ruggles et al., 2010).

Sample

The sample included all single-race Asian respondents over 18 years of age. I separated the sample into six Asian ethnicities: Chinese, Japanese, Filipino, Asian Indian, Korean and Vietnamese. These groups were largest in the sample and accordingly, the largest Asian groups in the United States. The sample sizes for each Asian ethnicity are provided in Table 4-1.

Variables

Health Measure

The only health-related measures in the ACS pertained to disability status, which was assessed across sensory, physical, cognitive, self-care, mobility and work disabilities. The series consisted of six yes/no questions that were asked as follows, "Does this person have any of the following long-lasting conditions: Blindness, deafness, or a severe vision or hearing impairment (sensory)? A condition that substantially limits one or more basic physical activities such as walking, climbing stairs, reaching, lifting or carrying (physical)?" and "Because of a physical, mental, or emotional condition lasting 6 months or more, does this person have any difficulty in doing any of the following activities: Learning, remembering, or concentrating (cognitive)? Dressing, bathing, or getting

around inside the home (self-care)? Going outside the home alone to shop or visit a doctors' office (mobility)? Working at a job or business (work)?"

The outcome of interest was a binary measure that indicated whether a respondent answered yes to any of the disability measures. If so, they were coded as having any disability.

Economic Measures

There were two economic measures to capture different aspects of material means. The first was *wage income,* which is the respondent's total pre-tax wage and salary income for the previous year. This measure included wages that were received as an employee or income generated from a business if the respondent was self-employed. This continuous variable was scaled to $10,000 to ease interpretation of the coefficients. Analyses with this measure only included respondents who reported being having a job at the time of the survey.

The second economic measure was *per capita household income,* which is the ratio of available household income to the number of individuals living in each household. This measure is an equivalence scale, which assesses the relative resources of households across different sizes and compositions (Nelson, 1993). Per capita household income avoids conflation between a high household income and a large household. This is important for Asian immigrants, as they have been found to have larger household sizes compared to native-born Whites (Burr & Mutchler, 1993). This variable was scaled to $10,000 to ease interpretation of the coefficients. Analyses with this measure included the entire sample.

Nativity/Years in the United States

This variable designated nativity status and years of U.S. residents for the sample. The variable was divided into the following categories that were provided in the ACS: US-born Asian, Immigrant 0-5 years, Immigrant 6-10 years, Immigrant 11-15 years, Immigrant 16-20 years and Immigrants 21 plus years. The reference group was US-born Asians; although the aim of this paper considered the economic and health changes over an immigrant's lifetime, I included US-born Asians to control for any exogenous changes that might impact the change in economics or health over time.

Interaction Variable

For analyses that tested the economic and duration interaction, I included interaction terms that were the product of each nativity/years dummy and an economic measure. For each model, there were five interaction terms that estimated the differential effect of duration on income and health for each duration category: 0-5 years * economic measure, 6-10 years * economic measure, 11-15 years * economic measure, 16-20 years * economic measure and 21+ years * economic measure.

Sociodemographic variables

The models adjusted for the sociodemographic characteristics of gender, age, marital status (0-married, 1-unmarried), employment (0-employed, 1-unemployed) and educational attainment (0-college graduate, 1-below college graduate). Each of these covariates has been associated with both SES and general physical measures of health (Choe, 2009; Tanjasiri & Nguyen, 2009; Tseng, 2009). Models with the aggregate Asian sample included controls for Asian ethnicity to account for the disparate population sizes.

Analyses

The entire analysis accounted for the ACS complex survey design. I used replicate weights that accounted for person weight, stratum and cluster design effects. All analyses were conducted on Stata version 11.2.

The research questions were examined in a series of multivariable regression models that are detailed below. Each model was conducted separately for each economic variable and Model 3 was conducted for each of the six ethnic groups.

Model 1 – Economic Measures and Disability

This model examined the relationship between the economic measures and disability.

$$Y_i = \beta_1 W_i + \beta_2 X_i + \varepsilon_i$$

The model was a logistic regression model that estimated the odds of having any disability for every $10,000 increase in wage income or per capita household income (W_i). The model also controlled for gender, age, marital status, educational attainment and Asian ethnicities (X_i represents the vector of covariates). The model with per capita household income also controlled for employment status.

Model 2 – Duration and Disability

This logistic regression model estimated the odds of having any disability for each duration category (D_i) relative to the US-born.

$$Y_i = \beta_1 W_i + \beta_2 D_i + \beta_3 X_i + \varepsilon_i$$

Wage income and per capita household income were also included in the model (W_i) to estimate the duration effect over and above any concurrent income effects. The model also controlled for gender, age, marital status, educational attainment and Asian

ethnicities. The model with per capita household income also controlled for employment status. For results that indicated a linear pattern across the duration categories, I tested the linear trend by analyzing another model among the foreign born only with an ordinal duration variable that had the following ordering: 0-5 years, 6-10 years, 11-15 years, 16-20 years and 21 plus years. The coefficient for this term represents the mean change in disability odds with each increasing duration group.

Model 3 – Interaction

This logistic regression model tested for the interactive effect of duration on the economic and disability relationship.

$$Y_i = \beta_1 W_i + \beta_2 D_i + \beta_3 (W_i * D_i) + \beta_4 X_i + \varepsilon_i$$

The model included main effects for duration and income along with the five separate interaction terms for each duration category by economic measure ($W_i * D_i$). The model included the same covariates as other models. I conducted this model separately for each of the different Asian ethnic groups to examine my final hypothesis.

To test the significance of the overall interaction between economic measures and duration, I used Wald Test to test the joint significances of the interaction terms. This provides an F-statistic that estimates the likelihood that of all the interaction terms in the model are equivalent to zero.

Results

Sample Characteristics

Table 4-1 describes the disability status and socioeconomic variables for the sample by ethnicity and duration in the United States. Among the aggregated Asian sample, the disability prevalence for each duration group increased with longer duration.

The 0-4 year group had the lowest at 5.2% and all subsequent groups increased. The 21 plus year duration group had the highest prevalence of disability with 14.6%. This pattern was also present in the individual Asian ethnic groups. For nearly all groups, the 21 plus group had the highest disability prevalence and the 0-5 years or 6-10 years groups had the lowest. The only group without this pattern was the Vietnamese; the 11-15 years group had the highest average disability prevalence, followed by the 16-20 years group.

In the aggregated Asian sample, wage income and per capita household income also increased with longer residence in the United States. The 21 plus group earned the highest income out of all groups with $39,000. Their per capita household income was the highest among the foreign born, but was still lower than the US born. This pattern was also consistent across most Asian ethnic groups. The average income doubled between the 0-5 years and 21 plus years immigrant groups among the Chinese, Asian Indian, Korean and Vietnamese. The only group without an increase was Japanese; the 21 plus year category had the lowest average income compared to other groups.

Multivariable analyses that controlled for gender, age, marital status and educational attainment confirm the economic patterns (Appendix E, Table E-1). In the aggregated Asian sample, the most recent immigrants (0-5 years) earned significantly lower income wages on average than their US-born counterparts but this difference shrank with each subsequent duration group. In wage/salary, the longest duration group eventually surpassed the US-born; employed Asians with over 21 years duration earned $3700 more than their U.S. counterparts.

These patterns were also present among the individual ethnic groups (Appendix E, Tables E-3 to E-8). Models in which duration was entered as an ordinal variable

confirmed the upward trend (results not shown). With each increasing duration category, the wage and salary of the foreign-born increased for Chinese by $7300, Filipinos by $6300, Asian Indians by $9700, Koreans by $6500 and Vietnamese by $6300. For per capita income, Chinese increased by $5700, Japanese by $3500, Filipinos by $5500, Asian Indians by $7500, Koreans by $9700 and Vietnamese by $5600.

Duration, Income and Disability

Some of the patterns in the descriptive tables may be due to the increasing average age with duration. One inherent confounder with duration is age; as immigrants live in the United States longer, they also grow older. To address some of this confounding, I age-adjusted disability prevalence.

Table 4-2 illustrates the age-standardized pattern of economic measures and disability by duration groups. I standardized the means to the age distribution of the total single-race Asian sample in the 2000 Census. For the aggregated Asians sample, there was not an obvious decrease in disability prevalence with increased wage. The lowest wage group often had the highest disability prevalence within a duration group, but the prevalence did not decrease with subsequent income categories. In the 0-4 years, 5-9 years and 15-20 years duration groups, the highest income category had among the highest disability prevalence.

Among the individual ethnic groups, there was a more obvious disability decrease with increasing wages (comparisons within columns). This was particularly true for the longer term immigrants. For example, for Filipinos with 16-20 years duration, the lowest income category had the highest prevalence of disability at 8.4%. As income increases, the prevalence drops, with only 1.3% of the highest earners reporting disability. This

patterns had some exceptions, such as the Filipino 0-5 year and Vietnamese 0-5 year group.

Among the aggregated Asians, there was an overall decline in disability prevalence with increasing duration (comparisons across rows). This pattern was reversed among the Chinese, Asian Indian and Korean groups. Overall, however, there was no clear duration pattern across the different ethnic groups. For example, the disability prevalence peaked at 16.2% among Filipinos earning less than $20,000 at 15-20 years and decreased on the last remaining duration category.

The same table with per capita household income and the entire sample is provided in Appendix C, Table C-1. The patterns with wage/salary are similar.

Regression Results

Economic Measures and Disability

Both wage/salary income and per capita household income were negatively related to disability; increases in income or per capita household income were associated with lower odds for disability (Table 4-3). In the aggregated Asian sample, each $10,000 in wage/salary increase was associated with a 0.93 decrease in disability odds. Likewise, a $10,000 per capita household income increase was associated with a .95 decrease in odds. This pattern was consistent across all ethnic groups (Appendix E, Tables E-3 through E-8)

Duration and Disability

Longer duration was associated with higher odds of disability among the aggregated Asian sample. For models that used the wage/salary economic measure and included the employed only, all groups had significantly lower odds than the US born,

but they increased with longer duration. The most recent immigrants (0-5 years), had the lowest relative odds to the US born at .66. For models that used the per capita household income economic measure and included the entire sample and measure, immigrants under 10 years had significantly lower odds for disability while nearly all the duration groups with over 10 years had significantly higher odds than the US born. The pattern was not linear, however, as the longest term immigrants had significant lower odds than the US born. The odds was very close to one (.93), however, and did not indicate a substantial difference in overall disability prevalence than the US born.

The results varied across Asian ethnic groups (Appendix E, Tables E-3 through E-8). For analyses that only included employed individuals and used the wage income measure, the Japanese and Korean respondents did not show any significant relationship between duration and disability. Chinese, Filipino and Asian Indian respondents demonstrated the positive duration and disability relationship seen in the aggregated sample. A linear test of trend among the foreign born only confirmed this trend (results not shown). For every increase in duration category, the disability odds for the foreign-born groups rose by 1.08 ($p<.05$), 1.08 ($p<.001$) and 1.10 (p.05) for the Chinese, Filipino and Asian Indian, respectively. The Vietnamese had a non-linear duration pattern and accordingly, the linear test did not indicate a significant increase in disability odds across the disability groups.

For models that included the entire sample and used the per capita household income economic measure, the positive patterns between duration and disability demonstrated in the aggregated Asian sample were seen in most of the Asian ethnic groups. In a linear test of trend among the foreign born only (results not shown), the

odds for disability increased by 1.09 (p<.001), 1.22 (p<.05), 1.07 (p<001), 1.09 (p<.001) and 1.16 (p<.001) for each increasing duration category for the Chinese, Japanese, Filipino, Asian Indian and Korean groups, respectively. The Vietnamese again displayed a non-linear pattern.

Figures D-1 through D-6 in Appendix D illustrate the predicted probability of disability over duration categories for each Asian ethnic group. The graphs also include the predicted economic measures on another axes. The predicted economic measures (primary axis, solid line) were calculated from a ordinary least squares regression model with duration categories regressed on economic measures and controlling for age, gender, marital status, college graduate and employment (Appendix E, Tables E-3 through E-8). The predicted disability values were calculated from the results of Model 2 (secondary axis, dotted line). Both economic measures and disability measures have a positive trend; across the increasing duration groups, estimated wage and salary or per capita household income and disability prevalence increase.

Economic Measures and Duration Interaction

The joint significance of the interaction terms for the aggregate sample were positive for both wage/salary (p<.05) and per capital household income models (p<.001). Figures 4-1 and 4-2 illustrate the interactions for both economic measures. Each line represents a different nativity/duration group and they grow progressively lighter with longer duration. The x-axis the economic measure in $10,000 intervals and the y-axis is the predicted disability.

Figure 4-1 illustrates the interaction between wage/salary and duration for the aggregated Asian sample. All of the lines are negative, signifying lower disability with

higher income. The slopes for some of the duration groups, such as the 0-5 years, 16-20 years and 21+ plus years groups are flatter, suggesting that the effect of income on disability is not as strong among the foreign born groups. None of the individual interaction terms were significant, however, so I can only speak to the general trend of the interaction.

Figure 4-2 illustrates the interaction between the per capita household income and duration among the aggregate sample. This graph reveals the opposite interaction as previously; the foreign born lines are more negative than the US born. Higher wages among the foreign born is associated with lower disability prevalence compared to the US born.

Among individual ethnic groups, the joint significance of the interaction terms between wage income and duration were only significant for the Filipino and Asian Indian groups. Both groups displayed a significant interaction in which groups with longer duration had a less positive relationship between wage income and disability. In other words, increasing wage income was less protective against disability for longer-term Asian Indian and Filipino immigrants. Figures 4-3 through 4-4 illustrate the trends of these groups with a graph. While all the lines in the figures are negative, indicating a lower disease prevalence with higher income, the lines for all the foreign-born groups are flatter.

For the interaction between per capita household income and duration, the joint significance of the interaction terms were significant for the Chinese, Filipino, Asian Indian and Vietnamese groups. Unlike the interaction between wage and duration, the interaction between household income and duration indicated a more negative

relationship between per capital household income and disability among groups with longer duration. This is in contrast to the previously stated hypothesis; among these Asian ethnic groups, immigrants with longer duration seem to benefit more from higher per capita household income than their US-born counterparts. Figures 4-5 through 4-8 graphically illustrate the interaction terms for these groups.

Discussion

This paper tested four hypotheses: that among Asian immigrants, higher economic measures would be associated with lower disability; that longer duration would be associated with both rising economic measures and higher disability; that duration would significantly modify the relationship between economic measures and disability; and that this interaction would be different across separate Asian ethnic groups.

Rising economic status, measured in both wage income and per capita household income, was associated with a lower odds of disability in the aggregated Asian sample. This relationship was consistent across all Asian ethnic groups and was robust to the addition of duration in the multivariate models. These results align with other research that has found better health status with higher socioeconomic status; on the whole, Asians enjoy better health with higher wage income and higher per capita household income. This is in contrast with other research that has questioned whether Asian immigrants display the positive SES-health gradient because of the positive health selection inherent in migration (Kimbro et al., 2008). Because I did not include a US-born white comparison group, I can only speak to within-Asian comparisons and I do not know whether Asian immigrants reap the benefits of material resources to the same degree as Whites.

Duration appears to complicate the SES-health gradient relationship, however. First, longer duration is associated with both increasing economic means and disability. The relationship between longer duration and increasing wage income and per capita household income followed a linear pattern among the aggregated Asian sample. The gap between the mean incomes of the US-born and of the foreign-born groups shrunk with each subsequent duration group. I found this positive trend across per capita household income as well, suggesting that immigrants both earn more and have more available economic resources. The results of a supplemental analysis that only included immigrants who migrated after adulthood (18 years of age) did not differ, confirming that the trends of the longer term immigrants were not driven by those who migrated in childhood. This is consistent with findings from the wage assimilation literature that indicate growing wages and earnings with longer residence in the United States.

Most Asian ethnic groups also displayed the positive relationship between duration and economic measures. There was one notable exception to this trend; the Japanese did not appear to have any relationship between duration and increasing wage income among the employed. The Japanese are the only ethnic group in the sample that has not experienced a significant population increase initiated by the 1965 Immigration Act amendments. A substantial portion of these post-1965 immigrants came to the United States as economic migrants and their economic integration patterns have been the focus of much of the wage assimilation literature. In contrast, the most recent Japanese immigrants earned the highest incomes; this could be due to Japan's parallel economic rise, which contributed a consistent inflow of temporary professional workers with higher

salary. The Japanese shared similar economic and duration patterns as other Asian ethnic groups in the per capita household income, however.

The relationship between duration and disability also indicated worsening health with duration among the aggregated Asian sample. In analyses among the employed that used wage/salary as the economic measure, all duration groups had significantly lower odds for disability than the US born, but the odds increased with duration. In analyses that included the entire sample and used per capita household income, the 0-5 years and 6-10 year groups were significant lower than the US born, while longer term duration groups did not differ from the US born. Again, a supplemental analysis with adult migrants only produced the same results. I proposed that stressors arising from social integration may accumulate over an immigrant's years in the United States. Although I could not measure stressors directly, the positive relationship between duration and disability may offer support to the hypothesis that Asian immigrants experience health effects from integration processes that progress with increasing years.

Among the Asian ethnic groups, the Chinese, Filipino and Asian Indian groups displayed the same duration and disability patterns as the aggregated Asian populations in all models. Japanese and Korean displayed the same trends as the aggregated sample in models with the entire sample using per capita household income as the economic measure. The Vietnamese did not display a positive duration disability measure in any of the models.

The different circumstances of migration that surround the Asian ethnic groups may explain some of the heterogeneity in the effect of duration and disability. As discussed, many employed Japanese immigrants are permanent workers and do not intend

to fully migrate to the United States. The Vietnamese largely entered the United States as refugees or under family reunification visas connected to the first refugee wave. Their stressful pre-migration circumstances may have been substantially alleviated by entry in the United States and thus reducing any long-term negative cumulative effects of integration-related stressors or barriers.

The lack of a significant trend among employed Koreans was unexpected. Their employment characteristics are similar to the Chinese, Filipino and Asian Indian groups; they are primarily economic migrants whose entry into the United States was facilitated by the 1965 Amendments. One possibility may be that the high proportion of self-employment among Korean immigrants removes them from barriers to upward occupational mobility in the primary labor force. Future research should consider characteristics of economic integration that move beyond income (i.e., occupation and underemployment) to identify more specific barriers.

The dual trends of increasing economic means and disability with duration are counter-intuitive to the initial finding that economic measures and disability were negatively correlated. If longer-term immigrants are earning more, we would also expect them to have lower odds for disability. I hypothesized an interaction between wage and duration to explain this incongruity and found limited support for this hypothesis. Among the aggregated Asian sample, the interactions for wage/salary and duration and per capital household income and duration were both significant, but in opposite directions. Among the employed respondents and using wage/salary, longer term immigrants displayed a flatter negative relationship between wage and disability. The

opposite was true for per capita household income; longer term immigrants seemed to enjoy a stronger health benefit of increasing economic means.

I found support for my final hypothesis that the interaction would vary across Asian ethnic groups. Among the Filipinos and Asian Indians, there was a moderating effect of duration among employed individuals with wage income as the economic measure. Longer term immigrants still maintained a relationship between higher wage income and lower disability, but this relationship was not as strong compared to the US-born. This provides some evidence that higher income does not invariably provide better health outcomes. In the case of Filipinos and Asian Indians there may be salient factors that proceed with duration that impact the wage-health relationship, as I hypothesized.

The interaction for the per capita household income was significant among some groups as well, but in the opposite direction than the wage income interaction. The longer-term Asian Indian, Filipino, Chinese and Vietnamese groups displayed an interaction that indicated a stronger negative relationship between per capita household income and disability than the US born. Like the results of the aggregated model, a higher per capita household income was associated with lower disability prevalence.

This study contained some limitations. The American Community Survey is one of the few nationally-representative datasets that contain a sizeable Asian population, but it lacks measures that are specific to the hypothesized pathway. Stress and coping models figured heavily in the development of the hypotheses, but the analyses did not include any direct measures of stress and used duration as a proxy measure to represent stress accumulation.

Another limitation is the inherent confounding between duration, age, and cohort effects in cross-sectional analyses (Myers & Lee, 1996). Current analytic models cannot accommodate controls for all three variables, as they are fully predictive of one another, so I excluded cohort effects estimates. It is possible that economic and health differences across duration categories actually reflect the characteristics of distinct groups that entered the United States at different points in time. The changing nature of immigration may give an appearance of changing health patterns with increased residence in cross-sectional analyses, but differences across duration groups may actually be due to cohort differences.

Table 4-1. Sample Characteristics

	n	Disability	Income/ Salary	Per Capita HH Inc	Married	College Grad	Employed	Age
All Asians	277,243	10.3%	33547	45698	62.4%	45.2%	62.9%	43
US Born	53,799	9.5%	31843	55648	37.4%	41.0%	62.3%	38
0-5 Years	28,384	5.2%	18662	30652	62.2%	53.3%	51.3%	36
6-10 Years	34,082	6.0%	30956	38731	70.1%	53.6%	65.7%	38
11-15 Years	31,574	10.3%	32067	39479	68.2%	42.7%	66.4%	42
16-20 Years	33,362	10.9%	34732	42909	67.3%	41.7%	67.3%	44
21+ Years	96,042	14.6%	38966	51618	70.0%	43.7%	63.4%	51
Chinese	67,797	9.3%	34444	45575	63.5%	48.3%	62.3%	44
US Born	12,225	7.4%	37753	62776	35.2%	53.9%	63.2%	37
0-5 Years	6,291	4.5%	13840	25748	59.9%	46.1%	48.4%	37
6-10 Years	8,562	5.9%	26936	35351	69.0%	49.0%	65.3%	39
11-15 Years	7,893	8.3%	33406	41023	70.1%	46.2%	67.7%	43
16-20 Years	9,116	9.6%	38605	44722	71.2%	47.7%	68.1%	46
21+ Years	23,710	14.3%	39126	49711	71.9%	46.8%	60.8%	53
Japanese	22,600	12.6%	33536	59884	57.2%	43.1%	54.7%	50
US Born	13,335	16.4%	34846	61324	54.1%	42.4%	58.0%	54
0-5 Years	2,095	2.1%	31873	48431	59.6%	53.1%	42.7%	33
6-10 Years	1,233	1.7%	32697	57677	61.9%	54.2%	56.3%	36
11-15 Years	856	4.0%	33499	64574	66.5%	56.2%	66.9%	39
16-20 Years	768	4.6%	32332	61534	66.6%	46.6%	65.0%	42
21+ Years	4,313	18.3%	27277	61857	59.6%	31.8%	47.6%	60
Filipino	54,019	11.4%	31486	47235	60.3%	43.1%	66.8%	45
US Born	10,012	8.2%	29569	54611	37.0%	30.8%	68.9%	34
0-5 Years	5,084	6.9%	19430	34893	64.9%	52.7%	60.7%	40
6-10 Years	5,169	7.9%	26147	38457	64.0%	49.0%	68.5%	41
11-15 Years	6,071	11.3%	30072	41251	63.0%	41.0%	69.9%	43
16-20 Years	6,762	11.5%	32896	44606	63.3%	43.2%	70.1%	45
21+ Years	20,921	16.0%	36073	51812	68.3%	45.9%	64.7%	53
Asian Indian	48,812	7.5%	44313	50782	71.6%	63.8%	66.5%	40
US Born	4,679	5.8%	33362	57228	29.4%	51.8%	58.2%	29
0-5 Years	7,600	4.7%	23421	32842	65.2%	71.3%	57.2%	33
6-10 Years	10,569	4.5%	44036	46732	79.3%	71.8%	70.2%	36
11-15 Years	6,767	7.9%	46133	49680	78.3%	59.3%	70.5%	40
16-20 Years	5,799	8.8%	46913	51975	76.2%	56.5%	70.8%	43
21+ Years	13,398	12.0%	58583	64718	79.8%	62.1%	68.9%	51

	n	Disability	Income/ Salary	Per Capita HH Inc	Married	College Grad	Employed	Age
Korean	26,936	9.0%	31053	45877	60.4%	47.6%	57.9%	42
US Born	3,233	5.0%	31212	54828	25.1%	45.5%	62.9%	29
0-5 Years	2,999	3.9%	15856	24749	59.4%	57.7%	36.1%	35
6-10 Years	3,172	4.7%	24147	32770	65.0%	53.6%	57.1%	38
11-15 Years	2,092	8.2%	25939	35365	66.4%	50.7%	58.8%	41
16-20 Years	3,256	9.4%	28272	42373	62.2%	40.7%	63.2%	42
Vietnamese	29,281	13.2%	26567	33890	59.3%	24.3%	62.2%	43
US Born	4,971	10.6%	24895	40700	35.5%	31.0%	59.0%	36
0-5 Years	1,723	7.9%	11338	21048	66.0%	13.6%	52.4%	38
6-10 Years	2,257	11.0%	16798	22911	61.9%	11.9%	62.4%	40
11-15 Years	5,283	16.8%	18478	22858	60.1%	16.4%	59.8%	44
16-20 Years	4,375	15.4%	24333	28436	61.6%	19.2%	62.5%	43
21+ Years	10,672	13.4%	37231	44692	66.2%	33.1%	66.7%	47

Sample Ns represent raw values

Means for disability, economic measures and demographic characteristics are weighted

Table 4-2. Mean Prevalence of Disability by Wage/Salary and Duration, Age Standardized

	US Born	0-4 Years	5-9 Years	10-14 Years	15-20 Years	21+ Years
All Asians						
0 -20,000	9.1%	5.6%	4.6%	4.7%	2.8%	3.6%
20,000 - 40,000	5.6%	2.5%	2.5%	2.4%	4.7%	1.5%
40,000 - 60,000	5.4%	4.9%	1.5%	2.2%	1.2%	1.5%
60,000 - 80,000	7.5%	4.1%	5.4%	2.0%	2.0%	1.0%
80,000 -100,000	8.1%	4.3%	4.5%	3.0%	1.8%	2.1%
Over 100,000	7.5%	5.7%	4.7%	2.5%	3.2%	2.8%
Chinese						
0 -20,000	8.1%	4.0%	4.5%	5.3%	4.6%	5.4%
20,000 - 40,000	4.4%	1.8%	3.4%	3.2%	2.7%	5.3%
40,000 - 60,000	4.2%	1.2%	0.7%	2.0%	3.0%	2.2%
60,000 - 80,000	4.0%	0.3%	0.3%	0.8%	2.2%	2.6%
80,000 -100,000	0.8%	0.0%	0.2%	1.7%	1.2%	4.0%
Over 100,000	3.3%	1.2%	5.2%	0.7%	2.3%	2.3%
Japanese						
0 -20,000	7.0%	3.2%	0.0%	7.7%	4.2%	8.8%
20,000 - 40,000	5.3%	2.3%	0.9%	1.9%	3.3%	3.1%
40,000 - 60,000	4.8%	8.1%	1.7%	0.0%	0.9%	5.7%
60,000 - 80,000	6.0%	1.5%	2.7%	3.0%	0.0%	2.0%
80,000 -100,000	2.7%	0.0%	0.0%	0.0%	0.0%	1.5%
Over 100,000	3.6%	1.9%	0.6%	0.0%	0.0%	3.8%
Filipino						
0 -20,000	11.5%	5.1%	5.9%	8.3%	8.2%	7.6%
20,000 - 40,000	4.9%	2.5%	3.3%	4.4%	6.2%	5.7%
40,000 - 60,000	7.8%	0.6%	2.0%	7.6%	4.8%	5.9%
60,000 - 80,000	2.4%	1.3%	7.0%	1.5%	1.7%	3.0%
80,000 -100,000	1.4%	13.2%	0.4%	1.7%	3.3%	3.7%
Over 100,000	2.3%	2.4%	6.1%	0.5%	1.2%	2.6%
Asian Indian						
0 -20,000	12.3%	5.0%	5.0%	9.4%	8.1%	8.5%
20,000 - 40,000	6.2%	2.3%	6.2%	5.3%	4.0%	4.5%
40,000 - 60,000	2.9%	3.1%	1.6%	5.2%	6.1%	5.1%
60,000 - 80,000	1.7%	3.4%	1.3%	2.7%	2.1%	2.3%
80,000 -100,000	0.8%	0.4%	0.6%	0.6%	1.6%	3.5%
Over 100,000	0.2%	0.4%	1.0%	2.0%	3.4%	2.9%
Korean						
0 -20,000	6.0%	7.9%	3.8%	11.4%	5.1%	8.6%
20,000 - 40,000	3.8%	3.7%	4.1%	3.3%	3.5%	6.1%
40,000 - 60,000	6.8%	2.0%	1.4%	1.4%	4.4%	4.2%
60,000 - 80,000	0.7%	0.7%	4.6%	0.0%	2.4%	2.5%
80,000 -100,000	2.9%	0.0%	7.4%	2.2%	3.1%	2.4%
Over 100,000	4.0%	2.9%	1.4%	0.8%	1.1%	3.5%

	US Born	0-4 Years	5-9 Years	10-14 Years	15-20 Years	21+ Years
Vietnamese						
0 -20,000	9.5%	5.3%	7.7%	6.8%	9.7%	6.4%
20,000 - 40,000	7.0%	3.4%	7.0%	4.4%	4.5%	7.2%
40,000 - 60,000	4.7%	4.2%	5.4%	5.2%	3.2%	6.2%
60,000 - 80,000	2.6%	0.0%	0.0%	2.3%	3.6%	3.0%
80,000 -100,000	2.2%	6.3%	0.0%	4.6%	5.8%	3.6%
Over 100,000	4.5%	10.2%	0.0%	1.5%	1.6%	3.9%

Disability prevalence age standardized to 2000 Census Total Asian age distribution

Table 4-3. Regression Results for Aggregated Asian Sample

	Wage/Salary			Per Capita Household Income		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Nativity/Duration						
US Born		Ref.	Ref.		Ref.	Ref.
0-5 Years		0.66 (0.57 - 0.77)**	0.60 (0.48 - 0.76)**		0.57 (0.52 - 0.63)**	0.59 (0.52 - 0.67)**
6-10 Years		0.67 (0.58 - 0.76)**	0.74 (0.62 - 0.89)**		0.75 (0.69 - 0.81)**	0.89 (0.80 - 0.99)*
11-15 Years		0.84 (0.75 - 0.93)**	0.84 (0.70 - 1.00)		0.99 (0.92 - 1.05)	1.19 (1.08 - 1.32)**
16-20 Years		0.87 (0.78 - 0.96)**	0.75 (0.63 - 0.89)**		0.99 (0.93 - 1.05)	1.12 (1.01 - 1.24)*
21+ Years		0.84 (0.76 - 0.93)**	0.77 (0.66 - 0.91)**		0.93 (0.88 - 0.99)*	1.09 (1.02 - 1.16)*
Economic Measures						
Salary in $10,000s	0.93 (0.92 - 0.94)**	0.93 (0.92 - 0.94)**	0.91 (0.89 - 0.94)**			
Per Capita HH Inc				0.95 (0.95 - 0.96)**	0.95 (0.94 - 0.96)**	0.98 (0.97 - 0.99)**
Interaction Terms						
0-5 Years * Salary			1.03 (0.97 - 1.10)			1.00 (0.98 - 1.03)
6-10 Years * Salary			0.96 (0.93 - 1.00)			0.95 (0.93 - 0.98)**
11-15 Years * Salary			1.00 (0.95 - 1.04)			0.94 (0.92 - 0.97)**
16-20 Years * Salary			1.04 (1.00 - 1.08)			0.97 (0.95 - 0.99)**
21 Plus Years * Salary			(0.99 - 1.05)			0.96 (0.95 - 0.97)**
p-value for Interaction			p=.04			p=.00

* significant at 5%; ** significant at 1%
For full tables, see Appendix E, Table E-1

Figure 4-1. Aggregated Asians Wage/Salary and Duration Interaction

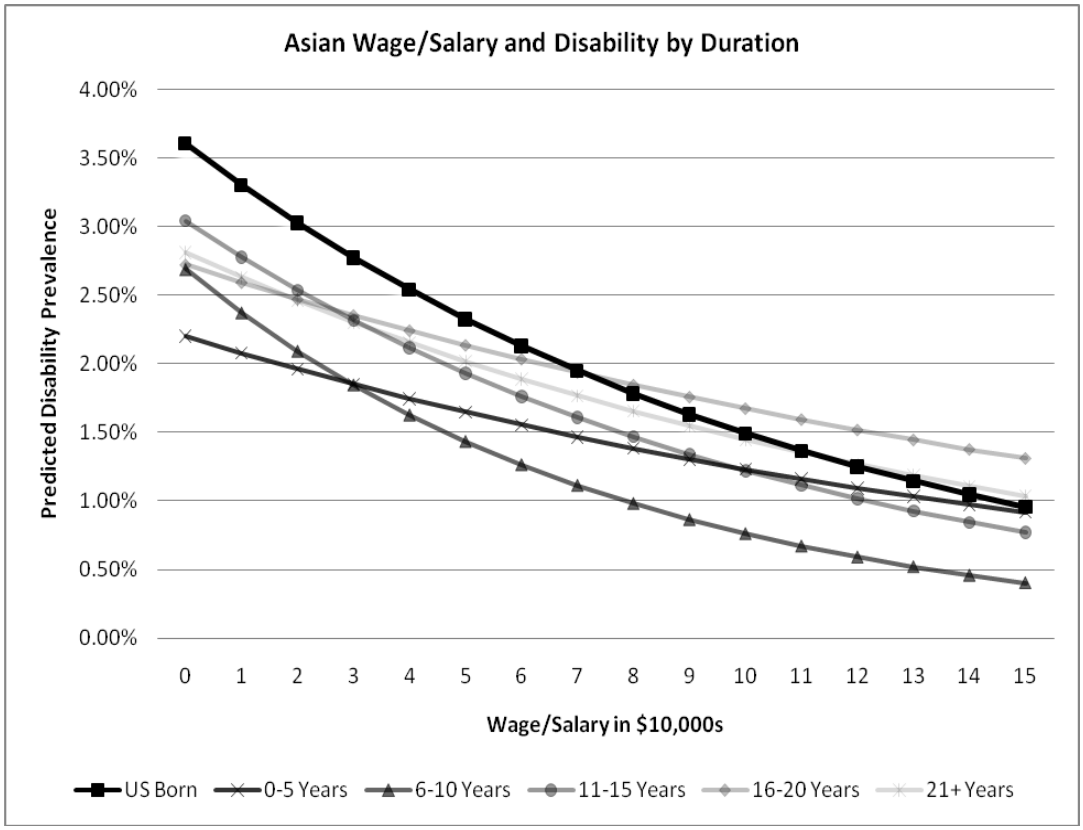


Figure 4-2. Aggregated Asians Per Capita Household Income and Duration Interaction

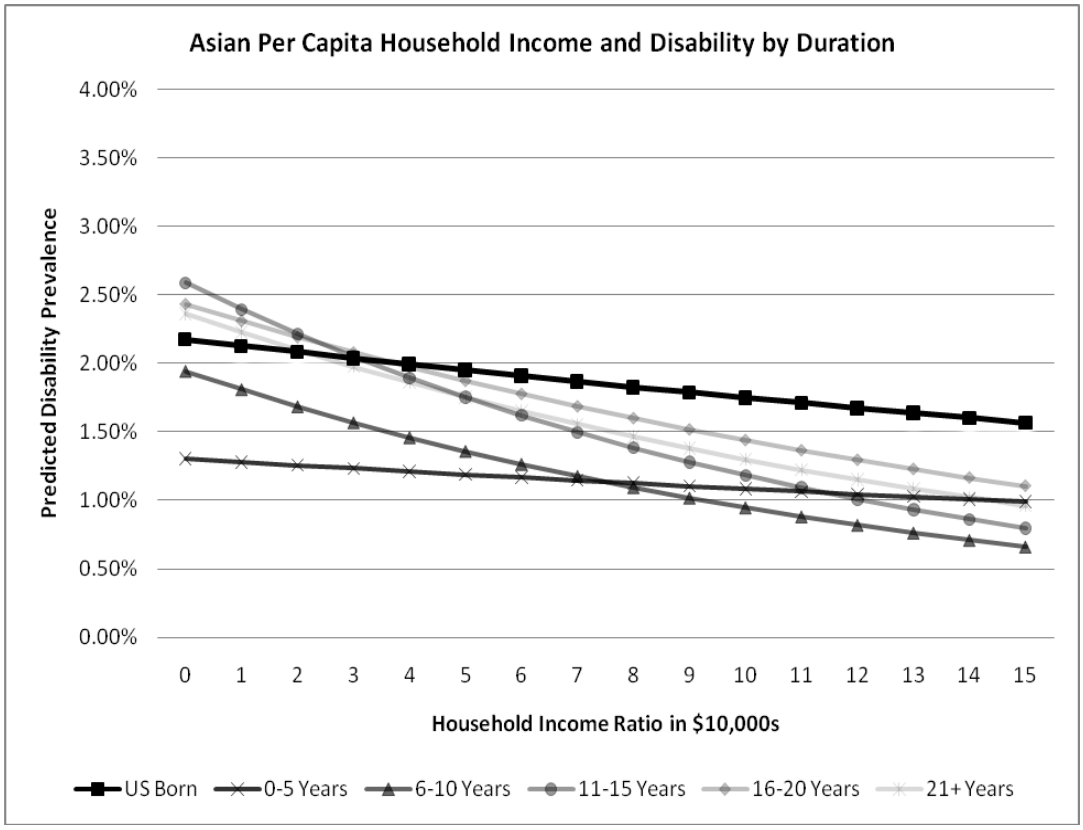


Figure 4-3. Filipino Wage/Salary and Duration Interaction

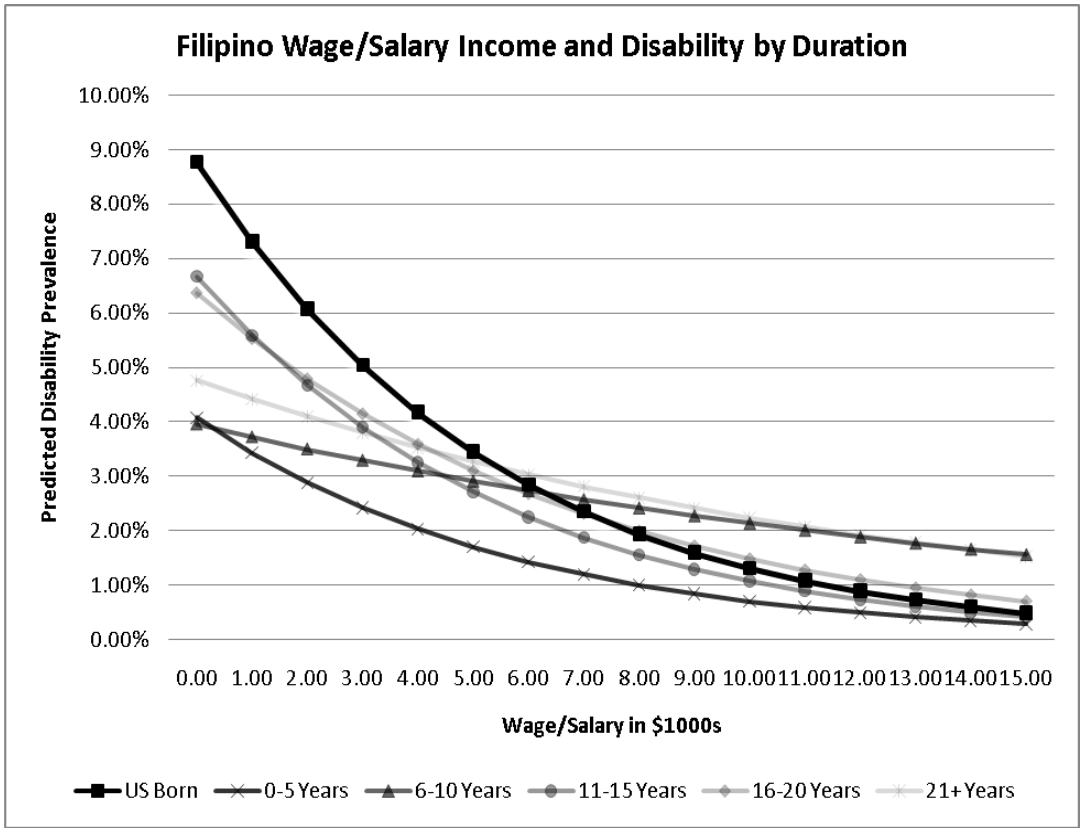


Figure 4-4. Asian Indian Wage/Salary and Duration Interaction

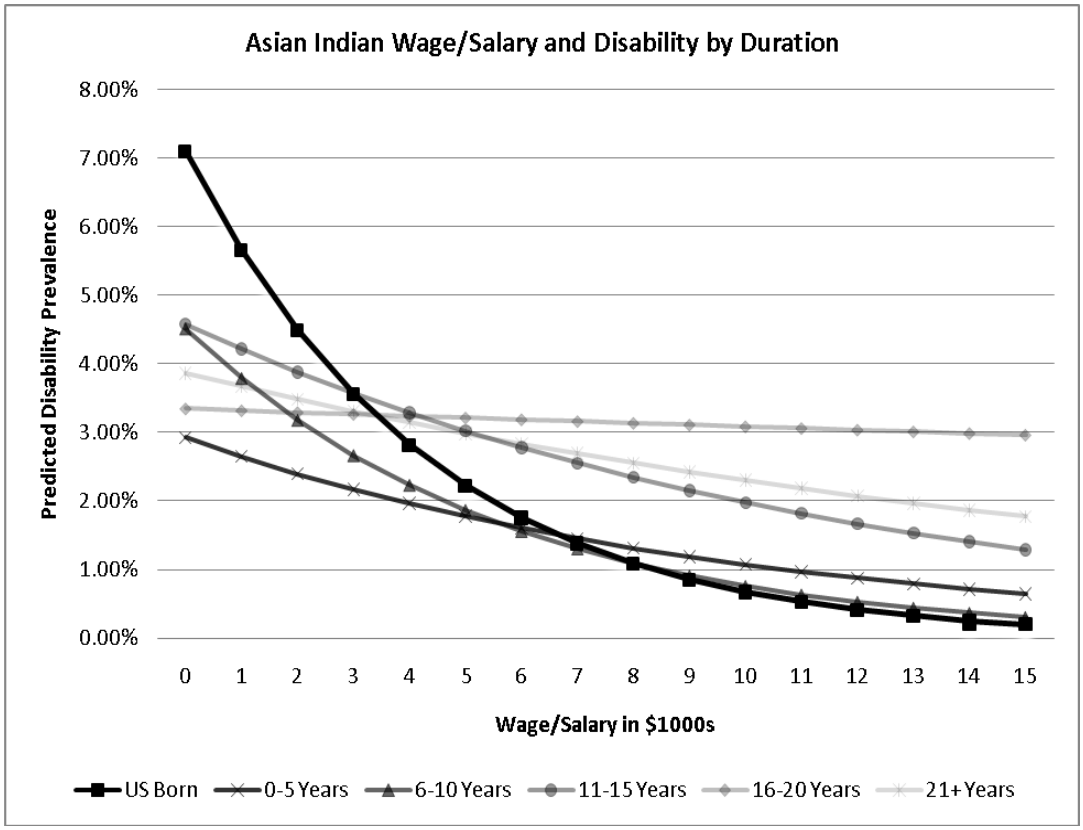


Figure 4-5. Chinese Per Capita Household Income and Duration Interaction

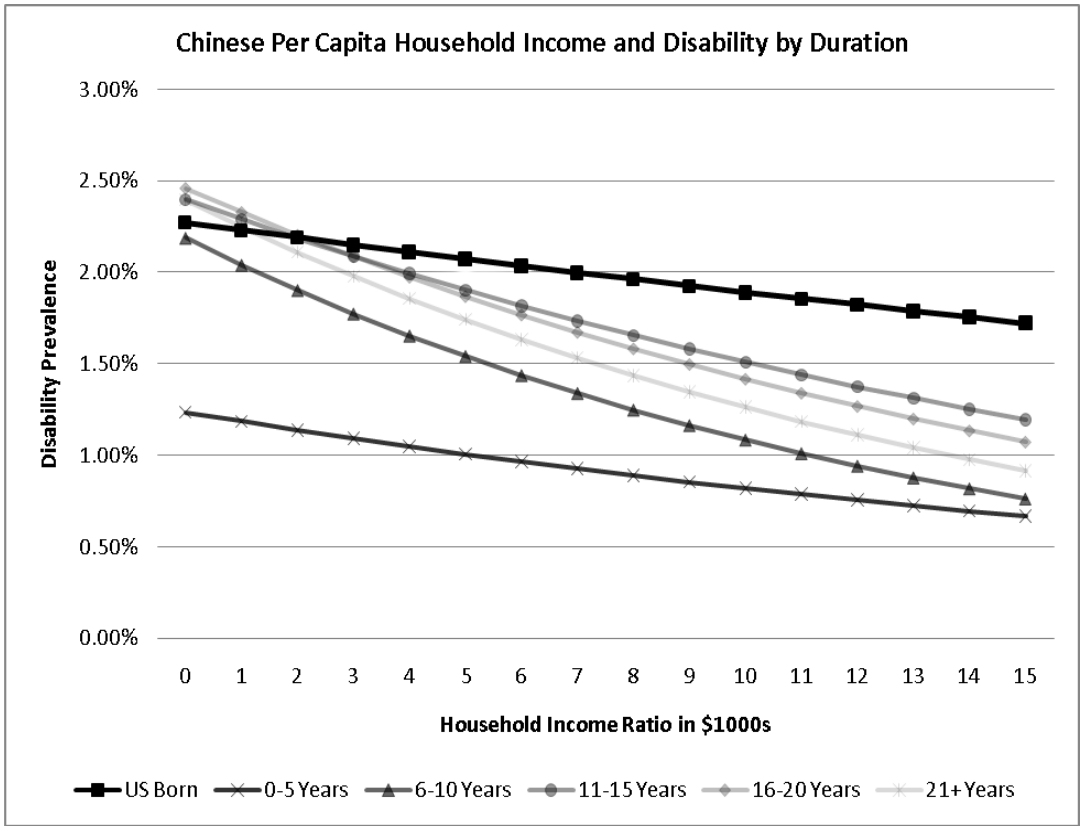


Figure 4-6. Filipino Per Capita Household Income and Duration Interaction

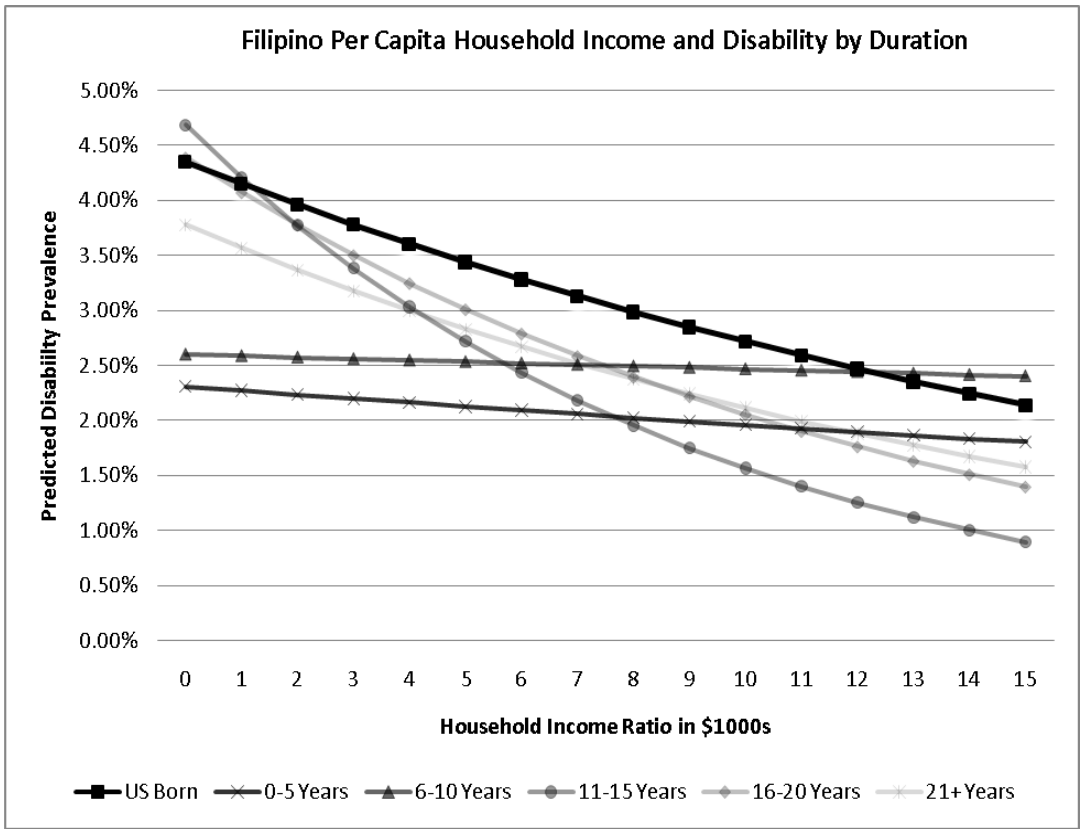


Figure 4-7. Asian Indian Per Capita Household Income and Duration Interaction

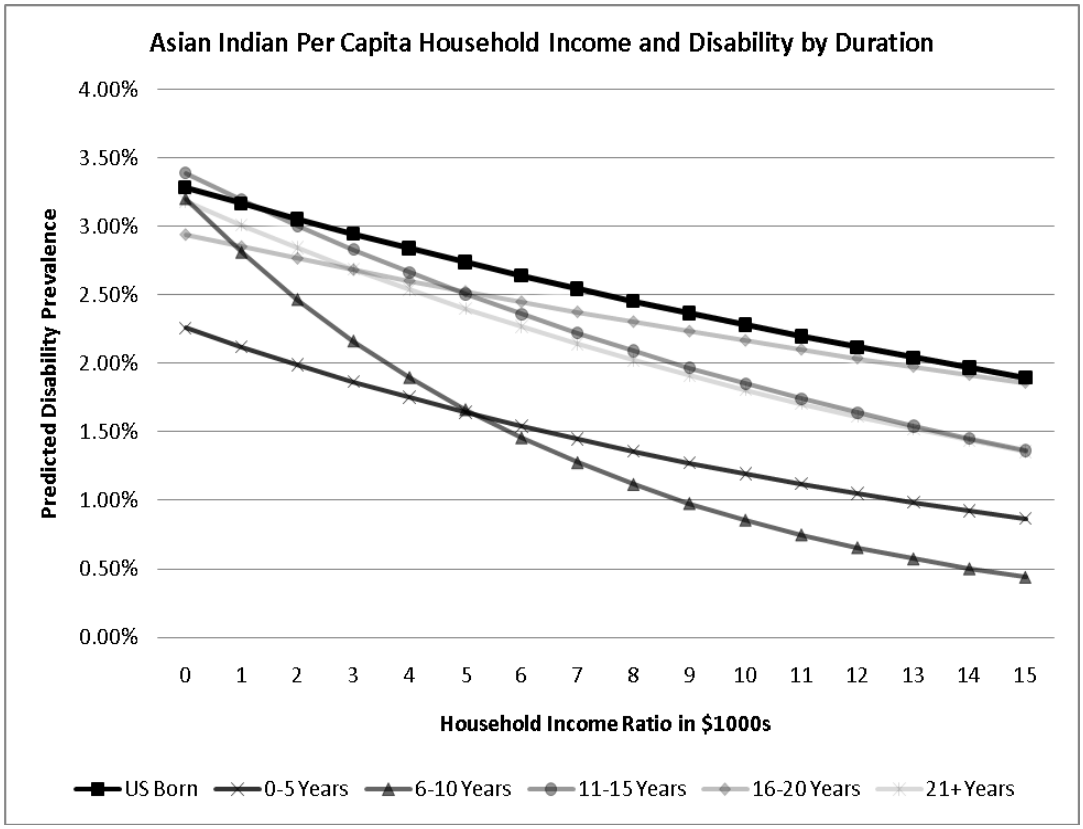
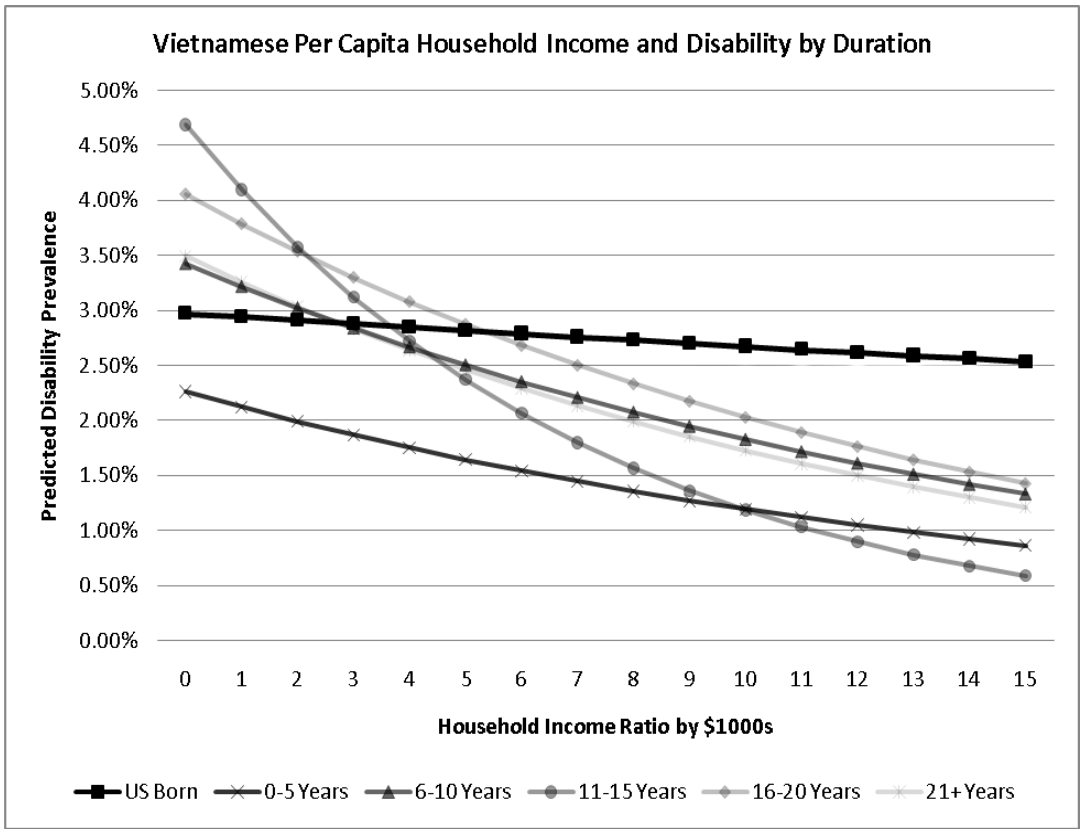


Figure 4-8. Vietnamese Per Capita Household Income and Duration Interaction



References

Acevedo-Garcia, D., Bates, L. M., Osypuk, T. L., & McArdle, N. (2010). The effect of immigrant generation and duration on self-rated health among US adults 2003-2007. *Social Science & Medicine, 71*(6), 1161-1172.

Adler, N. E., & Newman, K. (2002). Socioeconomic disparities in health: pathways and policies. *Health Aff (Millwood), 21*(2), 60-76.

Burr, J. A., & Mutchler, J. E. (1993). Nativity, Acculturation, and Economic Status: Explanations of Asian American Living Arrangements in Later Life. *Journal of Gerontology, 48*(2), S55-S63.

Chiswick, B. R. (1978). The Effect of Americanization on the Earnings of Foreign-born Men. *The Journal of Political Economy, 86*(5), 897-921.

Cho, Y. T., & Hummer, R. A. (2001). Disability status differentials across fifteen Asian and Pacific Islander groups and the effect of nativity and duration of residence in the U.S. *Soc Biol, 48*(3-4), 171-195.

Choe, J. (2009). The Health of Men. In C. Trinh-Shevrin, N. S. Islam & M. J. Rey (Eds.), *Asian American Communities and Health* (pp. 162-198). San Francisco: Jossey-Bass.

Cortes, K. E. (2004). Are Refugees Different from Economic Immigrants? Some Empirical Evidence on the Heterogeneity of Immigrant Groups in the United States. *Review of Economics and Statistics, 86*(2), 465-480.

Frisbie, W. P., Cho, Y. T., & Hummer, R. 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, G. C., Ro, A. E., Shariff-Marco, S., & Chae, D. (2009). Racial Discrimination and Health Among Asian Americans: Evidence, Assessment, and Directions for Future Research. *Epidemiologic Reviews, 31*(1), 130-151.

Geronimus, A. T., & Thompson, J. P. (2004). To Denigrate, Ignore or Disrupt: Racial Inequality in Health and the Impact of a Policy-Induced Breakdown of African American Communities. *Du Bois Review, 1*(2), 247-279.

Kaplan, G. A., & Keil, J. E. (1993). Socioeconomic factors and cardiovascular disease: a review of the literature. *Circulation, 88*(4), 1973-1998.

Kimbro, R. T., Bzostek, S., Goldman, N., & Rodriguez, G. (2008). Race, ethnicity, and the education gradient in health. *Health Affairs, 27*(2), 361-372.

Krieger, N. (2001). Theories for social epidemiology in the 21st century: an ecosocial perspective. *International Journal of Epidemiology, 30*(4), 668-677.

Kuo, W. (1976). Theories of Migration and Mental-Health - Empirical Testing on Chinese-Americans. *Social Science & Medicine, 10*(6), 297-306.

Lauderdale, D. S., & Rathouz, P. J. (2000). Body mass index in a US national sample of Asian Americans: effects of nativity, years since immigration and socioeconomic status. *Int J Obes Relat Metab Disord, 24*(9), 1188-1194.

Link, B. G., & Phelan, J. (1995). Social Conditions As Fundamental Causes of Disease. *Journal of Health and Social Behavior, 35*, 80-94.

Monat, A., & Lazarus, R. S. (1991). *Stress and Coping*. New York, NY: Columbia University Press.

Myers, D., & Lee, S. W. (1996). Immigration cohorts and residential overcrowding in southern California. *Demography, 33*(1), 51-65.

Nelson, J. A. (1993). Household Equivalence Scales: Theory versus Policy? *Journal of Labor Economics, 11*(3), 471-493.

Prashad, V. (2003). The Green Menace: McCarthyism after 9/11 *The Subcontinental, 1*(1), 65-75.

Ruggles, S., Alexander, J. T., Genadek, K., Goeken, R., Schroeder, M. B., & Sobek, M. (2010). *Integrated Public Use Microdata Series: Version 5.0 [Machine-readable database]*. Minneapolis. MN: University of Minnesota.

Sanchez-Vaznaugh, E. V., Kawachi, I., Subramanian, S. V., Sanchez, B. N., & Acevedo-Garcia, D. (2008). Differential effect of birthplace and length of residence on body mass index (BMI) by education, gender and race/ethnicity. *Social Science & Medicine, 67*(8), 1300-1310.

Schoeni, R. F. (1997). New evidence on the economic progress of foreign-born men in the 1970s and 1980s. *Journal of Human Resources, 32*(4), 683-740.

Stewart, Q. T., & Dixon, J. C. (2010). Is it Race, Immigrant Status, or Both? An Analysis of Wage Disparities among Men in the United States. *International Migration Review, 44*(1), 173-201.

Syme, S. L. (1979). Psychosocial Determinants of Hypertension. In G. Onesti & C. Klimt (Eds.), *Hypertension Determinants, Complications and Intervention*. New York: Grune & Stratton.

Tanjasiri, S. P., & Nguyen, T.-U. (2009). The Health of Women. In C. Trinh-Shevrin, N. S. Islam & M. J. Rey (Eds.), *Asian American Communities and Health* (pp. 132-161). San Francisco: Jossey-Bass.

Tseng, W. (2009). Social, Demographic and Cultural Characteristics of Asian Americans. In C. Trinh-Shevrin, N. S. Islam & M. J. Rey (Eds.), *Asian American Communities and Health* (pp. 23-49). San Francisco: Jossey-Bass.

Williams, D. R. (1999). Race, Socioeconomic Status, and Health The Added Effects of Racism and Discrimination. *Annals of the New York Academy of Sciences, 896*(1), 173-188.

CHAPTER 5 - DISCUSSION

This dissertation has examined structural and contextual influences on Asian immigrant health trajectories. I have argued Asian immigrants occupy a unique space in the American social hierarchy, in which they have positive SES characteristics but a history of marginalization. This duality points to the centrality of migration factors and accompanying economic, social and cultural integration processes as social determinants of Asian immigrant health. This viewpoint helps research progress beyond the lifestyle and behavior framework that has dominated the immigrant health literature.

My critical literature review chapter provided theoretical arguments for the salience of social determinants of Asian immigrant health. I presented three dimensions in which Asian immigrants are being incorporated into American society: economically, socially and culturally. The health resources associated with each act simultaneously and intersect, producing contexts of disease. Other structural factors additionally create discrete groups of immigrants who experience unique processes of economic, social and culturally integration. Accordingly, the health influences of each are varied, resulting in disparate health trajectories.

My first empirical paper, presented in Chapter 3, tested the latter part of my framework by considering whether different cohorts of Asian immigrants experience varied health trajectories. I argued that immigration policy and political shifts in the countries of origin created distinct cohorts of Asian immigrants. These cohorts, in turn,

varied in their societal reception in the United States, experiences with the labor market and coethnic networks. I argued that the health differences across cohorts would be seen in two ways: first in their health at entry, and second in their health trajectories, or effect of duration on health. My findings provided some support for the influence of immigration policy and other global demographic and social shifts in Asian immigrant health trajectories. I found that the 1990 Immigration Act was the most significant marker of difference among demographic characteristics. Cohort differences in baseline health were seen in obesity only and followed a globally-documented pattern of increasing BMI such that more recent cohorts entered the United States with higher obesity rates than earlier cohorts. Duration remained a significant influence on disability and obesity after controlling for health behaviors, suggesting that stressful integration processes take a toll on physical health.

My second empirical paper, presented in Chapter 4, jointly considered economic and social integration. I argued that the intersection of economic and social integration challenges economistic assumptions that higher SES characteristics facilitate improved health status. I analyzed Asian ethnic groups separately, as I argued that differences in circumstances of migration, coethnic networks and county of origin factors would result in varied economic and social integration. While disability was negatively correlated with rising wages, this relationship was less positive for longer-term Asian Indians and Filipino immigrants.

My three papers suggest that health influences can arise from economic, social and cultural forces. Migration factors can be a direct source of influence on health trajectories, as well as create distinct groups within the larger Asian immigrant

population. These groups display the disparate health impacts of unique integration experiences. I found differences in health trajectories across different cohorts and Asian ethnic groups, suggesting that some of the heterogeneity among Asians can be traced by to migration factors.

My dissertation points to future research directions. Future research should identify specific aspects of economic, social and cultural integration that have a health impact as well as how their interaction with one another produces health processes.

APPENDIX A

NHIS Cohort Weighting Scheme for Chapter 3

Table A-1. Cohort Weighting for NHIS Survey Year 1995

Year of Entry	N	Percent
Before 1950	40809	1.30%
1950 - 1959	65480	2.09%
1960 - 1964	68066	2.17%
1965 - 1969	166637	5.31%
1970 - 1974	273835	8.73%
1975 - 1979	464324	14.80%
1980		
1981	279635	8.91%
1982		
1983	203161	6.47%
1984		
1985	270540	8.62%
1986		
1987	274821	8.76%
1988		
1989	218983	6.98%
1990		
1991	321849	10.26%
1992		
1993		
1994		
1995	489726	15.61%

Year of Entry	Percent	N	Group N	Cohort Pct	Duration	Weight	Cohort
Before 1950	1.30%	40792	1219218	3.3%	15 years Plus	100%	1980 plus
1950 - 1959	2.09%	65581		5.4%			
1960 - 1964	2.17%	68092		5.6%			
1965 - 1969	5.31%	166621		13.7%			
1970 - 1974	8.73%	273936		22.5%			
1975 - 1979	14.80%	464404		38.1%			
1980	4.46%	139792		11.5%			
1981	4.46%	139792	613296	22.8%	10-14 Years	100%	1981-1984
1982	3.24%	101510		16.6%			
1983	3.24%	101510		16.6%			
1984	4.31%	135242		22.1%			
1985	4.31%	135242		22.1%			
1986	4.38%	137439	654873	21.0%	5-9 Years	100%	1986-1990
1987	4.38%	137439		21.0%			
1988	3.49%	109512		16.7%			
1989	3.49%	109512		16.7%			
1990	5.13%	160973		24.6%			
1991	5.13%	160973	650793	24.7%	0-4 Years	100%	1991-1995
1992	3.90%	122455		18.8%			
1993	3.90%	122455		18.8%			
1994	3.90%	122455		18.8%			
1995	3.90%	122455		18.8%			

Table A-2. Cohort Weighting for NHIS Survey Year 1996

Year of Entry	N	Percent
Before 1950	37266	0.72%
1950 - 1959	112645	2.18%
1960 - 1964	108390	2.10%
1965 - 1969	185973	3.60%
1970 - 1974	435931	8.44%
1975 - 1979	695005	13.46%
1980	566471	10.97%
1981		
1982	383165	7.42%
1983		
1984	400438	7.76%
1985		
1986	468768	9.08%
1987		
1988	398142	7.71%
1989		
1990	473668	9.17%
1991		
1992	375675	7.28%
1993		
1994	522003	10.11%
1995		
1996		

Year of Entry	Percent	N	Group N	Cohort Pct	Duration	Weight	Cohort
Before 1950	0.72%	37177	2141320	1.74%	15 plus	86.77%	1980 plus
1950 - 1959	2.18%	112565		5.26%			
1960 - 1964	2.10%	108434		5.06%			
1965 - 1969	3.60%	185887		8.68%			
1970 - 1974	8.44%	435803		20.35%			
1975 - 1979	13.46%	695012		32.46%			
1980	5.49%	283220		13.23%			
1981	5.49%	283220		13.23%		13.23%	1981-1985
1982	3.71%	191567	1018250	18.81%	10-14 years	76.98%	
1983	3.71%	191567		18.81%			
1984	3.88%	200345		19.68%			
1985	3.88%	200345		19.68%			
1986	4.54%	234425		23.02%		23.02%	1986-1990
1987	4.54%	234425	1106030	21.20%	5-9 years	78.59%	
1988	3.86%	199054		18.00%			
1989	3.86%	199054		18.00%			
1990	4.59%	236748		21.41%			
1991	4.59%	236748		21.41%		21.41%	1991-1995
1992	3.64%	187953	897939	20.93%	0-5 years	80.62%	
1993	3.64%	187953		20.93%			
1994	3.37%	174011		19.38%			
1995	3.37%	174011		19.38%			
1996	3.37%	174011		19.38%		19.38%	1996-2000

Table A-3. Cohort Weighting for NHIS Survey Year 1997

Year of Entry	N	Percent
Before 1950	33395	0.62%
1950 - 1959	108422	2.01%
1960 - 1964	131644	2.44%
1965 - 1969	189571	3.51%
1970 - 1974	428342	7.93%
1975 - 1979	721513	13.35%
1980		
1981	558036	10.33%
1982		
1983	378193	7.00%
1984		
1985	432400	8.00%
1986		
1987	438581	8.12%
1988		
1989	388241	7.18%
1990		
1991	473101	8.75%
1992		
1993	392462	7.26%
1994		
1995		
1996		
1997	730093	13.51%

Year of Entry	Percent	N	Group N	Cohort Pct	Duration	Weight	Cohort
Before 1950	0.62%	33505	2361005	1.42%	15 plus	80.17%	1980 plus
1950 - 1959	2.01%	108620		4.60%			
1960 - 1964	2.44%	131857		5.58%			
1965 - 1969	3.51%	189680		8.03%			
1970 - 1974	7.93%	428537		18.15%			
1975 - 1979	13.35%	721433		30.56%			
1980	5.17%	279116		11.82%			
1981	5.17%	279116		11.82%		19.83%	1981-1985
1982	3.50%	189140		8.01%			
1983	3.50%	189140	1060264	17.84%	10-14 yrs	58.61%	
1984	4.00%	216160		20.39%			
1985	4.00%	216160		20.39%			
1986	4.06%	219402		20.69%		41.39%	1986-1990
1987	4.06%	219402		20.69%			
1988	3.59%	194003	1057021	18.35%	5-9 yrs	59.07%	
1989	3.59%	194003		18.35%			
1990	4.38%	236425		22.37%			
1991	4.38%	236425		22.37%		40.93%	1991-1995
1992	3.63%	196165		18.56%			
1993	3.63%	196165	926245	21.18%	0-4 yrs	60.59%	
1994	3.38%	182520		19.71%			
1995	3.38%	182520		19.71%			
1996	3.38%	182520		19.71%		39.41%	1996-2000
1997	3.38%	182520		19.71%			

Table A-4. Cohort Weighting for NHIS Survey Year 1998

Year of Entry	N	Percent
Before 1950	20040	0.36%
1950 - 1959	114336	2.05%
1960 - 1964	125715	2.25%
1965 - 1969	187388	3.36%
1970 - 1974	421728	7.55%
1975 - 1979	771922	13.83%
1980		
1981	587296	10.52%
1982		
1983	417670	7.48%
1984		
1985	404466	7.24%
1986		
1987	354246	6.34%
1988		
1989	433859	7.77%
1990		
1991	477537	8.55%
1992		
1993	447716	8.02%
1994		
1995	343558	6.15%
1996		
1997		
1998	475809	8.52%

Year of Entry	Percent	N	Group N	Cohort Pct	Duration	Weight	Cohort
Before 1950	0.36%	20100	2646478	0.76%	15 plus	73.12%	1980 plus
1950 - 1959	2.05%	114457		4.32%			
1960 - 1964	2.25%	125624		4.75%			
1965 - 1969	3.36%	187598		7.09%			
1970 - 1974	7.55%	421538		15.93%			
1975 - 1979	13.83%	772169		29.18%			
1980	5.26%	293681		11.10%			
1981	5.26%	293681		11.10%		26.88%	1981-1985
1982	3.74%	208815		7.89%			
1983	3.74%	208815		7.89%			
1984	3.62%	202115	975121	20.73%	10-14 yrs	41.45%	
1985	3.62%	202115		20.73%			
1986	3.17%	176990		18.15%		58.55%	1990-1995
1987	3.17%	176990		18.15%			
1988	3.89%	216911		22.24%			
1989	3.89%	216911	1142061	18.99%	5-9 yrs	39.89%	
1990	4.28%	238686		20.90%			
1991	4.28%	238686		20.90%		60.11%	1991-1995
1992	4.01%	223890		19.60%			
1993	4.01%	223890		19.60%			
1994	3.08%	171686	819068	20.96%	0-4 yrs	41.92%	
1995	3.08%	171686		20.96%			
1996	2.84%	158565		19.36%		58.08%	1996-2000
1997	2.84%	158565		19.36%			
1998	2.84%	158565		19.36%			

Table A-5. Cohort Weighting for NHIS Survey Year 1999

Year of Entry	N	Percent
Before 1950	37035	0.63%
1950 - 1959	115401	1.97%
1960 - 1964	118272	2.02%
1965 - 1969	192210	3.29%
1970 - 1974	431507	7.38%
1975 - 1979	701627	12.01%
1980		
1981	634111	10.85%
1982		
1983	350796	6.00%
1984		
1985	404634	6.92%
1986		
1987	371162	6.35%
1988		
1989	410235	7.02%
1990		
1991	584808	10.01%
1992		
1993	493247	8.44%
1994		
1995	369762	6.33%
1996		
1997		
1998		
1999	629277	10.77%

Year of Entry	Percent	N	Group N	Cohort Pct	Duration	Weight	Cohort
Before 1950	0.63%	36818	2782369	1.32%	15 plus	68.74%	1980 plus
1950 - 1959	1.97%	115128		4.14%			
1960 - 1964	2.02%	118051		4.24%			
1965 - 1969	3.29%	192270		6.91%			
1970 - 1974	7.38%	431293		15.50%			
1975 - 1979	12.01%	701875		25.23%			
1980	5.43%	317042		11.39%			
1981	5.43%	317042		11.39%		31.26%	1981-1985
1982	3.00%	175323		6.30%			
1983	3.00%	175323		6.30%			
1984	3.46%	202205		7.27%			
1985	3.46%	202205	983559	20.56%	10-14 yrs	20.56%	
1986	3.18%	185550		18.87%		79.44%	1986-1990
1987	3.18%	185550		18.87%			
1988	3.51%	205127		20.86%			
1989	3.51%	205127		20.86%			
1990	5.01%	292496	1263199	23.16%	5-9 yrs	23.16%	
1991	5.01%	292496		23.16%		76.84%	1991-1995
1992	4.22%	246620		19.52%			
1993	4.22%	246620		19.52%			
1994	3.17%	184965		14.64%			
1995	3.17%	184965	814373	22.71%	0-4 yrs	22.71%	
1996	2.69%	157352		19.32%		77.29%	1996-2000
1997	2.69%	157352		19.32%			
1998	2.69%	157352		19.32%			
1999	2.69%	157352		19.32%			

Table A-6. Cohort Weighting for NHIS Survey Year 2000

Year of Entry	N	Percent
Before 1950	64260	1.04%
1950 - 1959	114595	1.86%
1960 - 1964	83811	1.36%
1965 - 1969	228293	3.70%
1970 - 1974	419678	6.80%
1975 - 1979	752734	12.20%
1980		
1981	511279	8.29%
1982		
1983	387882	6.29%
1984		
1985	372744	6.04%
1986		
1987	391813	6.35%
1988		
1989	388654	6.30%
1990		
1991	577445	9.36%
1992		
1993	516627	8.37%
1994		
1995	411761	6.67%
1996		
1997	400051	6.48%
1998		
1999		
2000	548493	8.89%

Year of Entry	Percent	N	Group N	Cohort Pct	Duration	Weight	Cohort
Before 1950	1.04%	64169	2935742	2.19%	15 plus	65.37%	1980 plus
1950 - 1959	1.86%	114764		3.91%			
1960 - 1964	1.36%	83914		2.86%			
1965 - 1969	3.70%	228294		7.78%			
1970 - 1974	6.80%	419568		14.29%			
1975 - 1979	12.20%	752754		25.64%			
1980	4.15%	255751		8.71%			
1981	4.15%	255751		8.71%		34.63%	1981-1985
1982	3.15%	194050		6.61%			
1983	3.15%	194050		6.61%			
1984	3.02%	186338		6.35%			
1985	3.02%	186338		6.35%			
1986	3.18%	195901	1069282	18.32%	10-14 yrs	100.00%	1986-1990
1987	3.18%	195901		18.32%			
1988	3.15%	194359		18.18%			
1989	3.15%	194359		18.18%			
1990	4.68%	288762		27.01%			
1991	4.68%	288762	1216747	23.73%	5-9 yrs	100.00%	1991-1995
1992	4.19%	258219		21.22%			
1993	4.19%	258219		21.22%			
1994	3.34%	205773		16.91%			
1995	3.34%	205773		16.91%			
1996	3.24%	199912	948347	21.08%	0-4 yrs	100.00%	1996-2000
1997	3.24%	199912		21.08%			
1998	2.96%	182841		19.28%			
1999	2.96%	182841		19.28%			
2000	2.96%	182841		19.28%			

Table A-7. Cohort Weighting for NHIS Survey Year 2001

Year of Entry	N	Percent
Before 1950	27960	0.44%
1950 - 1959	66247	1.04%
1960 - 1964	78139	1.23%
1965 - 1969	210850	3.32%
1970 - 1974	357585	5.63%
1975 - 1979	771699	12.14%
1980		
1981	522114	8.22%
1982		
1983	371801	5.85%
1984		
1985	300607	4.73%
1986		
1987	403978	6.36%
1988		
1989	417968	6.58%
1990		
1991	493849	7.77%
1992		
1993	465675	7.33%
1994		
1995	536489	8.44%
1996		
1997	446274	7.02%
1998		
1999		
2000		
2001	882976	13.90%

Year of Entry	Percent	N	Group N	Cohort Pct	Duration	Weight	Cohort
Before 1950	0.44%	27959		0.96%			
1950 - 1959	1.04%	66084		2.27%			
1960 - 1964	1.23%	78157		2.69%		60.97%	1980 plus
1965 - 1969	3.32%	210960		7.25%			
1970 - 1974	5.63%	357742		12.30%			
1975 - 1979	12.14%	771401		26.52%			
1980	4.11%	261158	2908958	8.98%	15 plus		
1981	4.11%	261158		8.98%			
1982	2.93%	185861		6.39%		32.09%	1981-1985
1983	2.93%	185861		6.39%			
1984	2.37%	150277		5.17%			
1985	2.37%	150277		5.17%			
1986	3.18%	202064		6.95%		6.95%	
1987	3.18%	202064		18.14%		77.84%	1986-1990
1988	3.29%	209054		18.77%			
1989	3.29%	209054	1113893	18.77%	10-14 yrs		
1990	3.89%	246861		22.16%			
1991	3.89%	246861		22.16%		22.16%	
1992	3.67%	232882		19.01%		81.79%	1991-1995
1993	3.67%	232882		19.01%			
1994	4.22%	268148	1225092	21.89%	5-9 yrs		
1995	4.22%	268148		21.89%			
1996	3.51%	223033		18.21%		18.21%	
1997	3.51%	223033		20.16%		80.04%	1996-2000
1998	3.48%	220809		19.96%			
1999	3.48%	220809	1106268	19.96%	0-4 yrs		
2000	3.48%	220809		19.96%			
2001	3.48%	220809		19.96%		19.96%	2001-05

Table A-8. Cohort Weighting for NHIS Survey Year 2002

Year of Entry	N	Percent
Before 1950	35283	0.56%
1950 - 1959	84575	1.33%
1960 - 1964	111615	1.76%
1965 - 1969	237463	3.74%
1970 - 1974	382486	6.02%
1975 - 1979	840509	13.24%
1980		
1981	457572	7.21%
1982		
1983	412243	6.49%
1984		
1985	296597	4.67%
1986		
1987	349452	5.50%
1988		
1989	345493	5.44%
1990		
1991	436701	6.88%
1992		
1993	427837	6.74%
1994		
1995	341856	5.38%
1996		
1997	445682	7.02%
1998		
1999	504352	7.94%
2000		
2001		
2002	638628	10.06%

Year of Entry	Percent	N	Group N	Cohort Pct	Duration	Weight	Cohort
Before 1950	0.56%	35551	3207182	1.11%	15 plus	59.89%	1980 plus
1950 - 1959	1.33%	84433		2.63%			
1960 - 1964	1.76%	111731		3.48%			
1965 - 1969	3.74%	237428		7.40%			
1970 - 1974	6.02%	382170		11.92%			
1975 - 1979	13.24%	840520		26.21%			
1980	3.61%	228858		7.14%			
1981	3.61%	228858		7.14%		29.23%	1981-1985
1982	3.25%	206004		6.42%			
1983	3.25%	206004		6.42%			
1984	2.34%	148234		4.62%			
1985	2.34%	148234		4.62%			
1986	2.75%	174579		5.44%		10.89%	1986-1990
1987	2.75%	174579		5.44%			
1988	2.72%	172675	996055	17.34%	10-14 yrs	56.60%	
1989	2.72%	172675		17.34%			
1990	3.44%	218383		21.92%		43.40%	1991-1995
1991	3.44%	218383		21.92%			
1992	3.37%	213939		21.48%			
1993	3.37%	213939	1001133	21.37%	5-9 yrs	55.49%	
1994	2.69%	170770		17.06%			
1995	2.69%	170770		17.06%			
1996	3.51%	222827		22.26%		44.51%	1996-2000
1997	3.51%	222827		22.26%			
1998	3.97%	252029	1142701	22.06%	0-4 yrs	62.74%	
1999	3.97%	252029		22.06%			
2000	3.35%	212881		18.63%		37.26%	2001-2005
2001	3.35%	212881		18.63%			
2002	3.35%	212881		18.63%			

Table A-9. Cohort Weighting for NHIS Survey Year 2003

Year of Entry	N	Percent
Before 1950	90479	1.30%
1950 - 1959	71718	1.03%
1960 - 1964	115152	1.65%
1965 - 1969	218542	3.14%
1970 - 1974	385444	5.53%
1975 - 1979	740621	10.63%
1980		
1981	491563	7.06%
1982		
1983	427934	6.14%
1984		
1985	381686	5.48%
1986		
1987	341497	4.90%
1988		
1989	374152	5.37%
1990		
1991	468153	6.72%
1992		
1993	492229	7.07%
1994		
1995	394190	5.66%
1996		
1997	431117	6.19%
1998		
1999	488913	7.02%
2000		
2001		
2002	1050629	15.09%
2003	** not in raw data	

Year of Entry	Percent	N	Group N	Cohort Pct	Year Group	Weight	Cohort
Before 1950	1.30%	90532		2.62%			
1950 - 1959	1.03%	71729		2.08%			
1960 - 1964	1.65%	114906		3.33%			
1965 - 1969	3.14%	218670		6.34%		54.11%	1980 plus
1970 - 1974	5.53%	385110		11.16%			
1975 - 1979	10.63%	740275		21.46%			
1980	3.53%	245830		7.12%			
1981	3.53%	245830	3450323	7.12%	15 plus		
1982	3.07%	213795		6.20%			
1983	3.07%	213795		6.20%		30.58%	1981-1985
1984	2.74%	190814		5.53%			
1985	2.74%	190814		5.53%			
1986	2.45%	170618		4.94%			
1987	2.45%	170618		4.94%		15.31%	1986-1990
1988	2.69%	186984		5.42%			
1989	2.69%	186984		16.30%		36.69%	
1990	3.36%	233991		20.39%			
1991	3.36%	233991	1147322	20.39%	10-14 yrs		
1992	3.54%	246178		21.46%		63.31%	1991-1995
1993	3.54%	246178		21.46%			
1994	2.83%	197082		18.42%		36.85%	
1995	2.83%	197082		18.42%			
1996	3.10%	215536	1069673	20.15%	5-9 yrs		
1997	3.10%	215536		20.15%		63.15%	1996-2000
1998	3.51%	244437		22.85%			
1999	3.51%	244437		18.87%		39.15%	
2000	3.77%	262718		20.28%			
2001	3.77%	262718	1295307	20.28%	0-4 yrs		
2002	3.77%	262718		20.28%		60.85%	2001-2005
2003	3.77%	262718		20.28%			

Table A-10. Cohort Weighting for NHIS Survey Year 2004

Year of Entry	N	Percent
Before 1950	46756	0.66%
1950 - 1959	57077	0.81%
1960 - 1964	90229	1.28%
1965 - 1969	167924	2.38%
1970 - 1974	443094	6.29%
1975 - 1979	640274	9.09%
1980		
1981	504298	7.16%
1982		
1983	349629	4.97%
1984		
1985	445018	6.32%
1986		
1987	411530	5.84%
1988		
1989	347831	4.94%
1990		
1991	506208	7.19%
1992		
1993	476864	6.77%
1994		
1995	482797	6.86%
1996		
1997	478901	6.80%
1998		
1999	463980	6.59%
2000		
2001	597064	8.48%
2002		
2003	531624	7.55%

Year of Entry	Percent	N	Group N	Cohort Pct	Duration	Weight	Cohort
Before 1950	0.66%	46471	3502243	1.33%	15 plus	48.43%	1980 plus
1950 - 1959	0.81%	57033		1.63%			
1960 - 1964	1.28%	90126		2.57%			
1965 - 1969	2.38%	167578		4.78%			
1970 - 1974	6.29%	442885		12.65%			
1975 - 1979	9.09%	640036		18.28%			
1980	3.58%	252071		7.20%			
1981	3.58%	252071		7.20%		29.90%	1981-1985
1982	2.49%	174971		5.00%			
1983	2.49%	174971		5.00%			
1984	3.16%	222499		6.35%			
1985	3.16%	222499		6.35%			
1986	2.92%	205600		5.87%		21.67%	1986-1990
1987	2.92%	205600		5.87%			
1988	2.47%	173915		4.97%			
1989	2.47%	173915		4.97%			
1990	3.60%	253128	1224447	20.67%	10-14 yrs	20.67%	
1991	3.60%	253128		20.67%		79.33%	1991-1995
1992	3.39%	238341		19.47%			
1993	3.39%	238341		19.47%			
1994	3.43%	241510		19.72%			
1995	3.43%	241510	1184313	20.39%	5-9 yrs	20.39%	
1996	3.40%	239397		20.21%		79.61%	1996-2000
1997	3.40%	239397		20.21%			
1998	3.30%	232004		19.59%			
1999	3.30%	232004		19.59%			
2000	4.24%	298543	1128688	26.45%	0-4 yrs	26.45%	
2001	4.24%	298543		26.45%		73.55%	2001-2005
2002	2.52%	177201		15.70%			
2003	2.52%	177201		15.70%			

Table A-11. Cohort Weighting for NHIS Survey Year 2005

Year of Entry	N	Percent
Before 1950	19211	0.27%
1950 - 1959	51336	0.71%
1960 - 1964	64334	0.89%
1965 - 1969	169694	2.36%
1970 - 1974	487636	6.77%
1975 - 1979	767168	10.66%
1980		
1981	556867	7.74%
1982		
1983	338823	4.71%
1984		
1985	435467	6.05%
1986		
1987	345311	4.80%
1988		
1989	399120	5.54%
1990		
1991	462384	6.42%
1992		
1993	424742	5.90%
1994		
1995	411498	5.72%
1996		
1997	469942	6.53%
1998		
1999	416316	5.78%
2000		
2001	556766	7.73%
2002		
2003		
2004		
2005	821605	11.41%

Year of Entry	Percent	N	Group N	Cohort Pct	Duration	Weight	Cohort
Before 1950	0.27%	19435		0.50%			
1950 - 1959	0.71%	51107		1.32%			
1960 - 1964	0.89%	64064		1.66%			
1965 - 1969	2.36%	169878		4.39%		47.53%	1980 plus
1970 - 1974	6.77%	487319		12.60%			
1975 - 1979	10.66%	767330		19.85%			
1980	3.87%	278571		7.21%			
1981	3.87%	278571		7.21%			
1982	2.36%	169518	3866163	4.38%	15 plus		
1983	2.36%	169518		4.38%		27.24%	1981-1985
1984	3.03%	217746		5.63%			
1985	3.03%	217746		5.63%			
1986	2.40%	172757		4.47%			
1987	2.40%	172757		4.47%			
1988	2.77%	199391		5.16%		25.23%	1986-1990
1989	2.77%	199391		5.16%			
1990	3.21%	231063		5.98%			
1991	3.21%	231063		21.65%			
1992	2.95%	212347		19.89%			
1993	2.95%	212347	1067496	19.89%	10-14 yrs	100.00%	1991-1995
1994	2.86%	205869		19.29%			
1995	2.86%	205869		19.29%			
1996	3.27%	235022		20.19%			
1997	3.27%	235022		20.19%			
1998	2.89%	208028	1164312	17.87%	5-9 yrs	100.00%	1996-2000
1999	2.89%	208028		17.87%			
2000	3.87%	278211		23.89%			
2001	3.87%	278211		25.30%			
2002	2.85%	205329		18.67%			
2003	2.85%	205329	1099528	18.67%	0-4 yrs	100.00%	2001-2005
2004	2.85%	205329		18.67%			
2005	2.85%	205329		18.67%			

APPENDIX B

Full Regression Models for Chapter 3

Table B-1. Cohort Differences in Sociodemographic Characteristics, Fully Adjusted Model

	College Graduate				Privately Employed				Self Employed			
	OR	95% CI			OR	95% CI			OR	95% CI		
Cohorts												
US Born	1.00	0.78	1.27		0.01	0.00	0.02	***	0.14	0.06	0.30	***
Pre-1980	0.94	0.86	1.02		3.39	3.04	3.78	***	2.44	2.00	2.98	***
1981-1985	0.94	0.86	1.03		2.74	2.44	3.09	***	2.03	1.65	2.49	***
1986-1990												
1991-1995	1.00	0.90	1.12		0.20	0.16	0.26	***	0.46	0.34	0.63	***
1996-2000	1.42	1.21	1.66	***	0.03	0.02	0.04	***	0.20	0.12	0.32	***
2001-2005	1.72	1.35	2.20	***	0.00	0.00	0.00	***	0.08	0.04	0.16	***
Duration												
0-4 Years												
5-9 Years	1.01	0.85	1.19		0.13	0.08	0.20	***	1.09	0.62	1.94	
10-14 Years	1.05	0.87	1.28		0.02	0.01	0.03	***	0.62	0.36	1.09	*
15+ Years	1.22	0.97	1.52		0.00	0.00	0.01	***	0.24	0.13	0.44	***
Asian Ethnicity												
Chinese	0.73	0.63	0.85	***	0.97	0.78	1.22		0.51	0.33	0.79	**
Filipino	1.46	1.25	1.71	***	0.87	0.69	1.08		0.97	0.64	1.48	
Asian Indian	0.52	0.46	0.59	***	0.90	0.76	1.08		1.44	1.07	1.95	**
Other Asian												
Covariates												
Male	1.10	0.96	1.27		0.96	0.71	1.29		2.97	1.59	5.56	**
Age	1.00	1.00	1.00		0.98	0.97	0.98	***	1.03	1.02	1.03	***
FB * Male	1.19	1.02	1.38	**	1.23	0.88	1.73		0.40	0.20	0.79	**

	Asian Indian				Filipino				Chinese			
	OR	95% CI			OR	95% CI			OR	95% CI		
Cohorts												
US Born	0.53	0.37	0.78	***	1.45	1.01	2.07	*	0.77	0.55	1.07	
Pre-1980	0.69	0.61	0.78	***	1.06	0.94	1.20		1.04	0.92	1.18	
1981-1985	0.76	0.68	0.85	***	1.02	0.91	1.15		1.01	0.90	1.14	
1986-1990												
1991-1995	1.27	1.08	1.51	**	0.96	0.81	1.14		0.92	0.79	1.07	
1996-2000	2.46	1.94	3.12	***	0.75	0.57	0.99	**	0.89	0.70	1.14	
2001-2005	2.88	2.07	3.99	***	0.89	0.61	1.31		0.88	0.61	1.28	
Duration												
0-4 Years												
5-9 Years	1.10	0.91	1.33		1.21	0.96	1.53		1.04	0.83	1.31	
10-14 Years	1.47	1.14	1.89	***	1.26	0.92	1.71		0.99	0.74	1.32	
15+ Years	1.42	1.02	1.99	*	1.30	0.91	1.86		0.82	0.58	1.17	
Covariates												
Male	1.06	0.83	1.35		0.94	0.81	1.09		1.14	0.97	1.34	
Age	0.99	0.98	0.99		1.00	1.00	1.01		1.01	1.00	1.01	***
FB * Male	1.39	1.07	1.79		0.80	0.67	0.94		0.93	0.79	1.10	

*** p<.001, ** p<.05, * p<.01

Table B-2. Cohort and Duration Differences in Physical Health Outcomes, Fully Adjusted Model

	Any Limitation				Fair/Poor SRH				Obesity			
	OR	95% CI			OR	95% CI			OR	95% CI		
Cohorts												
US Born	2.23	1.23	4.04	**	0.77	0.62	0.96	**	3.66	1.89	7.07	**
Pre-1980	1.05	0.92	1.18		1.01	0.92	1.10		0.76	0.63	0.91	***
1981-1985	1.05	0.92	1.20		0.99	0.90	1.09		0.82	0.68	0.99	**
1986-1990		Ref.				Ref.				Ref.		
1991-1995	1.17	0.92	1.48		0.94	0.83	1.06		1.03	0.71	1.49	
1996-2000	0.90	0.61	1.31		0.81	0.69	0.96	**	1.28	0.76	2.14	
2001-2005	0.98	0.49	1.95		0.81	0.62	1.07		1.01	0.49	2.09	
Duration												
0-4 Years												
5-9 Years	1.70	1.12	2.58	**	1.06	0.90	1.26		1.03	0.64	1.65	
10-14 Years	1.69	1.03	2.76	**	0.95	0.79	1.15		2.18	1.24	3.84	**
15+ Years	1.90	1.13	3.21	**	0.85	0.68	1.06		3.18	1.74	5.81	***
Asian Ethnicity												
Chinese												
Filipino	1.26	0.96	1.65	*	0.88	0.76	1.02	*	2.57	1.87	3.53	***
Asian Indian	1.20	0.87	1.65		0.75	0.63	0.89	***	1.93	1.38	2.69	***
Other Asian	1.52	1.20	1.91	***	1.11	1.00	1.25	**	1.58	1.19	2.08	***
Covariates												
Male	1.10	0.84	1.43		1.02	0.88	1.17		2.00	1.47	2.73	***
Age	1.06	1.06	1.07	***	1.03	1.03	1.04	***	1.00	0.99	1.00	
FB * Male	0.79	0.58	1.08		0.90	0.76	1.06		0.57	0.37	0.87	**

*** p<.001, ** p<.05, * p<.01

Table B-3. Duration Effects within Cohorts, Fully Adjusted Model

	Any Limitation															
	1981-1985				1986-1990				1991-1995				1996-2000			
	OR	95% CI			OR	95% CI			OR	95% CI			OR	95% CI		
Duration														Ref.		
0-4 Years										Ref.						
5-9 Years						Ref.			1.96	1.13	3.39	**	1.52	0.92	2.51	
10-14 Years		Ref.			1.18	0.71	1.98		1.68	0.87	3.21					
15+ Years	1.02	0.61	1.73		1.27	0.78	2.05									
Asian Ethnicity																
Chinese		Ref.				Ref.				Ref.				Ref.		
Filipino	1.45	1.04	2.01	**	1.27	0.86	1.87		0.55	0.27	1.14		0.48	0.17	1.37	
Asian Indian	1.18	0.80	1.74		1.64	1.01	2.66	*	1.32	0.68	2.57		1.18	0.55	2.53	
Other Asian	1.83	1.40	2.38	***	2.18	1.56	3.04	***	1.78	1.06	2.98	**	1.71	0.84	3.48	
Covariates																
Male	0.88	0.72	1.07		0.84	0.67	1.06		0.88	0.67	1.16		0.98	0.61	1.57	
Age	1.07	1.06	1.08	***	1.07	1.07	1.08	***	1.08	1.06	1.09	***	1.09	1.07	1.11	***

*** p<.001, ** p<.05, * p<.01

	Fair/Poor Self Rated Health															
	1981-1985				1986-1990				1991-1995				1996-2000			
	OR	95% CI			OR	95% CI			OR	95% CI			OR	95% CI		
Duration														Ref.		
0-4 Years										Ref.						
5-9 Years						Ref.			0.97	0.78	1.20		1.13	0.91	1.40	
10-14 Years		Ref.			0.79	0.66	0.95	**	0.98	0.77	1.24					
15+ Years	0.87	0.72	1.07		0.75	0.62	0.90	***								
Asian Ethnicity																
Chinese		Ref.				Ref.				Ref.				Ref.		
Filipino	0.83	0.66	1.04		0.80	0.61	1.04	*	0.89	0.63	1.26		0.71	0.48	1.07	
Asian Indian	0.80	0.64	1.00	*	0.90	0.66	1.22		0.71	0.51	1.00	*	0.69	0.50	0.96	**
Other Asian	1.23	1.02	1.48	**	1.18	0.97	1.43		1.23	0.96	1.56		1.11	0.86	1.42	
Covariates																
Male	0.99	0.89	1.10		0.91	0.79	1.04		0.83	0.73	0.95	**	0.83	0.73	0.94	***
Age	1.03	1.03	1.04	***	1.04	1.03	1.04	***	1.03	1.03	1.04	***	1.04	1.03	1.05	***

*** p<.001, ** p<.05, * p<.01

	Obesity															
	1981-1985				1986-1990				1991-1995				1996-2000			
	OR	95% CI			OR	95% CI			OR	95% CI			OR	95% CI		
Duration																
0-4 Years										Ref.				Ref.		
5-9 Years						Ref.			1.16	0.61	2.19	**	0.93	0.48	1.81	
10-14 Years		Ref.			2.28	1.17	4.45	**	2.07	1.05	4.09	**				
15+ Years	1.63	0.99	2.67	*	3.09	1.74	5.50	***								
Asian Ethnicity																
Chinese		Ref.				Ref.				Ref.				Ref.		
Filipino	3.22	1.84	5.62	***	4.47	2.10	9.55	**	4.20	1.54	11.45	***	5.42	1.48	19.81	**
Asian Indian	1.88	0.96	3.71	*	3.12	1.39	6.97	**	4.14	1.67	10.28		7.29	1.87	28.47	***
Other Asian	1.68	0.97	2.92	*	1.69	0.79	3.62		2.04	0.79	5.23		4.73	1.19	18.77	**
Covariates																
Male	1.15	0.80	1.67		0.99	0.61	1.61		1.31	0.73	2.34		0.78	0.40	1.52	
Age	0.99	0.98	1.01		1.00	0.99	1.01		1.01	0.99	1.03		1.01	0.98	1.04	

*** p<.001, ** p<.05, * p<.01

APPENDIX C

Age Standardized Disability Tables by Per Capital Household Income for Chapter 4

Table C-1. Mean Prevalence of Disability by Per Capita HH Inc and Duration, Age Standardized

	US Born	0-4 Years	5-9 Years	10-14 Years	15-20 Years	21+ Years
All Asians						
0 -20,000	16.4%	10.1%	7.6%	6.6%	6.8%	9.0%
20,000 - 40,000	9.1%	7.1%	6.6%	5.2%	5.4%	8.3%
40,000 - 60,000	11.0%	8.1%	7.0%	6.6%	8.2%	7.4%
60,000 - 80,000	13.4%	10.2%	8.8%	6.0%	7.9%	11.0%
80,000 -100,000	14.5%	9.3%	7.0%	9.4%	6.5%	11.3%
Over 100,000	15.8%	9.9%	7.4%	7.9%	6.6%	8.4%
Chinese						
0 -20,000	14.3%	6.7%	9.5%	9.7%	10.4%	11.5%
20,000 - 40,000	8.9%	4.9%	6.3%	7.1%	6.5%	8.5%
40,000 - 60,000	6.3%	3.9%	5.8%	7.9%	4.8%	5.4%
60,000 - 80,000	6.3%	4.3%	4.1%	6.2%	6.5%	6.3%
80,000 -100,000	6.1%	2.6%	6.3%	4.4%	1.7%	5.8%
Over 100,000	7.5%	8.8%	10.2%	9.1%	13.7%	7.2%
Japanese						
0 -20,000	14.7%	4.9%	5.4%	8.7%	9.2%	15.7%
20,000 - 40,000	8.7%	4.0%	1.8%	4.2%	4.8%	5.8%
40,000 - 60,000	6.8%	6.8%	0.8%	9.2%	4.4%	8.8%
60,000 - 80,000	5.2%	1.7%	1.4%	0.3%	0.3%	8.8%
80,000 -100,000	6.8%	4.7%	0.0%	3.2%	0.8%	7.2%
Over 100,000	8.7%	4.2%	0.9%	8.2%	1.5%	7.4%
Filipino						
0 -20,000	19.5%	9.1%	10.6%	12.5%	16.2%	14.5%
20,000 - 40,000	12.3%	8.6%	7.6%	10.5%	9.7%	10.2%
40,000 - 60,000	11.0%	9.0%	8.4%	8.7%	7.6%	7.5%
60,000 - 80,000	9.4%	7.1%	6.9%	6.9%	11.7%	10.5%
80,000 -100,000	6.3%	3.4%	3.8%	3.3%	4.9%	6.3%
Over 100,000	11.2%	6.1%	8.6%	10.1%	11.5%	8.3%
Asian Indian						
0 -20,000	21.0%	10.6%	12.2%	13.4%	13.4%	16.6%
20,000 - 40,000	14.4%	9.2%	9.1%	11.4%	10.4%	9.3%
40,000 - 60,000	10.6%	7.0%	7.5%	10.0%	6.4%	8.8%
60,000 - 80,000	8.3%	7.3%	7.5%	4.8%	7.3%	8.6%
80,000 -100,000	6.8%	6.8%	10.8%	2.7%	10.1%	7.3%
Over 100,000	9.7%	6.1%	4.2%	14.9%	9.7%	5.6%
Korean						
0 -20,000	11.7%	7.7%	8.6%	11.8%	10.6%	15.6%
20,000 - 40,000	10.6%	6.5%	9.2%	6.6%	9.3%	9.5%
40,000 - 60,000	7.6%	5.4%	3.0%	6.2%	6.1%	7.5%
60,000 - 80,000	6.7%	0.4%	1.6%	1.0%	8.7%	8.3%
80,000 -100,000	8.4%	1.3%	3.1%	11.0%	4.0%	6.1%
Over 100,000	7.5%	11.1%	9.9%	12.6%	11.9%	9.4%

Vietnamese						
0 -20,000	17.7%	12.0%	14.0%	16.4%	17.3%	16.8%
20,000 - 40,000	12.3%	6.8%	10.4%	11.9%	11.7%	10.9%
40,000 - 60,000	7.7%	6.1%	10.0%	11.0%	9.6%	9.3%
60,000 - 80,000	7.0%	0.7%	8.6%	8.5%	8.9%	5.8%
80,000 -100,000	8.0%	5.8%	10.4%	3.5%	7.7%	7.3%
Over 100,000	8.4%	16.7%	11.8%	12.2%	19.5%	10.3%

Disability prevalence age standardized to 2000 Census Total Asian age distribution
Weighted by person weight combining cohort and survey weight

APPENDIX D

Graphs of Predicted Disability Prevalence and Economic Measures by Asian Ethnicity for Chapter 4

Figure D-1 Chinese Economic Measures and Disability by Duration

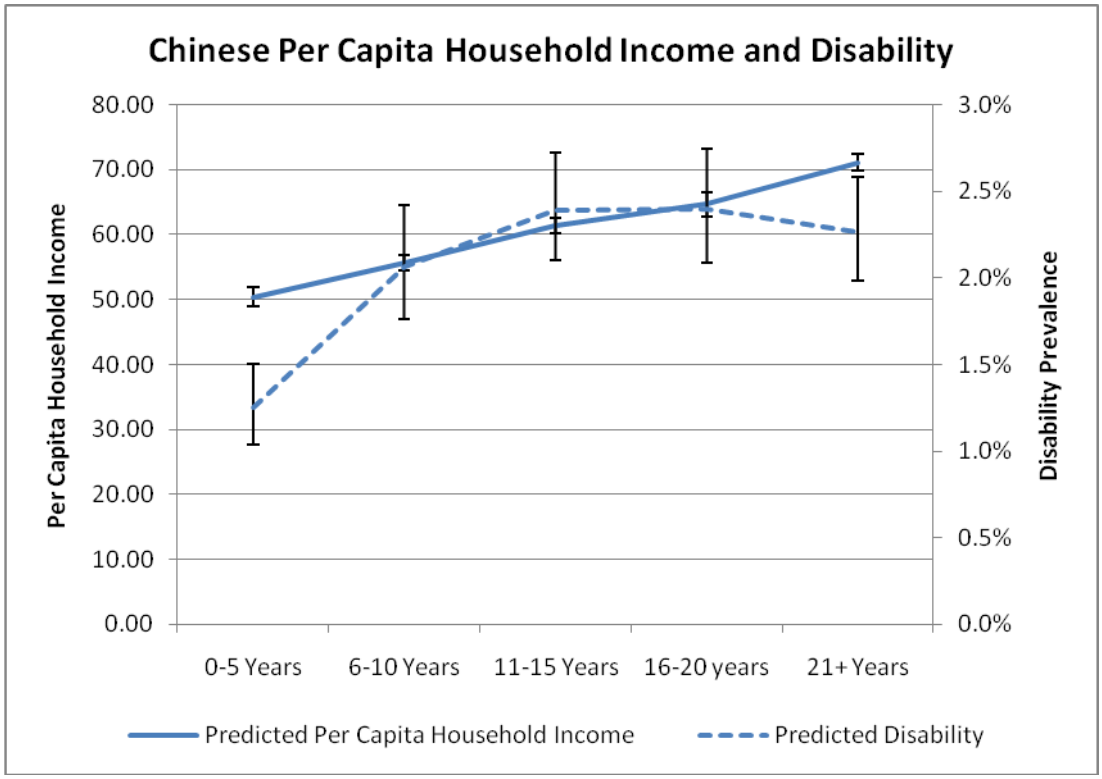
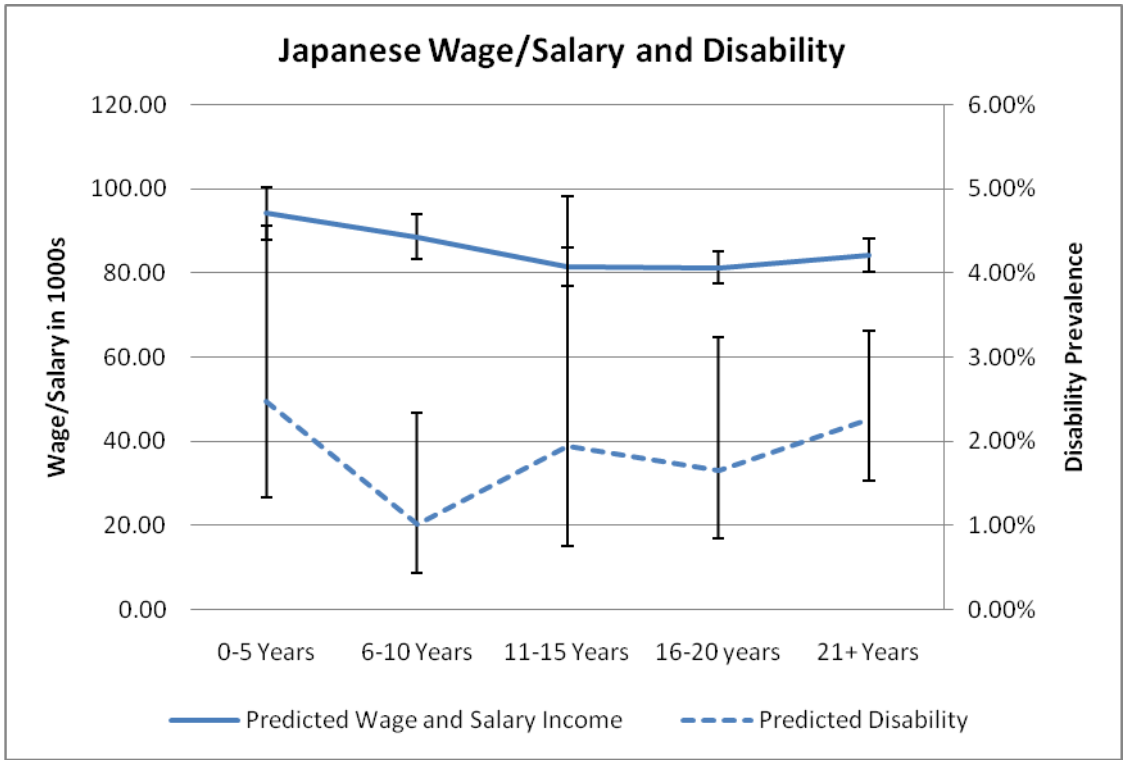


Figure D-2. Japanese Economic Measures and Disability by Duration



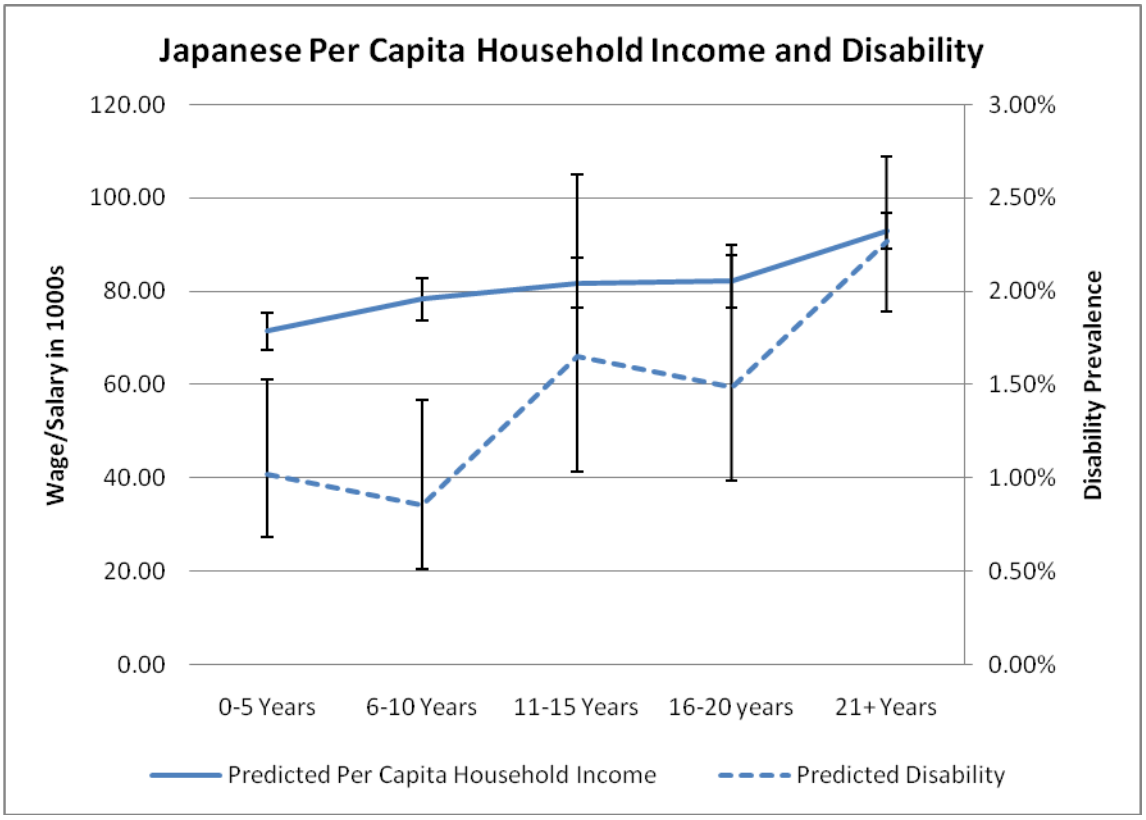
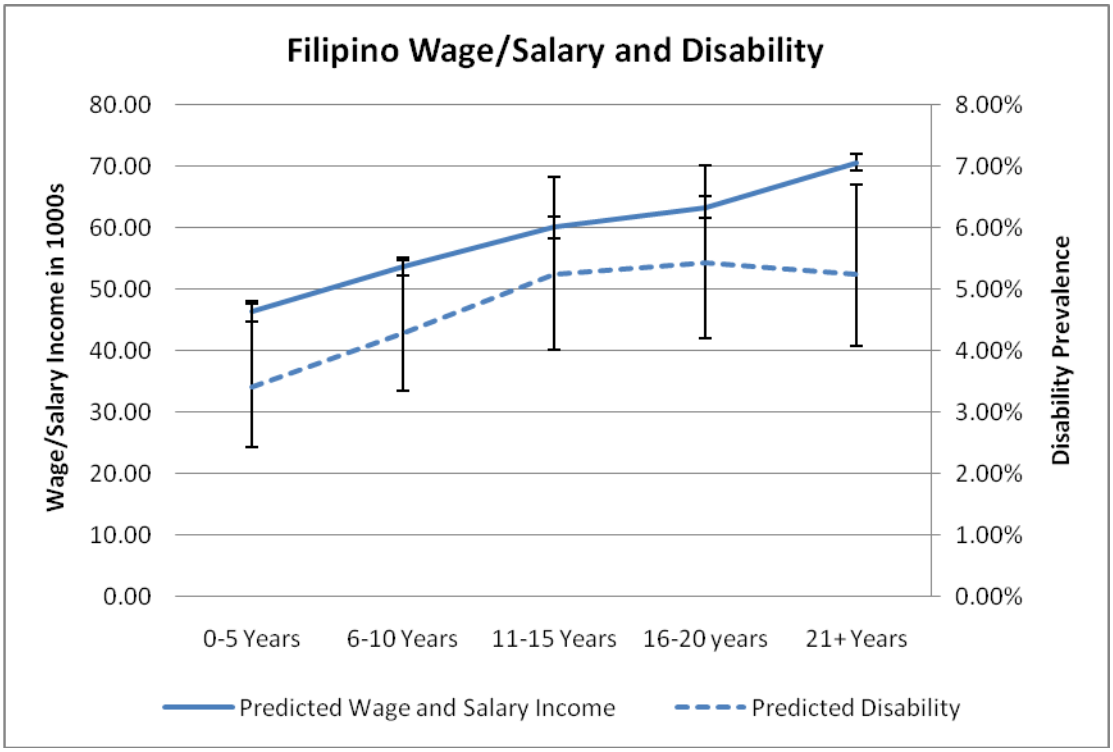


Figure D-3. Filipino Economic Measures and Disability by Duration



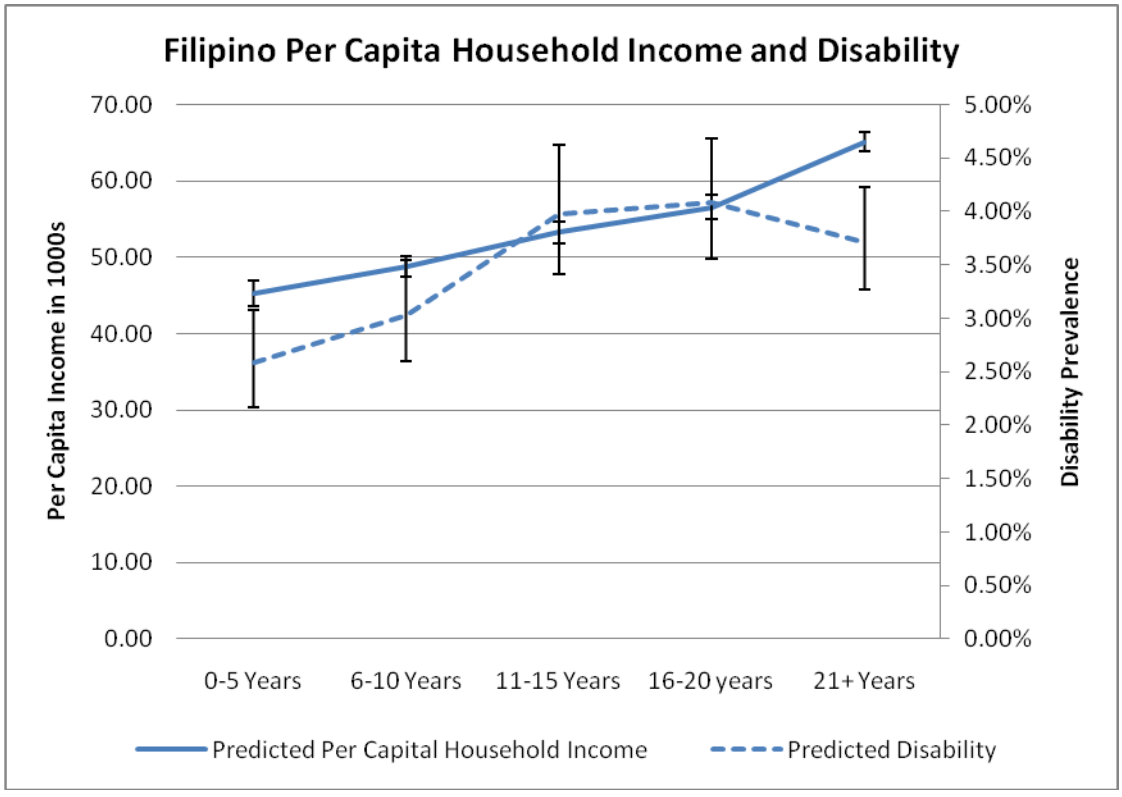
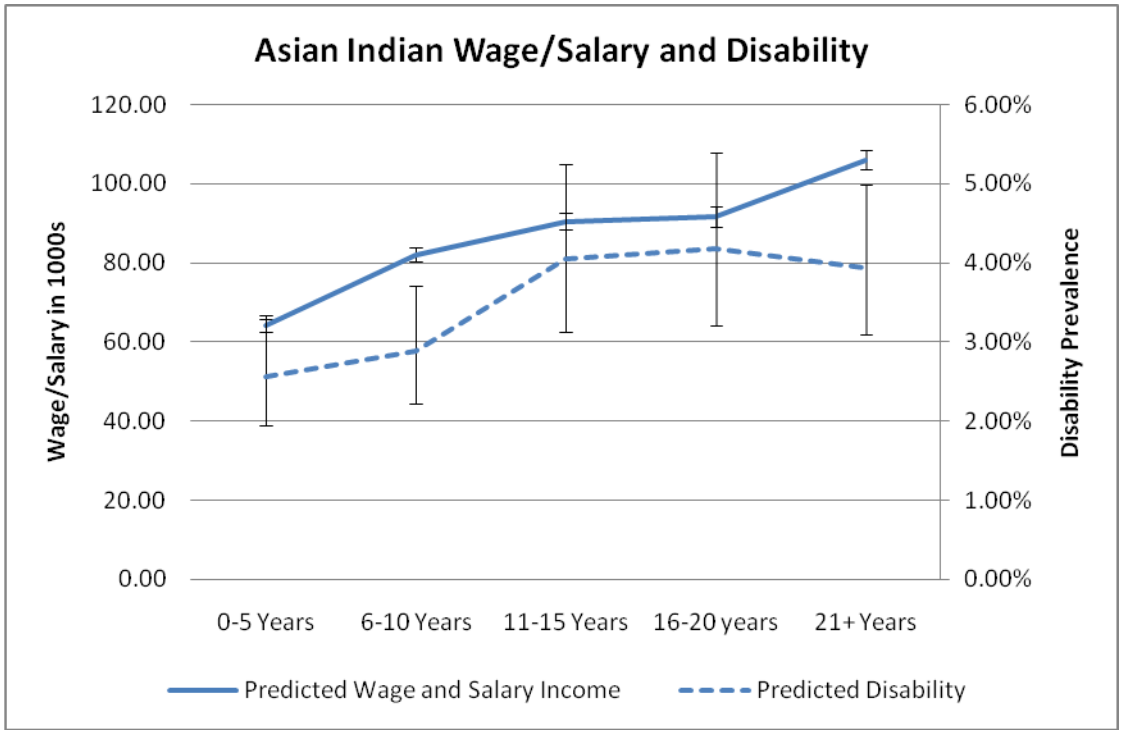


Figure D-4. Asian Indian Economic Measures and Disability by Duration



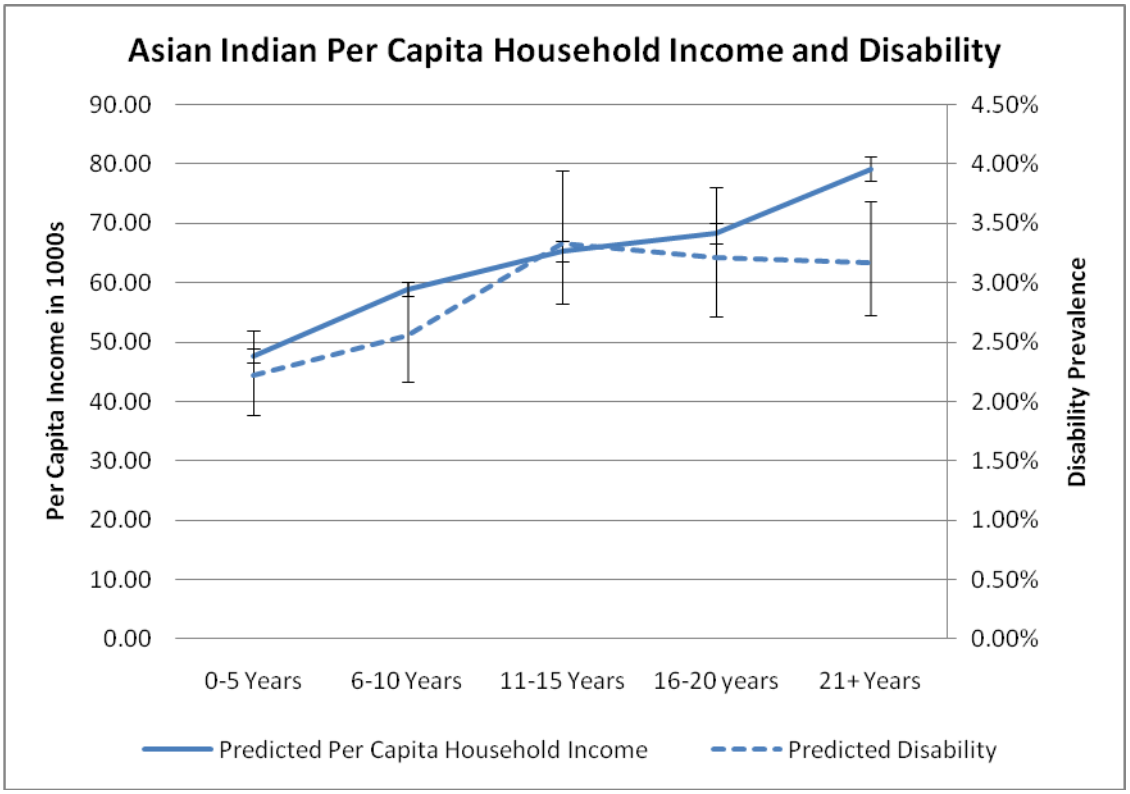
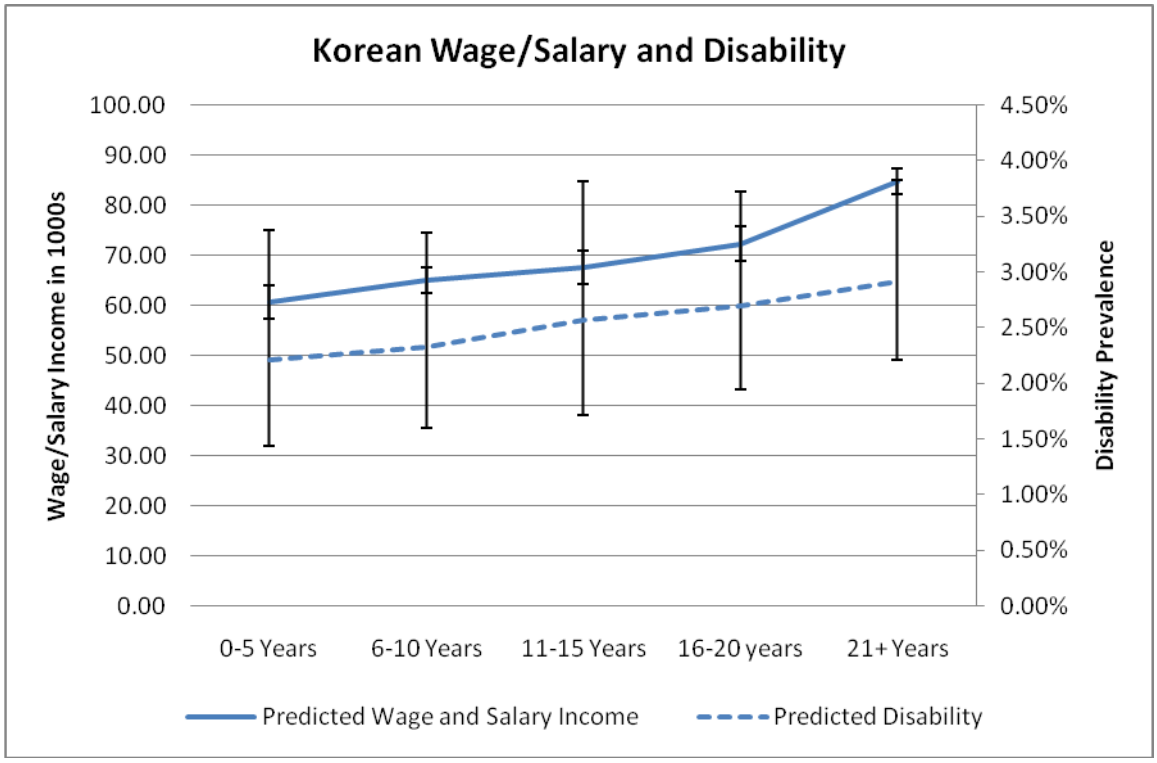


Figure D-5. Korean Economic Measures and Disability by Duration



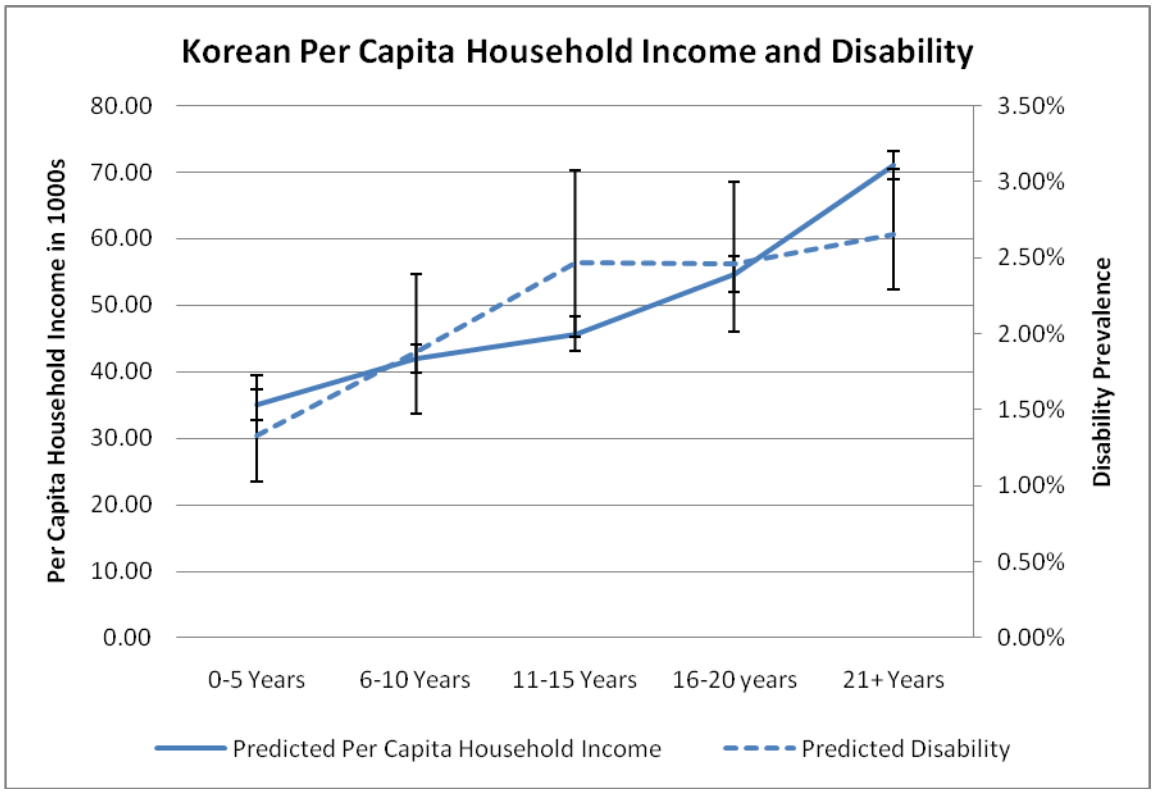
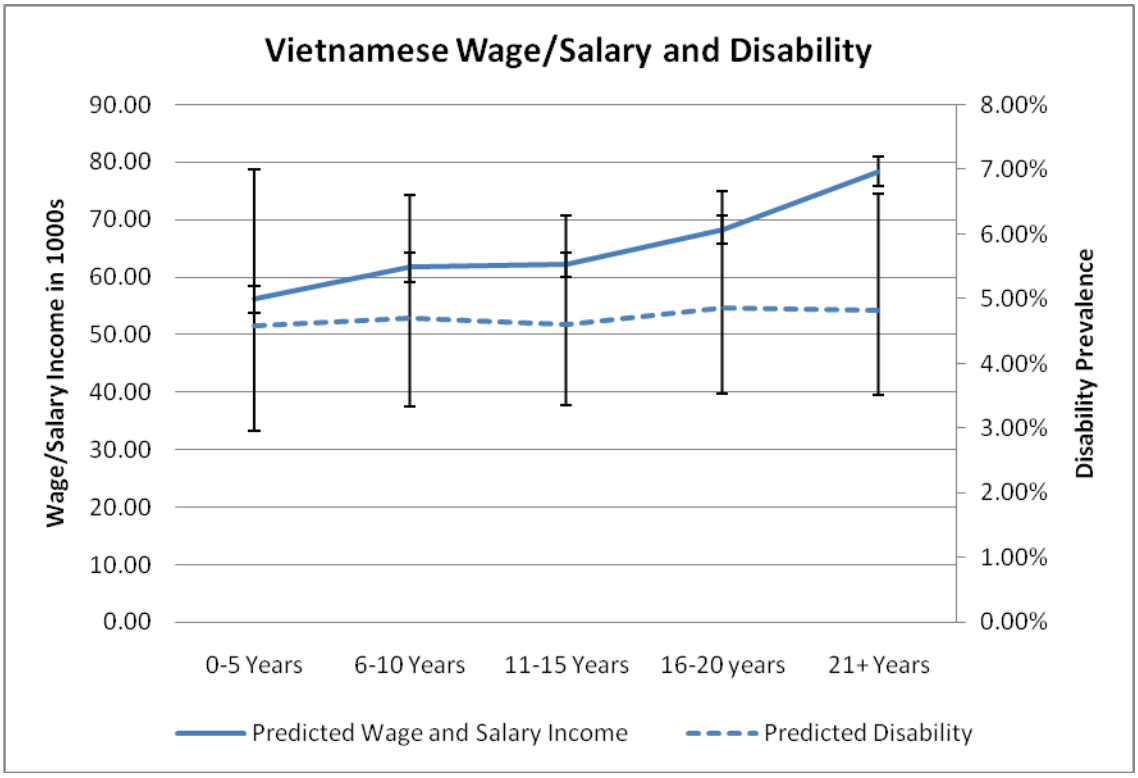
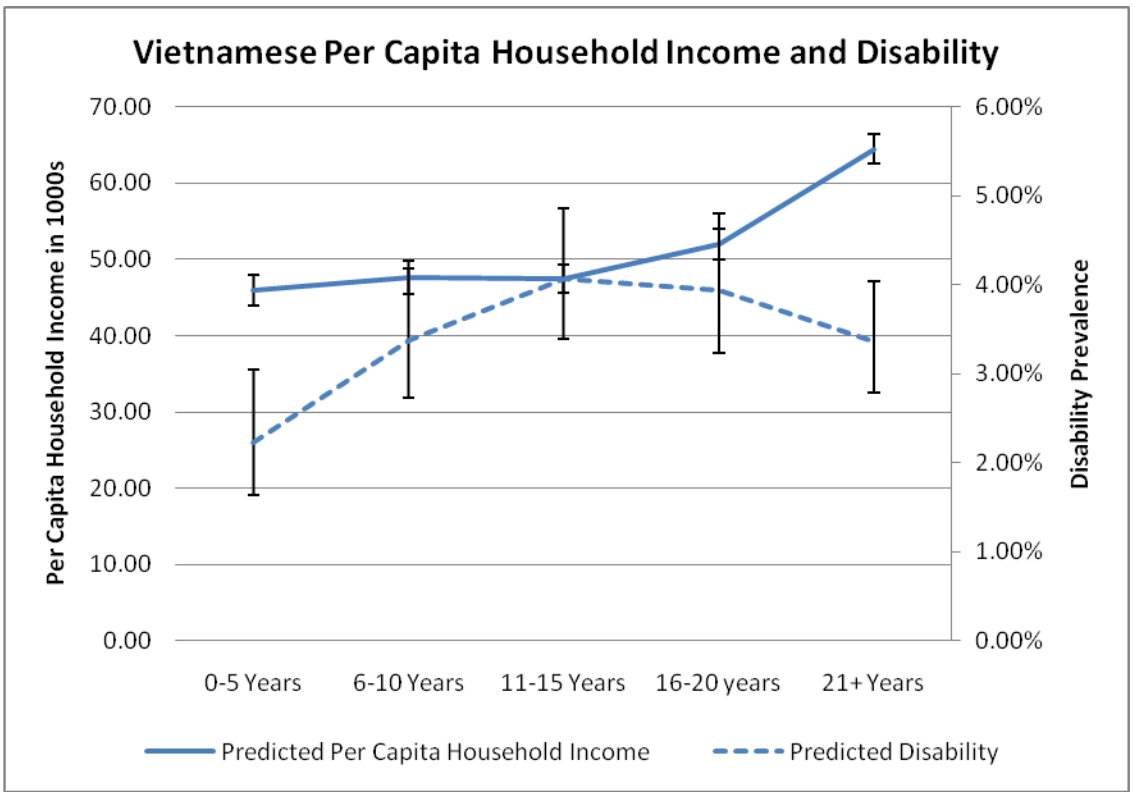


Figure D-6. Vietnamese Economic Measures and Disability by Duration





APPENDIX E

Full Regression Models for Chapter 4

Table E-1. Regression Results for Aggregated Asian Sample, Fully Adjusted Models

	Wage/Salary, Employed Only							
	Salary		Disability Odds		Disability Odds		Disability Odds	
Nativity/Duration								
0-5 Years	-2.23	(-2.34 - -2.13)**			0.66	(0.57 - 0.77)**	0.60	(0.48 - 0.76)**
6-10 Years	-1.22	(-1.31 - -1.14)**			0.67	(0.58 - 0.76)**	0.74	(0.62 - 0.89)**
11-15 Years	-0.63	(-0.73 - -0.53)**			0.84	(0.75 - 0.93)**	0.84	(0.70 - 1.00)
16-20 Years	-0.27	(-0.35 - -0.19)**			0.87	(0.78 - 0.96)**	0.75	(0.63 - 0.89)**
21+ Years	0.49	(0.40 - 0.59)**			0.84	(0.76 - 0.93)**	0.77	(0.66 - 0.91)**
Covariates								
Age	0.02	(0.02 - 0.02)**	1.05	(1.05 - 1.05)**	1.05	(1.05 - 1.05)**	1.05	(1.05 - 1.05)**
Male	1.53	(1.48 - 1.58)**	1.09	(1.03 - 1.15)**	1.09	(1.03 - 1.15)**	1.09	(1.03 - 1.15)**
Married	1.08	(1.02 - 1.14)**	0.64	(0.60 - 0.69)**	0.67	(0.62 - 0.71)**	0.67	(0.62 - 0.71)**
College Graduate	3.50	(3.44 - 3.55)**	0.62	(0.59 - 0.66)**	0.63	(0.60 - 0.67)**	0.64	(0.60 - 0.67)**
Japanese	0.57	(0.45 - 0.69)**	1.10	(0.98 - 1.25)	1.00	(0.87 - 1.15)	1.01	(0.88 - 1.15)
Filipino	-0.43	(-0.50 - -0.36)**	1.41	(1.29 - 1.55)**	1.40	(1.28 - 1.54)**	1.40	(1.28 - 1.53)**
Asian Indian	0.68	(0.59 - 0.77)**	1.45	(1.29 - 1.63)**	1.50	(1.34 - 1.69)**	1.51	(1.34 - 1.69)**
Korean	-0.22	(-0.33 - -0.11)**	1.28	(1.12 - 1.45)**	1.28	(1.13 - 1.45)**	1.28	(1.13 - 1.45)**
Vietnamese	-0.35	(-0.44 - -0.25)**	1.49	(1.34 - 1.66)**	1.48	(1.33 - 1.65)**	1.48	(1.33 - 1.65)**
Other Asian	-0.63	(-0.72 - -0.53)**	1.66	(1.51 - 1.82)**	1.64	(1.49 - 1.81)**	1.64	(1.50 - 1.81)**
Economic Measures								
Salary in $10,000s			0.93	(0.92 - 0.94)**	0.93	(0.92 - 0.94)**	0.91	(0.89 - 0.94)**
Interaction Terms								
0-5 Years * Salary							1.03	(0.97 - 1.10)
6-10 Years * Salary							0.96	(0.93 - 1.00)
11-15 Years * Salary							1.00	(0.95 - 1.04)
16-20 Years * Salary							1.04	(1.00 - 1.08)
21 Plus Years * Salary							1.02	(0.99 - 1.05)

Includes employed only

* significant at 5%; ** significant at 1%

	Per Capita Household Income							
	Per Capita HH Inc		Disability Odds		Disability Odds		Disability Odds	
Nativity/Duration								
0-5 Years	-2.82	(-2.90 - -2.73)**			0.57	(0.52 - 0.63)**	0.59	(0.52 - 0.67)**
6-10 Years	-2.19	(-2.28 - -2.10)**			0.75	(0.69 - 0.81)**	0.89	(0.80 - 0.99)*
11-15 Years	-1.71	(-1.80 - -1.61)**			0.99	(0.92 - 1.05)	1.19	(1.08 - 1.32)**
16-20 Years	-1.32	(-1.40 - -1.23)**			0.99	(0.93 - 1.05)	1.12	(1.01 - 1.24)*
21+ Years	-0.39	(-0.47 - -0.31)**			0.93	(0.88 - 0.99)*	1.09	(1.02 - 1.16)*
Covariates								
Age	-0.01	(-0.01 - -0.01)**	1.06	(1.06 - 1.06)**	1.06	(1.06 - 1.06)**	1.06	(1.06 - 1.06)**
Male	-0.71	(-0.74 - -0.68)**	1.14	(1.10 - 1.17)**	1.12	(1.09 - 1.15)**	1.12	(1.09 - 1.15)**
Married	1.02	(0.97 - 1.07)**	0.57	(0.55 - 0.59)**	0.58	(0.56 - 0.60)**	0.58	(0.56 - 0.60)**
Employed	1.41	(1.37 - 1.45)**	0.32	(0.31 - 0.33)**	0.31	(0.30 - 0.32)**	0.31	(0.30 - 0.32)**
College Graduate	2.46	(2.41 - 2.50)**	0.55	(0.53 - 0.58)**	0.56	(0.54 - 0.59)**	0.57	(0.54 - 0.59)**
Japanese	1.28	(1.17 - 1.40)**	0.86	(0.80 - 0.92)**	0.82	(0.76 - 0.88)**	0.82	(0.76 - 0.89)**
Filipino	0.14	(0.06 - 0.21)**	1.48	(1.39 - 1.57)**	1.47	(1.38 - 1.56)**	1.47	(1.39 - 1.57)**
Asian Indian	0.35	(0.26 - 0.44)**	1.46	(1.37 - 1.56)**	1.51	(1.41 - 1.61)**	1.52	(1.42 - 1.63)**
Korean	0.03	(-0.07 - 0.13)	1.18	(1.10 - 1.26)**	1.18	(1.10 - 1.26)**	1.18	(1.10 - 1.27)**
Vietnamese	-0.58	(-0.66 - -0.51)**	1.64	(1.54 - 1.75)**	1.59	(1.49 - 1.70)**	1.59	(1.49 - 1.70)**
Other Asian	-0.54	(-0.62 - -0.46)**	1.99	(1.87 - 2.11)**	1.96	(1.85 - 2.08)**	1.96	(1.85 - 2.08)**
Economic Measures								
Salary in $10,000s			0.95	(0.95 - 0.96)**	0.95	(0.94 - 0.96)**	0.98	(0.97 - 0.99)**
Interaction Terms								
0-5 Years * Salary							1.00	(0.98 - 1.03)
6-10 Years * Salary							0.95	(0.93 - 0.98)**
11-15 Years * Salary							0.94	(0.92 - 0.97)**
16-20 Years * Salary							0.97	(0.95 - 0.99)**
21 Plus Years * Salary							0.96	(0.95 - 0.97)**

* significant at 5%; ** significant at 1%

Table E-2. Chinese Regression Results, Fully Adjusted Models

	Wage/Salary, Employed Only							
	Salary		Disability Odds		Disability Odds		Disability Odds	
Nativity/Duration								
0-5 Years	-2.76	(-2.97 - -2.55)**			0.67	(0.46 - 0.99)*	0.73	(0.42 - 1.24)
6-10 Years	-1.74	(-1.92 - -1.56)**			0.56	(0.41 - 0.75)**	0.64	(0.43 - 0.98)*
11-15 Years	-0.93	(-1.14 - -0.71)**			0.66	(0.54 - 0.82)**	0.58	(0.40 - 0.85)**
16-20 Years	-0.44	(-0.64 - -0.24)**			0.77	(0.63 - 0.95)*	0.64	(0.42 - 0.97)*
21+ Years	0.07	(-0.12 - 0.26)			0.79	(0.64 - 0.96)*	0.71	(0.51 - 1.00)*
Covariates								
Age	0.03	(0.03 - 0.04)**	1.05	(1.05 - 1.06)**	1.05	(1.05 - 1.06)**	1.05	(1.05 - 1.06)**
Male	1.38	(1.27 - 1.49)**	1.09	(0.97 - 1.23)	1.09	(0.96 - 1.22)	1.09	(0.97 - 1.22)
Married	1.23	(1.10 - 1.36)**	0.58	(0.50 - 0.66)**	0.62	(0.53 - 0.72)**	0.62	(0.53 - 0.72)**
Employed	4.13	(4.03 - 4.23)**	0.64	(0.56 - 0.74)**	0.63	(0.55 - 0.73)**	0.63	(0.55 - 0.73)**
College Graduate								
Economic Measures								
Salary in 1000s			0.95	(0.93 - 0.97)**	0.94	(0.92 - 0.97)**	0.93	(0.88 - 0.98)**
Interaction Terms								
0-5 Years * Salary							0.94	(0.81 - 1.09)
6-10 Years * Salary							0.94	(0.85 - 1.02)
11-15 Years * Salary							1.03	(0.95 - 1.12)
16-20 Years * Salary							1.04	(0.96 - 1.13)
21 Plus Years * Salary							1.02	(0.97 - 1.08)

* significant at 5%; ** significant at 1%

	Per Capita Household Income							
	Per Capita HH Inc		Disability Odds		Disability Odds		Disability Odds	
Nativity/Duration								
0-5 Years	-3.48	(-3.66 - -3.29)**			0.47	(0.39 - 0.57)**	0.54	(0.40 - 0.73)**
6-10 Years	-2.96	(-3.15 - -2.77)**			0.79	(0.66 - 0.94)**	0.96	(0.75 - 1.23)
11-15 Years	-2.37	(-2.58 - -2.17)**			0.92	(0.78 - 1.08)	1.06	(0.84 - 1.34)
16-20 Years	-2.05	(-2.25 - -1.85)**			0.92	(0.81 - 1.05)	1.09	(0.88 - 1.33)
21+ Years	-1.41	(-1.61 - -1.21)**			0.87	(0.78 - 0.96)**	1.06	(0.90 - 1.24)
Covariates								
Age	0	(-0.00 - 0.01)	1.07	(1.06 - 1.07)**	1.06	(1.06 - 1.07)**	1.06	(1.06 - 1.07)**
Male	-0.88	(-0.96 - -0.80)**	1.09	(1.02 - 1.17)**	1.09	(1.02 - 1.16)*	1.08	(1.02 - 1.16)*
Married	1.22	(1.11 - 1.32)**	0.53	(0.49 - 0.58)**	0.55	(0.50 - 0.59)**	0.54	(0.50 - 0.59)**
Employed	1.54	(1.45 - 1.63)**	0.35	(0.32 - 0.38)**	0.33	(0.31 - 0.36)**	0.33	(0.31 - 0.36)**
College Graduate	3.17	(3.09 - 3.26)**	0.63	(0.58 - 0.69)**	0.63	(0.58 - 0.68)**	0.64	(0.59 - 0.69)**
Economic Measures								
Per Capita Household Income			0.96	(0.94 - 0.97)**	0.95	(0.94 - 0.96)**	0.98	(0.96 - 1.00)
Interaction Terms								
0-5 Years * Salary							0.98	(0.90 - 1.07)
6-10 Years * Salary							0.95	(0.90 - 1.00)*
11-15 Years * Salary							0.97	(0.93 - 1.02)
16-20 Years * Salary							0.96	(0.92 - 1.00)
21 Plus Years * Salary							0.95	(0.93 - 0.98)**

* significant at 5%; ** significant at 1%

Table E-3. Japanese Regression Results, Fully Adjusted Models

	Wage/Salary, Employed Only							
	Wage/Salary		Disability Odds		Disability Odds		Disability Odds	
Nativity/Duration								
0-5 Years	0.70	(0.12 - 1.27)*			0.92	(0.45 - 1.89)	0.71	(0.32 - 1.61)
6-10 Years	0.14	(-0.41 - 0.69)			0.37	(0.17 - 0.80)*	0.33	(0.16 - 0.70)**
11-15 Years	-0.57	(-1.01 - -0.12)*			0.72	(0.30 - 1.73)	0.66	(0.32 - 1.40)
16-20 Years	-0.59	(-0.94 - -0.24)**			0.61	(0.31 - 1.20)	1.59	(0.58 - 4.37)
21+ Years	-0.30	(-0.62 - 0.03)			0.84	(0.64 - 1.10)	0.80	(0.56 - 1.13)
Covariates								
Age	0.05	(0.05 - 0.06)**	1.05	(1.04 - 1.06)**	1.05	(1.04 - 1.06)**	1.05	(1.04 - 1.06)**
Male	2.50	(2.29 - 2.71)**	1.23	(0.99 - 1.52)	1.19	(0.96 - 1.48)	1.19	(0.96 - 1.49)
Married	1.10	(0.88 - 1.32)**	0.53	(0.41 - 0.68)**	0.54	(0.42 - 0.69)**	0.54	(0.42 - 0.69)**
College Graduate	3.11	(2.90 - 3.31)**	0.61	(0.48 - 0.76)**	0.61	(0.48 - 0.77)**	0.62	(0.49 - 0.78)**
Economic Measures								
Salary in 1000s			0.97	(0.94 - 0.99)**	0.97	(0.94 - 0.99)**	0.96	(0.93 - 0.99)*
Interaction Terms								
0-5 Years * Salary							1.04	(0.99 - 1.09)
6-10 Years * Salary							1.02	(0.96 - 1.09)
11-15 Years * Salary							1.02	(0.83 - 1.26)
16-20 Years * Salary							0.73	(0.56 - 0.95)*
21 Plus Years * Salary							1.01	(0.95 - 1.08)

* significant at 5%; ** significant at 1%

	Per Capita Household Income							
	Per Capita HH Inc		Disability Odds		Disability Odds		Disability Odds	
Nativity/Duration								
0-5 Years	-1.78	(-2.15 - -1.41)**			0.42	(0.28 - 0.64)**	0.35	(0.22 - 0.55)**
6-10 Years	-1.09	(-1.58 - -0.60)**			0.35	(0.21 - 0.59)**	0.41	(0.21 - 0.81)*
11-15 Years	-0.75	(-1.26 - -0.24)**			0.68	(0.43 - 1.08)	0.81	(0.47 - 1.42)
16-20 Years	-0.71	(-1.27 - -0.14)*			0.62	(0.40 - 0.94)*	0.85	(0.35 - 2.01)
21+ Years	0.36	(0.08 - 0.65)*			0.95	(0.83 - 1.08)	0.91	(0.77 - 1.07)
Covariates								
Age	-0.01	(-0.02 - -0.01)**	1.06	(1.05 - 1.06)**	1.05	(1.05 - 1.06)**	1.05	(1.05 - 1.06)**
Male	-0.78	(-0.96 - -0.60)**	1.31	(1.17 - 1.47)**	1.26	(1.13 - 1.41)**	1.26	(1.12 - 1.41)**
Married	1.86	(1.66 - 2.07)**	0.48	(0.43 - 0.54)**	0.49	(0.44 - 0.55)**	0.49	(0.44 - 0.55)**
Employed	1.9	(1.72 - 2.08)**	0.38	(0.33 - 0.44)**	0.35	(0.30 - 0.40)**	0.35	(0.30 - 0.40)**
College Graduate	2.51	(2.29 - 2.73)**	0.57	(0.50 - 0.65)**	0.58	(0.51 - 0.66)**	0.58	(0.51 - 0.66)**
Economic Measures								
Per Capita Household Income			0.99	(0.97 - 1.00)*	0.98	(0.97 - 1.00)**	0.98	(0.96 - 1.00)*
Interaction Terms								
0-5 Years * Salary							1.04	(1.00 - 1.09)
6-10 Years * Salary							0.96	(0.88 - 1.06)
11-15 Years * Salary							0.96	(0.88 - 1.06)
16-20 Years * Salary							0.93	(0.74 - 1.17)
21 Plus Years * Salary							1.01	(0.98 - 1.03)

* significant at 5%; ** significant at 1%

Table E-4. Filipino Regression Results, Fully Adjusted Models

	Wage/Salary, Employed Only							
	Wage/Salary		Disability Odds		Disability Odds		Disability Odds	
Nativity/Duration								
0-5 Years	-1.85	(-2.05 - -1.64)**			0.51	(0.38 - 0.67)**	0.44	(0.25 - 0.77)**
6-10 Years	-1.12	(-1.30 - -0.94)**			0.64	(0.49 - 0.83)**	0.43	(0.29 - 0.64)**
11-15 Years	-0.48	(-0.64 - -0.31)**			0.79	(0.63 - 0.99)*	0.74	(0.47 - 1.18)
16-20 Years	-0.16	(-0.35 - 0.04)			0.82	(0.67 - 1.01)	0.71	(0.48 - 1.04)
21+ Years	0.58	(0.40 - 0.75)**			0.79	(0.65 - 0.95)*	0.52	(0.38 - 0.72)**
Covariates								
Age	0.01	(0.00 - 0.01)**	1.05	(1.05 - 1.06)**	1.05	(1.05 - 1.06)**	1.05	(1.05 - 1.06)**
Male	0.73	(0.64 - 0.83)**	1.09	(0.98 - 1.22)	1.08	(0.97 - 1.21)	1.08	(0.97 - 1.21)
Married	0.79	(0.68 - 0.90)**	0.71	(0.63 - 0.80)**	0.74	(0.65 - 0.83)**	0.74	(0.66 - 0.84)**
College Graduate	2.50	(2.40 - 2.61)**	0.74	(0.65 - 0.84)**	0.77	(0.68 - 0.88)**	0.77	(0.68 - 0.88)**
Economic Measures								
Salary in 1000s			0.90	(0.87 - 0.93)**	0.89	(0.86 - 0.92)**	0.82	(0.77 - 0.88)**
Interaction Terms								
0-5 Years * Salary							1.02	(0.84 - 1.24)
6-10 Years * Salary							1.14	(1.02 - 1.28)*
11-15 Years * Salary							1.01	(0.89 - 1.15)
16-20 Years * Salary							1.05	(0.95 - 1.15)
21 Plus Years * Salary							1.13	(1.04 - 1.22)**

* significant at 5%; ** significant at 1%

	Per Capita Household Income							
	Per Capita HH Inc		Disability Odds		Disability Odds		Disability Odds	
Nativity/Duration								
0-5 Years	-2.49	(-2.71 - -2.27)**			0.56	(0.47 - 0.68)**	0.52	(0.40 - 0.68)**
6-10 Years	-2.14	(-2.31 - -1.97)**			0.67	(0.56 - 0.80)**	0.59	(0.44 - 0.79)**
11-15 Years	-1.69	(-1.89 - -1.50)**			0.88	(0.75 - 1.04)	1.08	(0.81 - 1.43)
16-20 Years	-1.37	(-1.54 - -1.20)**			0.91	(0.78 - 1.05)	1.01	(0.78 - 1.30)
21+ Years	-0.51	(-0.71 - -0.31)**			0.82	(0.73 - 0.93)**	0.86	(0.71 - 1.05)
Covariates								
Age	-0.02	(-0.02 - -0.02)**	1.06	(1.06 - 1.06)**	1.06	(1.06 - 1.06)**	1.06	(1.06 - 1.06)**
Male	-0.78	(-0.86 - -0.70)**	1.14	(1.07 - 1.21)**	1.12	(1.05 - 1.19)**	1.12	(1.05 - 1.19)**
Married	1.14	(1.05 - 1.24)**	0.63	(0.59 - 0.68)**	0.65	(0.60 - 0.70)**	0.65	(0.60 - 0.70)**
Employed	1.14	(1.03 - 1.25)**	0.32	(0.29 - 0.34)**	0.31	(0.29 - 0.34)**	0.31	(0.29 - 0.34)**
College Graduate	1.54	(1.45 - 1.64)**	0.62	(0.57 - 0.67)**	0.64	(0.59 - 0.69)**	0.64	(0.59 - 0.69)**
Economic Measures								
Per Capita Household Income			0.95	(0.94 - 0.96)**	0.94	(0.93 - 0.96)**	0.95	(0.93 - 0.98)**
Interaction Terms								
0-5 Years * Salary							1.03	(0.97 - 1.09)
6-10 Years * Salary							1.04	(0.98 - 1.11)
11-15 Years * Salary							0.94	(0.88 - 1.00)*
16-20 Years * Salary							0.97	(0.92 - 1.03)
21 Plus Years * Salary							0.99	(0.95 - 1.03)

* significant at 5%; ** significant at 1%

Table E-5. Asian Indian Regression Results, Fully Adjusted Models

	Wage/Salary, Employed Only							
	Wage/Salary		Disability Odds		Disability Odds		Disability Odds	
Nativity/Duration								
0-5 Years	-2.83	(-3.12 - -2.53)**			0.6	(0.39 - 0.92)*	0.39	(0.19 - 0.81)*
6-10 Years	-1.03	(-1.35 - -0.71)**			0.68	(0.44 - 1.03)	0.62	(0.31 - 1.25)
11-15 Years	-0.19	(-0.51 - 0.14)			0.96	(0.64 - 1.46)	0.63	(0.32 - 1.23)
16-20 Years	-0.07	(-0.43 - 0.29)			0.99	(0.65 - 1.52)	0.45	(0.23 - 0.87)*
21+ Years	1.36	(0.98 - 1.75)**			0.93	(0.61 - 1.43)	0.53	(0.27 - 1.04)
Covariates								
Age	0.02	(0.01 - 0.03)**	1.06	(1.05 - 1.06)**	1.05	(1.05 - 1.06)**	1.05	(1.05 - 1.06)**
Male	2.41	(2.24 - 2.58)**	1.02	(0.87 - 1.19)	1.04	(0.89 - 1.23)	1.06	(0.90 - 1.24)
Married	1.55	(1.38 - 1.72)**	0.68	(0.56 - 0.82)**	0.69	(0.58 - 0.84)**	0.71	(0.59 - 0.86)**
College Graduate	4.51	(4.35 - 4.67)**	0.54	(0.46 - 0.64)**	0.56	(0.47 - 0.67)**	0.59	(0.50 - 0.70)**
Economic Measures								
Salary in 1000s			0.94	(0.92 - 0.97)**	0.94	(0.91 - 0.96)**	0.79	(0.68 - 0.91)**
Interaction Terms								
0-5 Years * Salary							1.15	(0.95 - 1.40)
6-10 Years * Salary							1.06	(0.91 - 1.25)
11-15 Years * Salary							1.17	(0.99 - 1.38)
16-20 Years * Salary							1.26	(1.09 - 1.47)**
21 Plus Years * Salary							1.21	(1.03 - 1.41)*

* significant at 5%; ** significant at 1%

	Per Capita Household Income							
	Per Capita HH Inc		Disability Odds		Disability Odds		Disability Odds	
Nativity/Duration								
0-5 Years	-3.07	(-3.33 - -2.80)**			0.62	(0.47 - 0.81)**	0.68	(0.48 - 0.97)*
6-10 Years	-1.95	(-2.23 - -1.66)**			0.72	(0.56 - 0.91)**	0.97	(0.70 - 1.36)
11-15 Years	-1.31	(-1.62 - -0.99)**			0.94	(0.75 - 1.19)	1.03	(0.76 - 1.41)
16-20 Years	-1.01	(-1.31 - -0.70)**			0.91	(0.71 - 1.16)	0.89	(0.63 - 1.26)
21+ Years	0.08	(-0.23 - 0.40)			0.89	(0.71 - 1.13)	0.97	(0.71 - 1.32)
Covariates								
Age	0.01	(0.00 - 0.01)**	1.07	(1.06 - 1.07)**	1.07	(1.06 - 1.07)**	1.06	(1.06 - 1.07)**
Male	-0.45	(-0.53 - -0.36)**	1.11	(1.00 - 1.22)*	1.1	(1.00 - 1.21)	1.09	(0.99 - 1.20)
Married	0.50	(0.37 - 0.62)**	0.54	(0.49 - 0.60)**	0.55	(0.49 - 0.61)**	0.55	(0.49 - 0.61)**
Employed	1.52	(1.41 - 1.62)**	0.37	(0.33 - 0.41)**	0.36	(0.32 - 0.40)**	0.36	(0.32 - 0.40)**
College Graduate	3.01	(2.89 - 3.13)**	0.47	(0.42 - 0.52)**	0.48	(0.43 - 0.53)**	0.48	(0.43 - 0.54)**
Economic Measures								
Per Capita Household Income			0.95	(0.93 - 0.96)**	0.94	(0.93 - 0.96)**	0.96	(0.93 - 1.00)*
Interaction Terms								
0-5 Years * Salary							0.97	(0.91 - 1.04)
6-10 Years * Salary							0.91	(0.85 - 0.96)**
11-15 Years * Salary							0.98	(0.93 - 1.02)
16-20 Years * Salary							1.01	(0.96 - 1.06)
21 Plus Years * Salary							0.98	(0.94 - 1.02)

* significant at 5%; ** significant at 1%

Table E-6. Korean Regression Results, Fully Adjusted Models

	Wage/Salary, Employed Only							
	Wage/Salary		Disability Odds		Disability Odds		Disability Odds	
Nativity/Duration								
0-5 Years	-2.02	(-2.39 - -1.65)**			0.84	(0.55 - 1.28)	0.66	(0.34 - 1.27)
6-10 Years	-1.59	(-1.99 - -1.18)**			0.88	(0.53 - 1.46)	0.69	(0.37 - 1.28)
11-15 Years	-1.34	(-1.76 - -0.91)**			0.98	(0.59 - 1.63)	1.48	(0.63 - 3.47)
16-20 Years	-0.87	(-1.29 - -0.44)**			1.03	(0.67 - 1.57)	0.95	(0.54 - 1.69)
21+ Years	0.38	(-0.01 - 0.77)			1.11	(0.75 - 1.64)	1.17	(0.70 - 1.93)
Covariates								
Age	0.02	(0.01 - 0.03)**	1.05	(1.04 - 1.06)**	1.05	(1.04 - 1.06)**	1.05	(1.04 - 1.06)**
Male	1.88	(1.69 - 2.06)**	1.13	(0.97 - 1.32)	1.15	(0.99 - 1.33)	1.15	(0.99 - 1.33)
Married	1.18	(0.91 - 1.44)**	0.56	(0.45 - 0.71)**	0.57	(0.46 - 0.72)**	0.57	(0.46 - 0.72)**
College Graduate	3.01	(2.83 - 3.20)**	0.43	(0.35 - 0.54)**	0.44	(0.36 - 0.55)**	0.44	(0.36 - 0.55)**
Economic Measures								
Salary in 1000s			0.94	(0.91 - 0.97)**	0.94	(0.91 - 0.97)**	0.93	(0.84 - 1.03)
Interaction Terms								
0-5 Years * Salary							1.08	(0.90 - 1.29)
6-10 Years * Salary							1.08	(0.94 - 1.23)
11-15 Years * Salary							0.86	(0.69 - 1.09)
16-20 Years * Salary							1.03	(0.91 - 1.16)
21 Plus Years * Salary							0.99	(0.89 - 1.10)

* significant at 5%; ** significant at 1%

	Per Capita Household Income							
	Per Capita HH Inc		Disability Odds		Disability Odds		Disability Odds	
Nativity/Duration								
0-5 Years	-3.04	(-3.36 - -2.71)**			0.56	(0.41 - 0.77)**	0.56	(0.39 - 0.82)**
6-10 Years	-2.35	(-2.68 - -2.01)**			0.79	(0.58 - 1.08)	0.77	(0.51 - 1.17)
11-15 Years	-1.97	(-2.29 - -1.65)**			1.05	(0.75 - 1.46)	1.23	(0.80 - 1.89)
16-20 Years	-1.07	(-1.46 - -0.68)**			1.05	(0.80 - 1.37)	0.97	(0.69 - 1.35)
21+ Years	0.56	(0.21 - 0.92)**			1.13	(0.91 - 1.41)	1.28	(1.00 - 1.63)
Covariates								
Age	-0.05	(-0.05 - -0.04)**	1.06	(1.06 - 1.06)**	1.06	(1.05 - 1.06)**	1.06	(1.05 - 1.06)**
Male	-1.02	(-1.16 - -0.89)**	1.21	(1.10 - 1.33)**	1.21	(1.10 - 1.33)**	1.21	(1.10 - 1.33)**
Married	1.27	(1.09 - 1.46)**	0.51	(0.46 - 0.57)**	0.52	(0.46 - 0.58)**	0.52	(0.46 - 0.58)**
Employed	1.40	(1.25 - 1.54)**	0.36	(0.32 - 0.41)**	0.34	(0.31 - 0.38)**	0.34	(0.31 - 0.39)**
College Graduate	1.53	(1.36 - 1.69)**	0.46	(0.40 - 0.52)**	0.47	(0.42 - 0.53)**	0.47	(0.42 - 0.54)**
Economic Measures								
Per Capita Household Income			0.97	(0.96 - 0.99)**	0.96	(0.95 - 0.98)**	0.98	(0.95 - 1.02)
Interaction Terms								
0-5 Years * Salary							1.01	(0.91 - 1.12)
6-10 Years * Salary							1.02	(0.92 - 1.13)
11-15 Years * Salary							0.95	(0.85 - 1.06)
16-20 Years * Salary							1.03	(0.97 - 1.09)
21 Plus Years * Salary							0.97	(0.93 - 1.01)

* significant at 5%; ** significant at 1%

Table E-7. Vietnamese Regression Results Fully Adjusted Models

	Wage/Salary, Employed Only							
	Wage/Salary		Disability Odds		Disability Odds		Disability Odds	
Nativity/Duration								
0-5 Years	-1.29	(-1.54 - -1.04)**			0.75	(0.49 - 1.15)	0.82	(0.41 - 1.65)
6-10 Years	-0.73	(-0.96 - -0.51)**			0.77	(0.55 - 1.08)	0.98	(0.60 - 1.62)
11-15 Years	-0.68	(-0.90 - -0.46)**			0.75	(0.59 - 0.97)*	0.84	(0.58 - 1.23)
16-20 Years	-0.07	(-0.31 - 0.17)			0.8	(0.59 - 1.08)	0.93	(0.55 - 1.55)
21+ Years	0.93	(0.70 - 1.17)**			0.79	(0.62 - 1.01)	0.97	(0.66 - 1.42)
Covariates								
Age	0.01	(0.01 - 0.02)**	1.05	(1.04 - 1.05)**	1.05	(1.04 - 1.05)**	1.05	(1.04 - 1.05)**
Male	1.04	(0.90 - 1.17)**	1.17	(1.01 - 1.37)*	1.17	(1.00 - 1.37)*	1.17	(1.01 - 1.37)*
Married	0.62	(0.45 - 0.80)**	0.70	(0.59 - 0.82)**	0.71	(0.60 - 0.84)**	0.71	(0.60 - 0.84)**
College Graduate	3.29	(3.09 - 3.49)**	0.70	(0.56 - 0.88)**	0.68	(0.54 - 0.85)**	0.68	(0.55 - 0.86)**
Economic Measures								
Salary in 1000s			0.92	(0.88 - 0.95)**	0.92	(0.88 - 0.95)**	0.95	(0.90 - 1.01)
Interaction Terms								
0-5 Years * Salary							0.98	(0.75 - 1.28)
6-10 Years * Salary							0.91	(0.78 - 1.07)
11-15 Years * Salary							0.97	(0.88 - 1.07)
16-20 Years * Salary							0.96	(0.84 - 1.09)
21 Plus Years * Salary							0.94	(0.87 - 1.02)

* significant at 5%; ** significant at 1%

	Per Capita Household Income							
	Per Capita HH Inc		Disability Odds		Disability Odds		Disability Odds	
Nativity/Duration								
0-5 Years	-1.66	(-1.87 - -1.45)**			0.64	(0.48 - 0.84)**	0.75	(0.50 - 1.14)
6-10 Years	-1.50	(-1.73 - -1.26)**			0.98	(0.81 - 1.18)	1.16	(0.83 - 1.62)
11-15 Years	-1.51	(-1.70 - -1.32)**			1.18	(1.03 - 1.36)*	1.61	(1.29 - 2.00)**
16-20 Years	-1.06	(-1.26 - -0.86)**			1.14	(0.97 - 1.35)	1.38	(1.03 - 1.84)*
21+ Years	0.19	(-0.01 - 0.39)			0.97	(0.84 - 1.12)	1.18	(0.94 - 1.48)
Covariates								
Age	-0.01	(-0.01 - -0.00)**	1.06	(1.05 - 1.06)**	1.06	(1.05 - 1.06)**	1.06	(1.05 - 1.06)**
Male	-0.63	(-0.72 - -0.53)**	1.14	(1.05 - 1.23)**	1.13	(1.04 - 1.23)**	1.13	(1.04 - 1.22)**
Married	0.57	(0.45 - 0.69)**	0.64	(0.59 - 0.70)**	0.65	(0.59 - 0.71)**	0.64	(0.59 - 0.71)**
Employed	1.10	(0.99 - 1.21)**	0.27	(0.25 - 0.30)**	0.27	(0.24 - 0.29)**	0.27	(0.25 - 0.30)**
College Graduate	2.54	(2.37 - 2.71)**	0.55	(0.47 - 0.65)**	0.56	(0.48 - 0.65)**	0.56	(0.48 - 0.65)**
Economic Measures								
Per Capita Household Income			0.94	(0.92 - 0.96)**	0.94	(0.92 - 0.97)**	0.99	(0.95 - 1.03)
Interaction Terms								
0-5 Years * Salary							0.95	(0.82 - 1.09)
6-10 Years * Salary							0.95	(0.84 - 1.07)
11-15 Years * Salary							0.88	(0.81 - 0.95)**
16-20 Years * Salary							0.94	(0.85 - 1.04)
21 Plus Years * Salary							0.94	(0.90 - 0.99)*

* significant at 5%; ** significant at 1%