

THE SOCIAL DETERMINANTS OF IMMIGRANT  
WELL-BEING IN THE UNITED STATES:  
A GENDERED PERSPECTIVE

by

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A tribute to the four most important people in my life

To my parents Mr. Shanker L. Maleku & Mrs. Laxmi Maleku

To my brother E. Deepanker Maleku

To my husband Dr. Saurav Shrestha

Thank you for always believing in me.

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Abstract

THE SOCIAL DETERMINANTS OF IMMIGRANT  
WELL-BEING IN THE UNITED STATES:  
A GENDERED PERSPECTIVE

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This dissertation examines the overlapping effects of structural vulnerabilities that arise from individual's position in a society translated through gender, race, ethnicity, class, age, and marital status on the well-being of immigrants in the United States. Despite the increasing understanding of migration as a gendered process, research in this area is still limited to gender and/or women ignoring class, ethnicity, or race as relevant axes of structural disadvantage and differentiation. This empirical study addresses this lacuna in knowledge via two objectives: (1) advance a conceptual and methodological model of health and migration that integrates a gendered perspective drawing interconnections, interdependence, and interlocking of essentialist categories such as class, race, and ethnicity as the categories of disadvantage, and (2) contribute to a theoretically-based empirical foundation for social work research that examines structural factors to move beyond cultural explanations of immigrant health research. Using a complex survey analysis of the California Health Interview Survey 2012, this study

examined the incremental variance of social and intermediary determinants of health on immigrant well-being. Results showed that effect of moderated relationships between structural vulnerability factors are significant predictors of immigrant well-being and this is conditional based on gender, race, class, age, and marital status. This dissertation is distinct in advancing the application of intersectionality, vulnerability, and the social determinants of health perspectives in immigrant health research, policy, and praxis. Knowledge gathered from this study will contribute not only to the knowledge base for development of policies and programs for immigrants, but for the benefit of overall population to achieve health equity. Consistent with the movement toward framing the health equity discourse in the United States, this dissertation study contributes to the paradigm shift in social work's conceptualization of health equity and in tandem, assist in the creation of a fertile field of inquiry for social work research and practice.

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## Chapter 1

### Introduction

Human history has always been a history of migration. In general, human migration is considered as the permanent change of residence for individuals and groups. It is also a natural social phenomenon that is taking place within very different contexts including, but not limited to, military conquest, flight of refugees, natural disasters, expulsion or enslavement. People have always moved from time immemorial for various reasons. They have moved from one place to another in search of food and survival, in search of safety, and moving away from threats of danger and death. In essence, humans have always moved towards opportunities for a better life. Human migration then, is tied to the human spirit which seeks adventure, pursues dreams, and finds hope even in the most adverse circumstances. When people migrate, it is however, important to note that these movements affect the communities' migrants leave, the communities that receive them, and also the communities along the route of transit.

The world continues to be on the move and in the advent of the twenty-first century, human migration, and particularly crossing international borders has become the "human face of globalization" (Suarez-Orozco et al., 2011, p. ix). A record number of people around the globe are immigrating to nations and continents for a variety of reasons: to explore opportunities; escape deplorable circumstances; due to effects of natural disasters; political issues such as violence, conflict, and civil strife; and also due to emerging phenomenon such as climate change (Ki-Moon, 2007). Currently, about four percent of the world's population live outside their countries of origin. While four percent

sounds like a small number, this number is equivalent to the population of Brazil, which is the fifth most populous country in the world (CIA, n.d).

Human migration is inevitable, yet it still remains as one of the highly contested areas across the globe. Human migration is also one of the leading causes of demographic changes all over the world today. According to the United Nations Global Commission on International Migration, human migration is also considered an inalienable human right (GCIM, 2005). Although, migration has its own advantages for the overall well-being of human society such as economic contribution, diversity, contribution to declining and aging society and so forth, with increasing migration, the influx of people with a variety of traditions, values, skills, and expectations is also associated with implications for services from individual psychosocial adjustment to public policies and regulations (Segal et al., 2010). Among many challenges, the health and well-being of immigrants is one of the burgeoning fundamental concerns. Studying the health and well-being of immigrants as a distinct group is important in terms of understanding the complex social and structural determinants of immigrant health to provide avenues for enhancing disease prevention, health promotion efforts, and overall human development.

Since human migration has affected all areas of the world, public health issues become even more important with increasing migration due to the movement of populations. Migration and health issues force us to acknowledge that migration interacts with other population parameters as well (Evans, 1987). In addition, it is important to use a health perspective in order to view the movement of population as a dynamic process with respect to individual's participation in human networks. It is therefore important to

view human migration as a human process and subsequently, it becomes important to examine the individual involvement with human networks and the institutions sustaining them (Evans, 1987, p. v). However, with respect to the structural systems, a consideration of mobility and migration as a determinant of health also alludes to matters of power and position. One such power relationship is the issue of gender in immigrant health and well-being research.

Arguably, although the area of immigrant health has evolved to be a fertile field of inquiry, health and well-being of the immigrant population from a gendered perspective is one of the most inadequately studied areas (Llacer et al., 2007). While well-being and health are quite often used interchangeably, studies on immigrant health seldom focus on existing gender differentials, or capabilities in terms of human capital, socio-economic status, and perception of opportunities among the immigrant population (Vissandjee et al., 2007). This can be regarded as the three gaps in the migration literature surrounding gender in terms of human capital, economic capital, and the social capital created by the social structural system. Since people move into new social systems, the characteristics of the structural environment they move into, affects their health and their overall well-being. Furthermore, there is paucity in knowledge about the gendered pattern of the divergence or convergence in health status among immigrants and how this contributes to their overall well-being. Although the discourse on health and well-being is still evolving, well-being should be “the ultimate goal around which economic, health, and social policies are built” (Diener & Seligman, 2004, p.1). This is because well-being is an important concept in the health discourse that goes beyond examining the role of

economic and noneconomic predictors of health, which are crucial determinants of social inequities.

With the focus on well-being, studies that incorporate gender in immigrant health and well-being research are, therefore, much needed to provide essential tools for informing and monitoring efforts to improve population health; improve access to quality health care services; eliminate inequities in health that eventually affect immigrant well-being. The measuring and monitoring of gender needs and the associated social structural determinants of health that contribute to the overall health and well-being must be an integral component of health equity efforts. Men and women have different patterns of illness, morbidity and mortality, and varied experiences with health care, immigration, settlement, along with different social contexts to consider. Examination of social structural determinants of immigrant health from the gendered perspective aids in assessing the impact of gender on social opportunities, roles and interactions that inhibit sharing of ephemeral resources such as power, absence of which make populations more vulnerable to inequities in health and well-being. Structural vulnerability is embedded in people's position in society, which evolves and continues in cycles (UNDP, 2014).

Factors such as gender, ethnicity, race, job type, economic and social status are in fact the reflection of people's position in a society that creates structural vulnerability. Further, the intersecting or overlapping vulnerabilities that arise from social structures such as gender, race, and class among populations such as immigrants can magnify the adverse impact on freedoms and functions (UNDP, 2014). Thus, analysis of these intertwined vulnerabilities, which arise from people's position in a society via social structures, will

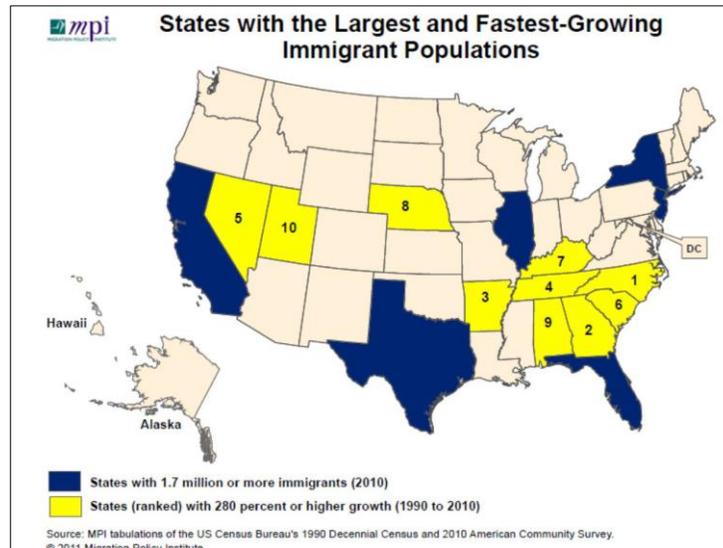
also contribute to the examination of human rights through the lens of health equity and social justice that is imperative to social work practice and research.

### **Human Migration in the United States**

The United States is the largest country with sizable immigrant flows every year. Immigrants are a growing segment of the American society, out of the total 307 million people living in the United States, 12.5 percent (38.5 million) are foreign-born. This means one in every eight residents in the United States is foreign born. According to the US Census Bureau (2010), this population increased by 24 percent between the years 2000 and 2009 and is expected to increase in the years ahead. In the US, many states are witnessing rapid demographic changes (Map 1.1.). Given these unprecedented demographic changes, needs for services, and the changes in human behavior, the phenomenon of migration has been an important area of inquiry. In addition, immigrant status is an important component of racial and ethnic health inequities with a large proportion of immigrants disproportionately uninsured and their healthcare needs are either totally or partially unmet (Kaiser Commission, 2004).

Due to the considerable changes in the ethnic composition of the population of the United States, monitoring of immigrant health becomes essential as the increase and presence of immigrant populations also shape the overall health outcomes of the US population (Ku & Matani, 2001). Further, female immigrants make up a little more than one-half of the US immigrant population (52%) and have immigration rates that outpace males since the 1960's (US Census Bureau, 2010). However, literature on immigrant

health has largely overlooked the interplay of gender in the health profiles and trajectories of the immigrant population, a crucial social structural determinant when it comes to discussing factors that affect health and well-being (Kosny, 1999).



Map 1.1 Immigrant Population in the United States  
(Source: Migration Policy Institute, 2011)

This is mainly because gender moderates the relationship between other determinants of health such as social and economic factors, creating distinctive experiences for men and women. Additionally, the compounding and interrelated impacts of structural factors such as race, sexual orientation, age, class, and disability have a strong influence on social resources affecting gender and health (Kosny, 1999) as a nested issue. In addition, the concept of this triple jeopardy of gender, race/ethnicity, and class situated in the context of social determinants of health perspective can address issues of health inequities and vulnerability as it influences health policy, service

delivery, and clinical practice. In essence, the barriers raised by triple jeopardy can shed light on many underlying societal factors that can influence immigrant health policy.

In discussing policy issues, Aday and Anderson (1981) assert that the state health policy is key in framing issues of organization of the health care system more specifically, accessibility and utilization of health services. The National Healthcare Quality and Disparities Reports (2011) indicate that the overall percentage of Americans that belong to minority groups is increasing and the total number of minorities in the US surpassed 180 million in 2007. The reports indicate that a large number of these groups are made up of recent immigrants and groups that may not speak English as their primary language. The reports address the fact that when members of the immigrant groups seek healthcare, language barriers can present significant challenges to communication with their providers and caregivers. Although the reports highlight several quality indicators that examine the impact of health care access and service utilization in terms of race/ethnicity, when it comes to immigrant population, the reports do not address any other issues. According to the United States Department of Health and Human Services (USDHSS, 2001), providing culturally and linguistically appropriate services (CLAS) to patients has the potential to improve access to care, quality of care, and, ultimately, health outcomes. Culture and ethnicity create a unique pattern of beliefs and perceptions as to what health or “illness” actually mean. In turn, this pattern of beliefs influences how symptoms are recognized, and how healthcare is sought out (Anderson et al., 2003). However, the organization of the health care system as a structure is also a determinant of access and utilization of health care (Solar & Irwin, 2010). Furthermore, the upstream

and downstream programs discussed in the next section, reveal the socio-political context as a structural determinant of immigrant health and well-being.

### **Healthy People 2020 Initiative**

The Healthy People 2020 initiative situates CLAS in healthcare as integral to achieving its overarching goals of increasing quality and years of healthy life and eliminating health disparities. While access to healthcare is a leading health indicator, barriers to access include cultural differences, language barriers, and discrimination. CLAS in healthcare improves all focus areas of Healthy People 2020 by reducing barriers to clinical preventive care, primary care, emergency services, and long-term and rehabilitative care. However, the limited discussion of the importance of immigrant health in national strategies like Healthy People 2020 raises another serious concern. The focus on social determinants of health and the elimination of ethnic and racial disparities are huge objectives of Healthy people 2020, but issues of immigrants are often intersected with issues of minorities, overlooking the determinant of migration and immigration experience within this population. In order to reduce inequities in health, WHO (2010) affirms that migration and ethnicity related factors should be acknowledged as powerful social determinants of health and attention to these factors should be treated as an intrinsic component of national and international strategies.

### **Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA)**

In 1996, Congress passed the Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA), which imposed a “five-year ban” on receipt of health and other public benefits on most newly arrived legal immigrants. Historically, legally

admitted immigrants were eligible for Medicaid and other benefits as citizens, but PRWORA delimited an important change in health benefits. Immigrants who may qualify for coverage themselves or who have citizen children who qualify often are confused or scared about enrolling. Fear of being labeled a “public charge,” which leads to ineligibility for citizenship and possible deportation, has caused a decline in immigrant families’ enrollment in public programs (Warner, 2012). In 1999, federal guidance clarified that being a recipient of Medicaid or SCHIP is not grounds for being declared a public charge; however, there is still a substantial amount of fear and confusion around enrolling in Medicaid or SCHIP among the immigrant community. Due to the eligibility restrictions, confusion, and concern around enrolling, low-income immigrants are much less likely to have public coverage than low-income native citizens (Kaiser Commission, 2004).

The new healthcare reform act Affordable Care Act (ACA), in principle, should provide a source of coverage for nearly all Americans with the exception of undocumented immigrants (Warner, 2012). Given, the background of PWORA, it becomes important to examine how ACA would accelerate progress in immigrant health and whether they are gender sensitive. In 2014, as a result of the Affordable Care Act (ACA), millions of people have gained and are still expected to gain access to quality health care through expansions in the Medicaid and purchasing of health insurance plans. ACA and the health care reform still raises several questions with implications for immigrants and immigration policy. Whether or not the proposed subsidies and mandates are applicable to recent immigrants is still in question. As Medicaid coverage

is expanded, it is still questionable if the five-year waiting period passed in 1996 will be overturned. Issues surrounding the application of individual mandates to immigrants despite their ineligibility for Medicaid or insurance subsidies are still not considered. Questions still remain on the implementation of the verification system. As the year 2015 is unfolding, concerned authorities should take the necessary steps to resolve these questions with a focus on health for all populations. It is also still questionable whether these reforms are gender sensitive as they relate to increasing diverse immigrant populations.

### **Statement of the Problem**

As stated, there is paucity of discussion of the importance of immigrant health and well-being in national strategies like Healthy People 2020 raising serious concerns. The focus on social determinants of health and the elimination of ethnic and racial disparities are crucial objectives of Healthy People 2020. In order to reduce health inequities, migration and ethnicity related factors should be acknowledged as powerful social determinants of health and attention to these factors should be treated as an intrinsic component of national and international strategies (WHO, 2010).

Past research on immigrant health and well-being has mainly focused on acculturation based explanations for immigrant health outcomes. The acculturation paradigm however, is ambiguous in terms of cultural focus due to both the theoretical and methodological ambiguity surrounding acculturation. Further, as mentioned previously, these studies lead to individual-centered interventions, ignoring the structural contexts

that are likely to produce social and economic inequities affecting immigrant health and well-being (Viruell-Fuentes, 2007). Researchers also claim that it is important to examine the influence of the complexities of social hierarchies, lest “ethnic culture is made culpable for health inequalities” (Hunt et al., 2004, p. 82). Equity in health and well-being for the immigrant population not only benefits the immigrants and their descendants, but their health status has larger social and economic implications for the overall health of the US population, particularly due to the increasing demographic changes in the US today.

While populations especially racial and ethnic minorities, are torn by widening health inequities, it is crucial to also note that these problems do not occur in a vacuum, but are predisposed by interacting social inequalities (Murphy et al., 2009). Populations that experience health inequities share some common characteristics such as poverty, marginalization, racial and ethnic minorities, women, and so forth. According to WHO (n, d. para 3), these characteristics are further exacerbated by the lack of political, social, or economic power. Thus, to be effective and sustainable, interventions that are targeted to eradicate inequities should go beyond remedying a particular health inequality and empower the group in question through systemic changes such as changes in policies, and in economic or social relationships (WHO,n.d.para.3).When it comes to health equity, there is a need for an immigrant perspective on the management of risks to health and well-being, largely due to the social structures that create risks for vulnerability among this population. Therefore, to sustain well-being among the immigrant population, it becomes important to examine the social structural mechanisms that create the

disproportions of resources. Further, migration to the United States will continue to be a pressing issue in the many years to come. It is therefore, critical to design strategies and guidelines that address the pressing needs of the well-being of the immigrant population residing in the United States.

Given the dominance of the acculturation paradigm in studying immigrant health and well-being, examination of equity in immigrant health requires a paradigm shift in the immigrant health discourse from micro-level conceptualization of culture to the macro-level structural factors such as the social, political, and economic context. These social structural patterns in terms of social and economic characteristics of individuals and populations are referred to as the most important antecedents of human health status versus medical care inputs and individual health behaviors such as smoking, diet, exercise, etc. (Evans, Barer & Marmot, 1994; Frank, 1995; Hayes & Dunn, 1998). The mechanisms believed to produce inequalities in health, which has an impact on equity in health and well-being are summarized by factors such as socio-economic status variants which are expected to be influential across class, gender, race, ethnicity, language, and age differences. For immigrants, however, the influence of socio-economic factors that make them vulnerable is not well-understood from a socio-structural level, which in turn questions the sustainability of health and well-being among this population. In addition, examining gender as a social structure in the migration health discourse and classification of mechanisms that produce gendered outcomes within each dimension of social structure (Risman, 2004) is very limited. Further, it becomes important to pay attention to the intersections of social structures such as race/ethnicity, class, and gender to help elucidate

knowledge on how immigrant-adaptation processes shape their health status and overall well-being (Viruell-Fluentes, 2007). These interwoven underlying vulnerabilities impede human development and challenge freedom and functioning (UNDP, 2014).

Due to these varied differences with regard to accessing resources linked with the pursuit and maintenance of health and well-being in many other ethnic and minority populations including immigrants, Wallace (2006) affirms that global health transformation where “equity in health for all” is pursued and valued, is much needed (p. 2). Contingent on the values of diverse groups, seeking and valuing equity in health supports the ideas of social justice, the right to health, and pursuit of physical, emotional, mental, and spiritual well-being (Wallace, 2006). In addition, conceptual clarity and consistency in language is needed when it comes to understanding the inequalities surrounding health. Often times, the terms “health disparities” or “health equity” are being used interchangeably, ignoring the conceptual differences between them. In the United States, the term “health equity” is less common compared to other countries (Wallace, 2006). While health disparities are the , “systematic, potentially avoidable differences in health or in the major socially determined influences on health between groups of people who are different relative positions in social hierarchies according to wealth, power or prestige” (Braveman, 2006, p. 181), health equity “ is the absence of avoidable or remediable differences among groups of people, whether those groups are defined socially, economically, demographically, or geographically” (WHO, n.d. para. 1). Therefore, pursuing health equity is “striving to eliminate health disparities strongly associated with social advantage can be thought of as striving for equal opportunities for

all social groups to be as healthy as possible” (Braveman, 2006, p. 181). Given this inherent belief in social equity, the health discourse therefore, should move towards the discussion of overall well-being of societies, focusing on positive outcomes and how to best realize them (Haworth & Hart, 2007).

### **Purpose of the Study**

As discussed previously, the structural determinants and conditions of daily life constitute the social determinants of health. The social determinants of health also create the inequities between and within countries (Marmot et al., 2008). Given the growing momentum of incorporating the social determinants of population health that calls for equity in health in prevention programming, the intent of this dissertation is to contribute to a new, theoretically-based empirical foundation for social work research via examining the effect of overlapping structural factors and moving beyond cultural explanations of immigrant health research. This dissertation considers the preeminence of gender as a structural variable in tandem with other underlying vulnerabilities such as race/ethnicity and social class. It is a call for migration scholarship to move beyond dichotomous specifications of women and men, in order to demonstrate how it is contingent on these dimensions of difference to look at the how gendered relationships of power structures such as race and class interact in tandem to affect immigrant well-being.

Despite the strong body of evidence on the relationship between social determinants and health outcomes, Dean et al. (2013) postulate that bringing attention to the impact of social determinants of health and employing innovative methods are both

critical to stimulate sustainable action (p.2). Moreover, despite the increasing understanding of migration as a gendered process, research in this area is still limited to gender and/or women ignoring class, ethnicity, or race as relevant axes of structural differentiation (Bastia, 2014). Although a rich body of literature describes multiple social and cultural disadvantages faced by the immigrant population that negatively affect their health, empirical research on the multiple social structural determinants or intersecting axes such as race/ethnicity, class, gender, and so forth, on immigrant well-being through a gendered lens is sparse and fragmented. This empirical study addresses that lacuna by advancing a theoretical based empirical model that addresses a range of social structural factors and their impact on equity in immigrant well-being through a gendered lens.

Hence, the purpose of this dissertation study is to advance a conceptual and methodological model of social determinants of health and migration that integrate a gendered perspective drawing interconnections, interdependence, and interlocking of essentialist categories such as class, race, and ethnicity as the categories of structural disadvantage. Knowledge gathered from this study will contribute not only to the knowledge base for development of policies and programs for immigrants, but for the benefit of overall population to achieve health equity. On a broad scale, this dissertation study attempts to address the importance of immigration policies that ultimately affect health policies (Viruell-Fluentes, 2007).

Given the influence of intersecting social structures leading to risks for vulnerabilities produced by socially constructed dimensions of difference on immigrant well-being then, (1) how do social determinants of health affect immigrant well-being

within gendered structures?, and (2) along what measurable domains, do the intersection of structural vulnerabilities explain immigrant well-being? The succeeding chapters of this dissertation will attempt to answer these broad research questions by advancing a theoretically based empirical model that (1) examines structural factors to move beyond cultural explanations of immigrant well-being, and (2) explores the impact of intersecting structural vulnerabilities such as race/ethnicity, class, and gender on immigrant well-being outcomes. Consistent with the movement toward framing the discourse in the United States as one focused on achieving equity in health and a global approach to health disparities (Wallace, 2006), this dissertation study attempts to contribute to the paradigm shift in social work's conceptualization of health equity discourse and in tandem, create a fertile field of inquiry for social work research and practice.

## **Definitions and Terms**

### **Immigrant**

An immigrant is defined as an individual who has lived outside of the country of birth for more than one year with an intent to live permanently in a foreign country (Castles, 2002). This category may include temporary labor migrants, skilled professionals, family reunification migrants, or international adoptees (Castles, 2002). For the purposes of this study, an immigrant is defined as an individual who was born in a different country, but is currently living in the United States.

## Well-being

The terms “well-being” and “health” are often used interchangeably or in tandem. In general, health is often equate to the absence or presence of disease. The World Health Organization defines health as “a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity” (WHO, 1948).

Well-being is a more multidimensional concept that is defined as “a dynamic and relative state where one maximizes his or her physical, mental, and social functioning in the context of supportive environments to live a full, satisfying, and productive life” (Kobau et al., 2010,p.274).

For the purpose of this dissertation, well-being is conceptualized as a function of health.

$$y \begin{array}{c} \longrightarrow \\ \longleftarrow \end{array} \text{Function of } (x)$$

where, y= well-being  
x= health

## Social Determinants of Health

Social determinants are the complex, integrated, and overlapping social structures and economic systems that are responsible for most health inequities. These social structures and economic systems include the social environment, physical environment, health services, and structural and societal factors. Social determinants of health are shaped by the distribution of money, power, and resources throughout local communities, nations, and the world (CSDH, 2008).

## **Social Determinant**

It is defined as the “proposed or established causal factor in the social environment that affects health outcomes (e.g., income, education, occupation, class, social support)” (Kindig, 2007, p.153)

## **Health Equity**

Health Equity is “the absence of avoidable or remediable differences among groups of people, whether those groups are defined socially, economically, demographically, or geographically” (WHO, n.d, para. 1). It also implies addressing the social as well as medical determinants of health as they are likely to be key determinants of health inequalities (Braveman, 2006).

## **Health Disparities**

Health disparities are the “systematic, potentially avoidable differences in health or in the major socially determined influences on health between groups of people who are different relative positions in social hierarchies according to wealth, power or prestige” (Braveman, 2006, p. 181).

## **Social Structure**

Social structure refers to the system of socio-economic stratification such as the class structure, social institutions, or other patterned relationships between social groups.

It is also the system of social network of classes and other groups, the nature of the functioning of social institutions, social organization and social action. (Levada, 1973).

### **Significance of the Study**

Today, social workers in large cities increasingly work with immigrants and forced migrants, yet few have received specialized preparation for this role in their professional training. Within the profession of social work therefore, human migration has yet to secure an important place. Social work has traditionally responded to migrants and displaced populations via emancipatory case management and mental health services, but the increasing demographic changes pose greater demands for social work research, practice, and education to prepare social workers to meet these new challenges. Variation in health profiles of immigrants through the gendered lens can provide explanations for variability in equity in health and well-being across groups of immigrant population. Furthermore, the intersecting effects of structural vulnerabilities such as gender, race, class that impede overall well-being of immigrants can begin to define the body of knowledge in intersectionality and advance the field of health research toward a common goal of social justice.

Significant gender gaps in socio-demographic variables that facilitate the association between health and well-being and immigrant integration could be predicted both within and between sub-populations. These results will contribute towards understanding the increasingly diverse health trajectories of newer immigrant populations and suggest avenues for future policy and research. Studies that incorporate gender and

equity in immigrant health research are much needed to provide essential tools for informing and monitoring efforts to improve population health; improve access to quality and outcomes of health care services; and eventually reduce inequities in health. Because population within and between groups have different patterns of illness, morbidity and mortality, different experiences with health care, immigration experience, settlement, different social contexts, the measuring and monitoring of overlapping structural vulnerabilities in health and well-being must be an integral component of health equity efforts. Likewise, there are significant inequities in health among vulnerable populations that are associated with socioeconomic position, ethnicity, and geography. Therefore, it is necessary to examine variations in the subgroups of immigrant groups. In addition, this will also contribute to the study of human rights through the lens of usability of health services, imperative to social work practice and research.

Studies on the social determinants of immigrant health through the gendered lens and its effect on equity in health and well-being can help build knowledge on the predictors and needs of unique immigrant population to improve conditions for those groups who have had fewer opportunities in realizing their rights to health. As mentioned earlier, the focus of this dissertation study is on the equity in health and well-being of the diverse immigrant population. Consistent with this perspective, this dissertation study has broader implications for social work research, especially in the conceptual and methodological use of advancing the social justice concept in health through two broad foci. One is the attempt to framing the health discourse on the achievement of equity in health. This would encourage social workers in the United States to view the intricate

link between national and international health domains (Wallace, 2006). Second is to advance the paradigm of intersectionality, critical to understanding how gender intersects with other demographic and socially constructed categories of difference such as class, race or ethnicity, citizenship status, nationality, and the like, and how these intersections contribute to unique experiences of accessing and utilizing healthcare, potentially leading to health equity. This framework will expand the idea that since various categories of oppression are interconnected and independent and merely separate essentialist categories, it is crucial to explain inequalities through a single framework of oppression (Bastia, 2014; Valentine, 2007).

Examination of the intersections of structural factors such as race, class, and gender on health and well-being can help bring about a conceptual shift in how researchers, civil society, public health professionals, including policy actors, understand social categories, structural vulnerabilities, their relationships, and interactions. Social work researchers can then, provide policy implications in the application of an intersectional perspective to health equity efforts and policies as failure to recognize these interconnections will misinform policy interventions in health. Healthcare policies have ethical and moral connotations rooted in the concept of social justice and social justice is a social work imperative.

## Chapter 2

### Review of the Literature

This chapter presents a review of the literature concerning the social determinants of immigrant well-being with a particular focus on gender. It also provides a foundation for subsequent presentation of theoretical and methodological framework that will guide this study. As the focus of this dissertation is on well-being outcomes, this chapter begins with the evolving discussion on the concept of well-being and its relationship to health. Despite the lack of consensus surrounding the concept of well-being, there is also an agreement that well-being is an intrinsic component of public health structure (Placa & Knight, 2013). Exploration of the concept of well-being and its effect on immigrant health therefore, is central to this dissertation as this discussion has far-reaching insinuations for structural vulnerabilities, health policies, and delivery of health services.

### **Review Methods and Search Criteria**

This review uses several methods to examine the current state of literature in the area of gender, health, and immigrant well-being. Using relevant search terms, articles on gender, immigration, and healthcare were identified. In addition, a search of reference lists and related items identified additional articles for review. Several online databases including: Academic Search Complete, Contemporary Migration Issues, JSTOR, MEDLINE, PUBMED, Proquest Dissertations and Theses Database, SIRS Researcher, Social Sciences Citation Index, Social Services Abstracts, Sociological Abstracts, and Social Work Abstracts were accessed for full review of peer-reviewed articles. Published

books and any other gray literature including conference proceedings, unpublished manuscript, government reports, reports from both national and international organizations that are key players in the area of immigrant health, immigrant well-being, and dissertations and theses were also reviewed as deemed relevant.

### **Inclusion Criteria**

This review includes any studies that address: migration process and/or migration experiences of men and women; migration process as influenced by gendered interactions; migration practices embedded in macro social structures such as institutions and organizations; immigrant health and well-being, and studies which discuss how migration reorganizes gender relations within social institutions. Also included is a subset of studies that conceptualize gender as a central element in theorizing the migration processes.

A total of 23 empirical studies (as shown in Appendix A) were reviewed due to their relevance to subject area and comparative fit with the purpose of this study. Broadly, these studies include: population based research with representative samples of immigrants at the national or state levels in the United States; models for the interactions between sex and/or gender and any explanatory variable; findings that assess separate models for men and women; explorations of the context of immigrant health and well-being, social determinants of health, health disparities, health equity, and health care utilization in terms of gender relations or gendered institutions; findings that include an immigrant indicator (for instance variables such as nativity, years in the US, citizenship status, etc.) and use this indicator to assess the “effect” of being an immigrant on health

outcomes including health and well-being, access, quality, utilization, and cost, and those published from 1990 to 2015. This literature review also includes research that focuses on gendered patterns of immigrant health and well-being issues in Canada, Australia, and Spain due to its relevance to the issue in question.

There are four major bodies of work that shape this review: (1) Discourse in health and well-being (2) Theoretical developments in gender, migration, health and well-being; (3) Empirical developments on immigrant health and well-being research; and (4) Patterns of health status on general health and well-being of immigrants. All three of these areas examine the consideration of gender as a key social determinant of immigrant health. The interplay of gender as a subject of inquiry is rarely mentioned in immigrant health research and is limited to the conceptualization of gender as a social attribute. The theoretical and empirical review presented here explores theoretical and methodological developments to provide an overall picture of the current state of literature in examining the interplay of gender in the areas of immigrant health, particularly the health, well-being, and quality of life.

### **Discourse on Health and Well-being**

As mentioned in chapter one, the concepts of health and well-being are exceedingly used interchangeably or in tandem. Before we explore the literature on gender, immigrant health and well-being, it is pertinent to explore the interconnections between health and well-being so as to explore the evolving discourse on health and well-being, which has far reaching implications to the overall human development.

## **The Health and Well-being Debate**

The concept of well-being is still evolving. Although a consensus has not been reached on the definition of well-being, scholars agree that well-being calls for multidimensionality of health (Wang & Shieh, 2001). In 1946, the World Health Organization (WHO) emphasized health as the state of complete well-being and not just the absence of disease (WHO, 1946). More recently, well-being has emerged in the public health policy discourse as a multiple and complex phenomenon of social determinant with a distinct idea in its own right (Knight & LaPlaca, 2013). Public health, governmental and non-governmental initiatives, both nationally and internationally, are beginning to emphasize well-being as the key outcome of strategic priorities in human development (LaPlaca, McNaught, & Knight, 2013). The relationship between health and well-being has also been in constant quarry surrounding the objective versus subjective nature, opening the door to an array of economic and psychological assessments (McNaught, 2011). Despite all the ongoing debate however, there is a general agreement that well-being is a positive outcome that is meaningful for people and for many sectors of society (CDC, 2013).

## **Historical Trajectory of Health and Well-being**

Initial ideas on well-being came from philosophers like Aristotle and John Stuart Mill who advocated for well-being within the scope of ethics, morality, individual, and societal inter-relationships (Hayborn, 2008; Helliwell & Putnam, 2004). In recent years, lots of ideas have spurred around the concept of well-being where social scientists have

approached the idea of subjective well-being defined by each individual. Helliwell and Putnam (2004) postulate that human well-being should in fact, be the ultimate outcome of social science. In particular, they contend that well-being should be self-defined and thus, support the concept of subjective well-being versus objective. Until after the Second World War, well-being was articulated largely in the context of economic growth and measured in terms of income and Gross Domestic Product (GDP) terms (McNaught, 2011). While economic growth and improved standards of living were taken as the indicators of development, health and well-being were classified as a domain within biomedical perspective, conceptualized as the absence of pain and disease in physiological health (LaPlaca & Knight, 2014). These ideas were largely influenced by the Rawlsian philosophy of primary goods conception of justice at that time (Riddle, 2013).

While Rawlsian philosophy still continues to be valued today, in the present time, Sen's idea of capabilities is a point of departure from Rawlsian primary goods conception of justice. According to Sen (1995), the focus on the possession of goods or resources was not adequate and that the focus should be on what people are able to be or do as a result of possessing goods or resources. Sen (1995) postulated that the primary focus should be on the capacity to function. Sen (1995) argues that capability, which is a set of functioning of an individual represents the freedom to choose alternatives. Nussbaum (2006) added to Sen's approach and further suggested that these capabilities should be pursued as an end by each individual and not merely treat it as a means to an end. The end state that Nussbaum (2006) refers to is the functioning, which is produced by the

realized capability. Nussbaum (2011) further provides an explicit list of ten capabilities including life, bodily health, bodily integrity, sense, imagination and thought, emotions, practical reason, affiliation, other species, play, political and material control over one's environment. However, this has received criticism over the absence of moral importance of health (Riddle, 2013). Riddle (2013) contends that the capability approach can only begin to promote justice after the central health capabilities are given the moral importance. Riddle (2013) postulates that in order to uphold justice "to encourage human flourishing and to promote well-being within the capabilities approach, we need to recognize the special moral importance of health." (p.159). Well-being and health slowly started to emerge as a social justice imperative.

### **Population Health and Well-being**

Well-being has been increasingly used in population health as an important concept that examines the noneconomic predictors. Literature affirms that well-being should in fact, be "the ultimate goal around which economic, health, and social policies are built" (Diener & Seligman, 2004, p.1). This is especially crucial for population health policies because as societies grow economically stronger, differences in well-being become less related to income, and much more associated with factors such as social relationships and enjoyment at work (Diener & Seligman, 2004.p.1). A large body of literature suggests that social factors strongly characterize overall health. Health then, organizes as one crucial aspect through which social factors influence subjective well-being (Berkman & Glass 2000; Farmer & Stucky-Ropp 1996; Helliwell & Putnam, 2004;

House et al. 1982; Kawachi & Berkman 2000; Kawachi & Kennedy 1997; Kessler & Essex 1997; Krumholz et al. 1998; Reed et al. 1983; Roberts et al. 1997; Ryff & Singer 2003; Schoenbach et al. 1986; Seeman et al. 1993; Sugisawa et al. 1994).

Well-being is associated with numerous health including family, work, and economically related benefits. Further, “higher levels of well-being are associated with decreased risk of disease, illness, and injury; better immune functioning; speedier recovery; and increased longevity” (CDC, 2013, para 3). So, these associations of health and well-being gave rise to individual choices in defining and developing their own needs. By acknowledging class and economic status as significant determinants of personal health and redefining their own well-being have enabled individuals, healthcare practitioners, and public health policy makers to revise previous notions of well-being linked to economics and finances (LaPlaca & Knight, 2014). Well-being in its current form is exceedingly used in public health as a resource that enables social, economic, and personal development, which are fundamental to well-being (CDC, 2013). Well-being is increasingly realized to cut across all facets of human life.

A historical analysis of well-being conducted by the Organization for Economic Co-operation and Development (OECD) that covered time period since 1820, revealed that life expectancy continued to improve around the globe, even when GDP per capita were stagnant. Advancement in medical technologies has contributed to high levels of life expectancy, which has more than doubled from below 30 years to almost 70 or beyond 80 on average in OECD countries since 1880 to 2000 (OECD, 2014). Longevity in life expectancy is generally used as a domain of well-being indicator showing public

health improvement. However, it is also argued that increase in life-expectancy alone cannot be a clear measure of health and well-being. Even countries with much economic gains and life expectancy beyond 80, such as the OECD countries, structurally lag behind in keeping pace with quality of life through optimal healthcare (Kahn & Juster, 2002).

As life expectancy continues to increase and treatments for diseases become more effective, debates on maintaining wellbeing has also become crucial. A secondary study conducted by Sprangers, et.al. (2007) among 15,000 clients from multiple databases of chronically ill older adults showed that assessments of quality of life are influenced by the person's state of health. Others have also reported that an average self-reported life satisfaction in population increases with aging. It also suggested that subjective wellbeing is affected by many factors other than health. Based on these findings, factors such as wealth status, social and family relationships, and other social roles and activities are increasingly coined as protective factors for good health and are assumed to reduce the risk of chronic physical illness and promote longevity (Sprangers, et al., 2007). Dolan and White (2007) have argued using subjective wellbeing as a measurement of health evaluation in health care resource allocation. Given these ideas surrounding health and well-being, the concept of well-being is still evolving from well-being conceptualization, to the intricate link to health, to now measures of well-being. Among the many measures that are used to measure well-being, there are three aspects of subjective wellbeing that is gaining popularity. These measures are related to evaluative or life satisfaction well-being, hedonic well-being related to feelings of happiness, sadness, anger, stress, and pain, and eudemonic well-being of having a sense of purpose and meaning and life

(Dolan & White, 2007). Many measures are still evolving, a discussion of which will continue in chapter four.

## **Theoretical Developments in Gender, Migration, Health and Well-being: A Critical Review of the Literature**

### **Gender and Migration**

Hondagneu-Sotelo (2003) posits gender to be one of the fundamental social relations anchoring and shaping immigration patterns. Moreover, migration in itself is believed to be a gendered phenomenon requiring more sophisticated theoretical and analytical tools compared to studies of sex roles and of sex as a dichotomous variable (Donato, et al., 2006). Evaluation of the epistemological developments in gender and migration infers that studies in the 1970's and 1980's recognized women to be as likely as men to migrate to the United States (Curran et al., 2006). These studies however, either focus on comparisons of women and men or focus only on women, presenting women migrants as a special case. This phenomenon of sociological scholarship is referred by Hondagneu-Sotelo (2003) as the phenomenon of "add and stir"(p. 5). Women are added as a variable and measured in comparison to the pattern of migrant men. Although this approach is used across quantitative studies for mere comparisons, Hondagneu-Sotelo (2003) asserts that this approach fails to recognize that gender is fundamentally about power. Feminist scholars critique the "women only" studies that produce "women only portraits" of immigration experiences. They believe the women only focus further marginalizes immigrant women from major immigration dynamics

(Hondagneu-Sotelo, 2003, p.6). These approaches limits our understanding of how gender as a social system shapes immigration processes for all immigrants- men and women.

Curran et al. (2006) affirm that new theoretical formulations in gender and migration are emerging from the “add and stir,” to “women only” approaches, empowerment studies, analyses at the household and family levels to now include institutions as well. Pessar (2003) argues that this new wave of migration scholarship should recognize the preeminence of gender in tandem with racism and other structures of oppression. Similarly Zinn et al. (2005) confirms that gender is always complicated by complex stratifications of intersecting power systems. It operates with and through other systems of opportunity and oppression, which gives rise to vastly different gender experiences among women and among men. Gender should therefore, move beyond dichotomous simplifications of women and men and show how it is contingent on other dimensions of difference (Zinn et al., 2005, p.11).

### **Selective migration, healthy immigrant effect and the immigrant paradox.**

The degree to which potential immigrants migrate, or fail to migrate, on the basis of their health status is referred to as selective migration ( Frisbie et al., 2001). Often times, it is believed that immigrants go through a process of self-selection where the healthiest and the fittest migrate to withstand the journey to the destination country. Another selection process occurs through the medical screenings in any regularized migration (Williams, 2002). Literature in immigrant health across disciplines explore health differentials between foreign-born immigrants and native-born Americans. Findings show that

immigrants have superior health status upon arrival compared to their native counterparts. This phenomenon is coined as the “healthy immigrant effect.” Overtime however, this health advantage deteriorates (Antecol & Bedard, 2006; House et al., 1990; Stephen et al., 1994). Similarly, this pattern is also supported in other countries such as Canada (Chen, Ng, and Wilkins, 1996; Deri, 2003; McDonald, 2003; Perez, 2002) and Australia (Donovan et al., 1992), which are also major immigrant receiving countries.

The push and pull factors associated with migration, however, vary by gender where males tend to migrate for economic or educational purposes and women mostly migrate as members of family units (Hondagneu-Sotelo, 1994). Thus, the likelihood of women selectively migrating based on good health becomes a rather precarious occurrence (Antecol & Bedard, 2006). Compared to their male counterparts, immigrant females then, arrive less healthy and are socio-economically disadvantaged both in their countries of origin and on arrival to the United States. Socio-economic disadvantage increases their health risks and the stressors of migration and settlement make them more vulnerable to negative health (Curran et al., 2006). In a study using the New Immigrant Survey (2003) that quantifies the extent of health selection and evaluates the degree to which selection explains variation in self-rated health among US permanent residents (N=6,183). Akresh and Frank (2008) found that the odds of positive health selection are lower for women than for men, supporting the assumption that in migratory flows, immigrant women are more likely than their male counterparts to have partners precede them in migration. Although women are less likely than men to experience positive health selection in this study, it is important to note that there is significant interaction

between gender and education where education is a stronger determinant to positive health selection for women than for men (Akresh & Frank, 2008). This study provides evidence that the migration process can be fundamentally different for highly educated women than for highly educated men in a way that involves a higher premium on good health (Akresh & Frank, 2008).

Llacer et al. (2007) also note that despite economic reasons as the major determinant of migration, the push and pull factors have gender specificity. Gender, in essence, controls the prospect of migration by combining the individual, family, and the social factors. These factors include age, birth order, race/ethnicity, urban/rural origin, marital status, reproductive situation, family role and position, education, professional training, work experience, and so forth. The assumption that women migrate as a family unit however might be changing and research foci needs to shift the attention toward examining selective migration or the healthy immigrant effect through gender lenses.

Explanations focusing on determinants such as selective migration and erosion of health behaviors are also offered to account for the differences in the pace of decline in health status across immigrant groups over time. However, leading theories on inequities in immigrant health argue the immigrant paradox models are often derived from studies of Mexican immigrant populations, which are becoming less generalizable due to the evolving influx of other diverse ethnic immigrant populations (Read & Reynolds, 2009). The paradox of the deterioration of immigrant health over time has been one of the most perplexing issues facing immigrant health researchers. Mixed results among groups and sub-groups further add to this perplexity. Several other studies however, provide

evidence that although positive selection occurs, its extent varies significantly among several dimensions questioning the notion of the immigrant paradox among all immigrant groups and sub-groups. Akresh and Frank (2008) also reveal evidence that positive selection occurs among new legal permanent residents and that its extent varies significantly among several dimensions. Immigrants from all regions of origin experience higher levels of positive health selection than immigrants from Mexico even after accounting for compositional differences in socioeconomic status. These explanations also assume that the decline in health status during settlement and integration phases remain consistent and identical between both men and women failing to take the gender considerations into account (Antecol & Bedard, 2006; Read & Reynolds, 2009).

Literature proposes three models to explain the decline in immigrant health over time (Lla´cer, et al., 2007). First, the convergence model posits that exposure to physical, social and cultural influences lead to a shift in migrant morbidity and mortality towards that of the host country's native born population. Second, the resettlement stress model postulates that stressors, such as poverty, unemployment, lack of social networks and lack of access to services, have an adverse effect on health, which is particularly strong for immigrant populations. Finally, the interaction model postulates that pre-migration and post migration stressors and the strategies adopted by individuals, their families and society at large to cope with the immigration experience interact to maintain the immigrant's health. These models are not mutually exclusive, and their proposed mechanisms may be acting simultaneously, but the challenge lies in how they could be expanded to encompass analysis of gender differences (Lla´cer, et al., 2007).

## **Theories of Acculturation**

The history and development of acculturation dates back to as early as 1880, encompassing three main philosophies of Anglo conformity, the melting pot, and cultural pluralism (Robbins et.al, 2012). The field of acculturation, historically, engaged the minds of anthropologists and sociologists, and most recently psychologists (Sam & Berry, 2006). Increasingly, acculturation is becoming a prevalent variable in research concerning health disparities among immigrants and ethnic minorities. It is an area that also receives a lot of mixed reactions. Criticism of unidirectional school of thought where acculturation is seen on a continuum has led to the development of the bi-dimensional acculturation theories (Mendoza, 2009). The thoughts proposed by Berry (1980) are the most influential, where acculturation is described as the extent to which an individual is willing to retain old culture and adopt a new one.

**Bi-dimensional school of thought.** Berry (1999) affirms that as immigrants acculturate into a different culture via learning new systems of beliefs and rules, they are constantly challenged to integrate these new systems into their own traditional cultural worldview. Berry (1980) classifies acculturation into four distinct constructs: (1) integration (acceptance of old culture and in tandem acceptance of the new culture); (2) assimilation (rejection of old culture and acceptance of the new culture); (3) separation (acceptance of old culture, and rejection of the new culture), and (4) marginalization (rejection of both the old culture and the new culture at the same time). According to Berry (1980), this model provides the framework for acculturation strategies used by individuals and groups in their intergroup encounters. The concept central to this theory

is the identification of culture, identity, and maintenance of heritage with the societies of settlement.

However, another body of literature asserts that the bi-dimensional theory of acculturation does not provide clear explanations on gendered outcomes or differences. Landrine and Klonoff (2004) argue that irrespective of how acculturation is measured, the bi-dimensional model of acculturation is more descriptive than explanatory and fails to predict behavior change in minority health and also cannot explain the differentials in gendered health behavior outcome (p. 530). Due to the incoherent evidence of acculturation on minority health, Landrine and Klonoff (2004) propose the “operant model” of acculturation based on the learning theory, which predicts behavior and behavior change (p. 546).

Although studies indicate that acculturation is broadly defined in terms of culture change and that it influences health outcomes, they are fragmented in terms of using a common model of acculturation and provide explanation of why it would affect health (Salant & Lauderdale, 2003). In the United States, acculturation has typically been perceived as an individual-level process by which individuals acquire the behaviors, attitudes and values prevalent within the American society (Lopez-Class et al., 2011). The concept of acculturation is mostly quantified in terms of proxy measures such as nativity, generational status, language acquisition, immigration status, age at arrival, and the length of stay in the United States (Viruell-Fuentes et al., 2012). Studies show that the relationship between culture and health is measured in diverse ways. Multiplicity of measures result in inconsistent findings making cross-comparisons difficult.

Through a systematic review of 67 peer-reviewed articles, Salant and Lauderdale (2003) juxtapose various approaches to acculturation within the health literature on Asian immigrants under the domains of mental health, physical health, and health services use. Results from their review reveal that the literature is highly fragmented in terms of the assessment of acculturation and its relationship to health (Salant & Lauderdale, 2003). Most studies either adapt or imitate models from sociology and behavioral epidemiology or borrow psychometric scales from psychology used among Hispanic populations. Salant and Lauderdale (2003) therefore, caution that a conceptual model of acculturation and its association to health should be based on the understanding of the researcher with attention to the historical experiences of different ethnic groups. In particular, Salant and Lauderdale (2003) note that effect of acculturation on immigrant health outcome can vary due to factors such as gender and socioeconomic status further acknowledging the presence of gendered pattern of acculturation.

Similarly, scholars contend that emphasis on acculturation as the central concept in the examination of immigrant health outcomes in the United States ignores the underlying socio-historical contexts of migration (Hunt et al., 2004). Viruell-Fuentes et al. (2012) argue that for a comprehensive understanding of immigrant health patterns, it is mandatory to move the research focus from individual-level cultural explanations to structural factors such as race that intersects with other dimensions of inequality such as gender and class that directly impact immigrant health outcomes (p. 2103). These limitations are even more prominent in immigrant health research where the paradigm of acculturation dominate explanations of immigrant health trajectories and the interplay of

race, class, and gender are merely absent (Viruell-Fuentes et al., 2012). To this end, the theory of intersectionality is gaining grounds in immigrant health research.

### **Theory of Intersectionality**

The concepts of intersectionality were used in feminist work questioning the position of women long before the term “intersectionality” was coined in 1989 by Kimberle Crenshaw (Phoenix, 2006). The theory of intersectionality posits that the systems of oppression through the social factors of gender, race, and class mutually work together to produce inequality (Collins, 1990). So, any analyses that examines the independent effects of gender, race, or class are inadequate due to the fact that these social positions are experienced simultaneously. The concepts of intersectionality has impacted both feminist and critical race theory, but literature is sparse on the integration of intersectionality in the study of health inequalities. Viruell-Fuentes et al. (2012) notes that this is particularly true in the area of immigrant health.

Increasingly, feminist scholars address the importance of recognizing the emergence of gender in migration with matrices of race relations, nation, occupational incorporation, and socio-economic class locations and acknowledge that gender does not exist in a vacuum (Hondagneu-Sotelo, 2003, p.5). Similarly, literature supports that while culture plays a role in immigrant health outcomes, examination of the ways in which immigration intersects with race, class, and gender can explain the changing patterns in these health outcomes (Viruell-Fuentes et al., 2012). Theory of intersectionality therefore, can serve as a framework to move beyond individual-level conceptualizations of culture

to structural examinations of power structures such as race, class, gender, and immigrant status and how they shape health inequities (p.2100).

### **Vulnerability Perspective**

Theorizing on immigrant health often takes the perspective of vulnerability, where immigrants are frequently identified as a “vulnerable population” based on their increased risk for poor physical, psychological, and social health outcomes and inadequate health care (Aday, 2003; Flaskeraud and Winslow, 1998). Aday (2003) recognizes immigrants as vulnerable due to factors involving: the complexity of diverse languages, health practices, food choices, culturally based definitions of health, and previous experiences with American bureaucracies affecting immigrant health care (Chesnay & Anderson, 2008, p. 5). According to the “differential vulnerability hypothesis”, negative or stressful life events put people more at risk for poor physical, psychological, or social health than others (Aday, 2003, p. 4). For immigrants, the migration experience itself is considered as a stressful life event, making them vulnerable to poor physical, psychological, or social health (Frisbie et al., 2001).

Although there is heterogeneity in the degree to which immigrants are vulnerable to adequate health care, literature is in sync with several factors such as socio-economic background; immigration status; limited English proficiency; policies on access to publicly funded health care; residential location; and stigma and marginalization that affect the vulnerability of immigrants in obtaining health care (Derose et al., 2007). In addition, Derose et al. (2007) also state that overall, the immigrant population has lower

rates of health insurance, use less health care, and receive lower quality of care compared to the U.S. born populations. Several other studies also support this argument (Frisbie et al., 2001). While the degree of vulnerability differs among subgroups, literature for the most part seems to exclude these differences. The heterogeneity among the immigrant population definitely pose a challenge for theorizing and research. However, more studies should be conducted to disaggregate the similarities and differences between and within groups and sub-groups.

### **Social Determinants of Health Perspective**

Despite the theoretical and empirical developments made in the area of studying health inequalities and health of the immigrant population, very few attempts have been made to integrate both these areas (Malmusi et al., 2010). Moreover, migration and health issues are rarely addressed from a health equity framework of social determinants of health. In addition, while theorizing of gender and migration has evolved over time, literature is very fragmented when it comes to conceptual understanding of gender, migration, and health inequities. Application of the health equity framework based on the social determinants of health perspective where migration experience is taken into consideration as a determinant of health can be one viable option to recognize the gendered pattern of immigrant health inequities. More studies are therefore needed to explain the importance of immigration experience as a key determinant of immigrant health.

When it comes to immigrant health, due to the heterogeneity of the immigrant groups and the differences in health outcomes, Williams (2002) asserts that better immigrant health does not exist for all outcomes. Factors such as selective migration or the healthy immigrant effect alone might not explain the health profile of immigrants (Williams, 2002). Therefore, it is critical to explore the ways in which stressors and resources linked to the process of migration and acculturation relate to each other and how they combine to affect the health of immigrants. Investigating the interplay of gender to see how it affects the health of immigrants can be one way to examine the gendered pattern of migration that has direct association to health. A growing body of immigrant health research seeks to establish sex, gender, ethnicity and migration as social determinants of health (Vissandjee, 2004; Krieger, 2005, Vissandjée et al., 2007). These concepts are important units of analysis and the integration of these concepts within health research is vital to inform research and policy in women's health (Krieger, 2005; Marmot, 2005). Additionally, the compounding and interrelated impacts of factors such as race, sexual orientation, gender, age, class, and disability has a strong influence on social resources affecting health. These social resources can be categorized in terms of social support networks, access to education, access to quality employment, risk of violence, etc. (Kosny, 1999).

The support for migration experience as a determinant of immigrant health is further supported by Edberg et al. (2011), where they present a health trajectory framework that incorporates the migration process from the point of original country and patterns of health; impact of immigration experience itself; and then impact of the

extended complex adjustment to life in the United States (p. 582). The authors address nine domain factors including: migration experience, social adjustment, SES, social supports, neighborhood characteristics, health status, health knowledge and practices, access to care, and perceived discrimination that should be taken into consideration in documenting and studying trajectories of immigrant health (Edberg et al., 2011). The authors further affirm that discussion of these factors should include all levels: individual, social, community, cultural, and environmental/ecological, examining both the individual perspective and observational data from the community.

### **Behavior Model of Health Care Utilization**

The behavior model of health care utilization first developed by Anderson (1968) and later revised (Andersen, 1995) and adapted by Phillips et al. (1997) have been widely used in understanding patterns of health care utilization among individuals. Although this model is not directly targeted towards the immigrant population, it is widely used in immigrant health research and therefore, pertinent for this review. Based on the systems perspective, the behavior model integrates individual, environmental, and provider-related variables associated with decisions to seek health care (Phillips et al., 1997). The behavior model posits that an individual's access to and use of health services is a function of three characteristics: predisposing factors; enabling factors; and need factors.

According to Andersen (1995), predisposing factors are the socio-cultural characteristics such as health beliefs (includes attitudes, values, and knowledge towards the health care system); demographic factors (age and gender); and social structural

factors (including education, occupation, ethnicity, social networks, social interactions, and culture). Enabling factors include: logistical factors such as personal/family (knowledge on accessing health services, income, health insurance, a regular source of care, travel, extent, and quality of social relationships); community (available health personnel and facilities, waiting time); and any additional genetic and psychological characteristics. The need factors include the immediate reason for using health services that generate the necessity to utilize health care services. Andersen (1995) states that perceived need is related to people's perception of their own health that prompt care-seeking. Evaluated need is the professional judgment and degree of medical care provided by the provider. In terms of the immigrant population, examining provider characteristics and the effects of satisfaction and utilization are important variables to measure utilization of health care services.

### **Gender, Immigrant Health & Well-Being Research: A Review of Methodological Developments**

The empirical articles reviewed here, (N=23) examine different areas of immigrant health including: acculturation (21%), utilization of health care (26%), and immigrant health status (52%). Out of the total empirical articles only 34.78% explicitly discuss issues of gendered patterns and gender differentials in immigrant health. Other articles either do not discuss gender or use it as a confounding variable. Although researchers have slowly begun to recognize the gendered pattern of immigrant health, gender has yet to secure a prominent place in immigrant health research.

## **Methods and Measures**

As far as research design and instruments are concerned, most of the studies reviewed use a survey design at pooled cross-sectional levels. Some studies also used longitudinal, cohort, and household surveys. There are strong recommendations for using longitudinal data to examine immigrant health trajectory. Studies recommend using multilevel modeling techniques, longitudinal studies, and the application of growth modeling techniques to identify health trajectories of the immigrant/refugee populations (Edberg et al., 2011). Instruments mostly used by researchers are state and national level population based surveys such as National Health Interview Survey, New Immigrant Survey, and Medical Expenditure panel survey. Standardized statistical procedures range from logistic regression models, hierarchical regression models, path analysis, and growth curve analyses. In addition, there are approximately 17% of studies that conduct systematic reviews. This empirical review also highlights several broader issues.

## **Racial and Ethnic Health Disparities and Immigrant Health Equity**

Literature on racial and ethnic health disparities widely report health inequities affecting minority populations. However, literature is sparse in making adequate connections between immigration and ethnic and racial health disparities. Since ethnic identities are often traced to the immigrant's country of origin or ancestry, Jasso et al., (2004) contend that immigration has strong associations with ethnic and racial health disparities. Further, the average healthiness of immigrants, the diversity in health status

among immigrants, the subsequent health trajectories following immigration both over immigrants' lifetime and that of their descendants when combined produce the ethnic health disparities observed at any point in time. Therefore, identification of the determinants of the original health selection of migrants and the forces that shape health paths following immigration are crucial to understanding ethnic health differences (p. 1).

Similarly, other studies accentuate the need to include migration and acculturation related variables as important factors in studying the health of racial/ethnic minorities. Williams (2002) asserts that while socioeconomic status is a central determinant of racial/ethnic disparities in health, several other factors including medical care, geographic location, migration and acculturation, racism, and exposure to stress and resources also have important contribution affecting minority health. These factors have to be adequately explored to eliminate racial/ethnic disparities in health. Calling for a renewed attention to monitoring, understanding, and actively seeking to eliminate racial/ethnic disparities in health, Williams (2002) reiterates the need to delineate the harmful and protective factors prevalent in both the immigrant and host cultures, identify the conditions under which these factors combine over time, across generations, and geographic contexts (p. 594).

### **Gender, Health, and Well-being of Immigrant Populations**

Although studies examine the similarities and differences between immigrant groups and sub-groups, literature remains fragmented in terms of examining the interplay of gender in immigrant health research. Moreover, studies that examine gendered

interactions or gender differentials are sparse. Few studies that do examine the gendered effects acknowledge the gendered patterns of immigration on health and provide further implications to examine the triple jeopardy effect of race, class, and gender.

Using data from the 2000-2007 National Health Interview Surveys, Read and Reynolds (2012) compare the health outcomes among Mexican-born, and Middle Easterners to those among native born whites and examine gender differences within each group. Read and Reynolds (2012) affirm that their results found an immigrant story and a gender story. The gender gap in health is much greater for immigrants than for native born white men and women, where the difference across health outcomes were much smaller (p. 113). Mexican and Middle Eastern immigrant women reported better health than US born white women, but reported worse health than their immigrant male peers. Similarly, using data from the National Health Interview Survey, Antecol and Bedard (2006) conduct a cohort study that highlights gender differentials in health of the immigrants. Consistent with the declining health status of immigrants with the increased residency, Antecol and Bedard (2006) find that female immigrants almost completely converged to American BMI (Body Mass Index) within 10 years of arrival, and men close a third of the gap within 15 years. In terms of race and gender, results show two important differences between the male and female patterns. For most racial groups, the average BMI difference between natives and recent immigrants was substantially larger for men than for women. With the exception of white immigrants, male immigrant's BMI's did not converge to the comparable native level even for the group with 15 or more years of residency in the United States. This pattern contrasts with the overshooting

pattern for female immigrants. Among female immigrants, only Hispanic immigrants converged to native levels. For men, it was only for overweight rates. Unlike females, white male immigrants assimilated in terms of overweight and obesity rates. Black immigrants however did not assimilate in terms of BMI irrespective of gender.

### **Measuring Acculturation**

Measurement of acculturation among the immigrant population and the ambiguity of how it relates to other variables or constructs has been an ongoing methodological issue. For a very long time, acculturation research was only restricted to correlational studies because of the limited measurement scales. Disagreements surrounding mathematical properties of the resulting scales and the levels of generalizations represented by these scales continue (Olmedo, 1980). Empirical studies for the most part are more focused on quantitative data utilizing mainstream norms for standardized measurement (Robbins et.al, 2012). These studies however are limited to the development of measurement models where acculturation is quantitatively defined with regards to single or multiple dimensions (Olmedo, 1980). McCarty (2011) states that acculturation grew from being used as a dependent variable (explained by the contact between cultures) to an independent variable (that explains outcome variables).

Acculturation studies now summarize many aspects of the acculturation process into one single score. Thus, more and more acculturation studies are becoming scale-based and the acculturation scores are now used to predict outcome variables (McCarty, 2011). Despite the growing empirical support in this field, Sam and Berry (2003) affirm that comparative

studies that cover more than a few countries is lacking, making it difficult to achieve generalizations about the phenomenon of acculturation.

Most acculturation scales assume acculturation to be continuous and progressive. They juxtapose the cultural behaviors of the country of origin and the behaviors of the host culture at the opposite ends of a continuum, where levels of culture change is assessed primarily through language use patterns, demographic factors, and awareness and participation in either ethnic group or mainstream cultural practices (Marin & Marin, 1991). However, it is also important to note that the rate and extent of acculturation over time varies from person to person. Acculturation studies among different groups also show mixed results.

**Acculturation and gender.** Studies in immigrant health research have widely examined the influence of gender on observed patterns of health behavior. Kimbro (2009) investigates differences in smoking and binge-drinking for Latinos by nativity, stratified by their age at immigration, and tested whether individual and neighborhood acculturation measures influence health behaviors within the context of gender and age at migration. This study also examines the influence of gender on observed patterns of health behaviors. Kimbro (2009) finds that both individual and neighborhood-level measures of acculturation contributed to immigrant health behavior advantages. With regard to gender differentials, Kimbro (2009) finds that women who have a Spanish-language preference had lower odds of smoking, while men with the same language preference had higher odds of smoking. However, both men and women with preference of Spanish language had lower odds of binge drinking. Interaction effects of gender with

other variables show larger effects differences for men and women. Based on this finding, Kimbro (2009) argues that gender should be considered as an important variable within the context of acculturation in health behaviors and outcomes. Similarly, Lopez-Gonzalez et al. (2005) find differences in the acculturative process for men and women with regards to health. Using a pooled data from NHIS from 1998-2001, Lopez-Gonzalez et al.(2005) examine the association between nativity, acculturation and health behavior of adults in the US and explore the gender differences between these relationships. Results show that the health behavior of more acculturated immigrant women is less positive than that of less acculturated women. However, acculturation made little difference for health behavior in men. The authors argue that it is important to not only consider how acculturation is related to health, but how the acculturation process differs across subgroups.

Findings from the Lopez-Gonzalez et al. (2005) study that examine the association between nativity, acculturation and health behavior of adults in the United States using a pooled data from the NHIS from 1998-2001, supports previous research that immigrant adults in general display far more healthy behavior than US born adults. Acculturation is related to less favorable behavior among immigrants, especially with increasing duration. When looking by gender, Lopez et al. (2005) find clear acculturation differences among women, specifically they find the health behavior of immigrant women in the US longer and who are citizens was less positive than the health behavior of new immigrants and those who are not citizens. Among men, the foreign born also show more positive health behavior, although the immigrant advantages are of smaller

magnitude in comparison to women. Unlike the association between acculturation and health behavior for women, duration of stay and citizenship made very little difference among men. Thus, Lopez-Gonzalez et al. (2005) assert that their study lends strong support to the existence of a gendered process of acculturation. Similarly, some other studies also identify the gendered pattern of acculturation (Cerrutti & Massey, 2001; Kanaiaupuni, 2000).

### **Utilization of health care**

Utilization of health care is emerging as a major variable in immigrant health research. Although literature seems to still offer vague assertions on the issues of health care utilization patterns among the immigrant population, most studies support various barriers faced by immigrants to seek care. The ability of immigrants to access and utilize preventive health care is poor (Carrasquilli et al, 2000; Frisbie et al., 2001, Sudano & Baker, 2003, Thamer et al, 1997). However, utilization of care varies widely depending on factors such as immigration status, country of origin, and the ability to navigate linguistic and cultural barriers (Kandula et al., 2004). Similarly, some other studies also widely report lack of health insurance, transportation, patient-provider communication, and legal status discrimination (Cristancho et al., 2008) as obstacles leading to under-utilization of screening and outpatient primary care services, shifting the burden of care to more acute presentations, and frequent use of emergency departments, particularly in the pediatric population (Derose et al., 2009). Delayed or forgone care is much more common among immigrants due to financial burden, language barriers, traditional beliefs,

and residence outside a major urban center (Huang et al, 2009). These challenges faced by recent immigrants engaging in the healthcare system (Schmidt et al., 2011) result in poor utilization of health services. These studies however, do not explore contextual factors that could contribute to poor utilization of health services.

In a household survey conducted between Oct 2005 and Jan 2006, Choi (2009) explores the effects of social contexts on access to health care among recent immigrants by comparing the experiences of recent immigrants among three ethnic communities namely, Filipinos, Koreans, and Marshallese in Hawaii. Findings reveal that state health policy, ethnic community characteristics, and individual support networks are important to influence health disparities among and within immigrants. Despite socioeconomic disadvantages, Marshallese had a better access to health care via health insurance assistance from the state compared to Filipino and Korean populations. High levels of health care resources and social capital also contributed significantly to better access to health care in the Filipino community. These results support the notion that health care of immigrants is a product of the interaction between societal factors and individual's socioeconomic and cultural characteristics and that social context in which the immigrants reside is a crucial factor to be explored (Choi, 2009).

When it comes to health and well-being among immigrants, literature affirms that immigrant females tend to access health services quickly and frequently contributing to their health burden (Gorman & Read, 2006). Drawing on the theories of gender inequality and immigrant health to hypothesize differences among this population, Read and Reynolds (2012) highlight important associations between gender, immigration, and

health that provides further direction to the understanding of gender and its interaction with immigrant health. Using data from the 2000-2007 National Health Interview Surveys, Read and Reynolds (2012) compare the health outcomes among the Mexican-born, and Middle Easterners to those among U.S. born whites and examine gender differences within each group. Read and Reynolds (2012) reveal that their results found an immigrant story on one hand and a gender story on the other. They found the gender gap in health to be much greater for immigrants than for US born white men and women, where the difference across health outcomes were much smaller (p. 113). Mexican and Middle Eastern immigrant women report better health than US born white women, but report worse health than their immigrant male peers. Unique to other studies, Read and Reynolds (2012) also affirm that contact with the health care system also contributes to the pattern of gender differences in immigrant health contributing to broader methodological and policy implications (Gorman et al, 2010). They further question the subjective and objective measures of health such as self-rated health, which is less dependent on medical diagnoses and more on cultural perception of illness and the presence of illness itself (Leclere et al., 1994). So, health outcomes then, may be influenced by differential access to and interaction with the medical system (p. 120).

In general, it is assumed that women are more likely to utilize health services quickly and frequently than males due to biological differences in reproduction and social differences as caregivers and perhaps may be more aware of their ailments (Read & Reynolds, 2012, p. 119). However, other arguments contend that immigrants in general are less likely to utilize health services due of issues such as lack of knowledge about the

system, lack of resources to access the system, and so forth. They also argue that this interpretation could also explain health differences between recent immigrants compared to more established immigrants where differences are often linked to changes that occur with acculturation. Read and Reynolds (2012) assert that rather than immigrants' health declining over time due to poor health habits and loss of protective factors, the data may be capturing the fact that new immigrants are less likely than more established immigrants to come into contact with the health care system and thus may be less aware of their health conditions (p. 119). Along the same argument, McDonald and Kennedy (2004) provide some evidence on the underlying reasons behind the effects of length of stay on health by analyzing immigrants' use of health services. They assert that similar patterns in the use of health services could infer that the barriers in accessing health services by recent immigrants could be contributing to lower reported incidence of poor health conditions. This may give the impression of healthy immigrants when measures for health status are usually self-reported and not based on diagnoses. For diagnosis to happen, contact with health care system is necessary. This evolving knowledge on the utilization of health care services to assess the health status of immigrant can contribute towards expanding the knowledge base of immigrant health advantage amidst the debate with self-reported health measures.

Similarly, Read and Reynolds (2012) reiterate that the health utilization measure could be the primary mechanism to address both immigrant and gender disparities (p. 119). Immigrants are less likely than native born whites to interact with the health care system. However, immigrant women are more likely to utilize healthcare compared to

immigrant men. In addition, immigrants are healthier than native born whites, but immigrant men report better health than women regardless of nativity or ethnicity. Therefore, immigrant and gender health disparities may partially reflect knowledge of health status rather than actual health. (Read & Reynolds, 2012). Similarly, Schmidt et al. (2011) examine the challenges in meeting healthcare needs of the growing immigrant population residing in the United States less than 10 years. Findings reveal that females are the most significant factor in influencing healthcare seeking behavior compared to males. Females are also more likely to be insured; visit a healthcare provider; participate in preventive health screening, but also report one or more chronic disease. Feelings of sadness and depression are widespread among recent immigrants (81%) and that mental health services such as counseling are under-utilized (1.7%).

Based on the Anderson model of health care utilization, Shibusawa and Mui (2010) examine health status and utilization of physicians, hospitals, emergency departments, and traditional medicine among older Asian Indian immigrants. Important gender differences are observed when comparing the sample with non-Hispanic Whites. A higher rate of women report fair or poor health (36.8%) than non-Hispanic White women (23.6%), while fewer men (21%) report being in poor or fair health than non-Hispanic white men (23.8%). More women than men delay seeing physicians. The authors claim that women report lower levels of English speaking proficiency than men, which may have resulted in having less medical information and knowledge of appropriate care. Also, traditional patriarchal norms that may affect the needs of other family members before their own may hinder them from seeking care (p. 532). These

results reveal the importance of utilization of health care as a measure to not only assess the immigrant health pattern, but also examine the gendered pattern of immigrant health affecting their overall well-being.

### **Measuring Gender**

Gender is normally measure in binary terms as a dichotomous variable divided into male and female throughout empirical quantitative studies in immigrant health research. The choice of gender measures is limited to some degree by what is available and consistently defined across the datasets underpinning immigrant health research. While many agree that analyses comparing male and female patterns could provide important distinctions, advocates of gender analysis critique male or female centered studies using bivariate analysis to be too limited, missing the important piece about gender as a way of structuring power in human relationships (Donato, 2006 ; Hondagneu-Sotelo, 2003). So, while the current focus of literature on women is not necessarily inappropriate, research foci should move beyond using gender as a synonym for women toward analysis of gendered positions within normative discourses such as policies and practices (Palmary et al., 2010). Further, Pessar (2003) urges the development of theory and design research that can address the concurrent interaction of gender, class, race, and ethnic exploitation. Emerging literature support the argument of positioning gender more in terms of a subject of inquiry rather than an attribute (Hondagneu-Sotelo, 2003; Palmary et al., 2010; Pessar, 2003).

However, there are still challenges in terms of moving away from dichotomization of gender. One challenge is the absence of gender indexes or composite of variables, that would be a measure of gender. Phillips (2005) asserts that in the context of health outcomes, defining gender to include both biological and social aspects of being male or female, and considering which measurable variables could form a gender coefficient should enable research to move forward. Phillips (2005) also recommends using measures such as gender empowerment measure (GEM) and human development indicator (HDI) that are widely used in developing countries to measure gender. However, these measures are fraught with limitations.

### **Analysis of the Literature on Immigrant Health & Well-Being**

While the area of immigrant health and well-being has evolved into its own field of research and more and more studies are acknowledging the gender differentials in immigrant health, significant gaps remain both at the theoretical and methodological levels. Although theorizing in immigrant well-being is still evolving, new perspectives such as intersectionality and vulnerability contributes to the knowledge base. An overwhelming number of studies used health and well-being interchangeably, with little inference to a well-rounded human development agenda. The social determinants of health perspective that focuses on equity in health and well-being, where migration experience is considered as a key determinant of immigrant health brings a comprehensive perspective to theorizing in immigrant health. Further, the feminist approach to migration and the emerging scholarship around gender and immigration

provides an inclusive understanding of power relationships and differentials. These ideas challenge the inherent essence of people's position in society that affect population health and well-being.

Literature in the area of immigrant health affirms that as immigrants integrate into the American society, their health deteriorates. Several explanations focusing on determinants such as migrant selectivity and erosion of health behaviors have been offered to account for the differences in the pace of decline in health status across immigrant groups over time. Leading explanations for inequities in immigrant health however, are derived mainly from studies of Mexican immigrant populations, which are becoming less generalizable due to the evolving influx of other diverse ethnic immigrant populations (Read & Reynolds, 2009). These explanations also assume that the decline in health status during settlement and integration phases remain consistent and identical between both men and women (Antecol & Bedard, 2006; Read & Reynolds, 2009). The theories of immigrant health to an extent is gender blind contributing to the gaps in our understanding of the process and persistence of change in immigrant health over time. Previous studies appear to be more appropriate for understanding the experience of men than that of women as the studies either control for gender or only look at the health outcomes among men or women (Antecol & Bedard, 2006). Although there are limited studies looking at the gender dimension of immigrant integration, literature available on immigrant health suggests that with increasing immigrant integration in the US society, the common pattern of declining health “ holds more strongly for men than women” (Gorman et.al, 2010, p. 452). Coupled with deteriorating immigrant health and the

increasing effects of immigrant integration, the absence of gendered perspective on the dimension of healthcare creates a huge gap at the theoretical level. What is still not clear is how these multiple dimensions of power structures intersect or overlap to impact the overall immigrant health outcomes.

As far as methodological improvements in immigrant health research is concerned, longitudinal research studies are burgeoning and adding to the methodological depth and rigor to understanding immigrant health trajectories. Attempts to examine similarities and differences between and within immigrants groups can also be considered as methodological strengths of immigrant health research. However, methodological gaps in immigrant health literature revolve around issues with data, measurement, and methodologies. In addition, overlooking the gendered pattern of immigration is a big gap in the literature. Most studies in immigrant health either use gender only through the lens of a dichotomous variable or use it as a confounding variable, ignoring the interaction of gendered relationships that create structural vulnerabilities in a society. Further, most studies in immigrant health are conducted in terms of comparing the immigrant population to the native-born population in the United States, showing mixed results. Researchers contend that comparison of immigrant health to native-born population is limited and cannot highlight the effects of immigration on lifetime health profiles (Jasso et al., 2004). This gap calls for innovative concepts and methods of advancing the understanding of immigrant health trajectories and the overall well-being of the immigrant populations. Further methodological development in this area is highly challenged with measures of acculturation, immigration status, nativity, and so forth due

to the exceedingly diverse immigrant populations. In general, instruments like immigration status have not received the assessments for reliability and validity (Loue, 2006). Additionally, the inconsistencies in the measures are also due to varied definitions of constructs that make cross-comparison difficult.

Literature on immigrant health and well-being show no consistent pattern in evidence even from the same group and provide mixed results. These varying results are also directed due to the varied research designs, sample sizes, methodologies, and the evident heterogeneity between and within immigrant groups. Literature on the processes and consequences of acculturation provide varying results making it impossible to make definitive statements regarding the current state of knowledge on this issue. Additional research based on large probability samples and longitudinal designs are much needed to provide conclusive results. Jasso et al. (2004) also affirm the importance of longitudinal studies that are able to capture the immigration process from the beginning. Due to enormous heterogeneity in the immigrant population, Jasso et al. (2004) address the direct implications for the need of large sample sizes. There is a huge need for methodological studies in this area. Lack of comprehensive measure of immigrant health is a huge methodological issue in immigrant health research. Factors such as immigration experience, economic, social, and demographic measures should be integrated in a single survey as a nested issue. While large scale surveys such as the National Health Interview Survey (NHIS) and National Health and Nutrition Examination Survey (NHANES) serve as good medium to address immigrant health disparities (Jasso et al., 2004), they are very

limited in terms of measuring individual, social, and contextual determinants of immigrant health and well-being.

In conclusion, what can be deciphered then, is that the discussions of gender, health, and well-being in the migration literature is limited to individual microsystems. There is a rich theoretical literature describing the multiple disadvantages facing immigrants in terms of gender, culture, acculturation, and health behaviors that negatively impact their health and well-being. However, gaps remain in terms of examining the influence of structural forces and power relationships such as gender that mediate the relationship between structural factors such as gender and health inequities faced by the immigrant population. Therefore, it is critical to move the migration discourse to include discussions of power relationships that cuts across both gender and health affecting the overall well-being. Discussions of gender have evolved from women only approaches, to empowerment studies, to now include institutions (Hondagneu-Sotelo, 2003). Because the issue of gender is not limited to the roles, responsibilities, and needs of only women or men, but also with the interrelationships between them, discussions of gender should therefore, move beyond dichotomous simplifications of women and men. Gender discourse therefore, should illustrate how the differences between them is contingent on other dimensions of difference. In a broad sense, the issue of gender is fundamentally about power (Hondagneu-Sotelo, 2003).

However, Pessar (2003) argues that the new wave of migration scholarship should recognize the primacy of gender in tandem with other structures of oppression such as racism. Given these evolving discussions of gender in the migration context, the

perspective of intersectionality seems to play a central role in further conceptualizing the issue of gender in migration issues. Further, it becomes even more important to discuss the intersectionality issue when it comes to discussing health and gender among the migrant populations as the interspaces created by these intersections shape varying levels of health risks affecting the overall wellbeing of the immigrant populations. It is due to these emerging trends in the immigrant health discourse that this dissertation study attempts to contribute to the immigrant health literature moving beyond cultural explanations toward an examination of social structural factors. This empirical study hopes to engage in the larger discussions of immigrant well-being and engender entry points to immigration policies via adoption of health policies that are conducive to human growth and the overall well-being of societies.

## Chapter 3

### Theoretical Framework

Chapter 2 discusses the changing landscape of human migration through the ages, particularly in recent decades. From the literature review in Chapter 2, it becomes clear that gender is an evolving area of inquiry in migration and health discourse. In essence, the development of the migration discourse flows in two streams: (1) advancement of the understanding of migration as a gendered process both at the theoretical and methodological level, and (2) an increasing addition to research studies on immigrant health and well-being. Both these streams of literature discuss the fundamental dynamics of power. The literature also encompasses discussions of gender and health in the migration, yet much of the discussion is limited to individual microsystems. There is a number of theoretical discourses which describe the multiple disadvantages facing immigrants in terms of gender, culture, acculturation, and health behaviors that negatively impact their health and well-being. However, significant gaps remain in terms of examining the influence of structural forces and power relationships that mediate the relationship between underlying factors such as gender and health inequities faced by the immigrant population. Therefore, it is critical to move the migration discourse beyond micro-level conceptualizations of culture towards fundamental considerations of power structures such as race, class, gender, and immigrant status, including other social determinants and how they shape health inequities among the immigrant population.

Drawing from both the streams of literature on gender and health, this chapter establishes theoretical and empirical bases for studying the social determinants of

immigrant well-being from a gendered lens, drawing interconnections, interdependence, and interlocking of essentialist categories such as class, race, and ethnicity as relevant axes of difference to address this lacuna in the extant immigrant health literature. The conceptual model of this study draws substantially from three broad theoretical perspectives: (1) social determinants of health framework; (2) feminist theory of intersectionality, and (3) the vulnerability perspective of health. These three theoretical formulations serve two important purposes: (1) guide the empirical work of this dissertation study, and (2) guide pragmatic application of this dissertation work to illuminate entry points for effective program and policy interventions for positive health outcomes among the immigrant population further making an impact on health equity for the overall population.

Building on the identified theoretical perspectives, this dissertation study adds to the extant literature on immigrant health and well-being by examining how a focus on the overlapping characteristics of the social determinants of immigrant health can have an impact on health equity and well-being among the immigrant population. The reasons behind explicitly drawing on concepts from these perspectives stem from their inherent strengths of functionality, parsimony, and replicability that fit with the aspirations of this dissertation. The social determinants of health framework provides a structural system perspective in alignment with conditions of daily living caused by the unequal distribution of power and resources as a cause for health inequity substantially affecting the chances of leading a flourishing life (Marmot et al., 2008). This context of structural systems overlays the vulnerability perspective (Aday, 2003), which posits that the social

structural system, in particular, induces vulnerability of populations and sub-populations contingent on the criteria of their membership to the system. The discussion on vulnerability of the immigrant population further calls for the examination of the interspaces created by social structures that stratify people in varying levels of social gradients, producing health-damaging experiences that ultimately affect their overall well-being. This idea is then guided by the theory of intersectionality. Likewise, the use of multiple theories broadens the range and scope of research and gives the power to provide a novel insight into an interesting phenomenon that cannot be accomplished by using one theory (Jaccard & Jacoby, 2010, p.32). The three theories used in this study provide more insights to a core set of underlying organizing principles and structures. That is, the “structuralism” typology of each theory taken in tandem offers a principal understanding and framework of “power relationships” (p.298). Structural analysis, here, focuses on isolating the basic core of these of power relationships and their interaction between socially constructed structural dimensions such as, socio-economic position and social resources to discover how they intersect to impact the well-being outcomes among the immigrant population.

### **Social Determinants of Health**

As a part of a more comprehensive effort to improving population health, recent population health strategies address the need to consider broader social determinants of health which cause health inequalities (Dean et al., 2013). According to the World Health Organization (WHO), social determinants of health are the conditions in which people

are born, grow, live, work, and age, which in essence are shaped by the distribution of power at the global, national, and local levels. WHO also states that social determinants of health are the systems put in place to deal with illness, shaped by a wider set of forces such as economics, social policies, and politics (WHO, 2014; CDC, 2014.) In addition, WHO postulates that such factors are mostly responsible for health inequities between and within countries. The CSDH framework is an action-oriented framework built on the work of Amartya Sen linking the concepts of health equity and agency to just governance (Solar & Irwin, 2010, p.12). Sen (1999) argues that inequalities in health in essence arise out of the inequalities in people's capability to function, thus overwhelmingly compromising freedom. This systematic rise in inequalities due to individual social position, according to Anand (2001) in addition to Sen (1999) reveals the failure of governance in ensuring fair access to basic goods and opportunities that condition people's freedom to choose. Therefore, health equity should be a goal of public policy with the premise that health is an important component for individual agency (Ruger, 2006).

### **Historical Trajectory: Commission on Social Determinants of Health**

The Commission on Social Determinants of Health (CSDH) was established by the World Health Organization (WHO) in March 2005 in order to provide support in addressing the social factors leading to health inequities globally. The committee aimed to draw the attention of governments and society to the social determinants of health with an aim to create better social conditions for health, especially among the most vulnerable

groups. The commission presented the report to WHO in July 2008. The final report of the commission stated that social inequities were killing people on a grand scale and identified three overarching principles to reduce health disparities both on national and global levels. Putting social justice at the center, these principles included: (1) improving daily living conditions; (2) tackling the unequal distribution of power, money, and resources; and (3) measuring and understanding the problem and assessing the results of action (CSDH, 2008).

The conference on social determinants of health addressed five different action areas: improved governance for health and development, promotion of participation in policy-making and implementation, reorientation of health sector towards promotion of health and reduction of health inequities; strengthen global governance and collaboration; and monitoring progress and increase accountability (WHO, 2013, para.3). The Rio Political Declaration was endorsed by WHO Member States at the 65<sup>th</sup> World Health Assembly in Geneva, Switzerland in May 2012. Tackling social determinants of health is recognized as a fundamental approach to the work of WHO and a priority area in the general program of work for 2014-2019. It is also important to note that framing health as a social phenomenon reiterates health as a topic of social justice (Solar & Irwin, 2010). Since health equity is described as “the absence of unfair and avoidable or remedial differences in health among social groups” (p. 4), it in essence becomes the guiding principle to achieve social justice. The health differences that are socially produced, systematic in their distribution across populations, and unfair are the remediable differences in health among population groups, which are defined socially, economically,

demographically, or geographically (p.12). The World Health Organization sees situating social justice and health equity requires the adoption of human rights framework as vehicles for achievement of social justice. The international human rights perspective is at the core of social determinants of health framework providing the appropriate conceptual and legal structure to advance the goals of health equity through the action on social determinants of health (p.14). Human rights application to health entails the empowerment of disadvantaged communities to exercise the control over the factors that determine their health and their overall well-being. Pursuing health equity therefore means minimizing inequalities in health and in the key determinants to health (Braveman, 2006).

### **The Commission on Social Determinants of Health Conceptual Framework**

The conceptual framework of the social determinants of health developed by the Commission on Social Determinants of Health (CSDH) of the World Health Organization forms the basis of this dissertation study. The CSDH framework is broadly based on the background element of (1) the theories of power and (2) the social production of disease model. In addition, the CSDH framework uses three main pathways for causal explanations: (1) social selection or social mobility (2) social causation, and (3) life course perspectives. All of these theoretical explanations and associated pathways emphasize the concept of “social position”, found to play a central role in the social determinants of health inequities (Solar & Irwin, 2010).

**Theories of power.** The theories of power play a vital role in the conceptualization of the CSDH framework. This is largely because the efforts to reduce health inequities involve changing the distribution of power within society for the benefit of disadvantaged groups. These changes in power relationships occur at various levels from the micro-level such as households or workplaces to macro-level domains such as structural relations facilitated through economic, social, and political institutions (Solar & Irwin, 2010, p.22). Among the different interpretations of power, Solar and Irwin (2010) reinforce the emphasis on power as a collective action, which is in alignment with a model of social ethics based on human rights. The focus of social power then, is not of “command”, but “enablement”. So, theorizing the impact of social power on health further establishes that “empowerment of vulnerable and disadvantaged social groups” is key to reducing health inequities (p.22). Since health inequities stem from the systematically unequal distribution of power, prestige and resources among different groups, Solar and Irwin (2010) affirm that researchers concerned with studying health equity and social determinants of health should provide a careful analysis of power. To do this, it also becomes important to understand how power operates in multiple dimensions of economic, social and political relationships (p.20). The authors further postulate that power analysis shows how micro-level modifications, if supported and strengthened through structural changes, can only reduce inequities in health, and not in micro-level modifications alone. Action on the social determinants of health inequities therefore is a political process that engages both the agency of disadvantaged communities and the responsibility of the state (p.23).

**Social production of disease model.** The CSDH framework considerably draws from Finn Diderichsen's model of social production of disease (Solar & Irwin, 2010, p. 23). Social status is at the center of Diderichsen's interpretation of the mechanisms of health inequality (Diderichsen, 1998). The model emphasizes that the crucial mechanisms in the stratification of health and well-being operate in three distinct ways. First, the social context create social stratification and assign individuals to different social position. Second, social stratification in turn engenders differential exposure to health damaging conditions and differential vulnerability in terms of health conditions and material resource availability. Finally, it also determines "differential consequences of ill health" for more and less advantaged groups (Solar & Irwin, p.24). This concept in essence explains the notion of social inequality.

### **Components of the CSDH Framework**

Considering the theorization of social power and the model of the social production of disease by Diderichsen et al. (2001) as the background elements, there are three key components of the CSDH framework including the socio-political context; the structural determinants and socioeconomic position; and intermediary determinants.

**The socio-economic and political context.** The CSDH framework defines "context" as "all social and political mechanisms that generate, configure, and maintain social hierarchies including the labor market, the educational system, political institutions, and other cultural and societal values" (Solar & Irwin, 2010, p.36). The political aspect of context although vital for the social distribution of health is also an

area that is largely understudied. The political context is reflected in the public policy decisions made by governments, which are driven by political, economic, and social forces. These public policies directly impact the distribution and effects of social determinants of health across populations adding to their vulnerability to relative risk factors for health. Solar and Irwin (2010) further note that the mapping of context should include governance; macroeconomic policy; social policies; public policies in areas such as education, medical care, water and sanitation; culture and societal values; and epidemiological conditions. The welfare state and its redistributive policies or the absence of such policies are the most powerful determinants that affect health among other contextual factors (p.36).

**Structural determinants and socioeconomic position.** The structural mechanisms are conceptualized as those that interplay between context and socio-economic position in the CSDH framework. This interplay generates and reinforces class divisions and defines socio-economic position within the hierarchies of power, prestige, and access to resources. The unequal distribution of material and other resources within each society is portrayed as a system of social stratification or social hierarchy. In the social hierarchy, people achieve various positions based on their social class, occupational status, educational achievement, and income level. This position in the social stratification system refers to their socioeconomic position. Solar and Irwin (2010) posit that the context, the structural mechanisms, and the socioeconomic position of individuals together form the structural determinants, referred to as the “social determinants of health inequities” (p.36). The root cause of inequities in health then, are

the structural mechanisms that contour social hierarchies. Indicators such as income, education, occupation, social class, gender, and race/ethnicity are termed as the most important structural stratifiers and are often used as proxy indicators (p.36). In addition, socio-economic position can be measured at the individual, household, and neighborhood levels and at different points of the lifespan. In today's world, it is also critical to recognize social stratifiers such as gender, ethnicity, and sexuality associated with systematic forms of discrimination (Krieger, et al., 1993; Solar & Irwin, 2010).

**Intermediary determinants.** In tandem with the structural determinants, the intermediary factors accentuate the causal significance of the structural factors. In the CSDH framework, the underlying social determinants of health inequities that operate through a set of influences that shape health outcomes are the intermediary determinants of health (Solar & Irwin, 2010). The social determinants of health inequities are a precursor to these intermediary factors linked to a set of individual level influences such as health behaviors and physiological factors. The intermediary factors flow from the arrangement of social stratification to determine differences in exposure and vulnerability to health-compromising conditions. The health effects of the social determinants are also mediated by biological processes and genetics. Intermediary factor of health have several categories such as material circumstances; psychosocial circumstances; behavioral and/or biological factors; and the health system as a social determinant of health.

While housing and neighborhood quality; consumption potential such as financial means to buy healthy food, warm clothing, etc., and the physical environment comprise the material circumstances, psychosocial circumstances include psychosocial stressors

such as stressful living circumstances and relationships, social support, coping styles or the lack thereof (p.45). Behavioral and biological factors include genetics, nutrition, physical activity, and consumption of alcohol and tobacco, distributed differently among various social groups. These factors can either be health enhancing or health damaging. So, while socio-economic and political context have a direct effect on the intermediary factors, socioeconomic position have more influence on the population via specific intermediary determinants namely, material circumstances, psychosocial circumstances, and behavioral and biological factors. The CSDH model assumes that social groups that fall under the lower socioeconomic level live in less favorable material circumstances compared to groups in higher socioeconomic groups. In addition, groups closer to the bottom of the social scale are more involved in health-damaging behaviors compared to the more privileged who are more engaged in health-promoting behaviors. The unequal distribution of the intermediary factors that are linked with differences in exposure and vulnerability to health-compromising conditions and consequences of ill-health, in essence creates the primary mechanism through which socioeconomic position generates health inequities (Solar & Irwin, 2010, p.41).

**Other Constructs of CSDH Framework.** Other constructs that need explicit discussion include health system, social cohesion/social capital, and the impact on equity in health.

***Health system as a determinant of health.*** The CSDH framework makes explicit the role of health system as a determinant of health compared to other models that have attempted to explain the functioning and impact of social determinants of health (Solar &

Irwin, 2010). The health system is viewed as an intermediary determinant as it can both address differences in exposure and vulnerability by improving access to care and promoting inter-sectoral action to improve health status (p.40). The health system also plays the role of mediating the differential consequences of illness in the lives of people. It has the capacity to safeguard deterioration of people's social status against health problems and enable social reintegration for those who get sick. Moreover, the health system contributes to social participation and empowerment, an important component for the development of pro-equity health policy.

***Social cohesion and social capital.*** In the discussions of SDH, the concept of social cohesion and social capital occupy a noticeable place, where it is perceived to be linking both the structural and the intermediary dimensions. Although the idea of social cohesion/social capital is much contested, Solar and Irwin (2010) state that the notion of "linking social capital" is evolving into newer ideas on the role of the state in health equity promotion (p.7). Thus, the cultivation of cooperative relationships between citizens and institutions becomes crucial for development of social capital. Although social capital has been proclaimed as an essential component in shaping population health, the debate surrounding social capital stems from whether it should be seen as property of individuals, groups, networks, or communities and where it should be located in the social order. Given the difficulty to situate social capital as either a structural or an intermediary determinant of health, the CSDH framework assumes it as "cross-cutting" both the structural and intermediary dimensions (p.43). This idea however, can be limited in terms of its application in intervention science.

## **Theory of Intersectionality**

Theories of intersectionality emerge from the writings of women of color during the 1960s and 1970s. The feminist perspective of intersectionality is described as “one of the most important contributions that women’s studies has made so far” (McCall, 2005, p.1771). From the theoretical level, intersectionality has indeed transformed how gender is discussed (Shields, 2008). This perspective was developed by women of color in the United States in response to dissatisfaction towards existing feminisms perceived to be inadequate in addressing their concerns (Mann, 2012). Intersectionality theory is largely rooted in the writings of US Black feminists who challenge the notion of a universal gendered experience (Viruell-Fluentes et al., 2012). They argue that experiences of Black women are shaped by race and class (Collins, 1990). Drawing substantially from critical race theory, the theory of intersectionality postulates that social categories such as gender, race, and class are the systems of oppression that are mutually constituted and work together to produce inequality. In recognizing the limitations of theorizing gender as a unified collective surpassing race and class, intersectionality further recognizes that especially for minority women, it is crucial to recognize the patterns of racism, classism, and other threats to equal access to opportunities and social justice (Siver, 2014). The theory of intersectionality proposes that gender cannot be used as a single analytic framework without also exploring how issues of race, migration status, history, and social class, in particular, come to bear on one’s experience as a woman (Siver, 2014). Winker and Degele (2011) view intersectionality “as a system of interactions between inequality-creating social structures (i.e. of power relations), symbolic representations and identity

constructions that are context-specific, topic-orientated and inextricably linked to social praxis” (p.54).

Feminist scholarship addresses race, class, and gender as an interwoven issue arguing for the examination of these forms of stratification as a “matrix of domination” (Collins, 1990) or a “complex inequality” (McCall, 2001) that need to be studied in relation to each other (Choo & Ferree, 2010). Although the term intersectionality was first coined by Kimberly Crenshaw as an intervention to the traditional “identity politics” in 1989 (Crenshaw, 1994, p.179), intersectional thinking within feminist scholarship has its roots in the works of women of color within the United States looking at the intersections of race and gender and in the tradition of Marxist/Socialist feminisms looking at the intersections of gender and class (Brah & Phoenix, 2004; Collins, 1998; Lykke, 2005). Feminist theories of intersectionality puts the interconnecting of social categories such as race, ethnicity, nationality, class, disability, age, sexuality and gender at the center of analysis (Collins, 1998; Crenshaw, 1994; Lykke, 2003, 2005; McCall, 2005; Verloo, 2006; Wekker, 2004; Yuval-Davis, 2006). When Crenshaw first coined the term, she distinguished between ‘structural’ and ‘political’ intersectionalities. Structural intersectionality occurs when inequalities and their intersections are directly relevant to the lived experiences of people, while political intersectionality indicates how inequalities and their intersections are relevant to political strategies such as, the idea that women of color are obligated to align with either women or their race pose serious concerns when it comes to not deciding which is more important, but which will gain the most results (Verloo, 2006).

Theoretical approaches of intersectionality and empirical research conceive structures, identities, and representations as mutually exclusive categories focusing on either one or two of these levels (Winker & Degele, 2011). This feminist knowledge on how diverse systems of oppression mutually construct one another has been overlooked at the macro level to question gender relations on how gender relations and heteronormative sexuality, class relations and configurations of ethnicity and race/ism are interwoven in the structural and institutional make-up of a given society (Knapp, 2005). Although the paradigm of intersectionality denominates structural reciprocities between genders, race, and class, giving room to integrate other socially defined categories, the level of these reciprocal effects however are not defined (Winker & Degele, 2011).

### **The Vulnerability Perspective**

As stated in Chapter 2, due to the increased risk for poor physical, psychological, social health outcomes, and inadequate health care, the immigrant population has been identified as a vulnerable population (Aday, 2003; Flaskeraud & Winslow, 1998). Aday (2003) identifies immigrants as vulnerable due to the complexity of diverse languages, health practices, food choices, culturally based definitions of health, and previous experiences with American bureaucracies affecting immigrant health care (Chesnay & Anderson, 2008, p.5). According to the “differential vulnerability hypothesis”, negative or stressful life events put people more at risk for poor physical, psychological, or social health than others (Aday, 2003, p.4). For immigrants, the migration experience is

considered such a stressful life event (Frisbie et al., 2001) thus making them vulnerable to poor physical, psychological, or social health.

Although there is heterogeneity in the degree to which immigrants are vulnerable to adequate health care, literature is in sync with several factors such as socio-economic background; immigration status; limited English proficiency; policies on access to publicly funded health care; residential location; and stigma and marginalization that affect the vulnerability of immigrants in obtaining health care (Derose et al., 2007). In addition, Derose et al. (2007) also state that overall, the immigrant population has lower rates of health insurance, use less health care, and receive lower quality of care compared to the U.S. born populations. Several other studies also support this argument (Frisbie et al., 2001, Ku & Matani, 2001). While the degree of vulnerability differs among subgroups, literature for the most part seem to exclude these differences. The heterogeneity among the immigrant population definitely pose a challenge for theorizing and research. However, more studies should be conducted to disaggregate the similarities and differences between and within groups and sub-groups. Whatever the similarities and differences may be, given their unique status as a population, the immigrant populace is considered a vulnerable population. The concepts of resource availability and relative risk are frequently used in the frameworks for studying vulnerable populations (Aday 2003, Flaskeraud & Winslow, 1998).

### **Resource availability and relative risk**

While resource availability emphasizes socioeconomic and environmental resources (Flaskeraud and Winslow, 1998; Chesnay and Anderson, 2008), relative risk refers to the ratio of the risk of poor health among groups exposed to risk factors compared to the ones that are not (Aday, 2003. p.4).

**Risk factors.** Community and associated individual characteristics are the “risk factors” that predict the incidence of poor physical, psychological, and social health, according to Aday (2003). Risk factors also increase the probability of occurrence of health-related outcomes. Although, one may argue that almost everyone can be potentially at risk of poor physical, psychological, and social health in some way or another, Aday (2003) asserts that some may be more at risk than others at any given point in time. The risk is greater for those with the least social status, social capital, and human capital resources to either prevent or ameliorate the origins or the consequences of poor physical, psychological, or social health.

Based on the aforementioned theoretical perspectives, the following section details the specific proposed conceptual model of this dissertation study.

### **Proposed Conceptual Model of the Study**

Although a rich body of literature describes multiple social and cultural disadvantages faced by the immigrant population that negatively affect their health, empirical research on the multiple social structural determinants and the interdependence of demographic and social categories of difference on immigrant health through a gendered lens is sparse and fragmented. Research in the area of gender, migration, and

health merely incorporate the effect of gender, class, ethnicity or race as structural vulnerabilities affecting immigrant well-being.

Building on the three theoretical perspectives described above, this study proposes to augment the extant literature on immigrant health and well-being by examining how a focus on overlapping characteristics of the structural determinants of immigrant health through the gendered lens- drawing interconnections, interdependence, and interlocking of essentialist categories such as class, race/ ethnicity, and gender as structural vulnerabilities can have an impact on well-being among the immigrant population. Since the purpose of this dissertation study is to advance a conceptual and methodological model of social determinants of health and migration that integrates a gendered perspective, the conceptual model focuses on the (1) examination of structural factors to move beyond cultural explanations of immigrant well-being, and (2) exploration of the impact of intersecting structural vulnerabilities on the outcomes of immigrant well-being.

As stated above, the effects of social determinants on population health and on health inequalities are characterized by working through long casual chains of mediating factors. Many of these factors tend to cluster among individuals living in underprivileged conditions to produce inequities in health that negatively impact their health and well-being. The structural mechanisms in the CSDH framework interact between the socio-economic political context and the socio-economic position that engender class hierarchies defining individual socioeconomic position within the hierarchies governed by power, prestige, and access to resources (Solar & Irwin, 2010). The vulnerability

perspective also posits that the risk of poor health originates at the macro level in terms of availability and distribution of community resources (Aday, 2003).

As a function of these social structures, the corresponding rewards and resources available to populations are social status referring to power and prestige, social capital referring to social support, and human capital referring to the productive potential (Aday, 2003). In essence, both these perspectives infer that the social structural factors are the background variables that influence the degree of vulnerability across populations.

Within these structures however, specific populations such as immigrants that fall within the interspaces created by these structures make them more vulnerable to health risks affecting their well-being. So, while the social determinants of health perspective provides the overall framework for the proposed model, the vulnerability perspective is at the center of the proposed model influencing immigrant well-being as it helps explain the interaction of structural vulnerabilities arising from people's position in a given society (Figure 3.1).

The structural determinants from the CSDH perspective refer to the structural mechanisms generating social stratification and the resulting socioeconomic position of individuals, which in essence are the social determinants that produce inequities in health. These structural processes then shape the distribution of downward social determinants of health known as the intermediary determinants of health (Solar & Irwin, 2010). As stated above, the corresponding rewards and resources available to population are a function of these social structures (Aday, 2003). Contingent on the function of opportunities,

material, and nonmaterial resources, coined as the intermediary determinants, the vulnerability perspective states that individual risks vary, which affects their well-being.

The structural mechanisms produce a set of social hierarchies in a society translated to socio-economic positions where populations are stratified according to income, education, occupation, gender, race/ethnicity that in turn shape specific determinants of health status (Solar & Irwin, 2010). This structure of socio-economic position is reflective of people’s place within social hierarchies based on their social status and based on which population groups experience differences in exposure and vulnerability to health-compromising conditions.

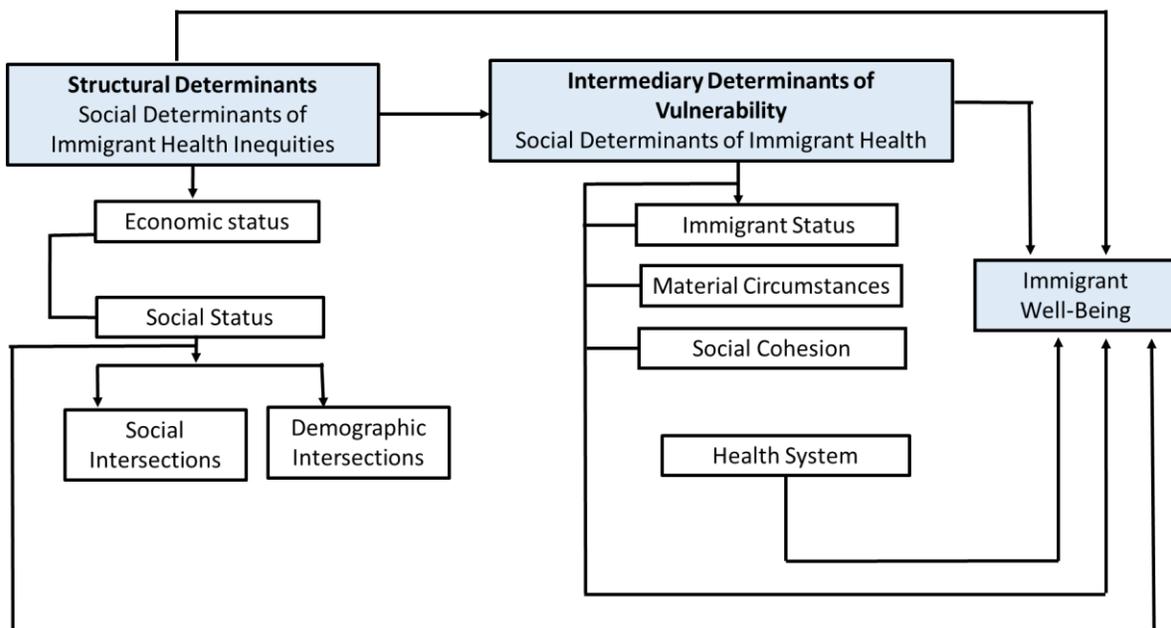


Figure 3.1 Social determinants of immigrant well-being

For a detailed examination, the socio-economic position can be viewed through economic status where populations are stratified through income, education, employment,

and occupation. (Figure 3.2). Social status, which is largely dependent on the social structural determinants are stratified through social class, gender, and race/ethnicity. That is to say, the interspaces created by these hierarchies that stratify population and distribution of resources can be explained through the examination of categories of oppression that are interconnected and interdependent, and not as separate essentialist categories (Bastia, 2014). So, in essence this approach of examination of the “interlocking” of the categories of disadvantage holds the notion of “structural inequality”, which focuses on the “structures of oppression and the overlapping nature of groups” (Squires, 2008, p.55) create more risks for structural vulnerability.

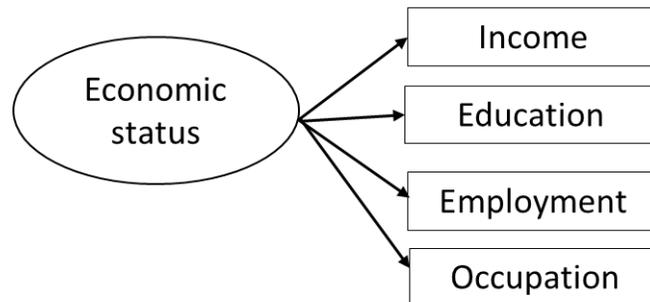


Figure 3.2 Categories of economic status as a structural determinant of immigrant well-being

While intersectionality (Crenshaw, 1991) aims to analyze how various forms of disadvantage intersect to produce unique experience of specific groups of women based on gender, race, and class structures (Bastia, 2014), it is also dubious whether intersectionality is only about gender, race, and class. The gender based inequalities are often compounded by differences also based on demographic characteristics such as age

and marital status. This is especially relevant in migration studies, which has been biased against women for a long time with the notion that women generally migrated as secondary migrants and men as the primary (Bastia, 2014). The disadvantage based on the interplay of demographic characteristics such as age, marital status, and gender then, can add value to further explaining the gendered process of migration affecting immigrant well-being. From a gendered perspective, it is important to note that the intersections of demographic variables and social variables can have independent effect on health conditions, material resource availability, and ultimately the well-being of the immigrant population. So, in essence, the conceptual model extends the extant literature by distinguishing two forms of intersectionality that can impact well-being outcomes for populations: demographic intersectionality, in which overlapping demographic characteristics produce disadvantages that are more than the sum of their parts, and socially constructed intersectionality, in which power dimensions of difference such as gender, race, and class interact to produce a unique ascriptive effect (Figure 3.3).

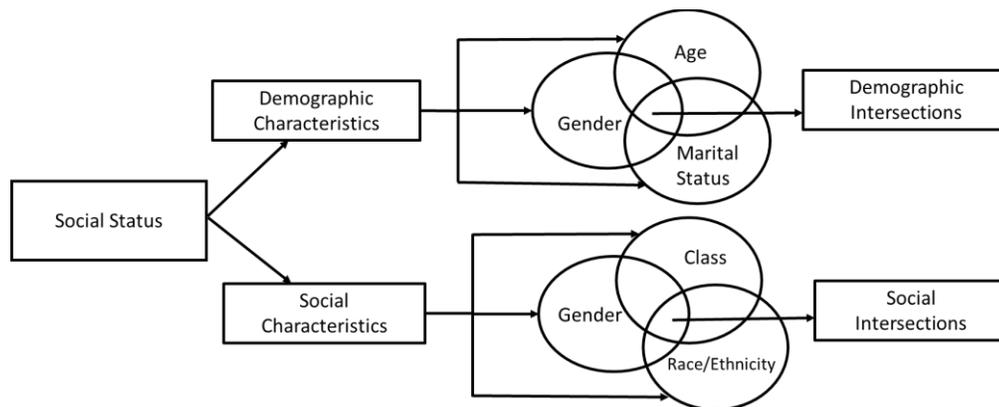


Figure 3.3 Social status and intersections of structural vulnerabilities

Examination of gendered intersections aid in avoiding the limitation of explaining inequalities through a single framework of disadvantage (Valentine, 2007), leading to varying degrees of vulnerability. Further, the theory of intersectionality questions the universal gendered experience of migration and helps explain the migration experience of immigrants that are also shaped by race and class. When the effects of race and class interact with the effect of gender, it becomes crucial to look at this interaction often coined as a “triple jeopardy effect”. The application of the theory of intersectionality in immigrant health research also helps to examine the triple jeopardy effect that can be crucial to informing policy. The theory of intersectionality therefore, provides the robustness for the conceptual foundation shaping this study.

Gender is a growing concern and it becomes crucial to determine the effect that gender in combination with other determinants has on the health and well-being of immigrants. Given the changing demographic patterns, this conceptual model provides a paradigm shift in analyzing population-based research from an immigration perspective. Determination of how these social factors interact within the immigrant context will be an important addition to an overall understanding of both population health and immigrant health. A growing body of immigrant health research seeks to establish sex, gender, ethnicity and migration as social determinants of health (Krieger, 2005; Vissandjee, 2004; Vissandjée et al., 2007). These conceptual areas are an important unit of analysis and the integration of these concepts within health research is vital to inform research and policy in women’s health (Krieger, 2005; Marmot, 2005).

Additionally, the compounding and interrelated impacts of factors such as race, sexual orientation, gender, age, class, and disability have a strong influence on social resources affecting health. These social resources can be categorized in terms of social support networks, access to education, access to quality employment, risk of violence, etc. (Kosny, 1999). While the CSDH regards categories of material circumstances, psychosocial circumstances and behavioral and or biological factors and the health system itself as a social determinant, it remains rather conspicuous in terms of resources such as social capital and/or social cohesion. As established before, factors such as social (in terms of age, gender, race, ethnicity) and economic capital in conjunction with the human capital (in terms of education, occupation, income and housing), and social capital (in terms of nature of ties with family structure, social networks, and neighborhood cohesion) are the predictors of populations at risk that make them vulnerable (Aday, 2003), which is translated in the proposed model (Figure 3.1).

The underlying social determinants of health inequities, which are the structural vulnerabilities, arising from people's position in a society operate through a set of intermediary factors of health shaping the overall well-being (Solar & Irwin, 2010). These determinants are also the proximate causes that affect immigrant well-being (Figure 3.4). The risk is greater for those with the least social status, social capital, and human capital resources to either prevent or ameliorate the origins or the consequences of poor physical, mental or social health. Immigrants often arrive at locations where they have some form of social networks and the opportunities present within the networks help them improve the quality and quantity of their network connections.

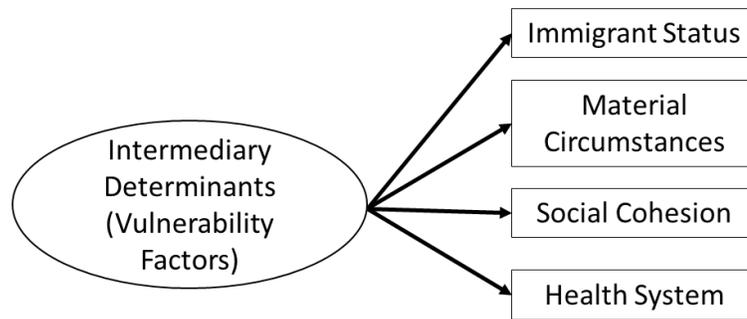


Figure 3.4 Vulnerability factors as intermediary determinants of immigrant well-being

Social networks can therefore influence health outcomes via rapidly diffusing health information and improving access to health resources (Berkman & Glass, 2000; Kawachi et al. 1999). Social capital and/or social cohesion is viewed as a fundamental form of social support shaping differential environmental and behavioral exposure to health risks between groups (Williams & Collins, 1995). Aday (2003) affirms that social capital and/or social cohesion is available to populations as a result of the structural arrangements in a given society. In the proposed model, social cohesion therefore, is theorized as an important intermediary component (Figure 3.1).

The immigrant status is a crucial element of racial and ethnic inequities (Ku & Matani, 2001). In the case of the immigrant population, although their need for access to services, particularly health care services starts at their arrival in the country, their immigration status is not equitable in the larger dominant group. Their immigration status impedes in their level of self-efficacy as an immigrant, making them vulnerable to risk factors affecting their well-being. So, the proposed model posits immigrant status as a

determinant of immigrant well-being and posits it as a proximate factor affecting the well-being of immigrants. Although the CSDH perspective brought a shift from an individually focused deficit model to a social structural perspective on health, it lacks a strong focus on social inequalities created by definitions of citizenship. As a result, sub-populations with varying degrees of citizenship (such as in the case of immigrants) and privileges are often ignored. Keeping this idea of citizenship then, makes the sub-populations of immigrants follow the social gradient: the lower the immigrant status, the greater the vulnerability to well-being.

The health care system is a critical determinant of health for all populations, especially because of its role in incorporating differences in exposure and vulnerability (Solar & Irwin, 2010). Literature also establishes that immigrants face a lot of barriers in accessing and utilizing health care in the United States (Rambaut et al., 1988). Aday (2003) affirms that some of the major factors that either generate or exacerbate access and utilization issues stem from barriers with language and cultural beliefs and practices that differ between the providers and the populations that are being served. These difficulties are then compounded with problems such as reluctance to seek care initially, failure to follow prescribed medical regimens, fear, lack of trust with the health care system which perpetuates reluctance to seek follow-up care, lack of patient-provider relationship, and poor treatment outcomes (Aday, 2003; Maleku & Aguirre, 2014; Rambaut et al., 1988).

The changing immigration patterns and the implications of emerging and re-emerging health issues will require a health system that is also culturally competent.

Health systems should be responsive to the diverse and unique needs of the immigrant population with the diverse demographic changes (Maleku & Aguirre, 2014). Although some of the common factors affecting access to care for the immigrant population are “the availability and affordability of services and their acceptability and adequacy for those in need of care”, the type and magnitude of access and utilization problems differ for different groups and sub-groups of immigrants (Aday, 2003, p.198). Although the CSDH framework places the health system as an intermediary determinant of health, it also affirms that the health system “influences how people move among the social strata” (Solar & Irwin, 2010, p.40) and the degree of this influence varies across population in terms of social status, economic status, gender, and the like. Given these variation in the utilization of the health system, it is considered as a control variable in the proposed model (Figure 3.1).

In conclusion, the proposed conceptual model takes into account both the macro structures and micro structures to examine the impact of these structural factors on immigrant well-being. Explanations of social phenomenon requires an examination of both macro (collective) and the micro (individual) levels of observation and analysis and their interrelationships (Aday, 2001, p.2; Coleman, 1990). Scholars examining the social determinants of health address the central role of racism in the production of health inequalities (Williams & Collins, 1995). Immigrant health literature is largely dominated by the acculturation paradigm where the focus is more on individual behavior. However, the structural influences that produce these individual behaviors as a root cause are often under researched. Despite the theoretical and empirical developments made in the area of

studying health inequalities and health of the immigrant population, very few attempts have been made to integrate both these areas (Malmusi et al., 2010) from a gendered lens. Moreover, migration and health issues have rarely been addressed from a health equity framework that examines the effect of structural factors.

In addition, while theorizing of gender and migration has evolved over time, literature is very fragmented when it comes to conceptual understanding of gender, migration, and health inequities. Application of the health equity framework based on the social determinants of health, interaction of social inequities that affect health, and the vulnerability perspective where immigrant status is taken into consideration as a determinant of health can be one viable option to recognize the gendered process of immigrant health inequities. Investigating the interplay of gender to examine how it affects the health of immigrants can be one way to examine the gendered pattern of migration that has direct association to their overall well-being.

The application of the three theoretical perspectives, as mentioned above, complements their strengths and weaknesses providing more explanatory power and further add to the robustness of the proposed testable intervention model. Further, using the three theoretical perspectives into a multidimensional framework as above provides opportunities to explore the nuances and interaction of power relationships such as race, gender, ethnicity, social stratification and proximate factors including, but not limited to immigrant status and social support and their impact on immigrant well-being. These power relationships have a strong correlation to the health of a population and further influence and shape population health policy. These integrated paradigms deepen our

understanding of the political, economic, and social domains that shape our understanding of inequities in health on a broader level. Therefore, a population health approach to immigrant well-being with the key assumption that health is a shared responsibility that requires the development of health promoting public policies beyond the health care system have an impact on the well-being of immigrant populations.

## Chapter 4

### Methodology

As discussed in previous chapters, the objective of this dissertation is to advance a conceptual and methodological model of social determinants of health and migration affecting immigrant well-being. A key distinction of the model is an integrated gendered perspective which draws interconnections, interdependence, and interlocking of essentialist categories such as class, race, and ethnicity, highlighting the influence these categories have on immigrant well-being. To meet this objective a theoretically based empirical model is proposed in Chapter 3 that (1) examines structural factors to move beyond cultural explanations of immigrant well-being, and (2) explores the impact of intersecting dimensions of difference such as race/ethnicity, class, and gender on immigrant well-being outcomes.

### **Study Hypotheses**

Based on the proposed conceptual framework of the social determinants of immigrant well-being from a gendered perspective in Chapter 3, the following hypotheses are proposed:

#### **Hypothesis 1**

All the structural determinants of immigrant health inequities will account for a portion of the variance on immigrant well-being, controlling for the utilization of health care.

## **Hypothesis 2**

All the intermediary determinants of vulnerability factors will account for a significant portion of the variance on immigrant well-being, controlling for the utilization of health care.

## **Hypothesis 3**

The intermediary factors on immigrant well-being with the preexisting structural variables will explain more variation on the effect of immigrant well-being outcomes than the intermediary measures alone, controlling for the utilization of health care.

## **Hypothesis 4**

There will be significant moderation effects between gender, race/ethnicity, and class adding to the prediction of immigrant well-being within the context of social intersections.

## **Hypothesis 5**

There will be significant moderation effects between gender, age, and marital status adding to the prediction of immigrant well-being within the context of demographic intersections.

Guided by the proposed conceptual framework in Chapter 3, this chapter provides detailed information on the empirical methodology that will be employed in the dissertation based on the stated hypotheses. Detailed information on the (1) the protection of human subjects; (2) research design, data source, and sample; (3) operationalization of variables and measures; and (4) description of data analysis process are both identified and addressed.

As discussed in Chapter 2, methodological gaps in immigrant health and well-being research revolve around issues with data, measurement, and methodologies. While large scale surveys such as the National Health Interview Survey serve as a good medium to address immigrant health disparities, they are inadequate in terms of measuring individual, social, and contextual determinants of immigrant health (Jasso et al., 2004). There is, therefore, an evolving need to establish methodological standards in immigrant health research. Building on the theoretical and methodological gaps in the immigrant health literature, this study uses the data from the 2011-2012 California Health Interview Survey (CHIS) Public Use File (PUFs). This dissertation also uses the CHIS confidential data for further exploration of the effect of social determinants on immigrant well-being. The CHIS dataset has been termed as the largest state-level health data set with approximately 528 variables including disproportionately higher sampling of many ethnic groups (CHIS, 2014) and social variables, providing greater ability to report on social structural differences.

### **Protection of Human Subjects**

The law of California, the institutional review board at the University of California, and several government human subject protection committees mandate that no personal information be released that could jeopardize identification of individual participant in the CHIS. Furthermore, the California Information Practices Act (section 1798.24) restricts the use of collected data only for statistical research and reporting purposes. Unauthorized release of any information is subject to violation for invasion of

privacy under California Civil Code, section 1798.53 (California Health Survey, n.d). In order to protect the privacy of respondents, diverse access and data security requirements are implemented. The Data Disclosure Advisory Committee and the Data Disclosure Review Committees are established to work towards effectively protect the confidentiality of survey participants (California Health Survey, n.d). The data set used in this study includes public use data sets purged of confidential information that could threaten respondent anonymity. Remote access to any confidential data from the CHIS 2011-2012 via programming services of the Data Access Center statistical at University of California Los Angeles (UCLA) was approved by the Data Access Center (DAC) at the UCLA Center for Health Policy Research as of April 15, 2015 (Appendix B). The University of Texas at Arlington's Institutional Review Board (IRB) has reviewed the documents and verified that submission of an IRB protocol or exemption was not applicable to this study.

### **Research Design, Data Source, and Sample**

The research design of this study is a secondary analysis of an existing data set of the California Health Interview Survey (CHIS) 2011- 2012. CHIS is conducted by the Center for Health Policy Research at the University of California at Los Angeles in collaboration with the California Department of Public Health, and the Department of Health Care Services. Westat, a research corporation, performs the data collection services for each CHIS cycle. The CHIS is funded through state agencies, federal agencies and from private foundations (CHIS, 2014).

California is a state with the largest number of foreign-born residents in the United States (9.9 million). California’s foreign born population alone represent over one-fourth of all foreign born population in the US (Census Bureau, 2011). CHIS is a cross-sectional study, conducted through telephone survey every two years of over 50,000 households. The 2011-2012 CHIS sampled a total of 42, 935 respondents. The survey uses a two-stage, geographically stratified random-digit-dial (RDD) to produce a sample that is representative of the state's population. Interviews were conducted in several languages, including English and Spanish. The overall response rate was approximately 40 percent using the conservative AAPOR RR<sub>4</sub> methodology (CHIS, 2014). This response rate is comparable to other telephone health surveys such as the Behavioral Risk Factor Surveillance Survey (BRFSS) conducted by the Center for Disease Control and Prevention (CDC). For this study, the adult sample that includes randomly selected respondents age 18 years and above is used. The resulting sample for this study includes the foreign born population who are either naturalized citizens or non-citizens (N=11,134) served as the sample size from the CHIS dataset (Table 4.1.). The sample was homogenized by selecting observations by immigrant status classified as naturalized citizens and non-citizens, resulting in an immigrant only dataset.

Table 4.1. Description of study sample

Immigrant Status	Frequency	Percent (%)
Naturalized Citizen	6,741	60.5
Non-Citizen	4,393	39.5
Total	11,134	100

## **Sampling Design**

The CHIS uses a probability sampling method in order to accurately represent the population of adults, adolescents, and children living within households in California. However, it excludes institutionalized and non-institutionalized group quarter residents. In order to make CHIS representative of California, population weights have to be applied to produce accurate estimates of the population when it comes to survey analysis (CHPR, 2012). This is because although the common assumption is that data are mostly collected on a simple random sample of the elements of a population, this is rarely the case in survey research (IDRE, 2015). If simple random sampling is used in data collection, survey analysis conducted as if all sample observations were independently selected with equal probabilities will be correct. However, due to the complex nature of sample selection in complex surveys, ignoring the departure from the assumption of simple random selection in analysis of survey data is not appropriate (Lee & Forthofer, 2006). When the simple random sample assumption is violated, corrections to the statistical calculation concerning the standard error, particularly of that of the sampling mean becomes mandatory (IDRE, 2015; CHPR, 2012).

Lee, Forthofer, and Lorimer (1989) assert that sample design are important in making inferences from the data, especially when it comes to the description of social phenomenon. Since the sample design affects the survey estimates and variances, ignoring the design features lead to “model-based inference” where sample selection is considered secondary to the inference (p.72). Lee et al. (1989) argue that design-based statistical inference should always consider the population as the primary interest. If not,

the estimates are subject to bias, even in large samples due to model misspecifications. The authors also recommend using both the design and model for any inference as it is likely to be more successful than using only one (Lee et al., 1989). In addition, to avoid underestimation of standard errors that are directly related to the sampling design, standard error calculations must include the important sampling design elements (Zanutto & Gelman, 2000). There are two possible ways of correcting the standard error in complex survey designs: the Taylor Series Linearization method and the Replicate Weight Method (IDRE, 2015). For the CHIS publicly available data set, the replicate weights approach was used to correct the standard errors.

**Replicate weights.** Replicate weights are essentially a variance estimation method using replication or resampling process that incorporates the impact of nonresponse and post-stratification adjustments (Zanutto & Gelman, 2000). The importance of using replicate weights lies in the ability to maintain confidentiality of respondents, especially when there are fewer respondents in a certain geographical area. In essence, replicate weights are a series of variables, usually between 50 and 100 where the sample are broken into subsamples called replicates and the estimate of interest is calculated from both the full sample and the replicate (IDRE, 2015).

The CHIS Public Use Files provide 80 replicate weights (rakedw1 to rakedw80). This is in addition to the final weight (rakedw0), which accounts for the probabilities of sample selection and the statistical adjustments for potential under coverage and nonresponse bias. While application of the final weight ensures an unbiased representation of the California population from the CHIS sample, the replicate weights

ensures valid estimates (CHPR, 2012). The 80 different replicate weights provide variance estimate calculated with 80 replications in the CHIS dataset. The replicate weights for CHIS were created using the jackknife delete-2 method (IDRE, 2015; CHPR, 2012). According to CHPR (2012), the replicate weights should be used in conjunction with the final weight to calculate unbiased estimates and their variance estimation. When analyzing data from the CHIS public use file, if the final weight is applied in the absence of replicate weights, yielding unbiased estimates increases, but their variability will be underestimated due to the incorrect assumption that the sample is a simple random sample (CHPR, 2012).

### **Statistical Software Package**

Zanutto and Gelman (2000) note that standard statistical packages generally do not account for elements of sampling design such as stratification, clustering or any adjustments such as raking, further providing biased point estimates of population parameters and underestimated standard error. Therefore, in order to incorporate the complex survey design of CHIS and include the survey weight and the replicate weights in the computation of data analysis, Stata SE v.14 as the statistical software package was used for this dissertation. The sample design specification was required in a separate step preceding data analysis in Stata (CHPR, 2012). As mentioned before, both the replicate weights and the final pweight (rakedw0) in addition to the jackweight adjustment multiplier (jackweight multiplier for CHIS adult data set =1) was used in the survey

command function of Stata 14 (IDRE, 2015). Below is the macro used for setting up the survey description prior to all data analysis of this study in Stata.

```
svyset [pw = rakedw0], jkrw(rakedw1 - rakedw80, multiplier(1))
```

### **Missing Values**

According to the California Interview Survey (2014), two different imputation methods were used by Westat Inc. to handle missing responses for items crucial for weighting the data. The first imputation was used only for a few variables when the percentages of missing items were very small. This method randomly selected cases from observed distribution of respondents. The hot deck imputation without replacement was used as a second method where a value reported by a respondent for a particular item was assigned to a “similar” person who did not respond to that item. For the CHIS 2011-2012, this included variables such as race, ethnicity, home ownership, and education (CHIS, 2014).

Frequencies were run for all variables used in this study and reported no missing values. A full list of variables used in the study is listed under Appendix C. Missing Data Analysis also revealed the data were complete (Figure 4.1). However, recoding of variables were conducted depending on applicability of select study variables with the sole purpose of decreasing measurement error and increasing statistical power to improve inference.

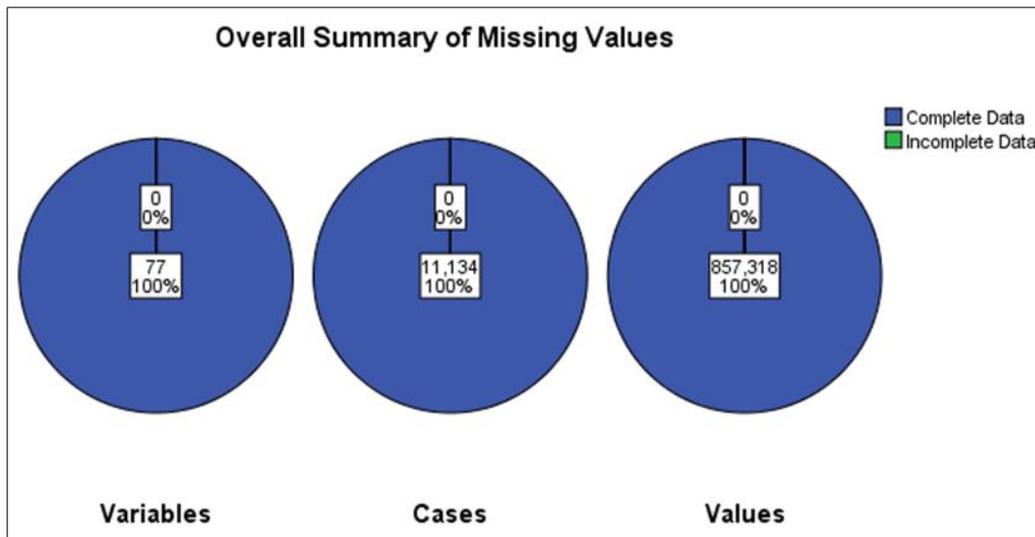


Figure 4.1 Missing Data Analysis

**Recoding of variables: Neutral point substitution & model based approach**

Although the results from missing data analysis showed no missing values and confirmed the data was complete, frequency results showed the need to make data adjustments for select random variables used in the study. This stemmed from two major issues in the data- the issue of inapplicability of an item and the issue of skipped items. Rather than excluding these subjects, the CHIS dataset had labelled them inapplicable or proxy skipped with default coding, where they coded these items either (-1) or (8). Cohen and Cohen (2010) note that the inapplicability of an item to some respondents is very common in survey data. Variables with “conditional missing data” where questions are skipped pose some challenges due to difficulty of dropping them that can ultimately affect the loss of information, loss of statistical power, and the precision of estimates (p.300).

Missing data and missing values are a fact of research. Despite some advantages and disadvantages, there are several methods that have been established through statistical theory and practice to classify missing data mechanisms (Little & Rubin, 1987). General approaches that are most commonly used include but are not limited to multiple imputation, model-based approaches, weighting methods and ad-hoc adjustments (Wu et al., 2013). Some of the common ad-hoc adjustments include mean imputation or use the indicators of missing items as a new variable (Moraga & Ozonoff, 2015). Similarly, Cohen and Cohen (2010) affirm that for quantitatively and nominally scale factors, the absence of data itself can be treated as one aspect of the research factor (p.300). So, the decision was made to use the inapplicable and skipped category as a category in itself. In order to recode them into an appropriate categorization however, there were two ideas that were taken into consideration: predictive modeling technique (Moraga & Ozonoff, 2015) and common point (Sauro, 2015) or neutral point substitution method (Windridge et al., 2009).

**Model based approach.** This technique is a regression based approach where regression estimates for non-missing cases are used to impute the missing cases (Williams, 2015). Authors coined this method as a useful approach to handle missing data counts in the presence of modest missing data occurrence (Moraga & Ozonoff, 2015). In general, recoding of study variables were done in such a way that higher values in any given variable was equated with higher levels of well-being. The categories that were labelled inapplicable or skipped also had to follow the same direction. So, the first step was to gauge how the respondents in the inapplicable and/or skipped category would

fare in general levels of health. Using the model based approach, a logistic regression model (Table 4.2) was conducted to predict the likelihood of the respondents in the inapplicable category [*dummy coded: inapplicable (1) versus applicable (0)*] to fall under the levels of general health condition using the SPSS package.

Results from the logistic regression indicated that respondents in the inapplicable category were two times more likely to say they were in excellent health [Exp(B)=2.55,  $p < 0.001$ ] and very good health [Exp(B)=2.05,  $p < 0.001$ ]. This bolstered more support to move on to the next step of neutral point estimation.

Table 4.2 Logistic regression results

General Health	B	SE	Wald	df	Sig	Exp(B)
Excellent	.94	.11	68.99*	1	0.000	2.55
Very Good	.71	.1	51.73*	1	0.000	2.05
Good	.592	.092	41.13*	1	0.000	1.80
Fair	.268	.093	8.37*	1	0.000	1.30
Poor	0	0	0	0	0	0
Constant	1.16	.079	214.57*	1	0.000	3.19

*-2LL= 9603.724, Nagelkerke  $R^2 = .010$ , \* $p < 0.001$*

**Neutral point estimation.** Also known as common-point imputation, this approach uses the mid-point or the commonly chosen value to categorize an item. Using this method, the inapplicable category was either substituted with a 3 (the midpoint value) in a five-point Likert scale or used the most common value of 4 (Williams, 2015). Since the logistic regression bolstered the support to use the substitute value at mid-point, items in select variables were recoded into its own neutral point category. Likewise, the weights used in CHIS survey were placed to account for any sample selection

probabilities and statistical adjustments for any potential nonresponse biases (CHPR, 2012).

**Summated Scale.** Other recoding and adjustment methods included creation of summated scales from multiple items. Here, multiple items are combined or summed with an underlying quantitative measurement continuum. Among various other summated scales, these scales are created as a single scale score from numerical values assigned to response categories for each question where the positive or negative scores are simply added to produce a single scale score. (Spector, 1992). Summated scales have several advantages over single items such as reduction in measurement error, representative of multiple facets of a concept and replicability across studies (Hair et al., 2006).

### **Operationalization of Variables and Measures**

#### **Dependent Variable: Immigrant Well-Being**

As discussed in Chapter 3, both the CSDH framework and the vulnerability perspective contend that well-being is affected by the structural factors in the background. The health outcome for the CSDH framework was conceptualized as equity in health and well-being and the vulnerability perspective strived for individual and community well-being, both inferring to positive domains that leads to a productive healthy life. For the purpose of this study the outcome variable, which is the dependent variable, is immigrant well-being defined as the function of health.

The concept of well-being is multidimensional. It examines the physical, mental, and social functioning in the context of conducive environments, which fosters life

chances for a productive life (Kobau et al., 2010). This conceptualization of well-being is also congruent to the definition of health by WHO, which states health as a state of complete physical, mental, and social well-being and not just the absence of disease (WHO, 2003). Considering this multidimensional concept of well-being, fundamental to the productive lives of the immigrant population, the immigrant well-being measure for this study was adapted from a number of concepts and validated well-being scales for psychometric robustness. These included the public health surveillance well-being scale by the Center for Disease Control (CDC) (Ban et al., 2012), concepts of Health Related Quality of Life (HRQL) and Well-Being measure from Healthy People 2020 (Healthy People 2020, n.d.), and from well-being assessment evaluation by Kobau et al. (2010).

Healthy People 2020 posits well-being as the physical, mental, and the social aspects of an individual's life (Healthy People, n.d). While physical well-being is related to vigor and vitality, mental well-being refers to life satisfaction; well-balanced positive and negative emotions; self-acceptance; purpose and meaning of life; personal growth; autonomy; competence; believing that life and circumstances are under control; and being optimistic, in general. Healthy People 2020 states that social well-being refers to social support from family, friends, and others. Social participation is a significant component of Healthy People's conceptualization of well-being. Healthy People 2020 affirms that by measuring HRQL through participation, "quality of life is not directly equated to health or functional status but reflects, rather, the level of community integration or involvement, which is based on a person's level of participation, taking

into account their health or functional status and the environment” (Healthy People 2020, n.d., para.16).

The Center for Disease Control & Prevention (CDC) states that although there is really no consensus around a single definition of well-being, there is an agreement across disciplines that well-being includes different factors such as, physical well-being; economic well-being; social-well-being; development and activity; emotional well-being; psychological well-being; life satisfaction; domain specific satisfaction; and engaging activities and work. The public health surveillance well-being scale (PHS-WB) used by CDC is a 10-item scale that captures mental, physical, and social components of well-being showing a good internal consistency ( $\alpha=0.87$ ) and correlation for the entire item pool ( $r=0.94$ ) (Bann et al., 2012).

As mentioned earlier, a psychometrically-based measure was created to measure immigrant well-being for the purpose of this study. In general, psychometric measures are based on relationships and strengths among multiple items intended to measure one or more domains of well-being (CDC, n.d, para.8). Based on the CHIS 2011-2012 dataset then, the psychometric scale was initially proposed to include five domains, namely: physical well-being, perceived self-efficacy, emotional well-being, social well-being, and psychological well-being to measure immigrant well-being (Table 4.3). Recoding of item measures were conducted as deemed necessary and relevant to create multiple items scale, also known as summated scale (Spector, 1992).

Table 4.3 Item measures for the construction of immigrant well-being scale

Items	Item Measures	Recoded Item Measures
<b><i>Physical well-being</i></b>		
General health condition	Excellent=1; Very Good=2; Good=3; Fair =4; Poor=5	Poor=1; Fair=2; Good=3 Very Good=4; Excellent=5
Chore impairment	None=0; Moderate=1; Severe=2	Severe=1; Moderate=2; Not at all=3
Limitation of activities	Not at all=1; A little bit=2; Moderately=3; Quite a lot=4; Extremely=5	Extremely=1; Quite a lot=2; Moderately=3; A little bit=4; Not at all=5
Has difficulty learning, remembering, concentrating	Yes=1; No=2	Created a summated scale for dichotomous item measures.
Conditions limits basic physical activity	Yes=1; No=2	Created a summated scale for dichotomous item measures.
Has difficulty dressing, bathing, getting around	Yes=1; No=2	Created a summated scale for dichotomous item measures.
Has difficulty going outside home alone	Yes=1; No=2	Created a summated scale for dichotomous item measures.
<b><i>Perceived self-efficacy</i></b>		
Feel hopeless worst month	All of the time=1; Most of the time=2; Some of the time=3; A little of the time=4; Not at all=5	Used original measure
Feel nervous worst month	All of the time=1; Most of the time=2; Some of the time=3; A little of the time=4; Not at all=5	Used original measure
Feel restless worst month	All of the time=1; Most of the time=2; Some of the time=3; A little of the time=4; Not at all=5	Used original measure
Feel depressed worst month	All of the time=1; Most of the time=2; Some of the time=3; A little of the time=4; Not at all=5	Used original measure
Feel everything an effort worst month	All of the time=1; Most of the time=2; Some of the time=3; A little of the time=4; Not at all=5	Used original measure
Feel worthless worst month	All of the time=1; Most of the time=2; Some of the time=3; A little of the time=4; Not at all=5	Used original measure
<b><i>Emotional well-being</i></b>		
Emotions interfere with work worst month	A lot=1; Some=2; Not at all= 3	Used original measure
Emotions interfere with chores worst month	A lot=1; Some=2; Not at all= 3	Used original measure

Table 4.3 continued

Emotions interfere with social life worst month	A lot=1; Some=2; Not at all= 3	Used original measure
Emotions interfere with relationships worst month	A lot=1; Some=2; Not at all= 3	Used original measure
<b><i>Social well-being</i></b>		
Did volunteer work or community services past year	Yes=1; No=2	Created a summated scale for dichotomous item measures.
Volunteer in organization dealing with community problem past year	Yes=1; No=2	Created a summated scale for dichotomous item measures.
Meet informally to deal with community problems	Yes=1; No=2	Created a summated scale for dichotomous item measures.
*Social life impairment	None=0; Moderate=1; Severe=2	Severe=1; Moderate=2; Not at all=3
*Family life impairment	None=0; Moderate=1; Severe=2	Severe=1; Moderate=2; Not at all=3
*Functional impairment	None=0; Moderate=1; Severe=2	Severe=1; Moderate=2; Not at all=3
Work impairment	None=0; Moderate=1; Severe=2	Severe=1; Moderate=2; Not at all=3
<i>*CHIS used the Sheehan scale measuring social, family, and functional role impairment for social well-being measure (Sheehan, 1983)</i>		
<b><i>Psychological well-being</i></b>		
Psychological distress in the last year	Yes=1; No=2; Proxy skipped=-1	Yes=1, Neutral=2, No=3
Psychological distress in the past month	Yes=1; No=2; Proxy skipped=-1	Yes=1, Neutral=2, No=3
Serious psychological distress for worst month past year (Kessler et al., 2003)	Frequency K6 score K6 measure(0 to5=none; 6-11=Low range; 12-19=mild to moderate; 20-30=severe)	Recoded according to validated K6 measure. Severe=1; Moderate=2; Neutral=3; Low=4, None=5

## Independent Variables

There were approximately 14 independent variables and one control variable proposed for the study. The independent variables include economic status (income, education, occupation); social status (gender, race/ethnicity, class, age, marital status); immigrant status; material circumstances (food security, home and work environment, living arrangement, public program assistance), and social cohesion. The health system was regarded as the control variable. As proposed in the conceptual model, these

variables were divided under structural determinants, which are the social determinants of immigrant health inequities and the intermediary determinants of vulnerability, which are the social determinants of immigrant health.

**Structural determinants (Social determinants of immigrant health inequities).**

*Economic status.* As discussed in Chapter 3, the structural mechanisms produce a set of social hierarchies stratified according to income, education, occupation, gender, race/ethnicity that in turn shape specific determinants of health status (Solar & Irwin, 2010). This structure of socio-economic position is reflective of people’s place within social hierarchies based on their social status and based on which population groups experience differences in exposure and vulnerability to health-compromising conditions. The economic status can be viewed through the stratification of income, education, and occupation, measures of which are shown in Table 4.4.

Table 4.4 Measures for economic status

<b>Economic Status</b>	<b>Item Measures</b>	<b>Recoded Item Measures</b>
Employment status	Full time employment=1; Part-time employment=2; Self-employment=3; Unemployed, looking for work=4; Unemployed, not looking for work=5	Unemployed, not looking for work=1, Unemployed looking for work=2, Employed part-time=3, Self-employed=4, Employed full time=5
Occupation	Private Company, Nonprofit=1; Government=2; Self-employed=3; Family Business or Farm=4; Not applicable=5	Private Company, Nonprofit=1; Government=2; Not applicable=3, Self-employed=4; Family Business or Farm=5
Educational attainment	Grade 1-8=1, Grade 9-11=2, High school diploma=3, Some college=4, Vocational school=5, AA or AS degree=6, BA or BS degree=7, Some grad school=8, MA or MS	No formal education=1, Less than high school=2, High school=3, Some College=4, Bachelor’s degree or higher=5, Master’s degree or higher=6

Table 4.4 continued

	degree=9, Phd or equivalent=10, No formal education=11	
Household's total annual income	In US(\$) Median Income: \$30,000	Below \$10,000=1, \$10,000-50,000=2, \$50,000-100,000=3, \$100,000-150,000=4, \$150,000-200,000=5, \$200,000-250,000=6, \$250,000-300,000=7

**Social status.** The social status difference in terms of age, race/ethnicity, gender, and so forth affects the differential availability of “personal and political power and associated human and social capital resources” among various groups (Aday, 2003, p.7). Moreover, the “purposive blocking of access to resources for certain groups relative to others on the basis of these ascribed characteristics is defining of the discrimination associated with age, gender, and race in the U.S. society” (p.7-8). As discussed in Chapter 3, the interspaces created by these hierarchies that stratifies population and distribution of resources can be explained through the examination of categories of oppression that are interconnected and interdependent and not as separate essentialist categories (Bastia, 2014). So, the disadvantage based on demographic and social categories will be measured through gender, race/ethnicity, age, marital status, and social class. Examination of these social positions represents enduring dimensions of both social and health inequality (Graham, 2004; Krieger, 2000).

The social class measure is one of the central concepts used in social stratification. Social class is widely documented in relation to socioeconomic status, subjective social status and many other outcomes including physical and mental health,

and achievements in education and academics (Diemer et al., 2013). Historically, social class has its early sociological roots since the times of sociologist Max Weber, where it was perceived in terms of higher order construct representing people's relative position in the economic, social, and cultural hierarchy in a society. Diemer et al. (2013) assert that although social class is used interchangeably with stratification, socioeconomic status and socioeconomic position, each of these concepts are distinct in capturing a complex multifaceted phenomenon such as social class (p.79).

In line with sociological and psychological arguments of social class, it is measured in a variety of ways such as prestige based measures (Kreiger, Williams & Moss, 1997), resource based measures (Evans 2004, Smith 2010), and poverty based measures (Iceland, 2003; Roosa et., 2005). In this study, social class is conceptualized in terms of basic standards of living parameters that emphasize the levels of power, prestige and control over resources relative to societal standards (Iceland, 2003; Roosa et al., 2005). Authors postulate that the absolute indicators of poverty examine the effect of poverty and economic hardship on health and well-being of different segments of the population (Evans 2004; McLyod, 1998; Smith, 2010). Among the many social class measures such as poverty thresholds, supplemental poverty measure, basic family budget, school and neighborhood level indicators of poverty that explicitly focus on poverty, Federal Poverty Levels (FPL) are the simplified versions of poverty thresholds used for administrative purposes with implications to policy, research, and practice (Diemer et al. (2013). The poverty measures such as FPL focus on basic standards of living parameters in relation to societal standards. Individuals who do not meet these societal standards are

deemed to be poor or disadvantaged (Iceland, 2003; Roosa et al., 2005). The item measures and respective recoding for social and demographic variables are shown under Table 4.5.

Table 4.5 Social and Demographic Variables

<b>Variables</b>	<b>Item Measures</b>	<b>Recoded Item Measures</b>
Gender	Male=1; Female=2	Male=1; Female=2
Age (in years)	Continuous frequency (18 to 84 years)	Recoded Below 20yrs=1; 21-30yrs=2;31-40yrs=3;41-50yrs=4; 51-60yrs=5; Above 60 yrs.
Marital status	Married=1; Living with partner=2;Widowed/Separated/Divorced=3;Never married=4	Single=1, Widowed/separated/divorced=2, living with partner=3, married=4
Race/ethnicity	Latino=1; Pacific Islander=2; American Indian/Alaskan Native=3; Asian=4; African American=5; White=6; Other single/multiple race=7	Used original measure
Class : Poverty level	0-99% FPL=1; 100-199%FPL=2; 200-299%=3 FPL; 300%=4	Used original measure

**Intermediary determinants of vulnerability (Social determinants of immigrant health).**

*Immigrant status.* For the purpose of this study, an immigrant is any foreign born person whether they are naturalized citizens, permanent residents, or temporary visitors such as students and workers. Immigration status is the legal status measured in this study in terms of naturalized citizen (coded 1) and non-citizen (coded 2). There were a total of 6,741 naturalized citizens and 4,393 non-citizens that made the total study sample (Table 4.6).

Table 4.6 Distribution of Immigrants by Immigrant Status and Gender

Immigrant Status			
Gender	Naturalized Citizen	Non-citizen	Total
Male	2,724	1,840	4,564
Female	4,017	2,553	6,570
Total	6,741	4,393	11,134

**Material circumstances.** The differences in material circumstances are the most important intermediary determinants of health associated with conditions of economic hardship, health damaging conditions in the physical environment such as housing, physical working conditions and so forth (Solar & Irwin, 2010). The CSDH framework also includes consumption potential referring to the financial means to buy healthy food, warm clothing, physical working and neighborhood environments (Solar & Irwin, 2010). Material circumstances for the purpose of this study will be measured through four distinct domains: food security status, public program assistance, home and work environment, and living arrangement (Table 4.7). The living arrangement factor will measure housing arrangements for the purpose of this study, which is an important material aspect of socioeconomic status (Solar & Irwin, 2010). The food security status will measure economic hardship of the most basic material- food, which is one of the most important cause of vulnerability (Solar & Irwin, 2010). As discussed in the CSDH framework, the home and work environment in the study will measure both the circumstances in the working and neighborhood environments, residential stability, as

well as the consumption potential. In this study, the public program assistance is an additional unique measure that can also examine the economic hardship.

Table 4.7 Measures of material circumstances

<b>Material Circumstances</b>	<b>Item Measures</b>	<b>Recorded Item Measures</b>
<b><i>Food Security Status</i></b>		
Food Security Status Level	Food security=1; Food security without hunger=2; Food security with hunger=3	Food security with hunger=1, Food security without hunger=2; Food security=3
How often couldn't afford to eat balanced meals?	Often true=1; Sometimes true=2; Never true=3	Used original measure
Adults cut/skipped meals in past 12 months for money	Yes=1; No=2; Proxy skipped=-1	Yes=1, Neutral=2, No=3
How often food didn't last, couldn't afford more, past 12 months	Often true=1; Sometimes true=2; Never true=3	Used original measure
<b><i>Public Program Assistance</i></b>		
Currently on TANF or CALWORKS	Yes=1; No=2; Not applicable=3	Used original measure
Receiving social security disability insurance	Yes=1; No=2; Not applicable=3	Used original measure
Receiving food stamp benefits	Yes=1; No=2; Not applicable=3	Used original measure
Receiving supplemental security income (SSI)	Yes=1; No=2; Not applicable=3	Used original measure
Currently on WIC	Yes=1; No=2; Not applicable=3	Used original measure
<b><i>Home and Work Environment</i></b>		
Neighborhood fruits/veg affordable	Never=1; Sometimes=2; Usually=3; Always=4	Used original measure
Workplace fruits/veg affordable	Never=1; Sometimes=2; Usually=3; Always=4	Used original measure
How often find fresh fruit/veg in neighborhood	Never=1; Sometimes=2; Usually=3; Always=4	Used original measure
How often find fresh fruit/veg near work	Never=1; Sometimes=2; Usually=3; Always=4	Used original measure
Rural and Urban	Urban=1, 2 <sup>nd</sup> city=2; sub-urban=3; Town and rural=4	Used original measure
Neighborhood safety	Proxy skipped=-1; All of the time=1; Most of the time=2; Most of the time=3; Some of the time=4; None of the time=5	None of the time=1; Some of the time=2; Most of the time=2; Most of the time=3; Some of the time=4; None of the time=5

Table 4.7 continued

<i>Living arrangement</i>		
Housing	House=1; Duplex=2; Building with 3 or more units=3; Mobile Home=4	Used original measure
Own or rent home	Own=1; Rent=2; Other arrangement=3	Used original measure
Household size	Frequency measure (1-to10)	One to three members=1; four to six members=2; seven to nine members=3; ten or more=4
Family type	Single adult 21+=1; single young adult, 19-20=2; Married, no kids=3; Married with kids=4; Single with kids=5; Single, 18 years old=6	Single young adult(18-20years)=1; Single no kids=2; Married no kids=3; Married with kids=4

### **Social Cohesion**

Research studies have shown that social support contributes to good health, providing the emotional and practical resources (Aday, 2003). Kim et al., (2008) affirm that much of the public health literature focuses on the health effects of social cohesion where health impact of group cohesion are generally measured at different scales including neighborhoods, states, and nation (p.139). Social cohesion is hypothesized to influence health through its role in promoting the adoption of health-related behaviors, increasing access to services and amenities, or through psychosocial processes (Kawachi & Berkman, 2000). Studies suggest that the interconnectedness and trust among neighbors, neighborhoods with high degree of social cohesion have shown to accelerate distribution of health information (Rogers, 1983) and influence psychosocial processes through source of meaningful connection and mutual respect (Kawachi & Berkman, 2000). Social cohesion therefore, becomes particularly important to the immigrant population as they adapt to unfamiliar environments. Neighborhood environments then become the determinants of social cohesion.

Previous studies report that social cohesion scale is measured through perception on neighborhood closeness, neighbors willing to help each other, neighbors getting along each other, that neighbors can be trusted, and that neighbors share the same values (Sampson et al., 1997). In this study, the social cohesion measure will be developed to assess the perceived degree of social cohesion among immigrant adults based on the concepts of Sampson et al. (1997). Responses to questions about the neighborhood social cohesion and respective recoding is shown in Table 4.8.

Table 4.8 Measures for social cohesion

<b>Items</b>	<b>Item Measures</b>	<b>Recoded Item Measures</b>
People in neighborhood willing to help each other	Proxy skipped=-1; Strongly agree=1; Agree=2; Disagree=3; Strongly agree=4	Strongly disagree=1; Disagree=2; Neither agree or disagree=3; Agree=4; Strongly agree=5
People in neighborhood would watch for children's safety	Proxy skipped=-1; Strongly agree=1; Agree=2; Disagree=3; Strongly agree=4	Strongly disagree=1; Disagree=2; Neither agree or disagree=3; Agree=4; Strongly agree=5
People in neighborhood could be trusted	Proxy skipped=-1; Strongly agree=1; Agree=2; Disagree=3; Strongly agree=4	Strongly disagree=1; Disagree=2; Neither agree or disagree=3; Agree=4; Strongly agree=5

## **Health System**

As discussed in Chapter 3, the health care system is a critical determinant of health for all populations, especially because of its role in incorporating differences in exposure and vulnerability (Solar & Irwin, 2010). Studies reveal that immigrants face a lot of barriers in accessing and utilizing health care in the United States (Rambaut et al., 1988). For the purpose of this study the health system will be operationalized and

measured in terms of utilization of health care factor, which is an important component of how the health system affects well-being of populations (Table 4.9). Aday (2003) affirms that some of the major factors that either generate or exacerbate immigrant population’s access and utilization of health system stem from barriers with language and cultural beliefs and practices that differ between the providers and the populations that are being served.

Although the CSDH framework places the health system as an intermediary determinant of health, it also affirms that the health system “influences how people move among the social strata” (Solar & Irwin, 2010, p.40) and the degree of this influence varies across population in terms of social status, economic status, gender, and the like. Given these variation in the utilization of the health system, this variable will be considered as a control variable in the analysis. The CHIS measured utilization of healthcare in terms of the frequency of annual doctor visits. Recoding of variables were conducted based on the association of utilization of healthcare with good health. Literature affirms that doctor visits of about three to four times can be equated with good health and good access and utilization of health services. More than four times per year can denote adverse health (Read & Reynolds, 2012).

Table 4.9 Measure for utilization of healthcare

<b>Item</b>	<b>Item Measure</b>	<b>Recoded Item Measure</b>
Number of times doctor visits in 12 months	Frequency measure (0 to 365times)	Not at all=1; Few times=2; More than few=3; Often=4; Very often=5

## **Methods for Data Analysis**

To test the proposed hypotheses and answer the research questions, a four-phase statistical analysis was completed: (1) descriptive analysis; (2) confirmatory factor analysis for dependent and independent variables; (3) moderated hierarchical multiple regression, and (4) analysis of intersectionality.

### **Phase One: Descriptive Analysis**

The first phase of data analysis involved describing summaries about the sample and measures of the data. Both univariate and bi-variate analysis were conducted.

### **Phase Two: Confirmatory Factor Analysis (CFA)**

**CFA for the well-being scale.** The second phase of data analysis included a Confirmatory Factor Analysis (CFA) process to construct a psychometric scale for the dependent variable, immigrant well-being. As stated earlier, the latent variable well-being was hypothesized as a multidimensional measure with the five domains: physical well-being, perceived self-efficacy, emotional well-being, social well-being, and psychological well-being. A CFA is appropriate when there is some knowledge of the underlying latent variable and that the relations between the observed measures is hypothesized a priori and test the hypothesized structure statistically (Byrne, 2010).

**CFA for independent variables.** A series of CFA were also conducted to test hypothesized one factor structures for select independent variables (social cohesion, food

security status, living arrangement, home and work environment, and public program assistance). A series of CFA were conducted to test whether the items supported the intended subscale structure of select independent variables for this study (Spector, 1992).

### **Phase Three: Moderated Hierarchical Multiple Regression**

Once the psychometric properties of the well-being scale were established, a composite score of well-being ( $y$ ) was constructed as an outcome variable to run regression analysis, which examined the hypotheses and relationships among the non-experimental data being used in the study. In general, multiple regression is a data-analytic strategy that helps explain or predict a criterion (dependent) variable with a set of predictor (independent) variables (Petrocelli, 2003). More specifically, moderated hierarchical multiple regression was used for the data analysis in this study.

Among the different approaches of multiple regression, hierarchical regression involves theoretically based decisions for how predictors are entered into the analysis. The point of interest here is on the change in predictability associated with predictor variables entered later in the analysis over and above that contributed by predictor variables entered earlier in the analysis (Wampold & Freund, 1987). Since the objective here is the examination of the extent of change of intermediary measures on immigrant well-being outcome over and above preexisting structural variables, the substantive theory will be strongly considered to specify the order of entry of the variables. Since the examination of change in explained variance, which is the change in  $R^2$  ( $\Delta R^2$ ) statistics is another point of interest, it was computed by entering predictor variables into the analysis

at different steps in blocks. The predetermined, theoretically based plan, as discussed in Chapter 3, was imposed on the data for the order of predictor variable entry. In the hierarchical multiple regression process, statistics associated with predictor variables that are entered in later steps were then computed with respect to predictor variables entered in earlier steps. Thus,  $\Delta R^2$  and its corresponding change in F ( $\Delta F$ ) and p-values were the statistics of greatest interest in the hierarchical regression model (Wampold & Freund, 1987). Since the proposed model postulated the examination of the effect of demographic and social intersections on immigrant well-being outcomes, the hierarchical regression analysis also included the tests of moderation where second order and higher order interaction variables were included in the hierarchical regression model. This approach can be summarized by the following equation in multiple regression analyses:

$$Y = a + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + b_5(x_1x_2) + b_6(x_1x_3) + b_7(x_1x_4) + b_8(x_2x_3) + b_9(x_2x_4) + b_{10}(x_3x_4) + b_{11}(x_1x_2x_3) + b_{12}(x_1x_2x_3x_4) + e$$

#### **Phase Four: Analysis of Intersectionality**

Despite the evolving popularity of intersectionality both as a concept and a research approach, there is very little agreement on how an intersectional analysis should be conducted (Choo & Ferree, 2010). Dubrow (2008) affirms that “multiplicative interaction terms are the best way to measure intersections and account for their properties as being beyond the sum of their parts” (para.2). So in the intersectional

analysis then, it is important to interpret the main effects and higher and lower order interaction terms, accordingly. Likewise, interactions are contingent on the size of main effects. When there is an existence of significant main effects, although the probability of finding significant first order, i.e., a two-way interaction or higher order interactions such as a three, four and n- way interactions decreases (Bowleg, 2008). This is because the significant main effects account for the majority of the variance in the dependent variable (Landrine et al., 1995). Due to the large sizes of the main effects, the probability that no interaction effect will be found is even greater. In the absence of main effects then, prediction of the presence and magnitude of the interaction becomes nearly impossible (Landrine et al., 1995). Bowleg (2008) however, states that this problem is not an inconsequential one for intersectionality researchers because interactions between constructs such as race and gender lie at the heart of intersectionality research. Despite these problems, Bowleg (2008) reiterates that the multiplication of multiple factors to define an individual's experience is at the heart of intersectionality research and that for this very reason, "investigation of statistical interactions in quantitative intersectionality research is both vital and necessary" (p.322).

The final phase included the analysis of intersectionality through two-way and three-way interactions in a series of multiple regression models to examine the main effects and interaction effects of gender, race, class, age, and marital status. Analysis of these interactions provided deeper understanding of the effects of structural and intermedairy determinants of health inequities at the intersections of demographic and social contexts on immigrant well-being.

## Chapter 5

### Data Analysis & Results

This chapter presents the empirical data analysis and results of the proposed conceptual framework examining the effects of structural and intermediary determinants of health inequities on immigrant well-being at the intersections of social structural contexts. This chapter is divided into six sections. The first section outlines the initial stage of data screening, transformation of variables, and methodological note concerning replicate weights. The second section describes the descriptive analysis of data. The third section presents the construction of measurement scales for dependent and independent variables. The fourth section provides results from the correlation matrix. The fifth section outlines the results of the moderated hierarchical regression analysis. Finally, the sixth section provides results from the analysis of intersectionality.

#### **Data Screening and Transformation of Variables**

The initial stage of data analysis involved screening the variables and respective values to assess the distributional properties of the variables and assess the need for appropriate transformations (Figure 5.1 , Table 5.1 ). Both unweighted and weighted tabulations were conducted as a preliminary first step to complex survey data analysis (Lee, Forthofer & Lorimor, 1990). Due to the rigorous weighting and adjustments used in the dataset, transformations of variables were not necessary.

**Methodological note: replicate weights and variance estimation.** As mentioned in chapter 4, analysis of survey data is different than analysis of data collected in other ways in that there are elements such as probability weight, also called sampling

weight or pweight, the stratification variable, and other finite population correction variables. For survey data analysis, the recommended practice is to use different sampling weights based on the sampling design for the correct calculation of point estimates and standard errors ( Lee et al., 1990).

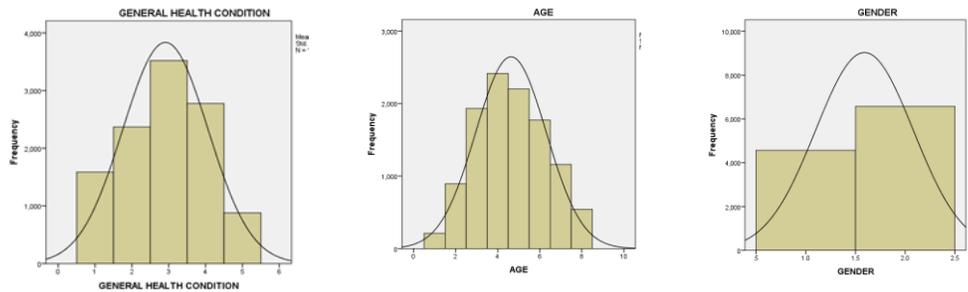


Figure 5.1 Initial data screening

Table 5.1 Data screening, skewness & kurtosis of select study variables

Variables	N	Min.	Max.	Mean	SD	Skewness		Kurtosis	
						Statistic	SE	Statistic	SE
General Health Condition	11134	1	5	5	1.16	-0.69	.023	-.828	.046
Age	11134	1	8	4.63 (51.84yrs)	1.6	.100	.023	-.666	.046
Gender	11134	1	2	1.59	.492	-.366	.023	-1.866	.046

For large scale surveys like CHIS, which includes a representative sample of the California population, most continuous variables are expected to be normally distributed. When constructing confidence intervals for population parameters using survey data, it is also assumed that estimates of means and proportions from the survey are approximately

normally distributed (Cochran 1977, p. 27). The CHIS uses 80 replicate weights with jackknife estimation as discussed in chapter 4. The sample is broken into subsamples called the replicate and the variance estimation is calculated both from the full sample and each of the replicate through the jackknife replication method. These methods of variance estimation, replications, bootstrapping and adjustments used in complex surveys provide advantages where these methods do not need to meet the assumptions of normality and equal variances (Shao & Tu, 1995). Many authors have also asserted that these methods in essence provide alternatives to the traditional nonparametric or log transformation techniques (Rascati, Smith & Neilands, 2001).

### **Descriptive Analysis**

This section provides results from descriptive statistics including the distributional properties of variables describing the overall state of immigrant well-being. The bivariate analysis provide empirical relationships between select variables critical for this study. The analyses include proportion estimate for the immigrant population in California using the sample weight and the 80 replicate weights with Jackknife estimations (Table 5.2.). In the tables that follow the descriptive analysis, the frequency and percent describe the sample (N=11,134) and the proportion with the estimated Jackknife Standard Error with the Confidence Interval are estimates for the immigrant population in California (Population size=9,357,419).

Table 5.2 Results showing population estimation using survey weight and replicate weights

---

Jackknife replications (80)	
-----+--- 1 -----+--- 2 -----+--- 3 -----+--- 4 -----+--- 5	
..... 50	
.....	
Survey: Proportion estimation	Number of obs = 11,134
Number of strata = 1	Population size = 9,357,419
	Replications = 80
	Design df = 79

---

### Gender, General Health Condition & Immigrant Status

**Gender.** The distribution of immigrant population in the sample (N=11,134) is slightly overrepresented by the population of women (59.01%) compared to men (40.99%). Table 5.3 shows the distribution of sample population and population estimates by gender.

Table 5.3 Gender distribution of study sample & population estimates

---

Gender	Frequency	Percent	Proportion	Jackknife Std.Err.	[95% Conf. Interval]	
Men	4,564	40.99	.4824213	.0048928	.4726826	.4921601
Women	6,570	59.01	.5175787	.0048927	.50784	.5273174
Total	11,134	100				

---

**General health condition.** Overall, most respondents in the sample (31.6%) considered themselves to be in good health (Table 5.4) Most women in the sample

considered themselves to be in either good health(18.7%), fair health condition (15.3%), and very good health condition (12.3%). Similarly, most considered themselves to be either in good health (12.9%), fair health (12.9%) or very good health (9%).

Table 5.4 General health condition of sample population by gender

General Health Condition	Gender				Total	Percent
	Men	Percent	Women	Percent		
Excellent	727	6.5	861	7.7	1,588	14.3
Very Good	1,000	9	1,369	12.3	2,369	21.3
Good	1,439	12.9	2,081	18.7	3,520	31.6
Fair	1,080	9.7	1,698	15.3	2,778	25
Poor	318	2.9	561	5	879	7.9
Total	4,564	41	6,570	59	11,134	100

**Immigrant status.** The sample of the study includes immigrant only populations in California. The legal immigrant status is an important determinant of immigrant well-being. Studies have shown that many immigrants go through the concerns with legal status and preoccupation with disclosure and deportation. These concerns especially among undocumented immigrants increase the risk for mental distress and impede their quality of health (Cavazos-Rehg, Zayas & Spitznagel, 2007). Immigrant status is an important determinant of health considered in this study.

The distribution of immigrant populations in the sample is separated by immigrant status under naturalized citizens and non-citizens (Table 5.5). The study sample includes more naturalized citizens (60.54%) than non-citizens (39.46%). Non-citizens can be anyone including permanent residents, people who come to the US on temporary basis such as tourism, business, temporary work, or study. There is no mention

of undocumented status in the CHIS data set. Hence, although it can be assumed that the non-citizen category might include undocumented immigrants, there is no clear distinction of this population in the data set or this study.

Table 5.5 Distribution of study sample and population estimates by immigrant status

Immigrant Status	Frequency	Percent	Proportion	Jackknife Std.Err.	[95% Conf. Interval]	
Naturalized Citizen	6,741	60.54	.53282	.0069224	.5190413	.5465987
Non-citizen	4,393	39.46	.46718	.0069224	.4534012	.4809588
Total	11,134	100				

As far as immigrant status by gender ( Table 5.6) is concerned, most women immigrants were naturalized citizens (36.1%) compared to non-citizens (22.9%). More men also reported to have naturalized citizen status (24.5%) compared to non-citizen status(16.5%).

Table 5.6 Distribution of immigrant status by gender

Immigrant Status	Gender				Total	Percent
	Men	Percent	Women	Percent		
Naturalized citizen	2,724	24.5	4,017	36.1	6,741	60.5
Non-citizen	1,840	16.5	2,553	22.9	4,393	39.5
Total	4,564	41	6,570	59	11,134	100

## Age, Race/Ethnicity, and Marital Status

**Age.** The mean age of the sample immigrant population was 51.84 years ( $SD=16.48$ ). As shown in Table 5.7, most immigrants in the sample were between 41-50 years (21.71%) and 51-60 years (19.77%), and between 31-40 years (17.36%).

Table 5.7 Distribution of sample & population estimates by age (M=51.84years, SD=16.48)

Age	Frequency	Percent	Proportion	Jackknife Std.Err.	[95% Conf. Interval]	
Below 20yrs	212	1.90	.0255549	.0022422	.0210918	.030018
21-30yrs	894	8.03	.1453463	.0047914	.1358092	.1548834
31-40yrs	1,933	17.36	.2447991	.0047913	.2352622	.2543359
41-50yrs	2,417	21.71	.2473625	.0050403	.2373301	.2573949
51-60yrs	2,201	19.77	.1734936	.0041207	.1652916	.1816956
61-70yrs	1,773	15.92	.0951164	.0036352	.0878807	.1023521
71-80yrs	1,161	10.43	.0489097	.0021961	.0445384	.0532809
Above 80yrs	543	4.88	.0194176	.0012626	.0169045	.0219308
Total	11,134	100				

**Race/Ethnicity.** The CHIS dataset includes a large number of diverse race and ethnicities. The Latino (35.58%) and Asian (30.20%) groups have the largest share of the immigrant population in the sample (Table 5.8). The Asian population (Figure 5.2) is a diverse group that include sub-populations such as Chinese, Filipino, Korean, Vietnamese, South Asian, Japanese, and other Asian groups. According to CHIS (2013), the Latino group (Figure 5.3) included sub-groups such as Mexican, Salvadoran, South American, Guatemalan, European Hispanic, other Latino, and more than one Latino ethnic group.

Table 5.8 Distribution of sample & population estimates by race/ethnicity

Race/Ethnicity	Frequency	Percent	Proportion	Jackknife Std.Err.	[95% Conf. Interval]	
Latino	3,962	35.58	.4173777	.0056076	.4062161	.4285394
Pacific Islander	11	0.10	.0016325	.0006676	.0003037	.0029612
American Indian/Alaskan Native	9	0.08	.0004763	.0002621	-.0000454	.0009981
Asian	3,363	30.20	.2909929	.0044255	.2821841	.2998017
Black	163	1.46	.0173924	.0016812	.0140461	.0207387
White	2,228	20.01	.1348582	.0040375	.1268218	.1428947
Other	1,398	12.56	.1372699	.0052864	.1267477	.1477922
Single/Multiple Race						
Total	11,134	100				

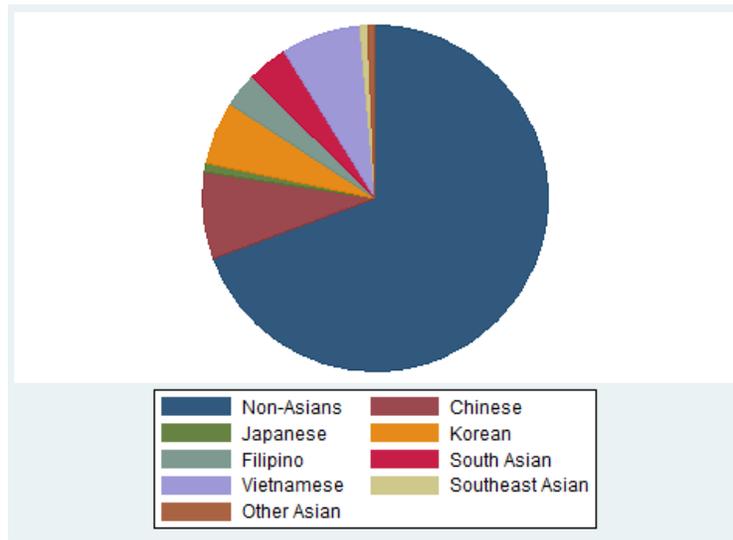


Figure 5.2. Asian group sub-types

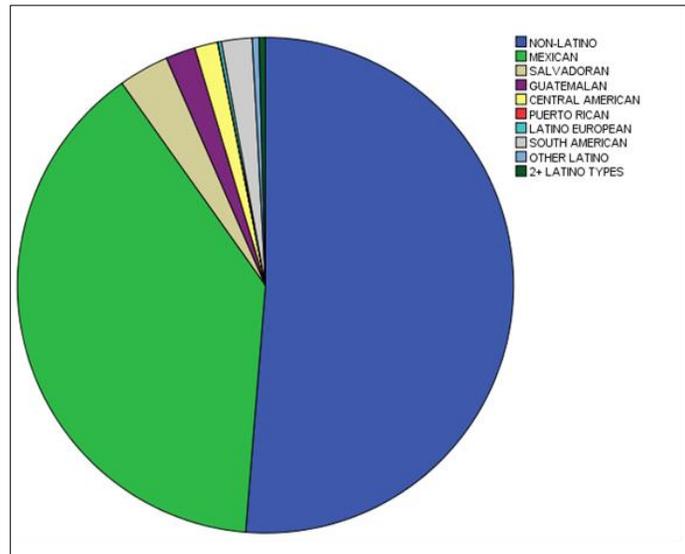


Figure 5.3. Latino group sub-types

**Marital status.** As shown in Table 5.9, most respondents in the sample were married (59.22%) followed by either widowed, separated, or divorced (21.80%); single (13.27); and living with partner, but not married (5.71%). Marital status is an important demographic variable especially among immigrant populations where migration often times is motivated by family immigration.

Table 5.9 Distribution of sample respondents and population estimates by marital status

Marital Status	Frequency	Percent	Proportion	Jackknife Std.Err.	[95% Conf. Interval]
Single	1,477	13.27	.167943	.0062878	.1554275 .1804585
Widowed/Separated /Divorced	2,427	21.80	.1447871	.0043172	.136194 .1533803
Living with Partner	636	5.71	.0779949	.0046179	.0688032 .0871867
Married	6,594	59.22	.609275	.0076616	.594025 .624525
Total	11,134	100			

## Income, Education, Employment Status, Occupation and Social Class

**Income.** The annual household income for the sample (Table 5.10) ranged from \$0 to \$300,000 with a median income of \$30,000 (Mean income= \$53,469.28). Majority of the respondents in the sample had a household income between \$10,000 to \$50,000 (53.96%).

Table 5.10 Income distribution of sample & population estimates

Income (USD)	Frequency	Percent	Proportion	Jackknife Std.Err.	[95% Conf. Interval]
Below 10,000	1,516	13.62	.107424	.004416	.0986343 .1162138
10,000-50,000	6,008	53.96	.5349182	.0074485	.5200924 .5497439
50,000-100,000	2,081	18.69	.2087352	.0060422	.1967086 .2207619
100,000-150,000	773	6.94	.075797	.0033295	.0691699 .0824241
150,000-200,000	410	3.68	.0394533	.0029133	.0336546 .0452521
200,000-250,000	163	1.46	.0171576	.0018366	.013502 .0208133
250,000-300,000	183	1.64	.0165146	.0017185	.0130941 .0199352
Total	11,134	100			

**Education.** As far as education level (Table 5.11) is concerned, respondents with less than high school (28.24%) and high school (20.55%) accounted for the highest share. About 19.24% of the immigrant population in the sample had at least bachelor's degree or higher, followed by some college (16.94%) and masters degree or higher (12.17%).

Table 5.11 Education level of sample & population estimates

Education Level	Frequency	Percent	Proportion	Jackknife Std.Err.	[95% Conf. Interval]
No formal education	319	2.87	.0315048	.0029872	.0255589 .0374507

Table 5.11 continued

Less than high school	3,144	28.24	.3109502	.0048819	.301233	.3206675
High School	2,288	20.55	.196387	.0044593	.1875109	.2052631
Some College	1,886	16.94	.157421	.0052269	.1470172	.1678248
Bachelors Degree or higher	2,142	19.24	.1950294	.0049621	.1851527	.2049061
Masters Degree or higher	1,355	12.17	.1087076	.0039446	.1008561	.1165591
Total	11,134	100				

**Employment Status.** Respondents in the sample were mostly employed full-time (45.36%). However, as shown in Table 5.12, a significant number of respondents were not employed, but also were not looking for job (39.27%).

Table 5.12 Employment status of the sample & population estimates

Employment Status	Frequency	Percent	Proportion	Jackknife Std.Err.	[95% Conf. Interval]	
Unemployed not looking for work	4,372	39.27	.2672805	.0053057	.2567198	.2778412
Unemployed looking for work	844	7.58	.0854638	.0044514	.0766035	.0943241
Employed part time	819	7.36	.0706434	.0038202	.0630395	.0782474
Self employed	49	0.44	.00428	.0008503	.0025875	.0059726
Employed full time	5,050	45.36	.5723323	.0076697	.557066	.5875985
Total	11,134	100				

**Occupation.** As shown in Table 5.13, out of the total respondents who were working, most of them worked in private or non-profit organizations (36.97%) followed by self-employed (9.88%) and government (6.40%).

Table 5.13 Distribution of sample and population estimates by occupation

Occupation	Frequency	Percent	Proportion	Jackknife Std.Err.	[95% Conf. Interval]	
Not applicable	5,125	46.03	.342767	.0069048	.3290234	.3565107
Private/Non Profit	4,116	36.97	.4820217	.0077168	.4666617	.4973817
Government	713	6.40	.0593137	.0035004	.0523464	.0662809
Self-employed	1,100	9.88	.107046	.0045943	.0979012	.1161908
Family Business	80	0.72	.0088516	.0012991	.0062658	.0114374
Total	11,134	100				

**Social Class.** As described in chapter four, social class in the study is measured by federal poverty levels (FPL) (Diemer et al., 2013 ). Among other measures of social class, using the FPL focuses on the identification of standard of living parameters. These measures help identify the poor or the disadvantaged group based on societal standards (Iceland, 2003, Roosa et al., 2005). In this study, respondents in the 300% FPL and above category had the highest share (33.55%), followed by 27.9% of respondents in the 0-99% FPL, and 100-199% FPL(25.92%) levels (Table 5.14)

Table 5.14 Distribution of sample and population estimates by social class

Social Class	Frequency	Percent	Proportion	Jackknife Std.Err.	[95% Conf. Interval]	
0-99% FPL	3,094	27.79	.2514573	.0066317	.2382573	.2646573
100-199% FPL	2,886	25.92	.2630473	.0063308	.2504462	.2756485
200-299% FPL	1,418	12.74	.1443503	.0056549	.1330945	.1556061
300% FPL and Above	3,736	33.55	.3411451	.0070088	.3271945	.3550957
Total	11,134	100				

## Utilization of healthcare

Utilization of healthcare is an important indicator providing information on access, utilization, and delivery of health resources. As shown in Table 5.15, majority of the respondents in the sample utilized healthcare resources few times every year (45.86%), followed by more than few times (25.68%). Although an important indicator, more utilization of healthcare can also indicate adverse health (Read & Reynolds, 2012). On average, the immigrant populations in the sample utilized healthcare services 3.88 times (M=3.88, SD= 7.9) on an annual basis.

Table 5.15 Utilization of healthcare on an annual basis

Utilization of healthcare	Frequency	Percent	Proportion	Jackknife Std. Err.	[95% Conf. Interval]	
Not at all	2,277	20.45	.2527414	.0066473	.2395103	.2659726
Few times	5,106	45.86	.4715597	.0068177	.4579894	.48513
More than few times	2,859	25.68	.2188844	.0059537	.2070338	.230735
Often	710	6.38	.0439939	.0027052	.0386092	.0493785
Very often	182	1.63	.0128206	.0016587	.0095191	.0161221
Total	11,134	100				

Literature states that doctor visits any where from three to four times a year indicates good health and adequate level of access and utilization of health services (Read & Reynolds, 2012). Many studies contend that immigrants in general are less likely to utilize health services due to issues such as lack of knowledge about the health system, lack of resources to access the health system, patient-provider communication, legal status discrimination, language barriers and so forth (Cristancho et al., 2008; Derosé et

al., 2009; Kandula et al., 2004). These challenges are reflected in poor utilization of healthcare services by immigrants (Schmidt et al., 2011) In the study sample, 55.6 % of respondents utilized healthcare services few times a year, followed by 20.5% of the respondent who did not utilize healthcare at all. Among the respondents who did utilize healthcare, 57.8% were naturalized citizens while 52.2 were non-citizens. Although there is some difference here, what is striking is that almost 55% of the respondents that did not utilize healthcare at all were non-citizens compared to 44.2% naturalized citizens (Table 5.16). These results reiterate the importance of immigrant status in accessing healthcare.

Table 5.16 Utilization of healthcare by immigrant status

Immigrant Status	Utilization of Healthcare (healthu)					Total
	None	Few times	More than few times	Often	Very Often	
Naturalized Citizen	1007	3896	1211	494	133	6741
% within immigrant status	14.9	57.8	18	7.3	2	100
% within healthu	44.2	63	68.2	69.6	73.1	60.5
% Total	9	35	10.9	4.4	1.2	60.5
Non-Citizen	1270	2293	565	216	49	4393
% within immigrant status	28.9	52.2	12.9	4.9	1.1	100
% within healthu	55.8	37	31.8	30.4	26.9	39.5
% Total	11.4	20.6	5.1	1.9	0.4	39.5
Total	2277	6189	1776	710	182	11134
% within immigrant status	20.5	55.6	16	6.4	1.6	100
% within healthu	100	100	100	100	100	100
% Total	20.5	55.6	16	6.4	1.6	100

## **Construction of Measurement Scales: Confirmatory Factor Analysis (CFA)**

### **Dependent Variable: Well-Being**

The second phase of the data analysis included development of a multidimensional scale for immigrant well-being. The primary goal was to evaluate the hypothesis that the well-being scale included five dimensions: physical well-being, emotional well-being, perceived self-efficacy, psychological well-being, and social well-being. The secondary goal was to then develop a well-being scale measuring the five dimensions that could be used as a dependent variable in this study. In the measurement context, the first task was to evaluate the measurement hypothesis of the internal structure of the well-being scale. As described in Chapter 4, the proposed well-being scale included five dimensions: physical well-being, social well-being, emotional well-being, perceived self-efficacy, and psychological well-being. Here, Confirmatory Factor Analysis (CFA) was used to evaluate the hypothesis that well-being was a multidimensional concept that included the five dimensions. The next section outlines the step-by-step approach used to validate the psychometric properties of the well-being scale proposed for this study.

**Item analysis.** Spector (1992) suggests that in a multidimensional scale, although the specified components are unrelated, the subscales of multidimensional instruments often intercorrelate. However, it is important that the subscales should conceptually remain distinct. As the first step, an item analysis (Spector, 1992) was conducted for each subscale separately.

The purpose of the item analysis was to find items that formed an internally consistent scale while eliminating item that were not consistent (Spector, 1992). Here, CFA was conducted separately through a one factor model using the statistical programming software STATA SE v.14 for all five well-being dimensions. As mentioned in chapter 4, the analysis included 80 replicate weights (df=79) and sample weight using Jackknife estimates giving standardized CFA solution (Table 5.17 ). Maximum Likelihood (ML) was used as the statistical estimator which helps to find the model parameter estimates that maximizes the likelihood of observing the same data (Hair et al., 2006)

Table 5.17 Results showing specs of replications, sample size and population size used in the measurement model

Jackknife replications (80)	
1 ----+---- 2 ----+---- 3 ----+---- 4 ----+---- 5	
.....	50
.....	
Survey: Structural equation model	Number of obs = 11,134
Number of strata = 1	Population size = 9,357,419
	Replications = 80
	Design df = 79

For the standardized solution, Standardized Root Mean Square Residual (SRMR) was used as a goodness of fit measure. The SRMR criterion is an estimation that shows the difference between the observed correlation and the predicted correlation assessing the average magnitude if the discrepancies between the observed and the expected correlations as an absolute measure of model fit criterion (Henseler et al., 2014).

Generally, a value less than 0.10 is considered a good fit. However, more conservative estimates regard a value of 0.08 or less as a criterion of good model fit (Hu & Bentler, 1998). As an absolute measure of fit, a value of zero for SRMR indicates perfect fit (Kenny, 2014). In this study, the replicate weights provide the bootstrapping results of the SRMR criterion making it a rigorous standardized fit index. With regards to indicators per construct, good practice suggests a minimum of three items per factor (Hair et al., 2006). Each dimension included a minimum of three items per factor as shown in the figures (Figures 5.4, 5.5, 5.6, 5.7, and 5.8).

The CFA estimated parameters for the item measures of the five dimension of the well-being scale separately. The goodness of fit index for physical well-being, social well-being, emotional well-being, perceived self-efficacy, and psychological well-being showed good model fit for each of the five dimensions (Table 5.18.). The standardized scale reliability also showed adequate internal consistency for all the items with the exception of physical well-being (Table 5.18.). Although coefficient alpha is generally used in estimating reliability where a value of 0.70 or higher is considered to have good reliability, many authors such as Raykov (2004) and Zimmerman (1972) have questioned its limitation regarding psychometric assumptions that might not necessarily be valid in some behavioral research applications. Although the scale reliability coefficient seemed inadequate for physical well-being ( $\alpha=0.54$ ), Confirmatory Factor Analysis indicated the goodness of fit (SRMR=0.005) for the hypothesized physical well-being model. The fit statistics (SRMR) and the scale reliability coefficients for social well-being (SRMR=0.019 ,  $\alpha=0.74$  ), perceived self-efficacy(SRMR=0.054 ,  $\alpha= 0.85$ ), emotional

well-being(SRMR=0.000 ,  $\alpha= 0.84$ ), and psychological well-being(SRMR=0.000 ,  $\alpha=0.92$  ) also showed good fit and scale reliability.

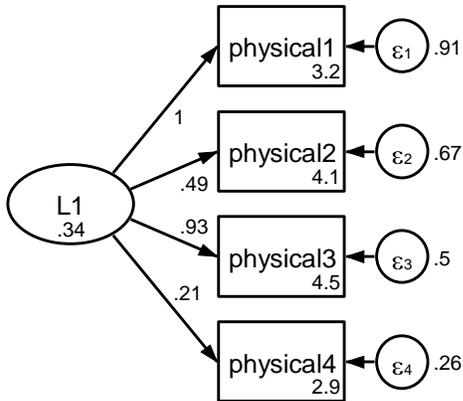


Figure 5.3 Latino group sub-types

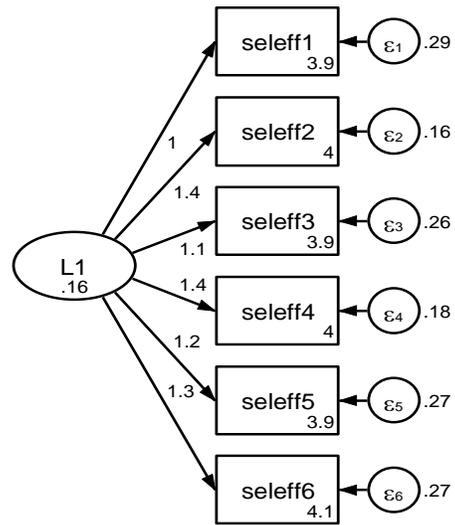


Figure 5.5 Parameter Estimates for Perceived Self-efficacy Measure (Mental Well-Being)

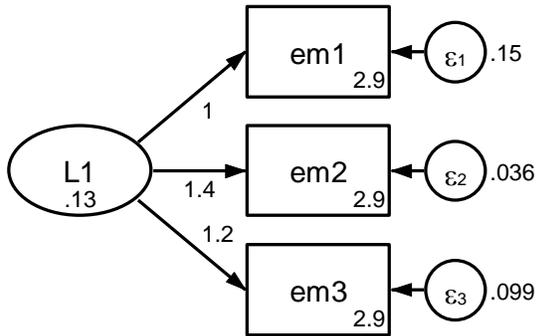


Figure 5.6 Parameter Estimates for Emotional Well-Being Measure

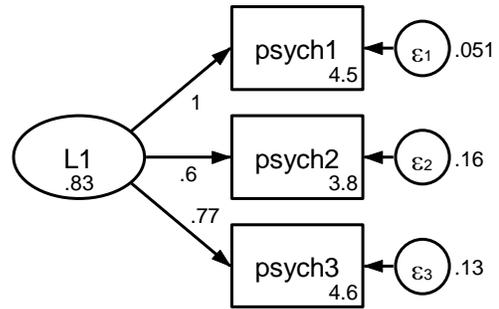


Figure 5.7 Parameter Estimates for Psychological Well-Being Measure

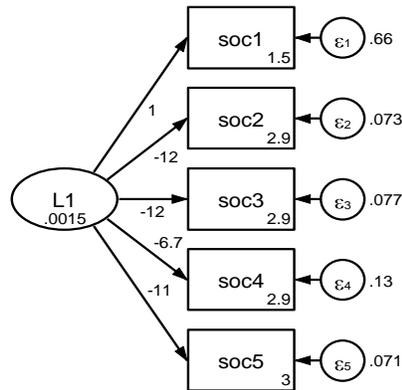


Figure 5.8. Parameter Estimates for Social Well-Being Measure

Table 5.18 Goodness of Fit Statistics for well-being dimensions

CFA Estimation Well-being Dimensions	SRMR (Standardized Root Mean Squared Residual)	CD (Coefficient of determination)	$\alpha$ (Standardized Cronbach's Alpha)
Physical Well-being	0.005	0.539	0.5456
Emotional Well-being	0.000	0.905	0.8435
Perceived Self-efficacy	0.054	0.871	0.8514
Psychological Well-being	0.000	0.957	0.9285
Social Well-being	0.019	0.895	0.7433

**Specification of a multidimensional well-being measurement model.** After the item analyses were completed, which resulted in a good model fit despite questionable reliability measure for the physical well-being scale, the next task was to specify the measurement model of a multidimensional well-being scale using the five dimensions analyzed above. No changes were made on the item analysis at this point due to the theoretical assumptions of the dimensions. One of the significant advantage of CFA is its ability to assess the construct validity of a proposed measurement theory (Hair et al., 2006).

As stated in chapter 4, well-being was hypothesized as the physical, mental, and the social aspects of an individual's life (Healthy People, n.d). Since the idea of well-being is evolving, there is no transdisciplinary consensus around its definition. However, there is an agreement in the well-being discourse that well-being includes several dimensions such as physical, economic, social, emotional, psychological, and other domain specific satisfaction and engagement (Ban et al., 2012). Given the social determinants of health perspective and the evolving literature on well-being, this study conceptualized well-being as a function of health and included five dimensions to operationalize the construct of well-being: physical well-being, perceived self-efficacy, emotional well-being, psychological well-being, and social well-being. While perceived self-efficacy, emotional, and psychological can be measured as separate dimensions, there are overlaps in these constructs as they pertain to the overarching mental well-being construct. In this study, well-being referred to an increase in good health in these five

domains increased the well-being scores in the respective five dimensions “as a state of complete physical, mental, and social well-being” (WHO, 1948, p.1).

As an iterative process, the next task was to articulate the scale’s hypothesized measurement model, evaluate, revise, and re-evaluate based on theoretical and empirical utility. The next section provides information on the model-testing process including respecification process with the goal of developing a multidimensional well-being measure. A five factor CFA model with physical well-being (L1), perceived self-efficacy (L2), emotional well-being (L3), social well-being (L4), and psychological well-being (L5) was conducted, which estimated standardized parameters and covariance estimates (Figure 5.7). As shown in Figure 5.9., the parameter estimates of the well-being scale suggested that the error variances were appropriate ( $<|2.5|$  and  $|4.0|$ ) and there were no issues with negative error variance also called “Heywood Cases” (Hair et al., p.793). The parameter estimates suggested that the factor loadings were either low or very high for self efficacy, emotional well-being, and social well-being. With the exceptions of the parameter constraint of 1 applied to all latent dimensions, the factor loadings for: physical well-being (L1) ranged from .22 to .89; self-efficacy (L2) ranged from 1.1 to 1.3; emotional well-being(L3) ranged from 1.2 to 1.3; social well-being (L4) ranged from -6.8 to -13, and psychological well-being (L5) ranged from .59 to .75. Although significant, the covariance estimates were between -0.078 to .21, suggesting weak correlations among the factors.

The size of factor loading is an important consideration in a CFA where the good rule of thumb is that standardized loading estimates should be .5 or higher and ideally .7

or higher (Hair et al., 2006). However, factor loading of approximately .32 is generally acceptable as a minimum loading of an item (Tabachnick & Fidell, 2001) for the minimum loading of an item. In addition, correlation estimates and standardized path coefficients that exceed |1.0| are also deemed problematic as these may suggest issues with multicollinearity or violations of the underlying statistical assumptions (Hair et al., 2006). These estimates in completely standardized solution however, are often debated.

Joreskog (1999) postulates that in a completely standardized solution, this is a common misunderstanding and that standardized coefficients, which are the estimated coefficient in a measurement of structural relationship need not be smaller than one. In the well-being model (Figure 5.6) however, although the scale reliability coefficient ( $\alpha=0.9$ ) suggested high internal consistency of the internal structures of the five dimensions of the well-being construct, the SRMR criterion did not suggest a good fitting model ( $SRMR < 0.08$ ) (Table 5.19). These results suggested a specification search had to be conducted to empirically validate the model with the theoretical construct of well-being. A specification search is an iterative fitting process driven by sequential changes of freeing fixed elements with the largest modification index to find the set of relationships that best fits a covariance matrix (Hair et al., 2006).

Table 5.19 Goodness for Fit Index for Initial Model for the Well-being Scale

Fit statistic	Value	Description
Size of residuals		
SRMR	0.262	Standardized root mean squared residual
CD	1.000	Coefficient of determination
	0.3106	Average interitem correlation
	20	Number of items in the scale:
Cronbach's Alpha ( $\alpha$ )	0.9001	Scale reliability coefficient

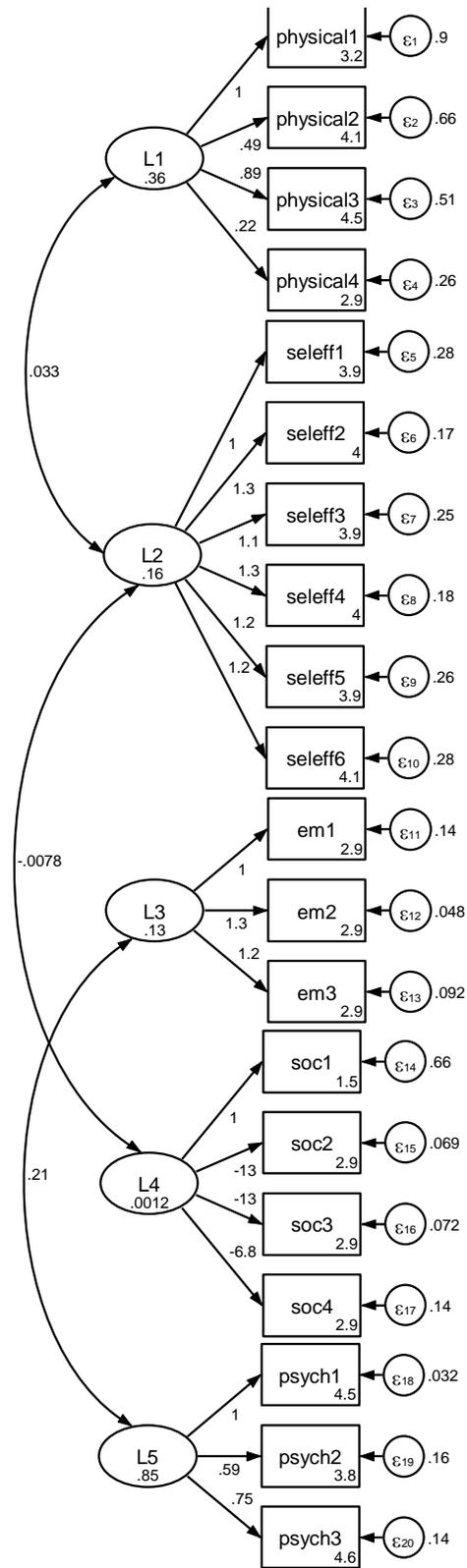


Figure 5.9 Initial model & parameter estimates for the well-being scale

Note: L1=Physical well-being, L2= Self-efficacy, L3=Emotional well-being, L4=Social well-being, L5=Psychological well-being

**Model respecification.** Although the iterative nature of CFA allows specification searches, there are several caveats when it comes to model respecification. While the answer to the limit of modifications on a model is not straight forward, Hair et al. (2006) suggest that when more than two out of every 15 measured variables are dropped or changed in terms of the factor they indicate, a new data set should be used for further verification (p.797). After several re-specification efforts of dropping smaller loadings and larger error variances, the overall adequacy of the hypothesized model could not be reached. This suggested the need for modifications on the multidimensional five factor well-being scale and prompted the re-examination of the theoretical construct of well-being. In the beginning of this study, well-being was operationalized as a function of health where health was conceived as “a state of complete physical, mental, and social well-being” (WHO, 1948, p.1. ). Well-being then, was conceptualized as “a dynamic and relative state where one maximizes his or her physical, mental, and social functioning in the context of supportive environments to live a full, satisfying, and productive life” (Kobau et al., 2010,p.274). In the proposed multidimensional well-being measure consisting of five factors, the perceived self efficacy, emotional well-being, and psychological well-being could have intercorrelations with the broader mental well-being construct. Spector (1992) affirms that when items on subscales, although not identical, contain similar content, the interpretation of relations among the scales will be compromised. So, it is important to “determine where constructs overlap and where they are distinct” (Spector, 1992, p.40).

As discussed in Chapter 4, Healthy People (n.d) suggests mental well-being as life satisfaction, well-balanced positive and negative emotions, self acceptance, purpose and meaning of life, personal growth, autonomy, competence, optimism, and the belief that life circumstances are under control. This implies that self-efficacy, emotions, and psychological well-being can imply to a “formative measurement theory” of mental health due to the potential intercorrelation of the construct. In a formative measurement theory, measured variable cause the construct (Hair et al., 2006, p.786). Based on the operationalization of well-being, theoretical and empirical utility, a well-being measurement model with three sub-constructs: physical well-being, mental well-being, and social well-being was deemed parsimonious to provide simplest equal quality explanations (Spector, 1992) for the construct of well-being. The three sub-constructs i.e physical well-being, social well-being, and mental well-being are also distinct, which is mandatory for a multidimensional scale (Spector, 1992). Given the focus of the dissertation study on the quality of life and the indication that perceived self-efficacy measure included items that measured self acceptance, purpose and meaning of life, personal growth, autonomy, competence, and optimism on a comprehensive level, the perceived self-efficacy construct theoretically made a better argument to be chosen as a mental well-being measure. In contrast, the construct of emotional well-being only focused on emotions and psychological well-being only focused on distress levels. Since sub-dividing the well-being construct into five dimensions did not add to the explanatory power of well-being, the creation of a multidimensional three factor well-being

measurement model was prompted rather than subdividing the well-being construct into five dimensions.

**Assessing measurement model validity of the well-being scale.** The three factor measurement model that included physical well-being, social well-being, and mental well-being was then assessed for psychometric evaluation and construct validation for the study (Figure 5.10).

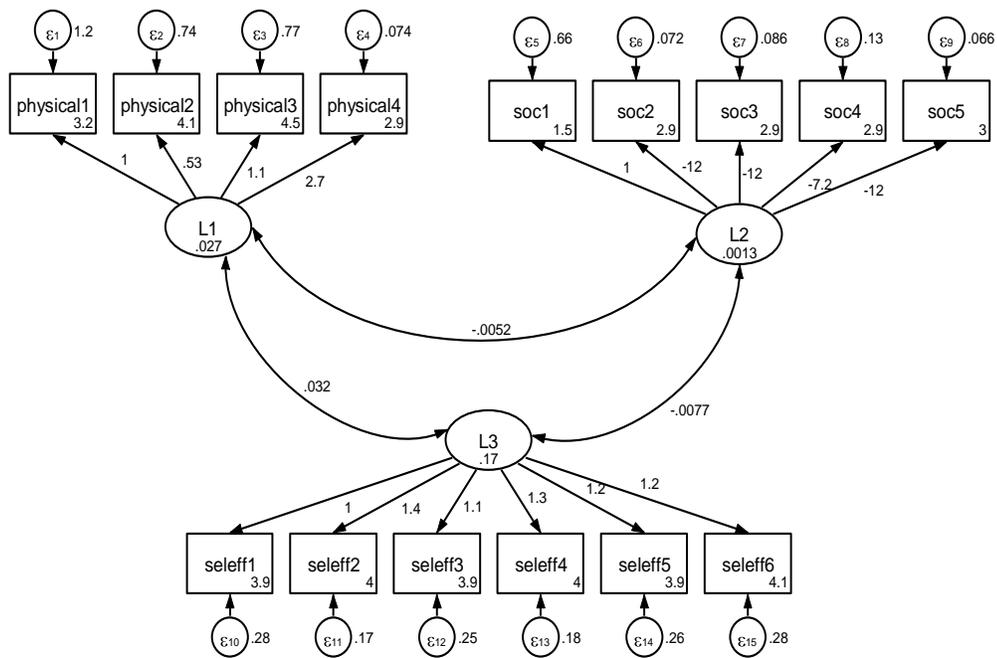


Figure 5.10 Modified measurement model and parameter estimates for the well-being scale

Estimations of the standardized CFA solution showed a unique set of parameter estimates for the three-factor well-being scale. While the well-being measurement model indicated good fit (SRMR=0.046) as shown under Table 5.20, there were several issues

that deserved attention. The factor loadings for physical well-being (L1) ranged from .53 to 2.7. The social well-being dimension (L2) had negative factor loadings and the mental well-being dimension (L3) had factor loadings ranging from 1.2 to 1.4. The residuals ranged from |0.17 to |1.2|, which did not necessarily indicate any error variance issues. Hair et al. (2006) affirm that in general, standardized residuals between |2.5| and |4.0| do not suggest any problems. However, small error variance are always better as it can indicate the presence of exact liner relationship (Joreskog, 1999). The covariance estimates although significant, showed weak negative correlation, which could be argued on a theoretical premise. Even with good fit statistics, the negative facctor loadings and the covariance estimates suggested an evaluation of the model diagnostics. Model diagnostics can suggest ways to futher improve the measurement model or assess some other problems not revealed before (Hair et al., 2006).

Table 5.20 Goodness of Fit Index for Modified 3 factor Model for Well-being Scale

Fit statistic	Value	Description
Size of residuals SRMR	0.046	Standardized root mean squared residual
CD	0.991	Coefficient of determination

**Model diagnostics and respecification.** Model Diagnostics re-examined the path estimates, standardized residuals, and modification indices (Figure 5.8). Analysis of path estimates focused on the factor loadings of each indicator on a construct. Under physical well being (L1), the fourth item (physical4) had a very high factor loading. So, the

decision was made to eliminate this path. Elimination of this item (physical4) made significant improvement in the factor loadings for the latent variable physical well-being (L1, Figure 5.11). Under social well-being (L3), the negative factor loadings presented some issues. However, when the highest residual associated with the first item (soc1) under social well-being was dropped, the factor loadings were significantly improved. This also improved the covariance estimates associated with physical well-being (L1), social well-being (L2), and mental well-being (L3). Under mental well-being (L2), there were factor loadings ranging from 1.1 to 1.4. As mentioned by Joreskog (1999), although the cut-off point lower than one for standardized coefficients in completely standardized solutions is not a problem, the decision was made to assess the mental well-being items to evaluate the relative magnitude of relations between the items of the same sub-construct. The items with highest loadings (selfff2 and selfff4) were dropped from the mental well-being (L3) sub-construct. This significantly improved the factor loadings for the two items (selfff5 and selfff6).

At this point, the loadings on path estimates were determined to be adequate (Figure 5.11. and Table 5.22.). Hair et al. (2006) suggested as a rule of thumb, loadings should be at least 0.5 and ideally 0.7 or higher. All the factor loadings in the modified measurement model of well-being were 0.7 or higher with the exception of the item, physical2 (approximately 0.5), which although was lower, was determined to be in an acceptable range. The standardized residuals were all significantly lower than the higher acceptable ranges of  $|2.5|$  and  $|4.0|$ .

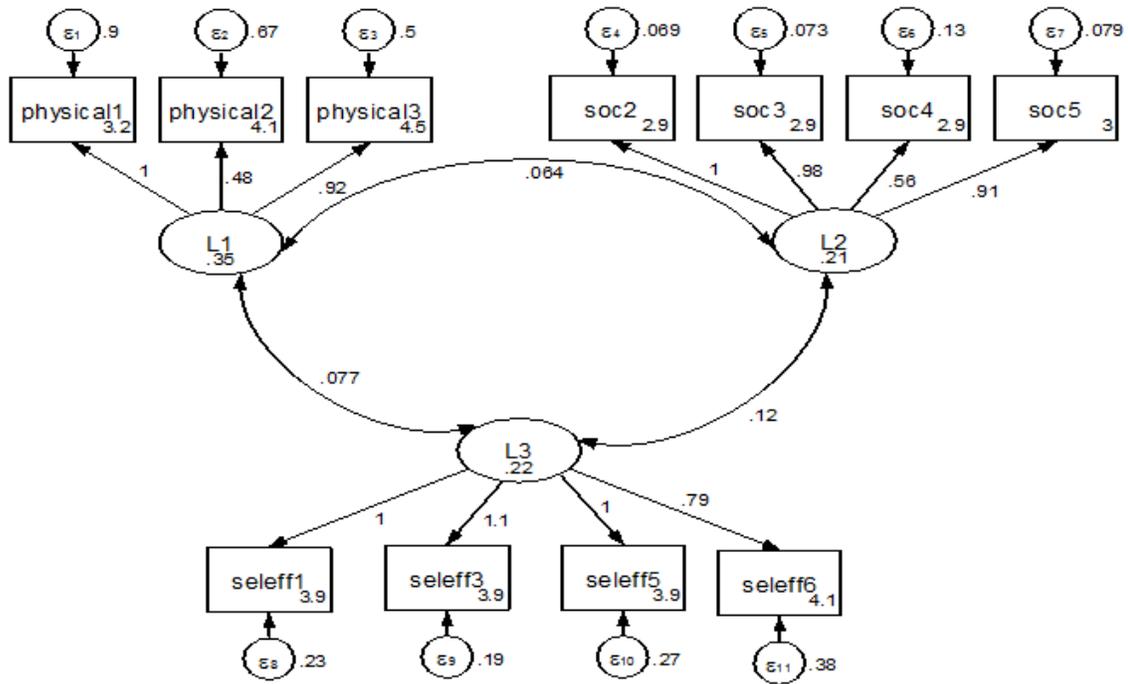


Figure 5.11 Final measurement model and parameter estimates for well-being

Although residuals or error variance between  $|2.5|$  and  $|4.0|$  warrant some attention, if there are no other problems, this might not suggest any changes to the model (Hair et al., 2006). Residuals greater than  $|4.0|$  however suggest “a potentially unacceptable degree of error” (p.797).

There were two items under mental well-being (L3) that had factor loadings ranging from 1 to 1.1, but had very smaller error variances. Since this was a completely standardized solution as mentioned before, despite standardized coefficients larger than 1, small error variance can indicate the presence of exact linear relationship (Joreskog, 1999).

As stated by Joreskog (1999), the cut-off point lower than one for standardized coefficients spur from the misunderstanding with classical exploratory factor analysis. Here, factor loadings are assumed to be correlations if a correlation matrix is analyzed and the factors are standardized and orthogonal or uncorrelated. If factors are correlated or oblique, then the factor loadings are regression coefficients and not merely correlations. Therefore, Joreskog (1999) affirms that in a completely standardized solution, the coefficients can be larger than one in magnitude. Further, a standardized coefficient such as 1.04, 1.40, or even 2.80 do not infer problems with the data, but can suggest high degree of multicollinearity in the data (Joreskog, 1999). To assess multicollinearity, separate sub-construct correlations between respective items were conducted. A multicollinearity problem is indicated when correlation coefficient is greater than .80 (Abu-Bader, 2010). The correlation analysis here were all below .80 and showed no multicollinearity issues [physical well-being (Table 5.23); social well-being (Table 5.24); and mental well-being (Table 5.25)]. The fit statistics (Table 5.22) showed that the modifications also increased the fit of the model (SRMR=0.034). The scale reliability coefficient ( $\alpha=0.78$ ) also showed adequate internal consistency reliability of the well-being measure.

The findings above gave further evidence that the modified well-being measurement model (Figure 5.11.) best represented the actual structure of responses to the well-being scale for this study and provided adequate information between the internal structure of the modified well-being scale and the internal structure of its intended constructs namely, physical well-being(L1), social well-being (L2), and mental

well-being (L3). Although the appropriateness of any given scale cannot be proven, it is important to collect enough evidence to either support or refute the validity of a scale (Spector, 1992). Given the underlying theoretical basis in a construct of a scale, as long as data supporting the theoretical interpretation is collected, the scale is deemed construct valid (Spector, 1992).

Table 5.21 Goodness of Fit Index for Modified 3 factor Model for Well-being Scale

Jackknife replications (80)  
 1 ---+--- 2 ---+--- 3 ---+--- 4 ---+--- 5  
 ..... 50  
 .....

Survey: Structural equation model	Number of obs = 11,134
Number of strata = 1	Population size = 9,357,419
	Replications = 80
	Design df = 79

	(1) [Physical1] L1=1	(2) [Soc2] L2=1	(3) [Seleff11] L3=1		
Measurement	Coef.	Jackknife Std. Err.	t	P> t	[95% Conf. Interval]
Physical1<-					
L1	1	(constrained)			
_cons	3.222364	.0161732	199.24	0.000	3.190172 3.254555
Physical2<-		.0419624	11.54	0.000	.4008391 .5678872
L1	.4843631	.010697	384.79	0.000	4.094866 4.137449
_cons	4.116158				
Physical3<-		.0617587	14.85	0.000	.7941957 1.040051
L1	.9171234	.0123476	367.19	0.000	4.509297 4.558452
_cons	4.533875				
Soc2<-L2	1	(constrained)	379.76	0.000	2.860572 2.890716
_cons	2.875644	.0075724			
Soc3<-L2	.9827968	.0229549	42.81	0.000	.9371063 1.028487
_cons	2.878019	.0083533	344.54	0.000	2.861392 2.894646
Soc4<-L2		.0392278	14.27	0.000	.4818737 .6380358

Table 5.21 continued

_cons	.5599547	.0072677	402.69	0.000	2.912188	2.941119
	2.926654					
Soc5<-L2	.9114785	.025592	35.62	0.000	.860539	.962418
_cons	2.967936	.0074272	399.60	0.000	2.953153	2.98272
Seleff1<-L3	1	(constrained)	349.78	0.000	3.867103	3.911367
_cons	3.889235	.0111192				
Seleff3<-L3	1.092932	.0579851	18.85	0.000	.9775157	1.208348
_cons	3.937248	.0104801	375.69	0.000	3.916387	3.958108
Seleff5<-L3	1.023797	.0822092	12.45	0.000	.8601635	1.18743
_cons	3.943189	.0139176	283.32	0.000	3.915487	3.970891
Seleff6<-L3	.7890844	.0811367	9.73	0.000	.6275859	.9505829
_cons	4.076187	.0130047	313.44	0.000	4.050302	4.102072
Var	.9015787	.0304628			.842938	.9642989
(e.physical1)						
Var	.6667232	.0179421			.6319499	.7034099
(e.physical2)						
Var	.5008208	.0253072			.4528984	.5538139
(e.physical3)						
Var (e. soc2)	.069344	.0066512			.0572921	.0839311
Var (e. soc3)	.0727646	.0063795			.0611127	.086638
Var (e. soc4)	.1342969	.0077984			.1196381	.1507518
Var (e. soc5)	.0789112	.0066282			.0667621	.0932712
Var (e. seleff1)	.2309486	.0270559			.1829132	.2915988
Var (e. seleff3)	.1903032	.0168063			.1596263	.2268756
Var (e. seleff5)	.2733458	.0272443			.2241578	.3333274
Var (e. seleff6)	.3817047	.0231189			.3383532	.4306106
Var (L1)	.3526328	.0274503			.302017	.4117315
Var (L2)	.2122939	.0116128			.1903931	.2367139
Var (L3)	2165511	.0255794			.1711792	.2739489
Cov (L1,L2)	.0639108	.0087461	7.31	0.000	.0465022	.0813195
Cov (L1,L3)	.0767216	.0094776	8.10	0.000	.0578569	.0955863
Cov (L2,L3)	.1243871	.0117501	10.59	0.000	.1009992	.147775

Table 5.22 Goodness of Fit Index for Modified Well-Being Measurement Model

Fit Statistic	Description	Value
Size of residuals		
SRMR	Standardized Root Mean Squared Residual	0.034
CD	Coefficient of Determination	0.985
Test scale= mean (standardized items)		
Average interitem correlation		0.2438
Number of items in the scale		11
Scale reliability coefficient ( $\alpha$ )		0.7800

Table 5.23 Correlation physical well-being factors  
[*observation (N)=11,134, p(w)*]

	Physical1	Physical2	Physical3
Physical1	1		
Physical2	0.2441	1	
Physical3	0.3533	0.2600	1

Table 5.24 Correlation mental well-being factors  
[*observation (N)=11,134, p(w)*]

	Seleff1	Seleff3	Seleff5	Seleff6
Seleff1	1			
Seleff3	0.5704	1		
Seleff5	0.4379	0.4739	1	
Seleff6	0.2370	0.3792	0.4229	1

Table 5.25 Correlation social well-being factors  
*[observation (N)=11,134, p(w)]*

	Soc2	Soc3	Soc4	Soc5
Soc2	1			
Soc3	0.7065	1		
Soc4	0.4331	0.4186	1	
Soc5	0.7346	0.7201	0.5118	1

**Latent variable scores.** After attaining a well-validated three factor model that measured well-being for the study, the next step was to create a composite well-being variable based on the standardized latent variable scores for physical well-being, mental well-being, and social well-being. Latent variable scores are often used interchangeably with factor scores, which is used most commonly in classical exploratory factor analysis (Joreskog, Sorbom & Wallentin, 2006). However, in this study, the focus is on the estimation of latent variable scores such that individual scores on physical well-being, social well-being, and mental well-being can be constructed for every individual in the sample, taking into consideration both the sample mean vector and covariance matrix with same parameter estimates computed in the CFA solution (Joreskog, 2000).

The statistical programming Stata, used in this study for obtaining the latent variable score uses the method proposed by Bollen (1989) where the linear predictions are “computed by substituting the factor scores in place of each latent variable before computing the linear combination of coefficients” (Stata,n.d.,p.2). Joreskog et al. (2006) affirm that the formulas by Bollen & Arminger (1991) are “valid for any method of estimating latent variable scores as linear combinations of observed variables” (p.1).

Stata allowed for the post estimation prediction of predicted values of standardized latent variables namely, physical well-being, social well-being, and mental well-being containing observation-by-observation values. Once the standardized predicted values of latent variable scores referred to as “factor scores” in Stata were calculated for physical well-being, social well-being, and mental well-being, a standardized composite well-being measure was created as a dependent variable for this study. Reliability analysis (Table 5.26) for the well-being score also affirmed an adequate scale reliability coefficient ( $\alpha=.70$ ).

Table 5.26 Reliability Coefficient for the Composite Well-Being Score

Test scale= mean (standardized items)	
Average interitem correlation	0.4376
Number of items in the scale	3
Scale reliability coefficient ( $\alpha$ )	0.7001

### **Confirmatory Factor Analyses for Independent Variables**

The next phase of the analysis involved testing for hypothesized one factor structures for select independent variables (social cohesion, food security status, living arrangement, home and work environment, and public program assistance). A series of CFA were conducted to test whether the items supported the intended subscale structure of select independent variables for this study (Spector, 1992). This section provides results of standardized CFA solutions for these select independent variables.

**Social Cohesion.** There were three observed measures (socohe1, sociohe2, and sociohe3) used for estimating the latent variable of social cohesion (Figure 5.12.). These three items measured responses to questions that asked whether people in neighborhood were willing to help each other, people in neighborhood would watch for children’s safety, and whether people in neighborhood could be trusted on a 4-point Likert scale. These three items measured the perceived degree of social cohesion as described in chapter 4. Parameter estimates from the standardized CFA solution determined the factor loadings ranging from .74 to .84, which were ideal (Hair et al., 2006). The fit statistics (Table 5.27) showed that the hypothesized social cohesion structure was a good representation of items used for measuring social cohesion (SRMR=0.000) as a concept that measured neighborhood closeness, trust, willingness to help, and sharing similar values (Sampson et al., 1997).

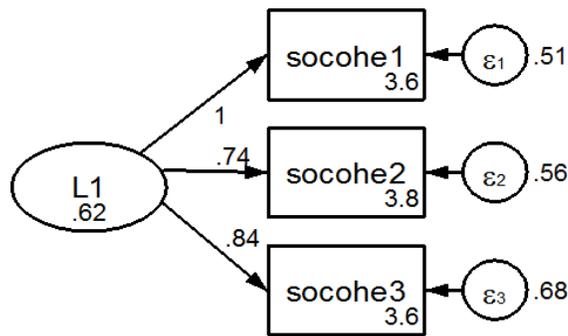


Figure 5.12 Social cohesion model and parameter estimates

Reliability measure was also deemed adequate ( $\alpha=0.70$ ). Once the latent structure was validated, a postestimated latent variable score was generated to be used as a standardized social cohesion score for the next phase of the analysis.

**Material circumstances.** Disparities in material circumstances such as economic hardship, health debilitating circumstances in the physical environment such as housing, work conditions, consumption potential are the most intermediary determinants of health (Solar & Irwin, 2010). These conditions also make population groups more vulnerable to realize their full potential. As described in Chapter 3 and 4, this study will measure material circumstances through food security status, home and work environment, public program assistance, and living arrangements.

**Food security status.** The latent variable of food security status included four observed items (fosec1, fosec2, fosec3, fosec4) measuring physical and economic access to sufficient, safe, and nutritious food (WHO, 2015). The standardized CFA solution (Figure 5.13) showed factor loadings ranging from .51 to .83. Although factor loadings of 0.5, although not ideal can be acceptable, the attempt to improve the fit of the model prompted dropping the item with the lowest factor loading (fosec2). This significantly improved the model (Figure 5.14) with high factor loadings ranging from 0.9 to 0.93. As shown under Table 5.27, the model also showed good fit (SRMR=0.000) and adequate reliability measure ( $\alpha=0.86$ ). Following previous latent variable score process, a postestimation prediction allowed for the computation of the food security status latent variable score to be used for the remainder of the analysis for the study.

**Home and work environment.** The social determinants of health perspective conceptualizes home and work environment as an important intermediary determinant of health. In this study, the physical conditions of home and work environment is conceptualized as the intermediary determinants of vulnerability. The construct of home and work environment was hypothesized to be measured by perceived level of safety in neighborhood, availability and affordability of fresh fruits and vegetables near work and neighborhood, and type of physical environment such as urban, rural, town, city, etc as described in chapter 4. The initial measurement model for home and work environment included four items (Figure 5.15).

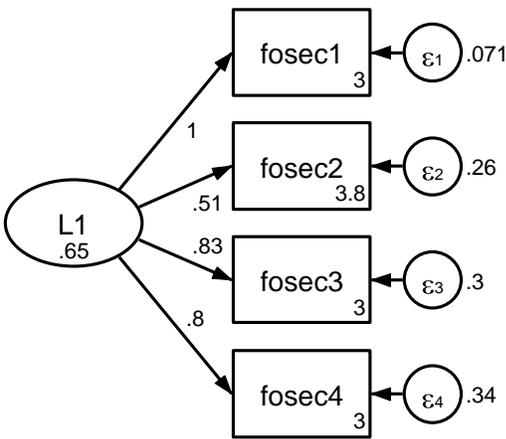


Figure 5.13 Initial Measurement Model & Parameter Estimates for Food Security Measure

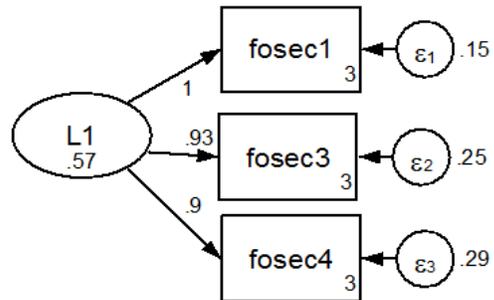


Figure 5.14 Modified Measurement Model & Parameter Estimates for Food Security Measure

The parameter estimates from the standardized CFA solution showed that the model had to be modified due to negative factor loading, showing potential keywood case error (Hair et al., 2006). When the negative factor loading (env3) was dropped from the model, the fit of the model was significantly improved, showing a good fit model (SRMR=0.000). The factor loadings were both low and high. While item env3 loaded very low (factor loading 0.26), the decision was made to retain the item due to its theoretical relevance. Item env3 measured perception regarding safety levels of neighborhood, an important item for neighborhood environment. Although the fit statistic showed a perfectly fitting model (SRMR=0.000), the reliability measure was not adequate (Table 5.27).

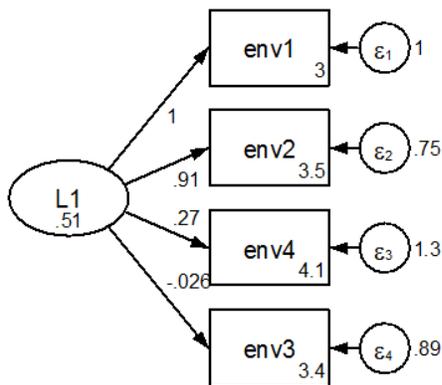


Figure 5.15 Initial measurement model & parameter estimates for home & work environment

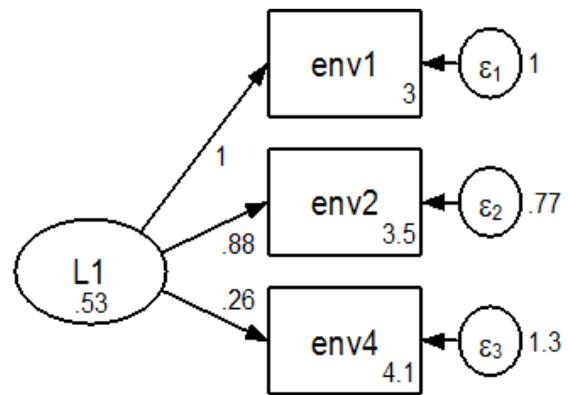


Figure 5.16 Modified measurement model & parameter estimates for home & work environment

As discussed previously, while reliability is generally used as reliability measure, the concern for the validity of the measurement has been questioned. Selltiz, Wrightsman & Cook (1981) state that this concern spurred from the difficulty in obtaining evidence about validity. Reliability is limited in measuring dependability, but not necessarily the intended concept. Selltiz et al. (1981) go on to state that, “a valid measure with low reliability is more useful than a reliable measure of something one does not care to measure” (p.197). Based on the fit statistics of the standardized CFA solution showing the items as a good representation of the intended construct, the modified home and work environment measure was deemed appropriate for the purpose of the study. Following this, a latent variable score was computed for the home and work environment variable.

***Public program assistance.*** Due to the 1996 five year ban on access to public benefit programs, many eligible immigrants were hesitant to enroll in critica health care, job trianing, nutrition, and cash assistance programs due to the fear and confusion caused by the law ( Broder & Blazer, 2011). After the passage of the 1996 laws therefore, there was a sharp decline in the participation of immigrants in public assistance programs, which had negative repurcussions to many immigrant families who lacked the support availabe to other low-income families.

Amid the debates about federal assistance, these means tested public assistance programs make enormous differences in the lives of struggling families. The joint report by the Ford Foundation, the Open Society Institute, and the Annie E. Casey Foundation affirmed that access and utilization of these benefits help families achieve greater

economic security as well as create more economic activity in their communities, in tandem (Boots, 2010). For immigrant families, the situation might be quite different, given their immigrant status. Access and utilization of public assistance programs would benefit eligible low income immigrant families and affect their material circumstances.

The public program assistance variable was hypothesized to measure participation in means tested programs such as TANF/CALWORKS (pubpg1), social security disability insurance(pubpg2), food stamps(pubpg3), supplemental security income(pubpg4), and WIC(pubpg5). The five item structure was put in a standardized CFA solution (Figure 5.17). Parameter estimates suggested factor loadings ranging from 0.12 to 1.1. To improve model fit, items with lower factor loadings were dropped, providing a three item structure with high factor loadings (Figure 5.18). Since estimates higher than one is not an issue in a completely standardized solution (Joreskog, 1999), the highest factor loading of 1.1 was deemed appropriate. The fit statistics (SRMR=0.000) and reliability measure ( $\alpha=0.97$ ) affirmed goodness of fit and reliability (Table 5.27). A post estimated standardized latent variable score was then generated for the public program assistance variable using Stata SE v.14.

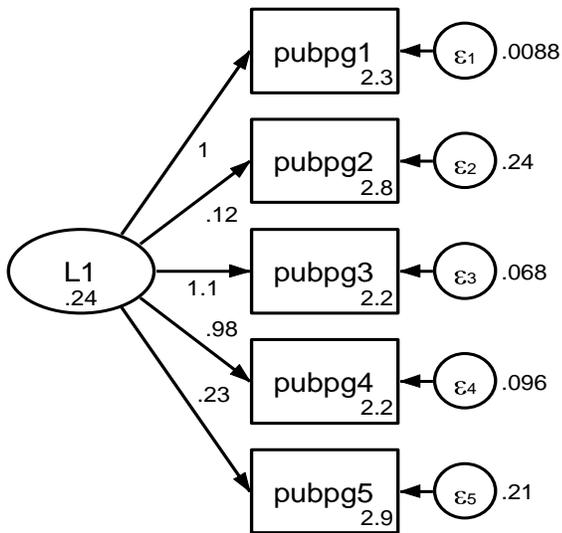


Figure 5.17 Initial measurement model & parameter Estimates for Public Program Assistance

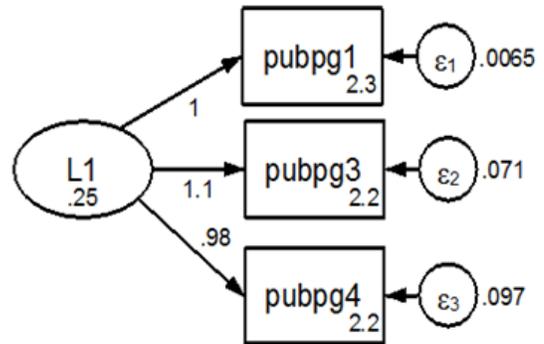


Figure 5.18 Modified Measurement Model & Parameter Estimates for Public Program Assistance

Table 5.27 Goodness of Fit Index & Reliability Measure for Select Independent Variables

CFA Estimation Well-being Dimensions	SRMR (Standardized Root Mean Squared Residual)	CD (Coefficient of determination)	Chronbach's $\alpha$ (Standardized Scale Reliability Coefficient)
Social Cohesion	0.000	0.712	0.7011
<b>Material Circumstances</b>			
Food Security	0.000	0.882	0.8681
Home & Work Environment	0.000	0.519	0.36
Public Program Assistance	0.000	0.978	0.9339

**Living arrangement.** As stated in chapters 3 and 4, living arrangement was conceptualized as an important material aspect of socioeconomic conditions affecting

well-being of populations. The latent structure of living arrangement was hypothesized to include items that measured type of housing (liveag1), home ownership status (liveag2), household size (liveag3), and household composition and family structure (liveag4). Standardized CFA solution could not be estimated for the latent living arrangement variable that initially included these four items (Figure 5.19). The decision was then made to use a single best item to measure living arrangement.

In terms of living arrangement, the structure of a family living in a household has important consequences for economic resources and access to everyday social support such as care for young children or the elderly (Lofquist, Lugaila, O'Connell & Feliz, 2012). The US Census Bureau refers to the family and household composition as an important demographic indicator (Lofquist et al., 2012). While there have been several criticism over the measures of household composition used by the US Census Bureau, Ruggles & Brower (2003) state that household type and household size measures can be misleading. The authors recommend using individual-level measures of living arrangements that curtails to answering specific research questions (Ruggles & Brower, 2003). Based on this recommendation and the availability of data, the individual family type measure (item livag4) was used in the CHIS data to measure living arrangement (Table 5.28). The variable was recoded to single young adult (1), single no kids (2), Single with kids (3), married no kids (4), and married with kids (5), where higher number indicated more people living in a household. As shown in Table 20-1, most immigrant families lived in married families with kids (31.81%), single families with no kids (31.18%), and married families with no kids (28.7%).

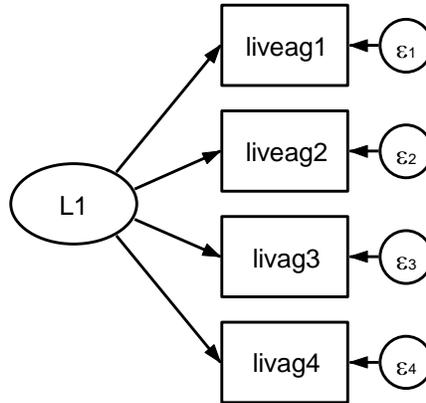


Figure 5.19 Initial measurement model for living arrangement

Table 5.28 Living Arrangement by Household Structure (N=11,134, Population Size: 9,357,419)

Living Arrangement	Frequency	Percent	Proportion	Jackknife S.E.	[95% Conf. Interval]	
Single young adult (18-20years)	191	1.72	.0160528	.0017439	.0125816	.019524
Single no kids	3,472	31.18	.3079011	.0068069	.2943522	.3214499
Single with kids	733	6.58	.0689916	.0046043	.0598269	.0781562
Married no kids	3,196	28.70	.28935	.0069779	.2754609	.3032391
Married with kids	3,542	31.81	.3177045	.0072044	.3033646	.3320445
Total	11,134	100				

### Correlation Matrix

Assumption of linearity include significant correlations among two variables, where one will predict the other (Abu-Bader, 2006). Therefore, best practice suggests conducting appropriate bivariate statistical test to examine the intercorrelation among all

independent (factors) and dependent (criterion) variables before conducting appropriate regression analysis. Correlation analysis also helps in identifying multicollinearity issues. In the presence of multicollinearity issue, two independent variables are highly correlated in such a way that both variables essentially measure the same thing (Abu-Bader, 2006). This presents several challenges such as increase in the variance of the coefficient estimates, making the estimates extremely sensitive to minor changes in regression models (Hair et al., 2006). To examine intercorrelations and assess the degree of collinearity issue, Pearson correlation analysis was conducted between all independent and dependent variables for the study. All pair-wise correlations with Pearson correlation coefficient ( $r$ ) for each pair of factors are succinctly represented in a correlation matrix (Table 5.29).

The correlation matrix reveal significant bivariate correlations between the criterion well-being and all independent variables with the exception of public program assistance. There were also no issues of multicollinearity ( $r < 0.80$ ). In general, factors that are significantly correlated with the criterion are entered in regression analysis while factors that are not significantly correlated with the criterion are removed from the analysis (Abu-Bader, 2006). The correlation matrix showed that the public program assistance variable was not significantly correlated with the criterion or any other factors. Therefore, this variable was not entered in the proceeding regression analysis. All other factors that were significantly correlated with the criterion variable or other were then entered in the regression analysis.

Table 5.29 Correlation Matrix of Dependent & Independent Variables

	Well Being	Immigrant Status	Income	Education	Employment	Social Class	Marital Status	Occupation	Social Cohesion	Food Security	Public Program	Home & Work Env.	Living Arrangement
<b>Well Being</b>	1												
Immigrant Status	0.0143	1											
Income	0.1713*	-0.1616*	1										
Education	0.1381*	-0.2639*	0.5048*	1									
Employment	0.1716*	0.0912*	0.2865*	0.1594*	1								
Social Class	0.1734*	-0.2618*	0.7147*	0.5498*	0.2408*	1							
Marital Status	-0.0883*	0.0119	-0.2345*	-0.0588*	-0.0548*	-0.1558*	1						
Occupation	0.1407*	0.0478*	0.2465*	0.1675*	0.8172*	0.2189*	-0.0395*	1					
Social Cohesion	0.1125*	-0.1088*	0.2171*	0.1905*	0.0372*	0.2645*	-0.0842*	0.0383*	1				
Food Security	0.1785*	-0.1190*	0.0193*	0.0864*	-0.0611*	0.0389*	0.0119	-0.0422*	0.1114*	1			
Public Program Assistance	0.125	-0.0131	0.0107	0.0028	0.0152	0.0146	-0.0175	0.0106	-0.0037	0.0119	1		
Home & Work Env.	0.1813*	-0.0170	0.2787*	0.2207*	0.2182*	0.2699*	-0.0613*	0.1957*	0.2039*	0.1630*	0.0014	1	
Living Arrangement	0.0909*	0.2115*	0.1831*	-0.0129	0.2104*	-0.0153	-0.5897*	0.1461*	-0.0103	-0.0750*	0.018	0.0972*	1

Dependent Variable: **Well Being.**

Independent Variables: *Immigrant Status, Income, Education, Employment, Social Class, Marital Status, Occupation, Social Cohesion, Food Security, Home & Work Environment, Public Program Assistance, Living Arrangement*

\* $p < 0.05$

### **Moderated Hierarchical Multiple Regression**

In essence, hierarchical multiple regression is conducted to examine the structural properties of certain variables that meaningfully contribute to the coefficient of determination ( $R^2$ ) only when other related variables are partialled out from the equation (Cohen & Cohen, 2010). This is because the contribution of  $R^2$  associated with any variable largely depends on other variables in the equation, as often times in social sciences variables are correlated to one another (Pedhazur, 1997).

In total, five significant models were identified through hierarchical multiple regressions with different combination of predictors to explain the variance in immigrant well-being outcomes. The sequence of the independent variables that are entered in the regression equation requires a thoughtful input by the researcher as it contributes to the researcher's understanding of the phenomenon under study producing successive tests of the validity of hypotheses based on the sequence of variables (Cohen & Cohen, 2010). The authors also note that hierarchical analysis can tell a story that single simultaneous analysis for all  $k$  variables cannot in many cases such as interactions, curvilinear relationships, and even missing data. Based on the theoretical model proposed in chapter four, the hierarchical multiple regression examined the incremental validity of variables in a sequential order. Pedhazur (1997) postulates that in order to reach valid and relevant results, it is critical to apply hierarchical regression when testing theory-based hypotheses and provide an exhaustive rationale for selecting a specific sequence of entering predictor variables in the equation. The conceptual framework presented in chapter four sought to

examine the role of structural and intermediary determinants of health in immigrant well-being outcomes. It also sought to examine the overlapping effects of structural vulnerabilities inherent in factors constructed by the social structure.

Based on the conceptual framework, the control variable healthcare utilization, income, education, employment, and occupation were entered in the first block as the structural determinants of immigrant health inequities related to economic status in the hierarchical regression model. In the second block, the social and demographic variables (gender, race, class, age, and marital status) were entered as the structural determinants of immigrant health inequities referred to as structural vulnerabilities. The third block included the intermediary determinants of vulnerability variables (immigrant status, social cohesion, food security, living arrangement, and home and work environment).

Examination of the overlapping effects of structural vulnerabilities was a key feature of the conceptual framework where moderated relationships between power structures such as gender, race, and class were hypothesized to affect immigrant well-being. Hayes (2013) states moderation analysis is the appropriate strategy to investigate whether a certain variable influences or is related to the size of one variable's effect on another. Moderated relationships in general are conceptualized in terms of interactions (Hayes, 2013). Interaction examines if the effect of one or more independent variables depend on the level of another independent variable (Jaccard & Turrisi, 2003). It provides better understanding of whether it is important to know about more than one independent variable to accurately understand what happened in the study. In essence, it answers the

question of whether there is a special combination of independent variables that creates a unique effect.

Before creating interaction terms, it is generally recommended that the variables be centered (Aiken & West, 1991) or standardized (Frazer, Tix, Barron, 2004) to provide meaningful results. However, centering is recommended in the case of continuous variables, it is not necessary to center categorical variables (Williams, 2015). Since most of the interaction variables in this study are categorical and standardized, centering the variables was not necessary. The two way interaction terms were first computed for gender, race, class, age, marital status by multiplying one variable with other to get a combination of six sets of second order interaction terms (gender x race; gender x class; race x class; gender x age; gender x marital status; marital status x age). Similarly, a three way interaction term was created in the same way producing two sets of higher order interaction terms (gender x race x class, gender x age x marital status). The fourth block then, included the two-way interactions first (gender x race; gender x class; race x class; gender x age; gender x marital status; marital status x age). While adding interaction terms in the regression model, it is recommended to either choose forward selection or backward selection method. Finally, the two three way interactions (gender x race x class and gender x marital status x age) were included in the fifth model.

As shown in Table 5.30. and Table 5.31, results showed that controlling for healthcare utilization, income, education, employment, and occupation accounted for 8.4 % of the variance in immigrant well-being,  $F(5,11128) = 60.38$ ,  $p < 0.001$  (Table 5.31 ). Income ( $\beta = .092$ ,  $p < 0.001$ ), education ( $\beta = .092$ ,  $p < .001$ ), and employment ( $\beta = .045$ ,

$p < 0.001$ ) were also found to significantly predict immigrant well-being. However, occupation was not a statistically significant predictor ( $\beta = -.195$ ,  $p = 0.41$ ). When the social and demographic variables (gender, race, class, age, marital status) were added in Model 2, class ( $\beta = .04444$ ,  $p < 0.01$ ) and marital status ( $\beta = .0710$ ,  $p < 0.001$ ) were statistically significant while gender, race, and age were not significant. The social and demographic variables accounted for 9.1% of the variance in immigrant well-being,  $F(10, 11123) = 40.603$ ,  $p < 0.001$  and added an additional incremental variance over the variables of economic status in Model 1 [ $\Delta R^2 = 0.007$ ,  $\Delta F(5, 11123) = 18.0225$ ,  $p < 0.001$ ]. In Model 3, the intermediary determinants of vulnerability equated to variables of immigrant health inequities such as immigrant status, social cohesion, food security, living arrangement, and home and home environment were added to the model. Once these variables were added, class ( $\beta = .0294$ ,  $p = 0.137$ ) showed no statistical significance. However, immigrant status ( $\beta = .065$ ,  $p < 0.05$ ), social cohesion ( $\beta = .0505$ ,  $p < 0.05$ ), food security ( $\beta = .2449$ ,  $p < 0.001$ ), and home and work environment ( $\beta = .1304$ ,  $p < 0.001$ ) showed that they were significant predictors of immigrant well-being, controlling for utilization of healthcare. The intermediary determinant variable living arrangement, which measured family structure did not show any statistical significance ( $\beta = 0.1304$ ,  $p < 0.001$ ). These variables explained 13% of variance in immigrant well-being [ $F(15, 11118) = 32.576$ ,  $p < 0.001$ ], adding to a significant incremental variance over and beyond the variables in models 1 and 2,  $\Delta R^2 = 0.039$ ,  $\Delta F(5, 11118) = 100.247$ ,  $p < 0.001$  (Table 5.31).

In block 4, although the overall two-way interactions did not significantly add additional variance to immigrant well-being outcomes over and beyond the first order effects, [ $\Delta R^2 = 0.001$ ,  $\Delta F(4, 11114) = 2.760$ ,  $p < 0.05$ ], results showed that social class ( $\beta = .1276$ ,  $p < 0.05$ ) was a significant predictor when the second order interactions were added to the model. Results also showed significant negative interaction between gender and class ( $\beta = -.0520$ ,  $p = 0.05$ ). Baron and Kenny (1986) affirm the evidence of interaction effect when the regression coefficient ( $\beta$ ) for the interaction term predicting the dependent variable, in this case well-being is significant (Baron & Kenny, 1986). The significant interaction between gender and class showed that the relationship between gender and immigrant well-being was moderated by varying levels of social class. Further, the high and low levels of immigrant well-being moderated by social class also varied for males and females. Although the coefficient for interaction between gender and class seemed small ( $\beta = -.0520$ ), the presence of this interaction in itself is a significant finding. Further, authors have reiterated the small nature of effect sizes of interactions in social science research ranging anywhere from squared semi-partial or partial correlations of .01 to .05 (Cohen et al., 2003, p.297). Results from model 4 showed no other significant interactions. Results also showed that income, education, employment, class, immigrant status, social cohesion, food security, and home and work environment were still significant predictors of immigrant well-being. However, marital status that showed statistical significance in model 3 before the two-way interactions were added did not show any statistical significance ( $\beta = .0206$ ,  $p = 0.4$ ).

In model 5 (Table 5.30), although the high order interactions between gender, race, class and gender, age, marital status did not add a large incremental variance, the incremental variance added [ $\Delta R^2 = 0.001$ ,  $\Delta F(4, 11110) = 8.557$ ,  $p < 0.001$ ] was still significant explaining 13.3% variance in immigrant well-being outcomes ( $R^2 = 0.133$ ,  $F(23, 11110) = 21.63$ ,  $p < 0.001$ ) as shown in Table 5.31. Further, the incremental variance in immigrant well-being although significant was not over and above the direct associations of first order and second order interaction effects, model 5 showed several significant two-way and three-way interactions.

The demographic intersections were all significant: gender x age ( $\beta = .1007$ ,  $p < 0.05$ ), gender x marital status ( $\beta = .1625$ ,  $p < 0.05$ ), age x marital status ( $\beta = .0594$ ,  $p < 0.05$ ), gender x marital status x age ( $\beta = -.0383$ ,  $p < 0.05$ ). The social intersections however were not significant: gender x race ( $\beta = -.0299$ ,  $p = 0.3$ ), gender x class ( $\beta = -.0924$ ,  $p = 0.09$ ), class x race ( $\beta = -.0240$ ,  $p = 0.18$ ), gender x race x class ( $\beta = -.0121$ ,  $p = 0.2$ ). Income, education, employment, class, age, immigrant status, social cohesion, food security, and home and work environment showed as significant predictors of immigrant well-being (Table 5.30).

Table 5.30 Hierarchical multiple regression

*[pweight (rakedw0) = sum of 9.3574e+06*

	Well-Being	$\beta$	Robust SE	t	p>  t	[95% Conf. Interval]	
<b>Model 1</b>	health utilization	-.2362	.0226	-10.43***	0.000	-.2806	-.1918
	income	.0920	.0139	6.60***	0.000	.0647	.1193
	education	.0455	.0119	3.80***	0.000	.0220	.0689
	employment	.0584	.0115	5.07***	0.000	.0358	.0809
	occupation	-.0195	.0240	-0.81	0.416	-.0666	.0275
	_cons	-.0648	.0649	-1.00	0.318	-.1921	.0624
<b>Model 2</b>	health utilization	-.2375	.0234	-10.14***	0.000	-.2834	-.1915
	income	.0450	.0166	2.71**	0.007	.0125	.07753
	education	.0383	.0129	2.95**	0.003	.0129	.0637
	employment	.0539	.0125	4.29***	0.000	.0292	.0784
	occupation	-.0173	.0236	-0.73	0.465	-.0637	.0291
	gender	-.0142	.0352	-0.40	0.686	-.0834	.0548
	race	.0097	.0069	1.39	0.165	-.0039	.0233
	class	.0444	.0202	2.20*	0.028	.0047	.0841
	age	-.0170	.0106	-1.61	0.107	-.0378	.0037
	marital status	.0710	.0149	4.75***	0.000	.0417	.1004
_cons	-.1874	.1076	-1.74	0.081	-.3983	.0234	
<b>Model 3</b>	health utilization	-.226	.0229	-9.87***	0.000	-.2707	-.1810
	income	.0379	.0165	2.30***	0.022	.0056	.0703
	education	.0275	.0128	2.15*	0.032	.0024	.0526
	employment	.0527	.0124	4.24***	0.000	.02834	.0771
	occupation	-.0205	.0229	-0.90	0.370	-.0654	.0244
	gender	-.0032	.0347	-0.09	0.926	-.0712	.0648
	race	.0096	.0069	1.40	0.162	-.0038	.0230
	class	.0294	.0198	1.49	0.137	-.0094	.0682
	age	-.0173	.0107	-1.61	0.107	-.0383	.0037
	marital status	.0670	.0145	4.63***	0.000	.0387	.0955
immigrant status	.065	.0329	1.97*	0.049	.0004	.1297	

Table 5.30 continued

	social cohesion	.0505	.0242	2.09*	0.037	.0030	.0980
	food security	.2449	.0284	8.62***	0.000	.1893	.3007
	living arrangement	.0179	.01271	1.41	0.158	-.0069	.0429
	home & work env.	.1304	.0326	4.00***	0.000	.0665	.1944
	_cons	-.2701	.1322	-2.04*	0.041	-.5293	-.0110
<hr/>							
<b>Model 4</b>	health utilization	-.2276	.0229	-9.89***	0.000	-.2727	-.1825
	income	.0396	.0166	2.37*	0.018	.0068	.0722
	education	.0287	.0128	2.24*	0.025	.0036	.0538
	employment	.0552	.0128	4.32***	0.000	.0302	.0803
	occupation	-.0223	.0228	-0.98	0.326	-.0667	.0221
	gender	.0856	.1397	0.61	0.540	-.1882	.3595
	race	.0251	.0274	0.91	0.361	-.0287	.0789
	class	.1276	.0527	2.42*	0.016	.0242	.2310
	age	.0001	.0422	0.00	0.997	-.0825	.0828
	marital status	.0206	.0518	0.40	0.691	.0809	.1221
	immigrant status	.0655	.0330	1.97*	0.049	.0031	.1309
	social cohesion	.0511	.0244	2.10*	0.036	.0034	.0989
	food security	.2440	.0281	8.68***	0.000	.1889	.2991
	living arrangement	.0178	.0127	1.40	0.161	-.0070	.0427
	home & work env.	.1314	.0325	4.03***	0.000	.0674	.1952
	gender x race	-.0017	.0132	-0.13	0.895	-.0276	.0241
	gender x class	-.0520	.0270	-1.93*	0.05	-.1049	.0008
	class x race	-.0058	.0056	-1.03	0.301	-.0168	.0051
	gender x age	-.0098	.0188	-0.52	0.601	-.0468	.0270
	gender x marital status	.0296	.0309	0.96	0.339	-.0310	.0903
	age x marital status	.0002	.0082	0.03	0.975	-.0158	.0164
_cons	-.4639	.2471	-1.88	0.061	-.9484	.0204	
<hr/>							
	health utilization	-.2293	.0229	10.01***	0.000	-.2742	-.1844
	income	.0395	.0167	2.36*	0.018	.0067	.0722
	education	.02863	.0128	2.23*	0.026	.0034	.0538
	employment	.0567	.0128	4.42***	0.000	.0316	.0819
	occupation	-.0235	.0227	-1.04	0.300	-.0679	.0209

Table 5.30 continued

<b>Model 5</b>	gender	-.1877	.2479	-0.76	0.449	-.6736	.2983
	race	.0683	.0538	1.27	0.204	-.0370	.1737
	class	.1883	.0909	2.07*	0.038	.0101	.3665
	age	-.1730	.0836	-2.07*	0.039	-.3369	-.0091
	marital status	-.1813	.1018	-1.78	0.075	-.3808	.0182
	immigrant status	.0663	.0334	1.99*	0.047	.0009	.1318
	social cohesion	.0491	.0244	2.01*	0.045	.0012	.0970
	food security	.2436	.0279	8.71***	0.000	.1887	.2984
	living arrangement	.0178	.0127	1.40	0.162	-.0071	.0427
	home & work env.	.1322	.0326	4.06***	0.000	.0684	.1961
	gender x race	-.0299	.0321	-0.93	0.352	-.0928	.0330
	gender x class	-.0924	.0550	-1.68	0.093	-.2002	.0156
	class x race	-.0240	.0183	-1.32	0.188	-.0598	.0117
	gender x age	.1007	.0512	1.97*	0.049	.004	.2011
	gender x marital status	.1625	.0688	2.36*	0.018	.0276	.2974
	age x marital status	.0594	.0249	2.38*	0.017	.0105	.1082
	gender x marital status x age	-.0383	.0159	-2.40*	0.017	-.0696	-.0069
	gender x class x race	.0121	.0115	1.06	0.291	-.0104	.0346
	_cons	-.0455	.3801	-0.12	0.905	-.7907	.6995

\*\*\* $p < 0.001$  \*\* $p < 0.01$  \* $p < 0.05$

Table 5.31 Summary of hierarchical multiple regression

<b>Model</b>	<b>R<sup>2</sup></b>	<b>F(df)</b>	<b>p</b>	<b>ΔR<sup>2</sup></b>	<b>ΔF(df)</b>	<b>p</b>
1	0.084	60.385 (5,11128)	0.000			
2	0.091	40.603 (10,11123)	0.000	0.007	18.022(5,11123)	0.000
3	0.130	32.576 (15,11118)	0.000	0.039	100.247(5,11118)	0.000
4	0.132	23.494 (19,11114)	0.000	0.001	2.760 (4,11114)	0.011
5	0.133	21.613 (23,11110)	0.000	0.001	8.557 (4,11110)	0.000

Table 5.32 Effect of intermediary determinants alone on well-being outcomes  
(sum of wgt= 9.3574e+06)

Well-Being	$\beta$	Robust SE	t	P> t	[95% Conf. Interval]	
healthu	-.249	.0224	-11.09*	0.000	-.2931	-.2050
immigrant	.017	.0319	0.52	0.602	-.0460	.0794
social cohesion	.086	.0239	3.64*	0.000	.0401	.1337
food security	.242	.0289	8.39*	0.000	.1857	.2990
living arrangement	.017	.0127	1.37	0.171	-.0075	.0424
home & work environment	.218	.0310	7.05*	0.000	.1579	.2795
_cons	.434	.090	4.78*	0.000	.2559	.6124

$R^2=0.103$ ,  $F(6,11127)=48.583$ ,  $*p<0.001$

### Plotting the interaction

Graphs were plotted for all significant interactions. Aiken and West (1991) suggest graph plots to be good visual indication of the nature of an interaction effect that can also provide information on the direction of the slopes on the basis of face validity. The graphs also provide useful information on the nature of interaction, whether they are ordinal or disordinal. Ordinal interactions are where the regression lines are not parallel and they do not intersect (Jaccard & Turrisi, 2003). In a disordinal interaction, the regression lines intersect with one another giving a crossover interaction (Jaccard & Turrisi, 2003).

**Gender and class.** In the graph showing the disordinal interaction between gender and class (Figure 5.20.), the regression of well-being and gender is plotted at the low and high levels of class. The graph shows that the effect of class is greater in

magnitude for women than for men, i.e. higher class increases well-being of immigrant women more than they increase the well-being of men. As a result, the difference between well-being outcomes of men and women depends on the level of class. The higher the class, the greater the expected difference between a man and a woman in levels of well-being.

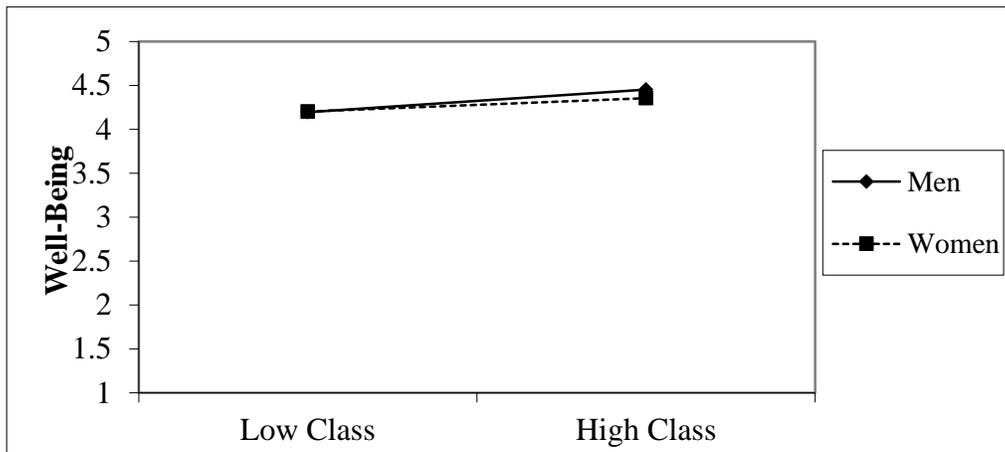


Figure 5.20 Interaction Effect (Gender x Class)

**Gender and marital status.** The results for the interaction between gender and marital status showed a significant interaction between gender and marital status on immigrant well-being outcomes ( $\beta = -.1625$ ,  $p < 0.05$ ). Plotting these results in the graph (Figure 5.21) further suggested that the ordinal interaction effect was more significant for women than men across different levels of marital status. At lower levels of marital status where individuals are widowed, divorced or separated, well-being levels increase more for women than men. As marital status moves up to higher levels such as married in this case (coded 4) however, well-being decreases and this decrease is more for women than

men. Here, gender moderates the relationship between marital status and well-being across different levels of marital status.

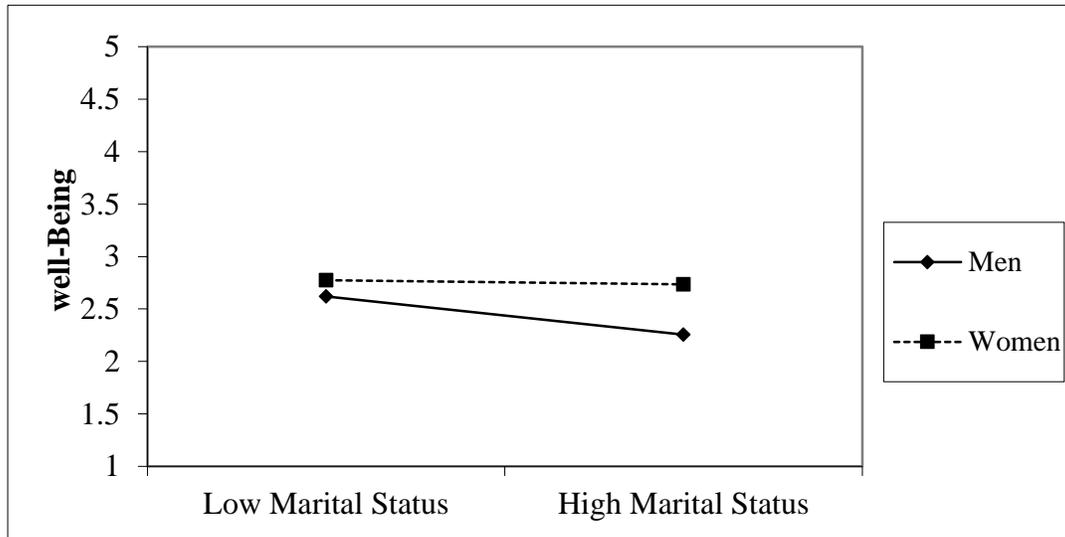


Figure 5.21 Interaction Effect (Gender x Marital Status)

**Gender and age.** Similarly, the results showed that age and gender also had a significant interaction effect on well-being outcomes. Here, the graph shows a disordinal interaction effect where gender and age have a crossover interaction. At low and high levels of age here, the effects for men and women on well-being outcomes are completely different. The graph shows that for men, well-being increases at low levels of age and decreases at high levels. For women, well-being increases from low levels of age to high levels. In essence, men and women have different well-being outcomes across different age levels. While men have higher levels of well-being when they are young, this decreases as they age. However, this is opposite for women where women have lower

levels of well-being when they are young, but well-being levels increase with their increasing age compared to men (Figure 5.22).

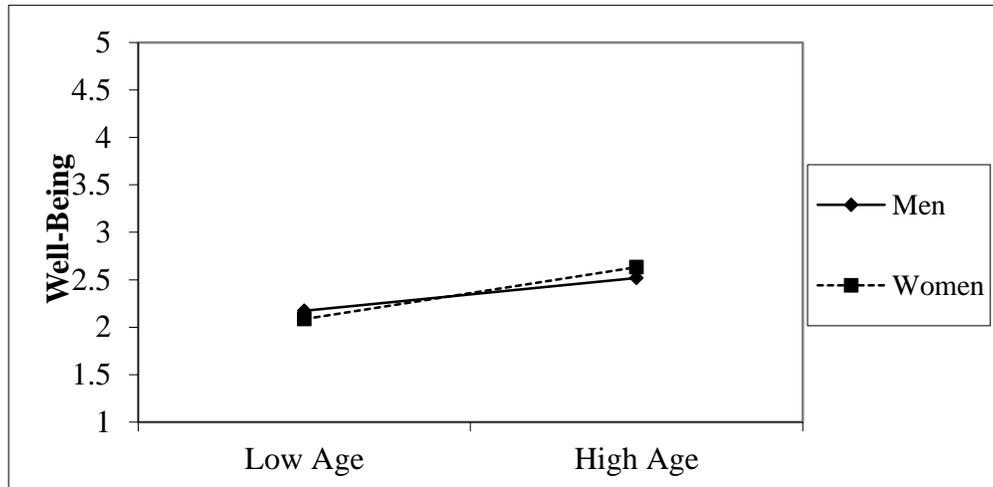


Figure 5.22 Interaction Effect (Gender x Age)

**Age and marital status.** Marital status and age also shows significant ordinal interactions (Figure 5.23). The graph shows that being married increases well-being levels from low age to high age. In essence, the graph shows that individuals who fall in the high age range and are married have higher well-being levels than singles. For singles however, well-being levels decreased with increasing age.

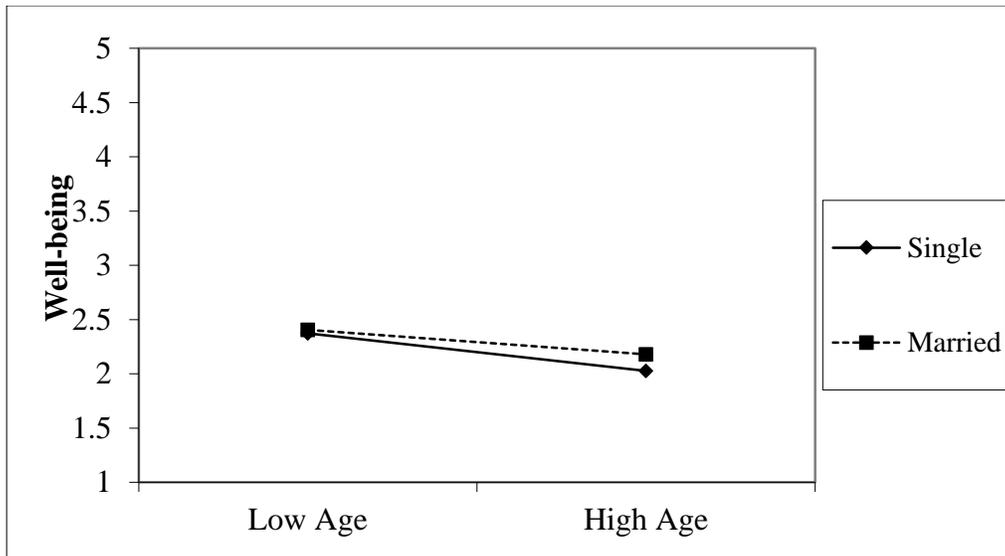


Figure 5.23 Interaction effect (Age x marital status)

**Gender, age, and marital status: three-way interaction.** Relationship between gender and well-being, at high and low values of age and marital status show a significant three-way interaction (Figure 5.24).

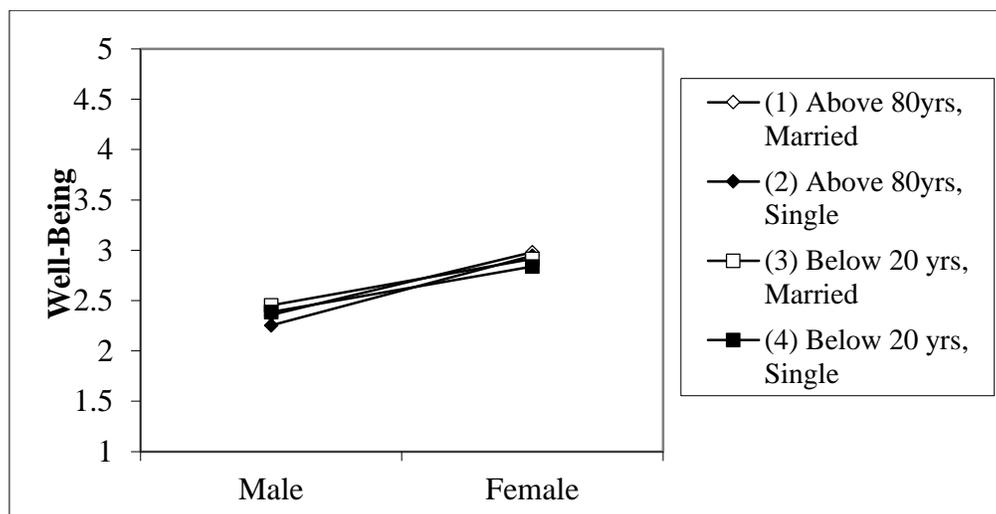


Figure 5.24 Interaction effect (Gender x Age x Marital Status)

A three-way statistical interaction is present when the effect of one independent variable on the dependent variable changes based on the level of another independent variable (Jaccard and Turrisi). If the effect of gender on well-being for a certain level of age or a category of marital status is different from the effect of gender on a different level of age or marital status, then there is an interaction. The graph (Figure 5.24) shows that for men being married increases the levels of well-being and this is better if they are in higher age range (above 80 years married). For women, this is exactly the opposite. Higher age and marital status (married) is associated with lower levels of well-being in women. So, what can be deciphered then is that gender and well-being is moderated by age and marital status and that the levels of well-being for male and female are conditional based on age and marital status. In a nutshell, the graph shows that there is a significant disordinal interaction.

It is difficult to examine however, if a significant three-way interaction is the result of significant differences among any two, three, or all four combinations of the two moderator variables whether at high and low levels. It is also not clear whether any difference between pairs of slopes is significant; or whether an individual slope is a significant predictor of the dependent variable.

Although, the moderated hierarchical regression and the graphs although provided important results and meaningful interpretations respectively, what is still not clear, particularly in the three way interaction is whether the results are significant among any two moderator variables at varying levels (Dawson & Richter, 2006). What is also not clear is how these intersecting effects are distributed across the exceedingly diverse

immigrant populations. This required further statistical probing to examine the analysis of intersections. The next step to the analysis was the analysis of intersectionality to further examine the interactions across diverse levels of structural variables in the study.

### **Analysis of Intersectionality**

In this study, intersectionality has been conceptualized as a system of interactions between inequality creating social structures arising from people's position in a society through factors such as gender, race, class, age, marital status which put populations across different levels of structural vulnerabilities. Although the moderated hierarchical regression provide some information on the moderated relationships, due to the exceedingly diverse group of the immigrant population, further analysis of the interactions were deemed relevant. A series of multiple regression were conducted to examine intersections between gender, race, and class and again, gender, marital status, and age. Both lower order and higher order interactions were further explored to examine the main effects of the variables and their subsequent lower order and higher order interactions.

#### **Main effects**

The first step was to essentially partial out the main effects of gender, race, and class. Similarly, the main effect of gender, age, and marital status. A main effect is basically the effect of an independent variable on the dependent variable, ignoring the effects of all other independent variables. In an interaction analysis, it is mandatory to partial out the main effect even though they are not statistically significant or even if

there is apriori hypothesis supporting its non-relevance (Nelder 1977; Cox 1984). In addition, Jaccard and Wan (1995) contend that the variance of the interaction term can only be explained within the context of the variance of its main effects. Literature suggest that immigrant well-being is accelerated by the combination of gender, race, class in a non-linear fashion that cannot be adequately modeled by the additive marginal effects of gender, race, and class alone (Gill, 2001).

A series of multiple regression analyses were conducted comparing men and women to examine the effect of the overlapping social intersections (race, class, gender) and the demographic intersections (gender, age, marital status). A reference category (called base category in Stata) was created as a criteria under which all other categories of the variable would be compared. Selection of a reference category should not be an arbitrary decision (Miller, 2013). Best practice recommendation for selecting reference category is based on theoretical criterion, previous literature, sample size or joint distribution of variables in the data (Miller, 2013). The reference categories therefore were created based on all these best practice recommendations. The reference categories included gender (men or women depending on the model), white for race, and above 300% FPL as the reference category for class. Similarly, below 20 years was chosen as the reference category for age and single status as the base category for marital status. These reference categories were chosen due to their prominence in previous literature. Tables 5.33, 5.34, and 5.35 show significant combined regression results for men and women. Only significant results were chosen for the tables due to the complexity of the

tables that would ease interpretation for the purposes of this study. Detailed results of the regression analyses are included in Appendix D.

Results from the main effects (Table 5.33) showed that gender was significantly related to immigrant well-being. Although levels of well-being were similar for both men and women, they were significantly opposite for them. Men ( $\beta = .1694307$ ,  $p < .05$ ) had higher levels of well-being compared to women ( $\beta = -.1694307$ ,  $p < .05$ ). Race was a significant predictor for Black men compared to whites. The main effect also showed that being black was associated with increased the levels of well-being ( $\beta = .3621181$ ,  $p < .05$ ). The main effect of class was particularly notable where it showed class to be a significant predictor, particularly for women. Women who fell under the 0-99%FPL ( $\beta = -.445$ ,  $p < .05$ ) and 200-299% FPL ( $\beta = -.359$ ,  $p < .05$ ) class levels had lower levels of well-being.

With respect to age, increase in age was associated with lower levels of well-being. As shown in Table 5.35, increase in age was associated with lower levels of well-being. Age was negatively associated with levels of well-being for women in the 21-30 ( $\beta = -.221$ ,  $p < .05$ ); 41-50 ( $\beta = -.533$ ,  $p < .05$ ); 51-60 ( $\beta = -.787$ ,  $p < .05$ ); and 71-80 ( $\beta = -.953$ ,  $p < .05$ ) age groups. Age was negatively associated for men in the 31-40 ( $\beta = -.460$ ,  $p < .05$ ); 41-50 ( $\beta = -.533$ ,  $p < .05$ ); 71-80 ( $\beta = -.427$ ,  $p < .05$ ), and above 80 ( $\beta = -.471$ ,  $p < .05$ ) age range. Similarly marital status was a significant predictor of immigrant well-being and this was more significant for women. Women who were either widowed, separated, divorced ( $\beta = -.3622$ ,  $p < .05$ ) and living with a partner ( $\beta = -.534$ ,  $p < .05$ ) had lower levels of well-being compared to singles.

## Interaction effects

**Lower order interactions.** When it comes to examining a higher order interaction, it is still critical to include the lower order interactions. Authors claim that neglecting to include lower-order interactions can violate the principle of non-invariance as the common transformations (such as centering and standardization) can substantively change the coefficient values (Friedrich 1982). In the series of multiple regression, there were series of two-way interactions added to the regression model (gender x race, race x class, gender x class) and (gender x age, age x marital status, gender x marital status). Results from the lower order interaction effect (Table 5.33) showed that both gender x class and race x class had significant interaction effects on immigrant well-being. There was a significant interaction effect between gender and class and this was significant for men who fell in the 100-199% FPL (FPL2) and women who fell in the same class level (FPL 2). However, this interaction effect showed that for men in the FPL 2 class, there was a positive interaction between well-being and class ( $\beta = .317, p < .05$ ). On the contrary, for women falling in the same FPL 2 class, there was a significant negative interaction between well-being and class ( $\beta = -.317, p < .05$ ). So, the effect of class on well-being is conditional on gender. Similarly, race and class had significant negative interaction effect for Pacific Islanders in the FPL 2 class ( $\beta = -2.47715, p < .05$ ) and Black in the FPL 2 class ( $\beta = -.867715, p < .05$ ). So, the aforementioned dynamics between race/ethnicity and class were more pronounced for Pacific Islanders and Black.

Table 5. 35 showed significant interactions between gender and marital status where the effect of marital status on well-being was different for men

widowed/separated/divorced ( $\beta = -.489408$ ,  $p < .05$ ) and women who were widowed/separated/divorced ( $\beta = .489408$ ,  $p < .05$ ). Age and marital status also had significant interaction effects, where the effect between marital status and age on well-being was more pronounced for widowed/separated/divorced and this was also different for men and women (Table 5.35).

**Higher-Order Interactions.** Hierarchical nature of increasing levels of interaction facilitates the examination of exploratory hypotheses as these levels can be increased systematically (Aiken and West, 1991). Essentially, higher order interactions are interactions between lower-order interaction effects and other coefficients as well as interaction effects between interaction effects. Specifying these terms naturally introduces a hierarchy into the model as the interpretation of these effects depends on the assumed levels of constituent terms. Higher order interactions reveal more about the structure of dependency effects in the dependent variables (Cornell and Montgomery 1996). Linking the analysis of discrete and continuous variables, the higher order interaction discusses the interpretation in conditional independence (De Leeuw, 1990). Table 5.33 and 5.35 show the higher order or three way interactions between gender x race x class and gender x age x marital status. In Table 5.33, gender x race x class show significant negative interaction where the overlapping effects of gender x race x class are more pronounced for Asian, Latino, Pacific Islanders, and Black.

The interaction effect shows that the effect of gender on well-being for a certain level of class or category of race is different from the effect of gender on a different level of class or race. Table 5.33 shows that for the effect of gender on well-being for Asians in

the FPL2 class was more pronounced for Asian men ( $\beta = -.314, p < .05$ ). Similarly, the effect of gender on well-being for Latinos in the FPL2 class was conditional based on race/ethnicity and class ( $\beta = -.6162, p < .05$ ). On the other hand, the effect of gender on well-being for Pacific Islander in the FPL2 was conditional for Pacific Islander women based on race/ethnicity and class ( $\beta = -2.47, p < .05$ ). The overlapping effect of gender, race, and class on well-being was also conditional for Black women based on race/ethnicity and class. So, what can be deciphered then is that gender and well-being is moderated by race/ethnicity and class and that the levels of well-being for male and female are conditional based on race/ethnicity and class.

Table 5.35 shows the interaction effect between gender, age, and marital status. The interaction effects show that the effect of gender on well-being for men and women is conditional based on the levels of age and marital status. The effect of gender on the levels of well-being are conditional on age and whether individuals are married or widowed/separated/divorced and this is different for men and women.

**Intersectional analysis among Asian sub-population.** Further probing into the intersectional analysis gave a cohesive picture on the overlapping effect of structural factors across populations and sub-populations. The overlapping effect of gender, race, and class was particularly interesting due to the suppressed effect in the hierarchical regression model. Since Asians and Latinos are larger sub-populations, a further probing into these intersections was deemed important to explore further analysis among one of the groups. Further analysis among Asian population is shown in Table 5.34. Results show that Asian women had increased levels of well-being compared to Asian men

( $\beta=.174$ ,  $p<.05$ ). The effects of class again was more pronounced among Asian women than men. Results also show that when class is taken into consideration, the well-being levels of Asian men ( $\beta= -.221$ ,  $p<.05$ ).and Asian women ( $\beta= -.283$ ,  $p<.05$ ) for the same level of class (FPL 2) is different where men fared better than women. The levels of well-being and race was significant among Korean ( $\beta= .133$ ,  $p<.05$ ) and Japanese ( $\beta= .408$ ,  $p<.05$ ). The higher order interaction between gender, Asian, and class showed interesting gender story among this sub-population. The three way interaction effect was significant for South Asian women falling in the FPL1 ( $\beta=3046536$ ,  $p<.05$ ) versus Asian men in other sub-groups. The results showed an exceedingly diverse overlapping effects of gender, class, ethnicity/race that has important implications for the well-being of immigrant populations. The next sections provides the integration of results, discusses some of the larger discourses in migration and well-being and provides implications for future directions.

Table 5.33. Intersections of the overlapping effects of gender, race, and class on immigrant well-being  
(Significant moderated social relationships only. Detailed results in Appendix D)

Well-Being	$\beta$	Jackknife SE	t	p> t	[95% Conf. Interval]	
Jackknife replications (80) ----- 1 ----- 2 ----- 3 ----- 4 ----- 5 .....x..... Survey: Linear Regression Number of strata = 1						
			Number of obs = 11,134 Population size = 9,357,419 Replications = 79 Design df = 78 F(48,31) Prob>F R-squared= 0.0491			
<b>Gender(ref)</b>						
Men	.1694307	.0769555	2.20*	0.031	.0162241	.3226373
Women	-.1694307	.0769555	2.20*	0.031	.0162241	.3226373
<b>Race (ref White)</b>						
Black(men)	.3621181	.1342456	2.70*	0.009	.0948557	.629380
<b>Class (ref FPL4)</b> (women)						
FPL 1 (0-99%)	-.4452201	.2108144	-2.11*	0.038	-.8649193	-.0255209
FPL 3 (200-299%)	-.3592551	.172939	-2.08*	0.041	-.7035502	-.0149599
<b>Gender x race</b>	<i>No statistical significance</i>					
<b>Gender x class</b>						
Men x FPL2	.3170326	.1524871	2.08*	0.041	.0134541	.620611
Womenx FPL2	-.3170326	.1524871	-2.08	0.041	-.620611	-.0134541
<b>Race x class</b>						
Pacific Islanderx FPL2	-2.47715	.4136885	-5.99***	0.000	-3.30074	-1.653559
Black x FPL2	-.8677294	.4012895	-2.16*	0.034	-1.666635	-.0688234
<b>Gender x Race x class</b>						
Men x Asianx FPL2	-.314658	.1129674	-2.79*	0.007	-.5395588	.8309949
Men x Latino x FPL2	-.6162	.1438464	-4.28***	0.000	-.9025762	-.3298238
Women x Pacific I. x FPL2	-2.47715	.4136885	-5.99***	0.000	-3.30074	-1.653559
Women x Black x FPL2	-.8677294	.4012895	-2.16*	0.034	-1.666635	-.0688234

\*\*\* $p < 0.001$ , \*\* $P < 0.01$ , \* $p < 0.05$ , [0-99% FPL=1; 100-199% FPL=2; 200-299% FPL=3; 300% FPL & Above



Table 5.35. Intersections of the overlapping effects of gender, age and marital status on immigrant populations  
(Significant moderated demographic relationships only- Detailed results in Appendix D)

Well-Being	$\beta$	Jackknife SE	t	p> t	[95% Conf. Interval]	
Jackknife replications (80) ----- 1 ----- 2 ----- 3 ----- 4 ----- 5 .....x..... Survey: Linear Regression Number of strata = 1						
Number of obs = 11,134 Population size = 9,357,419 Replications = 79 Design df = 78 F(48,31) - Prob>F - R-squared= 0.0333						
<hr/>						
<i>Gender(ref)</i>						
Women	-.1135213	.1595997	-0.71	0.479	-.4312599	.2042174
Men	.1135213	.1595997	0.71	0.479	-.2042174	.4312599
<i>Age (ref Below 20yrs)</i>						
21-30yrs (women)	-.2216948	.1072688	-2.07*	0.042	-.4352506	-.008139
31-40yrs (men)	-.4605626	.2368732	-1.94*	0.055	-.932141	.0110158
41-50yrs (men)	-.5339178	.2606498	-2.05*	0.044	-1.052832	-.0150038
41-50yrs (women)	-.4241951	.1895245	-2.24*	0.028	-.8015093	-.0468809
51-60yrs (women)	-.787014	.3626297	-2.17*	0.033	-1.508954	-.0650737
61-70yrs	<i>No statistical significance</i>					
71-80yrs (men)	-.4275097	.2086704	-2.05*	0.044	-.8429405	-.012079
71-80yrs (women)	-.9531222	.2950174	-3.23**	0.002	-1.540457	-.3657876
Above 80yrs (men)	-.4719384	.1587415	-2.97**	0.004	-.7879684	-.1559083
<i>Marital Status (ref Single)</i>						
Widowed/Separated/Divorced (women)	-.3622259	.0738304	-4.91***	0.000	-.509211	-.2152409
Living with partner(women)	-.5340767	.1501381	-3.56**	0.001	-.8329787	-.2351747
<hr/>						
<i>Gender x Age</i>	<i>No statistical significance</i>					
<i>Gender x Marital Status</i>						
Men x						
Widowed/Separated/Divorced	-.489408	.1595997	-3.07**	0.003	-.8071466	-.1716693
Women x						
Widowed/Separated/Divorced	.489408	.1595997	3.07**	0.003	.171693	.8071466

Table 5.35 continued

<i>Age x Marital Status</i>						
21-30yrs x W/S/D(women)	.3529266	.1831002	1.93	0.058	-.0115979	.7174511
21-30yrs x Living with partner(women)	.6965968	.209613	3.32***	0.001	.2792894	1.113904
21-30yrsxMarried(women)	.3194526	.1315542	2.43*	0.017	.0575483	.5813569
31-40yrsxW/S/D (women)	.4697109	.1546412	3.04**	0.003	.161844	.7775778
31-40yrsxLiving with partner(women)	.6361366	.2032781	3.13*	0.002	.231441	1.040832
41-50yrs x W/S/D(women)	.6025887	.2474645	2.44*	0.017	.1099247	1.095253
41-50yrsxLiving with partner(women)	.6970564	.2736344	2.55*	0.013	.1522921	1.241821
51-60yrs x Living with partner(women)	1.365594	.4044624	3.38**	0.001	.5603708	2.170817
51-60yrsxW/S/D(men)	-.5473005	.2747157	-1.99*	0.050	-1.094217	-.0003836
51-60yrsxLiving with partner(women)	1.365594	.4044624	3.38**	0.001	.5603708	2.170817
61-70yrsxW/S/D(women)	1.088033	.5107943	2.13*	0.036	.0711196	2.104946
61-70yrsxMarried (men)	1.089579	.5537209	1.97*	0.05	-.0127946	2.191953
61-70yrsxMarried(women)	-1.089579	.5537209	-1.97*	0.05	-2.191953	.0127946
71-80yrsxW/S/D (women)	.9599075	.3029012	3.17*	0.002	.3568776	1.562937
71-80yrsxMarried (women)	.7325046	.3002018	2.44	0.017	.1348487	1.33016
71-80yrsxLiving with partner(men)	1.544329	.6706493	2.30*	0.024	.2091688	2.879489
Above 80yrsxLiving with partner(men)	1.373307	.6073021	2.26*	0.027	.1642615	2.582353
Above 80yrsxLiving with partner(women)	1.113822	.4926708	2.26*	0.027	.1329899	2.094654

**Gender x Age x Marital Status**

51-60yrs x W/S/D x Women	-1.103396	.4679012	-2.36*	0.021	-2.034916	-.1718762
51-60yrs x W/S/D x Men	1.103396	.4679012	2.36*	0.021	.1718762	2.034916
61-70yrs x WSD x Women	-1.286453	.532987	-2.41*	0.018	-2.347549	-.2253575
61-70yrs x WSD x Men	1.286453	.532987	2.41*	0.018	.2253575	2.347549
61-70yrs x Married x Men	1.089579	.5537209	1.97	0.053	-.0127946	2.191953
61-70yrs x Married x Women	-1.089579	.5537209	-1.97	0.053	-2.191953	.0127946
71-80yrs x W/S/D x Men	.9007068	.4122221	2.19*	0.032	.0800356	1.721378
71-80yrs x W/S/D x Women	-.9007068	.4122221	-2.19*	0.032	-.1721378	-.0800356
71-80yrs x Married Men	1.05712	.4510483	2.34*	0.022	.1591519	1.955088
71-80yrs x Married Women	-1.05712	.4510483	-2.34*	0.022	-1.955088	-.1591519

\*\*\* $p < 0.001$ , \*\* $P < 0.01$ , \* $p < 0.05$ , W/S/D= Widowed/Separated/Divorced

## Re-examination of Study Hypotheses

Based on the results, it can be affirmed that the proposed hypotheses are either partially or fully supported. Controlling for the utilization of health care, the structural determinants of immigrant inequities measured in terms of economic and social status accounted for 8.4% of variance on immigrant well-being. Most structural determinants were also statistically significant including education, income, employment, class, and marital status. Hypothesis 1 was therefore, supported.

In terms of the intermediary determinants of health inequities, controlling for the utilization of healthcare, intermediary determinants such as immigrant status, social cohesion, food security, and home and environment were all significant showing that these predictors are significant determinants of immigrant well-being, with the exception of living arrangement. There was an incremental explained variance ( $\Delta R^2 = 0.039$ ,  $p < 0.001$ ) once the intermediary determinants were added to the model (Table 5.30). Hypothesis 2 was therefore, supported.

As shown in the results, the preexisting structural variables and the intermediary variables together explained the 13% variance in well-being (Table 5.31). Should the intermediary variables were only used to predict immigrant well-being, this would have explained only 10.3 % of variance in immigrant well-being (Table 5.32). These results further support hypothesis 3.

Hypotheses 4 and 5 focused on the moderating effects of social intersections (gender, race, and class) and demographic intersections (gender x age x marital status),

respectively. The presence of moderating effects is confirmed when there is a significant incremental explained variance produced by a regression with interaction terms (Cohen & Cohen, 1983). Results indicated that the interaction between gender and class was significant, which added to a small significant incremental variance ( $\Delta R^2=.001$ ). Although, results showed no other significant interactions (Table 5.30), further probing into the intersectional analysis showed that the overlapping effects of gender, race, and class on well-being were conditional on the levels of class, age, and categories of race and marital status. These results were also different for men and women across racial/ethnic lines. Results indicated that class was more significant for women compared to men. The intersections of gender, class, and race on immigrant well-being were significant for Asian, Latino, Pacific Islander, and Black populations compared to whites. In addition, the overlapping effects of race, class, and gender were statistically significant among Asian men over Asian women, Latino men over Latino women, Pacific Islander women versus Pacific Islander men, and Black women versus Black men. Based on these findings, hypothesis 4 was partially supported.

Within the context of demographic intersections where moderated relationships between gender, age, and marital status were examined, results indicated that there were significant interactions between gender and age, gender and marital status, marital status and age, and finally gender, age, and marital status (Table 5.30). Together, these moderated effects although accounted for a small percent incremental change in variance ( $\Delta R^2=.001$ ), it was statistically significant. These variables accounted for 13.3% explained variance in immigrant well-being. Further, the intersectional analysis also supported significant interaction and showed that the effect of gender on well-being for a certain level of age or a category of marital

status is different from the effect of gender on a different level of age or marital status (Table 5.35).

Results confirm that the overlapping effects of gender, age, and marital status on immigrant well-being is conditional on the varying levels of age and marital status. Based on these results, Hypothesis 5 was fully supported. In conclusion, the results indicate that the overlapping effects of structural vulnerabilities are strong predictors of immigrant well-being. These overlapping effects of structural factors on immigrant well-being are also conditional depending on the levels of class, age, categories of race/ethnicity, and marital status and that they vary across the dimensions of gender.

## Chapter 6

### Discussion: Integration of Results, Implications & Conclusion

*“Human population mobility is an intrinsic characteristic of the human race. It can no more be stopped than the movement of wind, water, or the birds. When we stop moving, it will probably mean that we have stopped to be.”*

*MacPherson & Gushulak (2013, p.2)*

Human migration is at the center of human history and human development. Human history is conceived as a history of migration and mobility. Going forward, human migration will continue to be a pressing issue in many years to come both in the United States and around the globe. Although human migration is an inevitable phenomenon, the influx of people with a variety of traditions, values, skills, and expectations is also associated with implications for services from individual psychosocial adjustment to public policies and regulations (Segal et al., 2012). Within the migration literature, public health issues have fueled the migration debate as health and migration interact with other population parameters in tandem (Evans, 1987). Further, the feminization of migration has challenged the gender debate in the migration literature as the compounding impacts of structural factors such as race, sexual orientation, age, class, and disability have a strong influence on social resources affecting gender and health (Kosny, 1999). With the rising demographic changes in the United States today where the immigrant populations are expected to double by 2050, it is critical to design strategies and guidelines that address the well-being of immigrant populations as their health status has larger social and economic implications for the overall health of the nation (Ku & Matani, 2001).

Scholars have examined issues of selective migration and healthy immigrant effect where newer immigrant populations often arrive healthier than the native born population, but their health begin to decline after their arrival. While immigrants surpass the geographic limitations, they are faced with significant barriers such as political rights, social, and health services. Within the immigrant populations, low income immigrants and immigrant women with limited language proficiency are at a higher risk for the rapid decline in health. Scholars in many fields have addressed migration, health, and well-being questions mainly from acculturation based explanations for immigrant health outcomes leading to individual-centered interventions, ignoring the structural contexts that are likely to produce social and economic inequities affecting immigrant health and well-being (Viruell-Fuentes, 2007).

Despite the increasing understanding of migration as a gendered process and excellent work on the multiple disadvantages facing immigrants in terms of acculturation and health behaviors that negatively impact immigrant health and well-being, scholars have not fully explored the importance of examining the influence of structural forces and power relationships through moderators such as gender, crucial for mitigating gaps in achieving immigrant health equity. What is still not clear is how these multiple dimensions of power structures intersect or overlap and impact the overall immigrant health outcomes. When people move into new social systems, the characteristic of the structural environment they move into affects their health and shapes their overall well-being. Low income immigrants, especially women who are vulnerable fall in the interspaces constrained by multiple factors such as gender, race, ethnicity, and class

creating structural vulnerabilities. These structural vulnerabilities further shape varying levels of health risks affecting the overall wellbeing of the immigrant populations. Yet, without such understanding, we are left with an inadequate analysis of macro-level structural factors such as the social, political, and economic context that creates ill-informed health policy decisions in achieving health equity and sustaining communities. This is evident in national strategies like Healthy People 2020 where although the elimination of ethnic and racial disparities are crucial objectives, the issues of immigrants are often overlapped with issues of minorities, ignoring the migration factor as a powerful social determinant of immigrant well-being. In order to reduce health inequities, migration and ethnicity related factors should be acknowledged as powerful social determinants of health and attention to these factors should be treated as an intrinsic component of national and international strategies (WHO, 2010).

Results from this dissertation highlight these larger discourses about structural vulnerabilities and its overlapping effects on well-being among the immigrant populations in the United States.

### **Major Findings**

Findings from this dissertation affirm that the influence of social and demographic factors on well-being co-exist along the intersections of structural vulnerabilities that arise from people's position in a society. Major findings of the study can be articulated through four major arenas:

## **Gendered relationship and its effect on well-being outcomes**

**Gender and well-being.** Results from this study point to changing gender structures among immigrant communities. There was a negative association between gender and well-being where being a women significantly decreased the well-being levels compared to men, ( $\beta = -.169$ ,  $p < .05$ ). Other studies have shown important differences between immigrant men and women on a variety of different levels such as health, acculturative stress, depressive symptoms (Livingston et al., 2007). Studies have found that there is a significant gender gap in symptom reporting where women report more health symptoms compared to men largely due to low social class status, high levels of chronic distress and poor self-assessed health (Ladwing et al., 2000).

Findings from this study reveal that the levels of well-being for immigrant women are lower than of men. This finding is corroborated by other studies that found similar results where on one hand there was an immigrant story and on the other a gender story (Read and Reynolds, 2012). The authors found the gender gap in health to be much greater for immigrants than for their US born counterparts. Although immigrant women reported better health than US born white women, they reported worse health than their immigrant male peers. However, due to limited studies looking at the gender dimension of immigrant integration, the literature that is available on immigrant health suggests that with increasing immigrant integration in the US society, the common pattern of declining health still “ holds more strongly for men than women” (Gorman et.al, 2010, p. 452). Therefore, future studies in immigrant health should include a gendered lens to bridge the gap at the theoretical level.

Increasingly, feminist scholars address the importance of recognizing the emergence of gender in migration with matrices of race relations, occupational incorporation, and socio-economic class locations and acknowledge that gender does not exist in a vacuum (Hondagneu-Sotelo, 2003, p.5). Similarly, literature supports that while culture plays a role in immigrant health outcomes, examination of the ways in which immigration intersects with race, class, and gender can explain the changing patterns in these health outcomes (Viruell-Fuentes et al., 2012). Theory of intersectionality therefore, can serve as a framework to move beyond individual-level conceptualizations of culture to structural examinations of power structures such as race, class, gender, and immigrant status and how they shape health inequities (p.2100).

Another body of literature supports findings that the well-being of immigrant women is lower compared to their male counterparts as immigrant females arrive less healthy and are socio-economically disadvantaged both in their countries of origin and on arrival to the United States. Socio-economic disadvantage increases their health risks and the stressors of migration and settlement make them more vulnerable to negative health outcomes (Curran et al., 2006). In a study using the New Immigrant Survey (2003) that quantifies the extent of health selection and evaluates the degree to which selection explains variation in self-rated health among permanent US residents (N=6,183). Akresh and Frank (2008) found that the odds of positive health selection are lower for women than for men.

**Gender and class intersections.** Results showed that the effect of class is greater in magnitude for men than for women. This was more evident among groups such as

Asians, where higher class showed greater expected difference between a man and a woman in levels of well-being. More particularly, the middle class effect was notoriously significant for women than men (FPL 2 men:  $\beta = -.2210818$ ,  $p < .05$ ) where both at the middle level class (FPL 2 women  $\beta = -.2839$ ,  $p < .05$ ) and even higher (FPL 3 women  $\beta = -.2399$ ,  $p < .05$ ) well-being decreased for women more than men. The levels of well-being for women in a higher class was comparable to well-being levels for men in a lower class. While well-being decreased for Asian men with midlevel class. Other studies have questioned the speculation surrounding gender and class relationships. A study conducted by Sen et al. (2010) among non-immigrant families on class and gender differences found similar results where the effect of class and gender were significant. The study found that while poor men and non-poor women were similar, the poorest women and men were more like each other. The study suggested that both class and gender were important factors (Sen et al., 2010) and not only should gender be studied in addition to class, but being able to study the intersections in detail showed how class appeared to work through gender (Sen et al., 2010).

**Gender and race intersections.** Literature on racial and ethnic health disparities widely report health inequities affecting minority populations. However, literature is sparse in making adequate connections between immigration and ethnic and racial health disparities. In this study the effect of race seemed to be a significant factor for certain racial groups such as Black men. Interestingly, well-being levels were positive and statistically significant for Black men compared to white ( $\beta = .362$ ,  $p < .05$ ). Gender and race intersections however, were not statistically significant for any other groups.

However, when class was interacted with gender, gender and race were statistically significant among Pacific Islanders and Blacks. This was strong for women where women falling both on the FPL1 and FPL3 levels had decreased levels of well-being. Since ethnic identities are often traced to the immigrant's country of origin or ancestry, Jasso et al., (2004) contend that immigration has strong associations with ethnic and racial health disparities. Moreover, the average healthiness of immigrants, the diversity in health status among immigrants, the subsequent health trajectories following immigration both over immigrants' lifetime and that of their descendants when combined produce the ethnic health disparities observed at any point in time. Therefore, identification of the determinants of the original health selection of migrants and the forces that shape health paths following immigration are crucial to understanding ethnic health differences (p. 1).

**Overlapping effects of gender, race, and class intersections.** In the 2014 Human Development Report, Helen Clark asserts, "unless and until vulnerabilities are addressed effectively and all people enjoy the opportunity to share in human development progress, development advances will be neither equitable nor sustainable" (p.v). Structural vulnerabilities in a society is rooted in people's position in that society as manifested through factors such as gender, ethnicity, race, or social status (UNDP, 2014).

These examined overlapping structural vulnerabilities such as poverty, gender, minority ethnic status, ethnicity, linguistics, religion, and so forth can quite substantially magnify the adverse impact on freedoms and daily functioning creating structural barriers for some people and groups to exercise their rights and choices. These vulnerabilities are perpetuated by exclusion, low human development and people's position in society,

reducing their ability to cope with downside risks and shocks (UNDP, 2014, p.106).

More studies need to explore these overlapping vulnerabilities among vulnerable populations to inform policies and programs for targeted interventions.

In this study, the overlapping effects of gender, race, and class in the moderated hierarchical regression model was not significant. However, further probing showed that the overlapping effects of gender, race, and class on immigrant well-being were significant among specific racial/ethnic and gender groups such as Asian men ( $\beta = -.314$ ,  $p < .05$ ), Latino men ( $\beta = -.6162$ ,  $p < .05$ ), Pacific Islander women ( $\beta = -.2.47$ ,  $p < .05$ ), and Black women ( $\beta = -.169$ ,  $p < .05$ ). Within the Asian population however, women were more likely to have higher well-being levels ( $\beta = .174$ ,  $p < .05$ ) than men ( $\beta = .113$ ,  $p < .05$ ). There are two important arguments that come out of this. The first one is that quantitative research on intersectionality is evolving and quantitative studies that use intersectionality in survey data is sparse and fragmented. Large scale surveys such as CHIS add to the trends and patterns in health with inadequate focus on social stratification. While a lot of qualitative studies corroborate on the “triple jeopardy effect” of these overlapping factors, it is also important that quantitative research focus on these overlapping effects because it is grounded on the study of social inequalities (Dubrow, n.d.). To test the theoretical proposition of intersectionality, it is critical that quantitative methods are used in large scale survey data to improve its theoretical functionality and parsimony. The second argument is on the aggregation of data for exceedingly diverse populations such as Latinos and Asians. While the CHIS should be commended to include sub-populations of larger immigrant populations, disaggregated data should be the step in the right direction so as to not suppress the effects in these diverse populations.

Despite the empirical evidence of how these intersections operate and what they imply for both theory and practice is relatively thin. Because of the paucity of research, we still do not know with a lot of empirical backing how gender affects class inequalities, for instance, or how gender relations are modified by class, let alone how these intersections influence health inequalities (Sen, 2010). Pessar (2003) argues that this new wave of migration scholarship should therefore recognize the preeminence of gender in tandem with racism and other structures of oppression. Similarly Zinn et al. (2005) confirms that gender is always complicated by complex stratifications of intersecting power systems. It operates with and through other systems of opportunity and oppression, which gives rise to vastly different gender experiences among women and among men. Gender should therefore, move beyond dichotomous simplifications of women and men and show how it is contingent on other dimensions of difference (Zinn et al., 2005, p.11).

**Gender and marital status.** Findings of the study also suggested a significant interaction between gender and marital status on immigrant well-being outcomes ( $\beta = -.1625$ ,  $p < 0.05$ ). Marital status was more significant for women than men across different levels of marital status and age. Marital status increased the level of well-being for women more than men across the continuum. Well-being decreased for men widowed, separated and divorced ( $\beta = -.489$ ,  $p < 0.05$ ), while well-being increased for widowed, separated, and divorced women ( $\beta = .489$ ,  $p < 0.05$ ). Women showed high levels of well-being when they are married, living with a partner, or when they are widowed, separated or even divorced compared to men in all age ranges (Table 5.35). Several other studies found that as age increases, marriage was more beneficial for men (Umerson, 1992).

Numerous studies showed that widowhood was more detrimental to the health of men compared to women (Stroebe & Stroebe, 1983). Divorce was also more detrimental to men than women (Reissman and Gerstel, 1985).

**Overlapping effects of age, gender, and marital status.** When age was added to the mix, the three way interaction of overlapping effects of gender, age, and marital status showed that marital status with age decreased well-being levels for women while it increased for men. Results in this study supports the literature that marriage is correlated with well-being, especially when it comes to aging. A number of studies have found strong relationship between marriage and well-being later in life (Barrett, 2000; Chipperfield & Havens, 2001; Ross, Mirowsky, & Goldsteen, 1990). Hawkins and Booth (2005) reported that couples in happy marriages report better health and subjective well-being when faced with depression or other psychological distress, compared to unhappy marriages. Being married has overall been associated with better well-being when it comes to mental health, quality of life, self-rated health, and life satisfaction for elderly men and women, however there are significant gender differences (Chipperfield & Havens, 2001; Williams, 2003). Peek et al. (2006) found that the well-being of one spouse is closely correlated to the other.

Results from the study also show that within the life course of aging and marriage, although women fare better in health and well-being compared to men, later in the aging process men show improvements in their well-being while the well-being levels of women decrease. This can be explained in terms of social construction of gender and emotions. Within marriages, socially constructed gender differences contribute to

disparities in emotional work (Erickson, 2005, Pfeffer, 2010 and Umberson et al., 2015), which can have a snowball effect on physical health and well-being. Efforts to promote emotional well-being of the spouse or others are often carried out in suppression and regulation of an individual's own emotions (Hochschild, 1979). This emotional work is more often carried out by women compared to men and is often unacknowledged or invisible (Eichler & Albanese, 2007 and Erickson, 2005). This can become the source of psychological and somatic stress, particularly when the emotional investment is unreciprocated or unappreciated. In fact, studies have found that husbands' well-being can influence wives' well-being, but not the other way around (Peek et. al., 2006).

Furthermore, there is a social understanding that women are naturally prone to attending to emotions in relation to men while men are rational problem-solvers (Thomeer et al., 2013 and Ussher & Sandoval, 2008). This expectation of gender differences in psychological well-being contributes to socially constructed gender inequality that creates systematic inequities in other health aspects. Thomeer, Reczek, and Umberson, (2014), conducted a dyadic in-depth interviews with 21 mid to later life couples to examine ways health impaired individuals provide emotional support to their spouses. They found that women provide emotional support despite their health status while husbands are less consistent in providing emotional support. They only provide support when they perceive marriage as balanced or are their wife's primary source of stability (Thomeer, Reczek, & Umberson 2014). Their study showed that the notions or expectations of traditional masculine roles deterred some men from providing emotional support even at times of physical ill-health of their spouse. Scholars in aging also report

this to be the general expectations for older men (Bennett, 2007; Thompson, 2002). This traditional role in emotional support may be more pronounced in Asian immigrants of older age. Asians, in particular place greater value on the family unit with clearly defined roles, positions, and expectations in family hierarchy, usually determined by age, gender, and social class. Harmonious and respectful interpersonal relationships are emphasized and expected with heavier burden on the women for maintaining peaceful coexistence within the family and others in the extended communities. Results from this study showed that the overlapping effects of age, marital status, and gender were statistically significant ( $\beta = -.0383$ ,  $p < .05$ ). Findings suggested that these effects were negatively associated with the well-being of women versus men (Table 5.35). Overlapping effects of these structural vulnerabilities therefore were found stronger for women.

### **Structural and intermediary determinants of health as powerful predictors**

There is a ubiquitous amount of literature that focus on determinants of health such as income, education, employment that are strong predictors of health. Results from this study suggest that income ( $\beta = .092$ ,  $p < 0.001$ ), education ( $\beta = .092$ ,  $p < .001$ ), and employment ( $\beta = .045$ ,  $p < 0.001$ ) were significant predictors of immigrant well-being. In addition, immigrant status ( $\beta = .065$ ,  $p < 0.05$ ), social cohesion ( $\beta = .0505$ ,  $p < 0.05$ ), food security ( $\beta = .2449$ ,  $p < 0.001$ ), and home and work environment ( $\beta = .1304$ ,  $p < 0.001$ ) were also found to be significant predictors of immigrant well-being, controlling for utilization of healthcare. However, the intermediary determinant variable living arrangement, which measured family structure did not show any statistical significance ( $\beta = 0.1304$ ,  $p < 0.001$ ),

which is contrary to other literature that found significant effects between living arrangements , immigrant status and mental health symptoms (Chen, 2003). While these studies might not be similar in purpose, they do highlight the important aspect of living arrangement that needs further exploration among immigrant families. However, the environmental influences were a strong predictor of immigrant well-being, that home and work environment increased levels of well-being. Literature also supports home and work environment to be powerful determinants of immigrant well-being. Previous studies have consistently found the intimate link between work and home environment and overall well-being (Solar & Irwin, 2007).

In addition, immigrant status was found to be a powerful determinant of immigrant well-being in that it is inextricably linked with federal and state policies that have restricted some immigrants' access to health care. The immigrant status is also tied to access to social services and jobs with benefits. Prior studies indicate that immigrants in general have consistently lower rates of health insurance coverage than U.S.-born populations, although there might be differences among immigrants based on immigration status, and time spent in the US and country of origin (Derose, Escarce, and Lurie, 2007). New studies have also shown that the immigrant status has consequences to the well-being of children in the US. A recent study by the Foundation for Child Development found large disparities in education, health and economic status for children in the US that is intricately tied to their race and the immigrant status of their parents (Hernandez, 2013).

In essence, there is a rich theoretical literature describing the multiple disadvantages facing immigrants in terms of gender, culture, acculturation, and health behaviors that negatively impact their health and well-being. However, gaps remain in terms of examining the influence of structural forces and power relationships such as gender that mediate the relationship between structural factors and health inequities faced by the immigrant population. Therefore, it is critical to move the migration discourse to include discussions of power relationships that cut across both gender and health affecting the overall well-being. Discussions of gender have evolved from women only approaches, to empowerment studies, to now include institutions (Hondagneu-Sotelo, 2003). Because the issue of gender is not limited to the roles, responsibilities, and needs of only women or men, but also with the interrelationships between them, discussions of gender should therefore, move beyond dichotomous simplifications of women and men. Gender discourse therefore, should illustrate how the differences between them is contingent on other dimensions of difference as gender is fundamentally about power (Hondagneu-Sotelo, 2003).

However, Pessar (2003) argues that the new wave of migration scholarship should recognize the primacy of gender in tandem with other structures of oppression such as racism. Given these evolving discussions of gender in the migration context, the perspective of intersectionality seems to play a central role in further conceptualizing the issue of gender in migration issues. It becomes even more important to discuss the intersectionality issue when it comes to discussing health and gender among the migrant populations as the interspaces created by these intersections shape varying levels of

health risks affecting the overall wellbeing of the immigrant populations. What is still not clear is how these multiple dimensions of power structures intersect or overlap and impact the overall immigrant health outcomes. More studies should explore these overlapping effects of structural vulnerabilities that have far reaching consequences for the capacity for health and well-being.

### **Recommendations and Future Directions**

Findings from this dissertation have implications in three key interconnected areas: theoretical implications for health equity research, methodological advancement in health research, and health equity policies and praxis.

#### **Theoretical and methodological implications for health equity research**

**Theoretical implications.** The importance of the social determinants of health is the paradigm shift in health research, a significant departure from the prescriptive medical model of health and illness. It was also a significant departure from interventions that address the traditional individual knowledge and behaviors alone to address the social conditions that make health possible (Solar & Irwin, 2007). Despite the tremendous strides made in health disparities research, policies, and programming, significant gaps still persist in the array of distressing disparity in key health indicators among certain subgroups of the population. Literature continues to report on the national paradox concerning steady overall improvement in health status and at the same time report on the significant inequities in health among minority populations (NIH, 2015)

The social determinants perspective goes beyond interventions that address individual knowledge and behaviors alone to address the social conditions that make health possible. It moves from a social service to a social change model. It helps to move away from silos to move across sectors and collaboration. The SDH framework highlights the importance of the social factors that influence health and the social processes that determine their unequal distribution. Solar and Irwin (2010) affirm that the structural factors associated with socioeconomic position (SEP) are at the root of health inequities measured at the population level. They contend that obscuring the distinction between the social determinants of health and the social processes that shape the unequal distribution of these determinants of health will lead to misguided policy decisions. However, improvements must be made in health-determinant models to account for the social inequalities that persists, which are the root cause of rising inequities in health (Solar & Irwin, 2010). Furthermore, it should also highlight the overlapping effects of social factors that have compounding effects on overall well-being of populations. As indicated throughout, the theory of intersectionality would add value to health equity work as its explicit attention to power can explore ways in informing a complete and nuanced understanding of health determinants (Havinsky & Christoffersen, 2008). Weber and Parra-Medina (2003) affirm that intersectionality ‘has great potential to provide new knowledge that can more effectively guide actions toward eliminating health disparities across race and ethnicity but also across gender, sexual orientation, social class and socioeconomic status, and other critical dimensions of social inequality’ (p. 183). In addition, intersectionality acknowledges the “historically situated and always emergent

nature of power structures” (Lee, 2005.p.6). This opens the door for both a retrospective and prospective analysis of social, political, and economic divisions keeping time and place into focus, which are lacking in discussions of health determinants (Havinsky & Christoffersen, 2008).

Efforts in understanding the social and behavioral underpinnings of health and larger assertions of health and well-being should insinuate components of human rights and social justice. Although the ultimate goal of health determinants models like SDH is equity in health and well-being, they are still limited to convolutions of health as absence of illness. The ultimate discourse of health then, should move towards improving the capacity of health to achieve overall well-being. These theoretical improvements in health and well-being would greatly improve the knowledge base of health determinants.

**Methodological implications.** Most large scale surveys today still follow the prescriptive medical model framework with very little information on social factors. As a result, there are inadequate and limited methods of constructing determinants, capturing their relationships, and understanding the wider context of structural inequities in which they operate (Havinsky & Christoffersen, 2008). There is a need for a radical thinking of how large scale surveys can capture the social inequalities and contribute towards mitigating the gaps in health equity research (Dubrow, 2009.). Perhaps, new kinds of survey questions need to be asked (Bowleg, 2008) and the larger framework of survey design has to have the population at its heart (Lee, Forthofer & Lorimor, 1990). Likewise, the complexity of intersectionality presents its own problem of adequately capturing its true essence in quantitative research. More quantitative studies should explore the

intersectional dimensions and build methodological improvements for intersectional research that has the potential to exploring social stratification in the most effective fashion.

**Immigrant health research.** Past research on immigrant health and well-being has mainly focused on acculturation based explanations for immigrant health outcomes. While acculturation based studies have simultaneously added value to diverse cultures, the abstruse acculturation paradigm has also been inconclusive due to both theoretical and methodological ambiguities surrounding acculturation. These studies lead to individual-centered interventions, ignoring the structural contexts that are likely to produce social and economic inequities affecting immigrant health and well-being (Viruell-Fuentes, 2007). Given the dominance of the acculturation paradigm in studying immigrant health and well-being, examination of equity in immigrant health requires a paradigm shift in the immigrant health discourse from micro-level conceptualization of culture to the macro-level structural factors such as the social, political, and economic context. These social structural patterns in terms of social and economic characteristics of individuals and populations are more important than the antecedents of human health status versus medical care inputs and individual health behaviors such as smoking, diet, exercise, etc. (Evans, Barer & Marmor, 1994).

Use of singular paradigm and methodology have also contributed to the gaps in our understanding of the process and persistence of change in immigrant health and well-being over time. Previous studies appear to be more appropriate for understanding the experience of men than that of women as the studies either control for gender or only

look at the health outcomes among men or women (Antecol & Bedard, 2006). Future studies in immigrant health research should include discussion of intersectionality in discussing health and gender among the migrant populations as the interspaces created by these intersections shape varying levels of health risks affecting the overall wellbeing of the immigrant populations.

While large scale surveys such as the National Health Interview Survey (NHIS) and National Health and Nutrition Examination Survey (NHANES) serve as a good medium to address immigrant health disparities (Jasso et al., 2004), they are very limited in terms of measuring individual, social, and contextual determinants of immigrant health and well-being. Jasso et al. (2004) also affirm the importance of longitudinal studies that are able to capture the immigration process from the beginning. Due to enormous heterogeneity in the immigrant population, Jasso et al. (2004) address the direct implications for the need of large sample sizes. There is a huge need for methodological studies in this area. Lack of comprehensive measure of immigrant health is a huge methodological issue in immigrant health research. Factors such as immigration experience, economic, social, and demographic measures therefore, should be integrated in a single survey as a nested issue.

### **Policy and praxis implications**

Despite significant improvements in health equity efforts such as the National Standards for Culturally and Linguistically Appropriate Service in health and Health Care; Health People Initiatives; National Partnership for Action to End Health Disparities; the reauthorization of the Office of Minority Health, and so forth, there is

paucity in reporting national health data when it comes to minority and immigrant populations.

As seen in the results from the study, when aggregation of data is used, it tends to suppress the pertinent issues prevalent in a community by making them invisible. This provides significant challenges to improving health equity efforts across minority populations. Increased improvements on the collection and dissemination of disaggregated demographic data therefore, is not an option anymore when the demographics in the United States is changing rapidly. To achieve health equity in its truest sense, policies that systematize efforts to standardize the collection and dissemination of disaggregated data and information is crucial. In tandem, public availability of these data on a regular basis is highly pertinent for research use to inform programs and policies.

Efforts such as Health Equity through Enhanced Data (HEED) and the White House Initiative on Asian Americans and Pacific Islanders are significant initiatives in their efforts to collect disaggregated data so as to target tailored resources across populations. However, these efforts should be expanded to also collect and disseminate disaggregated data at the local and state levels. In addition, more funding should be allocated to support Community Based Participatory Research (CBPR) programs so that communities build their capacity for data development and research.

Social inequalities in essence, are the root cause of health inequalities (CSDH, 2008). However, as shown in the study, there are also other dimensions in the social context

such as, gender, ethnicity or migration status that engender health inequalities (Solar & Irwin 2007). Since these dimensions of social inequality can be seen as power relations interacting among each other in creating health inequalities, there is a critical need to acknowledge these dimensions and their intersections from a policy perspective (Schulz & Mullings 2006). Hankivsky (2012) recommends using frameworks such as Intersectionality-Based Policy Analysis (IBPA) as an effective method for understanding the varied equity-relevant implications of policy within increasingly diverse and complex populations. According to Hankivsky (2012), IBPA seeks to examine and shape power differentiation within and among populations, accounting for resistance and resilience at the policy and programming levels. Use of such policy frameworks could greatly improve the evaluation of policy among diverse populations.

### **Limitations of the Study**

Immigrants as a distinct group is an increasingly diverse assemblage of sub-populations. This diversity is limited in terms of ethnicity variables used in this study. Some other pertinent issues such as length of stay and language barriers that are important in the migration discourse have not been discussed. The generalizability of this dissertation study is limited because all of the respondents are from the geographic location of California. Although the external validity of this study is strong given the robustness of the complex survey analysis that can be inferred to the 9.3 million immigrant populations in California, comparing the immigrant populations to other geographical location might be inconclusive.

The data being utilized is cross-sectional further limiting generalizability to a particular time frame among a particular group of respondents. Similarly, the use of secondary data restricted methodological analyses and subsequently the results of the study. Due to the limitations of the secondary data, various measures such as social network could not be included in the analysis. The lack of breadth of data can also pose some ambiguity in terms of theoretical constructs compromising the multidimensionality of constructs and measurement scales that were developed for the purpose of the study. As such, post-hoc attempts to construct the measurement model may have been limited. Some of the constructs used in the study such as well-being, social class, home and work environment might not have been comprehensive due to operationalization via single survey item or a subset of items. The well-being scale is limited to physical, mental, and social dimensions. It does not include various well-being dimensions such as spiritual well-being. This might have led to reliability and validity concerns. Given the robustness of the survey design and the analysis using replicate weights, although the findings of the study can be generalizable to approximately 9.3 million immigrant population in the state of California, the use of neutral point estimates used to handle inapplicable values might have provided some biased estimates.

Despite the limitations discussed, this study is distinct in its efforts to recognize not only structural vulnerabilities and their overlapping effects on immigrant health and well-being, but reflect on the analyses of the structural nuances of intersectionality. This study provides a beginning glimpse of how micro-level social identities interact with the macro level environments in shaping structural interactions with the larger environment.

It also provides important implications for social work research, practice, education, and policy, providing a solid ground for advancement in social work theorizing and methodology.

### **Implications for Social Work**

Based on the findings of this dissertation, larger discourse on structural vulnerabilities affecting capacity of health and overall well-being, the potential of social work to truly become a transdisciplinary profession, and the social work beliefs in equity and social justice, the following social work implications are discussed.

#### **Social work theorizing**

With the burgeoning human needs, massive shifts in consumerism, globalization, changes in demography, and new technologies, social workers are continuously pressed to enter new arenas to respond to these everyday demands. Over the last thirty years, the emancipatory nature of social work knowledge base has been a constant target with plethora of disparagements about the profession being futile and not being able to resolve the ever-increasing deleterious social problems. In response to these contextual needs, social work as a profession has led itself into eclectic theories and multiplicity of methodologies, the diversity of which has threatened the social work profession with fragmentation. Yet, there is still an absence of an integrated approach to connect the array of social work tasks (Elliott, 1993). Gaps within the breadth of micro and macro social work continuum have increased, questioning the inherent essence of the social justice beliefs of the profession (Reeser & Leighninger, 1990). Many new ideas and dilemmas continue to spur around these criticisms. While many argue on the need for a cohesive

element that would heuristically solve all these issues, others contend that social work should surrender itself to interdisciplinary objectives of the modern world. For a profession to essentially be interdisciplinary however, theory building and engagement in the values inherent in a profession is crucial.

While the momentum for social work theorizing has been building, it is crucial for social work as a profession to build a comprehensive social work paradigm that engages in ideological and empirical analyses. Translation of empirical research into practice based on alignment of social work values and principles, engagement with social work theories and policies in an interdisciplinary environment is mandatory. The use of intersectionality theory could be a viable opportunity for social work to engage in theorizing. Although intersectionality has been considered as one of the most significant contributions by feminist scholars (Bowleg, 2008; McCall, 2005), the complexity of intersectionality has led to inconsistencies in conceptualizations (Mehrotra, 2010). There are ambiguities surrounding the reciprocal effects between the levels of intersectionality- the levels of social structures, the level of constructions of identity, and the level of symbolic representations (Winker, Degele, 2011). Social work can take the lead to enhance the theoretical grounding inherent in the interaction between the person and the environment framework connecting both the micro and macro arenas of social work. In addition, the commitment to social justice goals makes intersectionality so relevant to the goals of social work. It is an opportune period for social work to deepen scholarship, research, and practice through provoking further thinking about intersectionality. Social work can take the core tenet of intersectionality and contribute towards building and

drawing epistemologically diverse intersectional frameworks inherent in the social justice beliefs of the profession.

### **Social work research**

Implications to social work research revolve around efforts to capturing the complexity of exceedingly diverse populations including immigrants and refugees, most particularly in issues pertaining to socioeconomic positions and wealth (Oliver and Shapiro, 1995) and disparities in health (Weber, 2006) grounded in historical oppression (Murphy et al., 2009).

Methodological issues of intersectionality research include gaps with clear and concise definition, absence of parameters, and lack of specification on which categories should be theorized and intersecting (Davis, 2008). Absence of established rules about when intersectionality should and should not be applied to and when to add and stop adding categories in analyses have created ambiguities surrounding intersectional research among scholars (Weber & Parra-Medina 2003; Winker & Degele, 2011). Despite these methodological issues, there are many opportunities for social work researchers to address the very systems of inequality that intersectionality illuminates. Social work research should therefore be engaged in methodological developments surrounding the realities of multiple inequalities and contribute towards methodological advancements in intersectionality research. Similarly, while social workers are at the frontline to work with immigrant integration and resettlement (Valtonen, 2008), there is very little presence of social work in human migration research and broader discourses on migration affecting human development. Social work research can use Community Based

Participatory Research to work with vulnerable communities to enhance both improvements in intersectional research with immigrants and other vulnerable communities and work towards building community empowerment and resilience. With a clear understanding of the importance of social change, social work research can move the discussion of social inequities through the intersecting relationships between structural vulnerabilities such as race, class, and gender (Murphy et al., 2009). Given the complexity of intersectional research and the fact that little is known about a priori the outcome of race, gender, and class dynamics in a given situation, engagement in empirical research in a wide variety of areas and situations is crucial (Landry, 2006).

### **Social work practice**

Implications for social work practice spur around social work practice with immigrant populations and the broader health equity work. Social workers in large cities increasingly work with immigrants and forced migrants, yet few have received specialized preparation for this role in their professional training. Within the profession of social work therefore, human migration has yet to secure an important place. Social work has traditionally responded to migrants and displaced populations via emancipatory case management and mental health services, but the increasing demographic changes pose greater demands for social work research, practice, and education to prepare social workers to meet these new challenges. The intersectional perspective offers social work practitioners to upgrade their understanding and challenge themselves to ask critical questions about modalities of service delivery (Murphy et al., 2009) to diverse clientele including immigrant and refugees. Macro social work practice should engage with

organizations and communities to build their capacity for data development, evaluation, and translation of research into practice.

### **Social work education**

The 2015 Education Policy and Accreditation Standards by the Council on Social Work Education (CSWE) states:

Social workers understand how diversity and difference characterize and shape the human experience and are critical to the formation of identity. The dimensions of diversity are understood as the intersectionality of multiple factors including but not limited to age, class, color, culture, disability and ability, ethnicity, gender, gender identity and expression, immigration status, marital status, political ideology, race, religion/spirituality, sex, sexual orientation, and tribal sovereign status. Social workers understand that, as a consequence of difference, a person's life experiences may include oppression, poverty, marginalization, and alienation as well as privilege, power, and acclaim (CSWE, 2015, p.7).

The central goal of social work education is to prepare competent social workers who can provide services in the way that reflects the social justice goals of the profession (CSWE, 2001). Integrating intersectionality into the social work curriculum can foster diversity-oriented social work education. Murphy et al. (2009) assert that intersectionality orientation can be a viable mechanism to prepare social work students to develop competencies to deliver services in the micro, mezzo, and macro realms of social work practice that reflect a social justice orientation (p.91). Incorporating intersectional perspective of experiences of intersecting categories that occur outside the classroom, social work educators can create learning that is expanded and internalized (Murphy et al., 2009).

## **Policy implications for social work**

Policy implications for social work revolve around advocacy efforts for the vulnerable migrant population and the disaggregation of data to bolster support for community building and resilience. International migrants account for over three percent of the global population and have fewer rights and protection even when they are documented. They also have barriers to social services and social protection. They are excluded from social and public life, lack voting rights and have very little influence over relevant policies that affect them. Most international migrants, who account for over three percent of the world's population, have fewer rights and less protection, even when they are documented, than citizens and have less access to social protection (UNDP, 2010). As a professional of human rights, social work should advocate policies and programs that engage these groups into the decision making process. Social work is also uniquely positioned to champion the need for an intersectional paradigm in policy making. Social work efforts should also be targeted to working with immigrant communities to build community resilience and development of local leadership. Social work advocacy efforts should advocate for the disaggregated data so as to make these invisible population visible and inform policy for the overall well-being of the society.

## **Conclusion**

Through a theoretical based empirical model of social determinants of health explaining structural vulnerabilities and its overlapping effect on the immigrant well-being, this dissertation addresses the lacuna in immigrant health knowledge by examining the effect of overlapping social vulnerabilities arising from people's position in a society

through factors such as gender, race, class, marital status, and marital status. It examined the interconnections, interdependence, and interlocking of essentialist categories such as gender, race/ethnicity, and class as categories of structural disadvantage among immigrant communities in order to elucidate the unrecognized relationships between structural forces and immigrant health beyond cultural explanations in one highly contested immigrant context.

Given these evolving discussions of gender in the migration context from a social determinants of health perspective, this dissertation explored the theorizing of intersectionality and vulnerability in further conceptualizing the issue of gender in the immigrant health context. Findings from this dissertation provide a platform to begin to define the body of knowledge surrounding structural vulnerabilities from a gendered perspective among immigrant populations that can be replicated to other vulnerable populations to move this emerging field of research toward a common goal of social justice. Based on the findings and the larger discourse surrounding gender, migration, health and well-being, future studies should include discussions of power relationships that cuts across both gender and health, recognizing the primacy of gender in tandem with other structures of oppression such as race, ethnicity, and class (Hondagneu-Sotelo, 2003, Pessar, 2003). Similarly, the health discourse should move beyond illness and health to embrace the idea of fostering capacity for health towards human well-being and development. Furthermore, the intersecting effects of structural vulnerabilities such as gender, race, class that impede overall well-being of immigrants can begin to define the body of knowledge in intersectionality and advance the field of health research toward a

common goal of social justice. This dissertation lays the groundwork for social work to use novel methods to tap into health equity research and opens a fertile field for social work theorizing in migration and health equity research to begin to answer larger questions about human rights and social justice.

## Appendix A

### List of Empirical Studies Reviewed

Author/Year	Problem/Purpose	Sample	Design/Instruments	Data Analysis	Results
Akresh and Frank (2008)	To quantify the extent of health selection (i.e the degree to which potential immigrants migrate, or fail to migrate, on the basis of their health status) and evaluate the degree that selection explains variation in self-rated health among US permanent residents.	6,183	Secondary analysis: New Immigrant Survey 2003	logistic Regression	Found significant interaction between gender and education. Education was a stronger determinant of positive health selection for women than for men
Antecol and Bedard (2006)	Studied potential determinants of health immigrant effect with a particular focus on the tendency of immigrants to converge to unhealthy American BMI levels.	429,482 natives; 61,234 immigrants	Cohort study NHIS cross-sections: NHIS dataset (1989-1996)	Logistic Regression Models	Average female and male immigrants enter the US with BMIs that are approximately two and five percentage points lower than native-born women and men respectively. The longer they remain in the United States, female immigrants almost completely converge to American BMI's within 10 years of arrival, and men close a third of the gap within 15 years.
Chen et al.(2008)	Explored the utilization patterns of mental health services	45,774	4 year combined		

Author/Year	Problem/Purpose	Sample	Design/Instruments	Data Analysis	Results
Choi (2009)	Explore the effects of social contexts on access to health care among recent immigrants by comparing health care experiences of three immigrant groups (Filipinos, Koreans, Marshallese) in Hawaii	378 adults	Household surveys: structured interview questionnaire Surveys conducted between October 2005 and January 2006	Logistic Regression Models	Results showed that Marshallese had better access to healthcare despite lowest socioeconomic status compared to Filipinos and Koreans. Family/kinship networks were associated with higher levels of immigrant access.
Derose et al. (2009)	Reviewed empirical evidence regarding immigrants' healthcare experiences in terms of healthcare access, quality, and cost after 1996. Conceptual underpinning from Anderson Newman model.	67 studies			
Frisbie et al. (2001)	Examine the effect of immigrant status (both nativity and duration of residence in the US) on the health of Asian and Pacific Islander adults. Examined the effects of group membership and immigrant status on the number of visits to a physician and a measure of regular access to health care.	8249 (8 groups: Chinese, Filipinos, Asian Indian, Japanese, Korean, Vietnamese, Pacific Islander, Other Asians)	NHIS dataset (1992-1995)	Logistic Regression Models	Immigrants were found to be in better health than their US counterparts, but their health advantages decreased with the duration of residence, supporting the validity and complementarity of the migration selectivity and acculturation hypotheses. However, there were variations among the sub-groups. Notably, Pacific Islanders and Vietnamese were found to be less favorable than average. Immigrants also had less adequate access to formal medical care.

Hunt et al. (2004)	Examine the development, application, misconceptions and errors in the central assumptions underlying the concept of acculturation.	69 articles (1996-2002)	Systematic Review	Systematic Review	Acculturation as a variable in health research may be based more on ethnic stereotyping than on objective representations of cultural differences.
Author/Year	Problem/Purpose	Sample	Design/Instruments	Data Analysis	Results
Jasso et al (2004)	Explore the determinants of health selectivity and health trajectories following immigration		Longitudinal: New Immigrant Survey		
Kandula et al. (2004)	Due to gaps in national databases, heterogeneity of immigrant populations, and uncertainty about how migration affects health, discussed the health of immigrants from the perspective of ten leading health indicators based on Healthy People 2010.	N/A	Systematic review	systematic review	More than any other leading health indicator, sexual behavior is subject to very disparate cultural perceptions, norms, and expectations between groups of different cultural and ethnic origins and with large gender differences within subgroups.
Kimbro (2009).	Purpose was to shed light on the debate about acculturation and find out its importance in the health and well-being trajectories to maintain the relative health of immigrants in the US.	2,023 adults in 1,562 households	Cross-sectional: Wave 1 of the Los Angeles Family and Neighborhood Study	Multilevel Logistic Regression Gender interactions	Women who preferred Spanish-language preference had lower odds of smoking, while men with the same language preference had higher odds of smoking. However, both men and women with preference of Spanish language had lower odds of binge drinking. Interaction effects of gender with other variables showed larger effects differences for men and women.

Leduc and Proulx (2004)	To analyze how the recently immigrated families utilize health services and how it evolves over time.	20 families			Utilization of primary healthcare services progressively changes over time, evolving from the ad hoc use of walk-in services to the adoption of regular sources of care. Families relied upon a variety of information sources, primary attributes were geographical and temporal accessibility, interpersonal and technical quality of services, and language spoken by health professionals and staff. Perception of health services' attributes is influenced by the families' sociocultural referents and pre-emigration experience.
Lopez-Gonzalez et al., 2005	To examine the association between nativity, acculturation and health behavior of adults in the US and explore the gender differences between these relationships.	81,366 adults (drinking) 83,240 (smoking)	Survey: pooled data 1998-2001 NHIS	Multinomial logistic regression	Results showed that the health behavior of more acculturated immigrant women was less positive than that of less acculturated women. However, acculturation made little difference for health behavior in men. It is important to not only consider how acculturation is related to health, but how the acculturation process differs across subgroups.

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McDonald and Kennedy (2004)	Provide some preliminary evidence on what might be underlying the estimated YSM effects on health, by analyzing immigrants' use of some basic health services.	73,402 and 131,535	Pooled cross-sectional data from 2 datasets: 1996 National Population Health Survey and the 2000-01 wave of the Canadian Community Health Survey	Growth curve analysis	Patterns in the use of these health services might indicate that barriers in the access of health services by recent immigrants are contributing to relatively lower reported incidence of health conditions, giving the impression of relatively healthier immigrants. Immigrant men and women were less likely to have been diagnosed with a chronic condition than native-born men and women. Immigrants were less likely to report being in good health and immigrant women were more likely to report being in fair or poor health than native-born women.
Read and Reynolds (2009)	Examined how well conventional theories of immigrant health apply to six immigrant groups, focusing on differences by region of birth and gender	23,154	Merged data from the 2000-2007 National Health Interview Survey (NHIS)	Binomial logistic regressions	The results reveal tremendous diversity in health patterns across immigrant groups. Immigrants from Africa and India have much more advantaged health profiles than Mexican immigrants and the gender gap in health for these groups is quite small. European and Middle Eastern immigrants, on the other hand, have health profiles more in line with Mexican immigrants and exhibit much greater disparities between men and women, the latter being more disadvantaged on all measures of health.

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Read and Reynolds (2012)	Compared health outcomes among immigrants (Mexican born and Middle Easterns) to those among U.S.-born whites and assess gender differences within each group	155,831	Multistage, stratified, cluster design: NHIS dataset (2000-2007)	Hierarchical logistic regression models	The gender gap in health is much greater for immigrants than for US born white men and women, where the difference across health outcomes were much smaller. Mexican and Middle Eastern immigrant women report better health than US born white women, but report worse health than their immigrant male peers.
Salant and Lauderdale (2003)	Compared various approaches to acculturation within the health literature on Asian immigrants in the domains of mental health, physical health, and health services use.	67 studies	Systematic Review: studies of health outcomes in Asian immigrants that employ measures of acculturation published between 1966 and June 2001.	Systematic review	Literature is highly fragmented in terms of the assessment of acculturation and its relationship to health. Most studies conform to models from sociology and behavioral epidemiology, borrowing psychometric scales from psychological literature based on studies among Hispanic populations. A conceptual model of acculturation and its association to health should be based on the understanding of the researcher with attention to the historical experiences of different ethnic groups. Gender and socioeconomic status can contribute to the modification of acculturation's effect on health.

Schmidt et al. (2011)	Examined the challenges in meeting healthcare needs of the immigrant population residing in the US less than 10 years.	290	Survey: one on one structured interviews	Multivariate Analysis	Findings revealed that female gender was the most significant factor in influencing healthcare seeking behavior compared to male. Female were also more likely to be insured; visit a healthcare provider; participate in preventive health screening, but also reported one or more chronic disease. Noted a trend that showed a decline in health status after immigration. Although language remained as an important factor in seeking health care, the analysis showed no statistical significance in determining language as a determinant to healthcare.
Shibusawa and Mui (2010)	Based on the Anderson model, examines health status and utilization of physicians, hospitals, emergency departments, and traditional medicine among older Asian Indian immigrants.	100	Survey: cross-sectional: Structured interviews- Asian American Elders in New York City Study	Multivariate Analysis	The number of medical conditions is significant in predicting the likelihood of physician visits while age and having medical insurance predicted the likelihood of hospital stays. Having medical insurance was also a significant predictor for the use of emergency department services while poor English proficiency was associated with the use of traditional medicine.
Song et al. (2010)	Examined the predictive ability of Anderson's health care utilization model by analyzing the interplay between predisposing, enabling, and need factors among Korean American immigrants with high blood pressure.	445		Path analysis	Findings showed that insurance status and relevant medical history were not just strong direct effects, but also carried the most total effect on the health care utilization. Life priorities, years of residency in the US and perceived income level showed indirect effects through the participants insurance status. The findings support the need to

					improve access to healthcare by introducing a variety of community resources and building sustainable community infrastructures.
Williams (2002)	Provides an overview of the magnitude of and trends in racial/ethnic disparities in health for women in the United States.	23,154	Review	Bivariate binomial logistic regression	Although socioeconomic status is a central determinant of racial/ethnic disparities in health, several other factors including medical care, geographic location, migration and acculturation, racism, and exposure to stress and resources also play a role.
Jang et al (1998)	Examined income, language, and citizenship status and their effect on the use of healthcare services by Chinese Americans in San Francisco.	1,808	3 methods: focus groups, interview with key informants, telephone survey		
Ku (2009)	Examined insurance coverage and medical expenditures of both immigrant and US born adults to determine the extent to which immigrants contribute to US medical expenditures	N/A	2003 Medical Expenditure Panel Survey	logistic regression and linear regression	Immigrants' medical costs averaged about 14% to 20% less than those who were US born

## Appendix B

### Data Access Center Approval



**Ninez Ponce, MPP, Ph.D**  
*Principal Investigator, California Health Interview Survey*  
*Associate Director, UCLA Center for Health Policy Research*  
*Professor, UCLA Fielding School of Public Health*  
*Department of Health Policy and Management*

April 15, 2015

Arati Maleku  
University of Texas at Arlington  
211 S. Cooper St.  
Arlington, TX 76019

RE: The social determinants of immigrant well-being in the United States: A gendered perspective (DAC150205)

Dear Ms. Maleku:

As the Principal Investigator of the California Health Interview Survey (CHIS), I am pleased to approve your above-referenced application to use CHIS 2011 to 2013 data through the Data Access Center (DAC) at the UCLA Center for Health Policy Research.

I base my approval on the recommendation of the CHIS Data Disclosure Review Committee, which carefully reviewed your application. The Data Disclosure Review Committee found that the project is feasible, consistent with the purpose of CHIS, and constitutes no added risk of disclosure of confidential information. This approval means your protocol meets the Center's evaluation criteria for using CHIS data and does not imply an endorsement of your study by the Center.

We have received the signed Nondisclosure Affidavit/Data Access Center agreement. Be aware that breaching the terms and conditions of the agreement will result in immediate termination of access to the DAC.

The CHIS Research Clearinghouse is designed to help users learn about past studies and those in progress. To help make the Clearinghouse a valuable resource, we thank you for allowing us to submit your project online (see <http://healthpolicy.ucla.edu/chis/research/Pages/add.aspx>). We also request that papers, articles, reports or presentations that use CHIS data cite CHIS appropriately (see [http://healthpolicy.ucla.edu/chis/fag/Documents/cite\\_source.pdf](http://healthpolicy.ucla.edu/chis/fag/Documents/cite_source.pdf)). Finally, please remember to forward copies of final publications derived from your use of CHIS data to the DAC.

Again, I am pleased that we are able to support your study by providing permission to use the CHIS 2011 to 2013 data through the DAC. If you have any questions please feel free to contact the Data Access Center Manager at (310) 794-8319 or by e-mail at [dacchpr@ucla.edu](mailto:dacchpr@ucla.edu).

Sincerely,

Ninez Ponce

cc: David Grant, PhD  
Hongjian Yu, PhD  
May Aydin, PhD

[www.chis.ucla.edu](http://www.chis.ucla.edu)

[www.healthpolicy.ucla.edu](http://www.healthpolicy.ucla.edu)

10960 Wilshire Boulevard, Suite 1550 Los Angeles, CA 90024 PH: 310 794.2691 FAX: 310 794.2686 [nponce@ucla.edu](mailto:nponce@ucla.edu)

## Appendix C

### List of Variables Used in the Study (CHIS Public Use Files 2012)

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AB1	GENERAL HEALTH CONDITION
AB16	LIMITATION OF ACTIVITIES B/C OF JOINT PROBLEMS
AC42_P	How OFTEN FIND FRESH FRUIT/VEG IN NEIGHB (PUF RECODE)
AC43	HOW OFTEN FIND FRESH FRUIT/VEG NEAR WORK
AC44	NEIGHBORHOOD FRUIT/VEG AFFORDABLE
AC45	WORKPLACE FRUIT/VEG AFFORDABLE
AC7	FALLEN TO GROUND MORE THAN ONCE IN PAST YR
ACMDNUM	# OF DOCTOR VISITS PAST YEAR
AD51	HAS DIFFICULTY LEARNING, REMEMBERING, CONCENTRATING
AD52	HAS DIFFICULTY DRESSING, BATHING, GETTING AROUND
AD53	HAS DIFFICULTY GOING OUTSIDE HOME ALONE
AD54	HAS DIFFICULTY WORKING AT A JOB
AD57	CONDITION LIMITS BASIC PHYS ACTIVITY
AF62	ANY MONTH PAST 12 MONTHS FELT WORSE
AF63	FEEL NERVOUS WORST MONTH
AF64	FEEL HOPELESS WORST MONTH
AF65	FEEL RESTLESS WORST MONTH
AF66	FEEL DEPRESSED WORST MONTH
AF67	FEEL EVERYTHING AN EFFORT WORST MONTH
AF68	FEEL WORTHLESS WORST MONTH
AF69B	EMOTIONS INTERFERE W/WORK WORST MONTH
AF70B	EMOTIONS INTERFERE W/CHORES WORST MONTH
AF71B	EMOTIONS INTERFERE W/SOCIAL LIFE WORST MONTH
AF72B	EMOTIONS INTERFERE W/RELATIONSHIPS WORST MONTH
AG9	TYPE OF EMPLOYER ON SPOUSE'S MAIN JOB
AHEDUC	EDUCATIONAL ATTAINMENT
AJ29	FEEL NERVOUS PAST 30 DAYS
AJ30	FEEL HOPELESS PAST 30 DAYS
AJ31	FELL RESTLESS PAST 30 DAYS
AJ32	FEEL DEPRESSED PAST 30 DAYS
AJ33	FEEL EVERYTHING AN EFFORT PAST 30 DAYS
AJ34	FEEL WORTHLESS PAST 30 DAYS
AK22_P	HOUSEHOLD'S TOTAL ANNUAL INC (PUF RECODE)
AK23	LIVE IN HOUSE, DUPLEX, BUILDING WITH 3+ UNITS, OR MOBILE HOME
AK28	HOW OFTEN FEEL SAFE IN NEIGHBORHOOD

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AK3	# OF USUAL HRS WORKED PER WEEK
AK4	TYPE OF EMPLOYER AT MAIN JOB
AM19	PEOPLE IN NEIGHBORHOOD WILLING TO HELP EACH OTHER
AM21	PEOPLE IN NEIGHBORHOOD CAN BE TRUSTED
AM35	NEIGHBORHOOD WATCHES OUT FOR CHILDREN'S SAFETY
AM36	DID VOLUNTEER WORK OR COMMUNITY SERVICES PAST YR
AM39	VOLUNTEER IN ORG DEALING W/COMM PROB PAST YR
AM40	MEET INFORMALLY TO DEAL W/COMM PROB PAST YR
CHORES2	CITIZENSHIP STATUS - 3 LEVELS
FAMILY2	FAMILY LIFE IMPAIRMENT PAST 12 MONTHS
FAM_TYPE	FAMILY TYPE
FSLEV	FOOD SECURITY STATUS LEVEL
IMPAIR2	FUNCTIONAL ROLE IMPAIRMENT DUE TO EMOTIONS PAST 12 MONTHS
MARIT2	MARITAL STATUS- 4 CATEGORIES
POVLL	POVERTY LEVEL {1, 0-99% FPL}
SOCIAL2	SOCIAL LIFE IMPAIRMENT PAST 12 MONTHS
SRSEX	GENDER
WRKST	WORKING STATUS
YRUS	YEARS LIVED IN THE U.S.
RAKEDW0	CHIS2011 RAKED WEIGHT - FULL SAMPLE
RAKEDW1	CHIS2011 RAKED WEIGHT - REPLICATE 1
RAKEDW2	CHIS2011 RAKED WEIGHT - REPLICATE 2
RAKEDW3	CHIS2011 RAKED WEIGHT - REPLICATE 3
RAKEDW4	CHIS2011 RAKED WEIGHT - REPLICATE 4
RAKEDW5	CHIS2011 RAKED WEIGHT - REPLICATE 5
RAKEDW6	CHIS2011 RAKED WEIGHT - REPLICATE 6
RAKEDW7	CHIS2011 RAKED WEIGHT - REPLICATE 7
RAKEDW8	CHIS2011 RAKED WEIGHT - REPLICATE 8
RAKEDW9	CHIS2011 RAKED WEIGHT - REPLICATE 9
RAKEDW10	CHIS2011 RAKED WEIGHT - REPLICATE 10
RAKEDW11	CHIS2011 RAKED WEIGHT - REPLICATE 11
RAKEDW12	CHIS2011 RAKED WEIGHT - REPLICATE 12
RAKEDW13	CHIS2011 RAKED WEIGHT - REPLICATE 13
RAKEDW14	CHIS2011 RAKED WEIGHT - REPLICATE 14
RAKEDW15	CHIS2011 RAKED WEIGHT - REPLICATE 15
RAKEDW16	CHIS2011 RAKED WEIGHT - REPLICATE 16
RAKEDW17	CHIS2011 RAKED WEIGHT - REPLICATE 17
RAKEDW18	CHIS2011 RAKED WEIGHT - REPLICATE 18
RAKEDW19	CHIS2011 RAKED WEIGHT - REPLICATE 19
RAKEDW20	CHIS2011 RAKED WEIGHT - REPLICATE 20
RAKEDW21	CHIS2011 RAKED WEIGHT - REPLICATE 21
RAKEDW22	CHIS2011 RAKED WEIGHT - REPLICATE 22
RAKEDW23	CHIS2011 RAKED WEIGHT - REPLICATE 23
RAKEDW24	CHIS2011 RAKED WEIGHT - REPLICATE 24
RAKEDW25	CHIS2011 RAKED WEIGHT - REPLICATE 25
RAKEDW26	CHIS2011 RAKED WEIGHT - REPLICATE 26

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RAKEDW27	CHIS2011 RAKED WEIGHT - REPLICATE 27
RAKEDW28	CHIS2011 RAKED WEIGHT - REPLICATE 28
RAKEDW29	CHIS2011 RAKED WEIGHT - REPLICATE 29
RAKEDW30	CHIS2011 RAKED WEIGHT - REPLICATE 30
RAKEDW31	CHIS2011 RAKED WEIGHT - REPLICATE 31
RAKEDW32	CHIS2011 RAKED WEIGHT - REPLICATE 32
RAKEDW33	CHIS2011 RAKED WEIGHT - REPLICATE 33
RAKEDW34	CHIS2011 RAKED WEIGHT - REPLICATE 34
RAKEDW35	CHIS2011 RAKED WEIGHT - REPLICATE 35
RAKEDW36	CHIS2011 RAKED WEIGHT - REPLICATE 36
RAKEDW37	CHIS2011 RAKED WEIGHT - REPLICATE 37
RAKEDW38	CHIS2011 RAKED WEIGHT - REPLICATE 38
RAKEDW39	CHIS2011 RAKED WEIGHT - REPLICATE 39
RAKEDW40	CHIS2011 RAKED WEIGHT - REPLICATE 40
RAKEDW41	CHIS2011 RAKED WEIGHT - REPLICATE 41
RAKEDW42	CHIS2011 RAKED WEIGHT - REPLICATE 42
RAKEDW43	CHIS2011 RAKED WEIGHT - REPLICATE 43
RAKEDW44	CHIS2011 RAKED WEIGHT - REPLICATE 44
RAKEDW45	CHIS2011 RAKED WEIGHT - REPLICATE 45
RAKEDW46	CHIS2011 RAKED WEIGHT - REPLICATE 46
RAKEDW47	CHIS2011 RAKED WEIGHT - REPLICATE 47
RAKEDW48	CHIS2011 RAKED WEIGHT - REPLICATE 48
RAKEDW49	CHIS2011 RAKED WEIGHT - REPLICATE 49
RAKEDW50	CHIS2011 RAKED WEIGHT - REPLICATE 50
RAKEDW51	CHIS2011 RAKED WEIGHT - REPLICATE 51
RAKEDW52	CHIS2011 RAKED WEIGHT - REPLICATE 52
RAKEDW53	CHIS2011 RAKED WEIGHT - REPLICATE 53
RAKEDW54	CHIS2011 RAKED WEIGHT - REPLICATE 54
RAKEDW55	CHIS2011 RAKED WEIGHT - REPLICATE 55
RAKEDW56	CHIS2011 RAKED WEIGHT - REPLICATE 56
RAKEDW57	CHIS2011 RAKED WEIGHT - REPLICATE 57
RAKEDW58	CHIS2011 RAKED WEIGHT - REPLICATE 58
RAKEDW59	CHIS2011 RAKED WEIGHT - REPLICATE 59
RAKEDW60	CHIS2011 RAKED WEIGHT - REPLICATE 60
RAKEDW61	CHIS2011 RAKED WEIGHT - REPLICATE 61
RAKEDW62	CHIS2011 RAKED WEIGHT - REPLICATE 62
RAKEDW63	CHIS2011 RAKED WEIGHT - REPLICATE 63
RAKEDW64	CHIS2011 RAKED WEIGHT - REPLICATE 64
RAKEDW65	CHIS2011 RAKED WEIGHT - REPLICATE 65
RAKEDW66	CHIS2011 RAKED WEIGHT - REPLICATE 66
RAKEDW67	CHIS2011 RAKED WEIGHT - REPLICATE 67
RAKEDW68	CHIS2011 RAKED WEIGHT - REPLICATE 68
RAKEDW69	CHIS2011 RAKED WEIGHT - REPLICATE 69
RAKEDW70	CHIS2011 RAKED WEIGHT - REPLICATE 70
RAKEDW71	CHIS2011 RAKED WEIGHT - REPLICATE 71
RAKEDW72	CHIS2011 RAKED WEIGHT - REPLICATE 72
RAKEDW73	CHIS2011 RAKED WEIGHT - REPLICATE 73

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RAKEDW74	CHIS2011 RAKED WEIGHT - REPLICATE 74
RAKEDW75	CHIS2011 RAKED WEIGHT - REPLICATE 75
RAKEDW76	CHIS2011 RAKED WEIGHT - REPLICATE 76
RAKEDW77	CHIS2011 RAKED WEIGHT - REPLICATE 77
RAKEDW78	CHIS2011 RAKED WEIGHT - REPLICATE 78
RAKEDW79	CHIS2011 RAKED WEIGHT - REPLICATE 79
RAKEDW80	CHIS2011 RAKED WEIGHT - REPLICATE 80

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## Appendix D

### Analysis of Intersectionality: Detailed Results

1            Number of obs    =    11,134  
              Population size   = 9,357,419  
              Replications       =        79  
              Design df           =        78  
              F( 48,        31)    =        .  
              Prob > F            =        .  
              R-squared           =        0.0491

WellBeing	Jackknife					[95% Conf. Interval]
	Coef.	Std. Err.	t	P> t		
gender						
Male	.1694307	.0769555	2.20	0.031	.0162241	.3226373
race						
Latino	-.1223122	.1195398	-1.02	0.309	-.3602976	.1156732
Pacific Islander	.2246564	.4094283	0.55	0.585	-.5904528	1.039766
American Indian/Alaskan Native	-2.899246	2.131362	-1.36	0.178	-7.142462	1.343969
Asian	.1414087	.0793062	1.78	0.078	-.0164779	.2992953
African/African American	.3621181	.1342456	2.70	0.009	.0948557	.6293806
Other single/multiple race	-.026534	.1322119	-0.20	0.841	-.2897477	.2366796
class						
0-99% FPL	-.3204018	.2215502	-1.45	0.152	-.7614743	.1206706
100-199% FPL	-.1990149	.113482	-1.75	0.083	-.4249402	.0269104
200-299% FPL	-.2634561	.1517909	-1.74	0.087	-.5656486	.0387364

	gender#race						
	Male#Latino	.1377095	.1374943	1.00	0.320	-.1360207	.4114396
	Male#Pacific Islander	-.8625708	1.128286	-0.76	0.447	-3.108815	1.383673
	Male#American Indian/Alaskan Native	-.6165182	.4353745	-1.42	0.161	-1.483282	.2502459
	Male#Asian	-.0685459	.0994737	-0.69	0.493	-.2665827	.1294909
	Male#African/African American	-.3769357	.226581	-1.66	0.100	-.8280237	.0741524
	Male#Other single/multiple race	-.0149559	.1891889	-0.08	0.937	-.3916021	.3616903
	gender#class						
	Male#0-99% FPL	-.1248183	.3232149	-0.39	0.700	-.7682897	.5186532
	Male#100-199% FPL	.3170326	.1524871	2.08	0.041	.0134541	.620611
	Male#200-299% FPL	-.095799	.243883	-0.39	0.696	-.5813328	.3897349

race#class						
Latino#0-99% FPL	.1481173	.2612675	0.57	0.572	-.3720263	.6682609
Latino#100-199% FPL	-.064298	.1631299	-0.39	0.695	-.3890646	.2604687
Latino#200-299% FPL	.3564267	.2042179	1.75	0.085	-.0501399	.7629932
Pacific Islander#0-99% FPL	.9558402	1.087581	0.88	0.382	-1.209367	3.121047
Pacific Islander#100-199% FPL	-2.47715	.4136885	-5.99	0.000	-3.30074	-1.653559
Pacific Islander#200-299% FPL	1.136441	1.073646	1.06	0.293	-1.001025	3.273906
American Indian/Alaskan Native#0-99% FPL	4.746466	2.535494	1.87	0.065	-.3013143	9.794246
American Indian/Alaskan Native#100-199% FPL	3.329944	2.138582	1.56	0.123	-.9276468	7.587534
American Indian/Alaskan Native#200-299% FPL	0	(empty)				
Asian#0-99% FPL	.0203756	.2396034	0.09	0.932	-.4566381	.4973893
Asian#100-199% FPL	.0032912	.1345133	0.02	0.981	-.2645042	.2710866
Asian#200-299% FPL	-.1174716	.2143518	-0.55	0.585	-.5442132	.3092699
African/African American#0-99% FPL	-.3582404	.3834382	-0.93	0.353	-1.121607	.4051265
African/African American#100-199% FPL	-.8677294	.4012895	-2.16	0.034	-1.666635	-.0688234
African/African American#200-299% FPL	.1365997	.3044034	0.45	0.655	-.4694209	.7426203
Other single/multiple race#0-99% FPL	.0711658	.2581332	0.28	0.784	-.4427378	.5850694
Other single/multiple race#100-199% FPL	-.0442336	.198426	-0.22	0.824	-.4392694	.3508022
Other single/multiple race#200-299% FPL	.2313922	.2327305	0.99	0.323	-.2319386	.6947231

race#class#gender						
Latino#0-99% FPL#Male	-.2319605	.3907776	-0.59	0.555	-1.009939	.5460179
Latino#100-199% FPL#Male	-.2503601	.2055569	-1.22	0.227	-.6595924	.1588723
Latino#200-299% FPL#Male	-.1248459	.2912139	-0.43	0.669	-.7046082	.4549164
Pacific Islander#0-99% FPL#Male	0	(omitted)				
Pacific Islander#0-99% FPL#Female	0	(empty)				
Pacific Islander#100-199% FPL#Male	-1.50713	3.203002	-0.47	0.639	-7.883817	4.869557
Pacific Islander#200-299% FPL#Male	0	(omitted)				
Pacific Islander#200-299% FPL#Female	0	(empty)				
American Indian/Alaskan Native#0-99% FPL#Male	0	(omitted)				
American Indian/Alaskan Native#0-99% FPL#Female	0	(empty)				
American Indian/Alaskan Native#100-199% FPL#Male	0	(omitted)				
American Indian/Alaskan Native#200-299% FPL#Male	0	(empty)				
American Indian/Alaskan Native#200-299% FPL#Female	0	(empty)				
American Indian/Alaskan Native#300% FPL and Above#Male	0	(empty)				
Asian#0-99% FPL#Male	-.0374242	.3627647	-0.10	0.918	-.7596332	.6847847
Asian#100-199% FPL#Male	-.6194913	.2090183	-2.96	0.004	-1.035615	-.2033677
Asian#200-299% FPL#Male	.0990642	.3713708	0.27	0.790	-.6402783	.8384066
African/African American#0-99% FPL#Male	.7972683	.4682339	1.70	0.093	-.1349138	1.72945
African/African American#100-199% FPL#Male	.2454685	.5097545	0.48	0.631	-.7693748	1.260312
African/African American#200-299% FPL#Male	.0132137	.41268	0.03	0.975	-.8083691	.8347964
Other single/multiple race#0-99% FPL#Male	.2506309	.389951	0.64	0.522	-.5257019	1.026964
Other single/multiple race#100-199% FPL#Male	-.2594886	.2722639	-0.95	0.343	-.8015243	.2825472
Other single/multiple race#200-299% FPL#Male	-.0567702	.3400695	-0.17	0.868	-.7337967	.6202562
_cons	.0824408	.0593876	1.39	0.169	-.0357909	.2006725

Note: One or more parameters could not be estimated in 1 jackknife replicate;  
standard-error estimates include only complete replications.

race#class#gender						
Latino#0-99% FPL#Male	-.2319605	.3907776	-0.59	0.555	-1.009939	.5460179
Latino#100-199% FPL#Male	-.2503601	.2055569	-1.22	0.227	-.6595924	.1588723
Latino#200-299% FPL#Male	-.1248459	.2912139	-0.43	0.669	-.7046082	.4549164
Pacific Islander#0-99% FPL#Male	0	(omitted)				
Pacific Islander#0-99% FPL#Female	0	(empty)				
Pacific Islander#100-199% FPL#Male	-1.50713	3.203002	-0.47	0.639	-7.883817	4.869557
Pacific Islander#200-299% FPL#Male	0	(omitted)				
Pacific Islander#200-299% FPL#Female	0	(empty)				
American Indian/Alaskan Native#0-99% FPL#Male	0	(omitted)				
American Indian/Alaskan Native#0-99% FPL#Female	0	(empty)				
American Indian/Alaskan Native#100-199% FPL#Male	0	(omitted)				
American Indian/Alaskan Native#200-299% FPL#Male	0	(empty)				
American Indian/Alaskan Native#200-299% FPL#Female	0	(empty)				
American Indian/Alaskan Native#300% FPL and Above#Male	0	(empty)				
Asian#0-99% FPL#Male	-.0374242	.3627647	-0.10	0.918	-.7596332	.6847847
Asian#100-199% FPL#Male	-.6194913	.2090183	-2.96	0.004	-1.035615	-.2033677
Asian#200-299% FPL#Male	.0990642	.3713708	0.27	0.790	-.6402783	.8384066
African/African American#0-99% FPL#Male	.7972683	.4682339	1.70	0.093	-.1349138	1.72945
African/African American#100-199% FPL#Male	.2454685	.5097545	0.48	0.631	-.7693748	1.260312
African/African American#200-299% FPL#Male	.0132137	.41268	0.03	0.975	-.8083691	.8347964
Other single/multiple race#0-99% FPL#Male	.2506309	.389951	0.64	0.522	-.5257019	1.026964
Other single/multiple race#100-199% FPL#Male	-.2594886	.2722639	-0.95	0.343	-.8015243	.2825472
Other single/multiple race#200-299% FPL#Male	-.0567702	.3400695	-0.17	0.868	-.7337967	.6202562
_cons	.0824408	.0593876	1.39	0.169	-.0357909	.2006725

Note: One or more parameters could not be estimated in 1 jackknife replicate;  
standard-error estimates include only complete replications.

Number of strata = 1  
 Number of obs = 11,134  
 Population size = 9,357,419  
 Replications = 79  
 Design df = 78  
 F( 48, 31) = .  
 Prob > F = .  
 R-squared = 0.0491

WellBeing	Coef.	Jackknife Std. Err.	t	P> t	[95% Conf. Interval]	
gender						
Female	-.1694307	.0769555	-2.20	0.031	-.3226373	-.0162241
race						
Latino	.0153973	.0610205	0.25	0.801	-.1060853	.1368798
Pacific Islander	-.6379144	1.060905	-0.60	0.549	-2.750014	1.474185
American Indian/Alaskan Native	-.1858208	.3243264	-0.57	0.568	-.831505	.4598635
Asian	.0728628	.0673381	1.08	0.283	-.0611971	.2069226
African/African American	-.0148175	.1834162	-0.08	0.936	-.3799711	.350336
Other single/multiple race	-.04149	.134207	-0.31	0.758	-.3086755	.2256956
class						
0-99% FPL	-.4452201	.2108144	-2.11	0.038	-.8649193	-.0255209
100-199% FPL	.1180177	.0897946	1.31	0.193	-.0607496	.2967849
200-299% FPL	-.3592551	.172939	-2.08	0.041	-.7035502	-.0149599
gender#race						
Female#Latino	-.1377095	.1374943	-1.00	0.320	-.4114396	.1360207
Female#Pacific Islander	.8625708	1.128286	0.76	0.447	-1.383673	3.108815
Female#American Indian/Alaskan Native	-2.713426	2.155729	-1.26	0.212	-7.005151	1.5783
Female#Asian	.0685459	.0994737	0.69	0.493	-.1294909	.2665827
Female#African/African American	.3769357	.226581	1.66	0.100	-.0741524	.8280237
Female#Other single/multiple race	.0149559	.1891889	0.08	0.937	-.3616903	.3916021
gender#class						
Female#0-99% FPL	.1248183	.3232149	0.39	0.700	-.5186532	.7682897
Female#100-199% FPL	-.3170326	.1524871	-2.08	0.041	-.620611	-.0134541
Female#200-299% FPL	.095799	.243883	0.39	0.696	-.3897349	.5813328

gender#class#race						
Male#0-99% FPL#Latino	-.0838432	.250742	-0.33	0.739	-.5830322	.4153458
Male#0-99% FPL#Pacific Islander	.9558402	1.087581	0.88	0.382	-1.209367	3.121047
Male#0-99% FPL#American Indian/Alaskan Native	1.416522	1.288179	1.10	0.275	-1.148046	3.98109
Male#0-99% FPL#Asian	-.0170486	.2499325	-0.07	0.946	-.514626	.4805287
Male#0-99% FPL#African/African American	.4390279	.2980425	1.47	0.145	-.1543292	1.032385
Male#0-99% FPL#Other single/multiple race	.3217968	.2557696	1.26	0.212	-.1874013	.8309949
Male#100-199% FPL#Latino	-.314658	.1129674	-2.79	0.007	-.5395588	-.0897572
Male#100-199% FPL#Pacific Islander	-3.984279	3.179737	-1.25	0.214	-10.31465	2.346091
Male#100-199% FPL#American Indian/Alaskan Native	0	(omitted)				
Male#100-199% FPL#Asian	-.6162	.1438464	-4.28	0.000	-.9025762	-.3298238
Male#100-199% FPL#African/African American	-.6222609	.2685567	-2.32	0.023	-1.156916	-.0876057
Male#100-199% FPL#Other single/multiple race	-.3037222	.1779218	-1.71	0.092	-.6579372	.0504929
Male#200-299% FPL#Latino	.2315808	.1915337	1.21	0.230	-.1497335	.612895
Male#200-299% FPL#Pacific Islander	1.136441	1.073646	1.06	0.293	-1.001025	3.273906
Male#200-299% FPL#American Indian/Alaskan Native	0	(empty)				
Male#200-299% FPL#Asian	-.0184075	.232406	-0.08	0.937	-.4810922	.4442773
Male#200-299% FPL#African/African American	.1498134	.2621552	0.57	0.569	-.3720975	.6717243
Male#200-299% FPL#Other single/multiple race	.174622	.2462587	0.71	0.480	-.3156415	.6648855
Male#300% FPL and Above#American Indian/Alaskan Native	0	(empty)				
Female#0-99% FPL#Latino	.1481173	.2612675	0.57	0.572	-.3720263	.6682609
Female#0-99% FPL#Pacific Islander	0	(empty)				
Female#0-99% FPL#American Indian/Alaskan Native	0	(empty)				
Female#0-99% FPL#Asian	.0203756	.2396034	0.09	0.932	-.4566381	.4973893
Female#0-99% FPL#African/African American	-.3582404	.3834382	-0.93	0.353	-1.121607	.4051265
Female#0-99% FPL#Other single/multiple race	.0711658	.2581332	0.28	0.784	-.4427378	.5850694
Female#100-199% FPL#Latino	-.064298	.1631299	-0.39	0.695	-.3890646	.2604687
Female#100-199% FPL#Pacific Islander	-2.47715	.4136885	-5.99	0.000	-3.30074	-1.653559
Female#100-199% FPL#American Indian/Alaskan Native	3.329944	2.138582	1.56	0.123	-.9276468	7.587534
Female#100-199% FPL#Asian	.0032912	.1345133	0.02	0.981	-.2645042	.2710866
Female#100-199% FPL#African/African American	-.8677294	.4012895	-2.16	0.034	-1.666635	-.0688234
Female#100-199% FPL#Other single/multiple race	-.0442336	.198426	-0.22	0.824	-.4392694	.3508022
Female#200-299% FPL#Latino	.3564267	.2042179	1.75	0.085	-.0501399	.7629932
Female#200-299% FPL#Pacific Islander	0	(empty)				
Female#200-299% FPL#American Indian/Alaskan Native	0	(empty)				
Female#200-299% FPL#Asian	-.1174716	.2143518	-0.55	0.585	-.5442132	.3092699
Female#200-299% FPL#African/African American	.1365997	.3044034	0.45	0.655	-.4694209	.7426203
Female#200-299% FPL#Other single/multiple race	.2313922	.2327305	0.99	0.323	-.2319386	.6947231
_cons	.2518715	.0473679	5.32	0.000	.1575693	.3461737

Note: One or more parameters could not be estimated in 1 jackknife replicate;  
standard-error estimates include only complete replications.

gender#class#race						
Male#0-99% FPL#Latino	-.0838432	.250742	-0.33	0.739	-.5830322	.4153458
Male#0-99% FPL#Pacific Islander	.9558402	1.087581	0.88	0.382	-1.209367	3.121047
Male#0-99% FPL#American Indian/Alaskan Native	1.416522	1.288179	1.10	0.275	-1.148046	3.98109
Male#0-99% FPL#Asian	-.0170486	.2499325	-0.07	0.946	-.514626	.4805287
Male#0-99% FPL#African/African American	.4390279	.2980425	1.47	0.145	-.1543292	1.032385
Male#0-99% FPL#Other single/multiple race	.3217968	.2557696	1.26	0.212	-.1874013	.8309949
Male#100-199% FPL#Latino	-.314658	.1129674	-2.79	0.007	-.5395588	-.0897572
Male#100-199% FPL#Pacific Islander	-3.984279	3.179737	-1.25	0.214	-10.31465	2.346091
Male#100-199% FPL#American Indian/Alaskan Native	0	(omitted)				
Male#100-199% FPL#Asian	-.6162	.1438464	-4.28	0.000	-.9025762	-.3298238
Male#100-199% FPL#African/African American	-.6222609	.2685567	-2.32	0.023	-1.156916	-.0876057
Male#100-199% FPL#Other single/multiple race	-.3037222	.1779218	-1.71	0.092	-.6579372	.0504929
Male#200-299% FPL#Latino	.2315808	.1915337	1.21	0.230	-.1497335	.612895
Male#200-299% FPL#Pacific Islander	1.136441	1.073646	1.06	0.293	-1.001025	3.273906
Male#200-299% FPL#American Indian/Alaskan Native	0	(empty)				
Male#200-299% FPL#Asian	-.0184075	.232406	-0.08	0.937	-.4810922	.4442773
Male#200-299% FPL#African/African American	.1498134	.2621552	0.57	0.569	-.3720975	.6717243
Male#200-299% FPL#Other single/multiple race	.174622	.2462587	0.71	0.480	-.3156415	.6648855
Male#300% FPL and Above#American Indian/Alaskan Native	0	(empty)				
Female#0-99% FPL#Latino	.1481173	.2612675	0.57	0.572	-.3720263	.6682609
Female#0-99% FPL#Pacific Islander	0	(empty)				
Female#0-99% FPL#American Indian/Alaskan Native	0	(empty)				
Female#0-99% FPL#Asian	.0203756	.2396034	0.09	0.932	-.4566381	.4973893
Female#0-99% FPL#African/African American	-.3582404	.3834382	-0.93	0.353	-1.121607	.4051265
Female#0-99% FPL#Other single/multiple race	.0711658	.2581332	0.28	0.784	-.4427378	.5850694
Female#100-199% FPL#Latino	-.064298	.1631299	-0.39	0.695	-.3890646	.2604687
Female#100-199% FPL#Pacific Islander	-2.47715	.4136885	-5.99	0.000	-3.30074	-1.653559
Female#100-199% FPL#American Indian/Alaskan Native	3.329944	2.138582	1.56	0.123	-.9276468	7.587534
Female#100-199% FPL#Asian	.0032912	.1345133	0.02	0.981	-.2645042	.2710866
Female#100-199% FPL#African/African American	-.8677294	.4012895	-2.16	0.034	-1.666635	-.0688234
Female#100-199% FPL#Other single/multiple race	-.0442336	.198426	-0.22	0.824	-.4392694	.3508022
Female#200-299% FPL#Latino	.3564267	.2042179	1.75	0.085	-.0501399	.7629932
Female#200-299% FPL#Pacific Islander	0	(empty)				
Female#200-299% FPL#American Indian/Alaskan Native	0	(empty)				
Female#200-299% FPL#Asian	-.1174716	.2143518	-0.55	0.585	-.5442132	.3092699
Female#200-299% FPL#African/African American	.1365997	.3044034	0.45	0.655	-.4694209	.7426203
Female#200-299% FPL#Other single/multiple race	.2313922	.2327305	0.99	0.323	-.2319386	.6947231
_cons	.2518715	.0473679	5.32	0.000	.1575693	.3461737

Note: One or more parameters could not be estimated in 1 jackknife replicate;  
standard-error estimates include only complete replications.

1                    Number of obs        =        11,134  
                      Population size       =        9,357,419  
                      Replications           =            79  
                      Design df                =            78  
                      F( 71,            8)        =            61.84  
                      Prob > F                =            0.0000  
                      R-squared                =            0.0475

WellBeing	Coef.	Jackknife Std. Err.	t	P> t	[95% Conf. Interval]	
Asian						
Chinese	.0390701	.1753871	0.22	0.824	-.3100989	.3882391
Japanese	.4083073	.1018797	4.01	0.000	.2054804	.6111342
Korean	-.1484263	.4110617	-0.36	0.719	-.9667873	.6699347
Filipino	.1200925	.2396278	0.50	0.618	-.3569699	.5971549
South Asian	-.1558732	.2973557	-0.52	0.602	-.747863	.4361165
Vietnamese	.022682	.1879301	0.12	0.904	-.351458	.396822
Southeast Asian	.1208629	.188014	0.64	0.522	-.2534443	.4951701
Other Asian	.2996166	.2475854	1.21	0.230	-.193288	.7925212
class						
0-99% FPL	-.1545199	.0899106	-1.72	0.090	-.3335182	.0244785
100-199% FPL	-.2210818	.0939082	-2.35	0.021	-.4080388	-.0341249
300% FPL and Above	.1792824	.0938523	1.91	0.060	-.0075632	.3661279
gender						
Male	.1136616	.0789201	1.44	0.154	-.0434563	.2707796

gender#Asian						
Male#Chinese	.1067949	.1895747	0.56	0.575	-.2706193	.4842092
Male#Japanese	.0350075	.1197085	0.29	0.771	-.2033138	.2733288
Male#Korean	.3119724	.4244516	0.74	0.465	-.5330459	1.156991
Male#Filipino	-.2501104	.362012	-0.69	0.492	-.9708209	.4706001
Male#South Asian	-.7256617	.6724649	-1.08	0.284	-2.064436	.6131131
Male#Vietnamese	-.1859013	.3581219	-0.52	0.605	-.8988671	.5270646
Male#Southeast Asian	.2603906	.1893395	1.38	0.173	-.1165554	.6373365
Male#Other Asian	-.9308524	.8651923	-1.08	0.285	-2.653318	.7916131
gender#class						
Male#0-99% FPL	-.05469	.1075167	-0.51	0.612	-.2687393	.1593592
Male#100-199% FPL	.1770149	.1010734	1.75	0.084	-.0242067	.3782364
Male#300% FPL and Above	.0606292	.0941651	0.64	0.522	-.126839	.2480974
class#Asian						
0-99% FPL#Chinese	-.17302	.2281263	-0.76	0.450	-.6271846	.2811446
0-99% FPL#Japanese	-.0489464	.2034802	-0.24	0.811	-.4540443	.3561516
0-99% FPL#Korean	.2041228	.4286912	0.48	0.635	-.6493359	1.057581
0-99% FPL#Filipino	.0576203	.3901838	0.15	0.883	-.719176	.8344167
0-99% FPL#South Asian	.3378485	.304747	1.11	0.271	-.2688562	.9445531
0-99% FPL#Vietnamese	.1650594	.2135196	0.77	0.442	-.2600256	.5901443
0-99% FPL#Southeast Asian	.1923026	.2164269	0.89	0.377	-.2385703	.6231755
0-99% FPL#Other Asian	-.2101116	.4494925	-0.47	0.641	-1.104982	.6847592
100-199% FPL#Chinese	.0987771	.216643	0.46	0.650	-.3325259	.5300802
100-199% FPL#Japanese	-.0099824	.2777915	-0.04	0.971	-.5630227	.543058
100-199% FPL#Korean	.3074311	.4452812	0.69	0.492	-.5790558	1.193918
100-199% FPL#Filipino	.2805836	.2640406	1.06	0.291	-.2450809	.806248
100-199% FPL#South Asian	.3209623	.3053017	1.05	0.296	-.2868466	.9287713
100-199% FPL#Vietnamese	.4133428	.35612	1.16	0.249	-.2956377	1.122323
100-199% FPL#Southeast Asian	-.5255262	.4043	-1.30	0.197	-1.330426	.2793733
100-199% FPL#Other Asian	.2337291	.2704181	0.86	0.390	-.304632	.7720902
300% FPL and Above#Chinese	-.1096502	.207861	-0.53	0.599	-.5234696	.3041692
300% FPL and Above#Japanese	-.1712603	.1091291	-1.57	0.121	-.3885197	.0459992
300% FPL and Above#Korean	.2921549	.4202992	0.70	0.489	-.5445967	1.128906
300% FPL and Above#Filipino	-.0934901	.3886544	-0.24	0.811	-.8672416	.6802615
300% FPL and Above#South Asian	.1221465	.3288406	0.37	0.711	-.5325248	.7768178
300% FPL and Above#Vietnamese	.0745427	.2292626	0.33	0.746	-.381884	.5309695
300% FPL and Above#Southeast Asian	-.0345484	.3713198	-0.09	0.926	-.7737894	.7046925
300% FPL and Above#Other Asian	-.3277841	.2858665	-1.15	0.255	-.8969005	.2413324

gender#class#Asian						
Male#0-99% FPL#Chinese	.0389748	.2960582	0.13	0.896	-.5504318	.6283814
Male#0-99% FPL#Japanese	-2.070481	1.015765	-2.04	0.045	-4.092714	-.0482486
Male#0-99% FPL#Korean	-.0288326	.4470657	-0.06	0.949	-.9188721	.8612069
Male#0-99% FPL#Filipino	-.1926114	.6899645	-0.28	0.781	-1.566225	1.181002
Male#0-99% FPL#South Asian	.6493381	.6981593	0.93	0.355	-.7405903	2.039266
Male#0-99% FPL#Vietnamese	.1079576	.3882428	0.28	0.782	-.6649745	.8808896
Male#0-99% FPL#Southeast Asian	-.3835801	.3335069	-1.15	0.254	-1.047541	.2803811
Male#0-99% FPL#Other Asian	.8004845	1.027217	0.78	0.438	-1.244548	2.845517
Male#100-199% FPL#Chinese	-.1819634	.2755832	-0.66	0.511	-.7306074	.3666806
Male#100-199% FPL#Japanese	-.0540716	.3887232	-0.14	0.890	-.8279601	.7198168
Male#100-199% FPL#Korean	-.3248554	.4829642	-0.67	0.503	-1.286363	.6366524
Male#100-199% FPL#Filipino	-.1459739	.4333444	-0.34	0.737	-1.008696	.7167486
Male#100-199% FPL#South Asian	.7686388	.6746881	1.14	0.258	-.574562	2.11184
Male#100-199% FPL#Vietnamese	-.3439894	.4884196	-0.70	0.483	-1.316358	.6283794
Male#100-199% FPL#Southeast Asian	.4158527	.5028442	0.83	0.411	-.5852331	1.416938
Male#100-199% FPL#Other Asian	.0673924	1.023346	0.07	0.948	-1.969933	2.104717
Male#300% FPL and Above#Chinese	-.1997766	.2495986	-0.80	0.426	-.6966891	.297136
Male#300% FPL and Above#Japanese	-1.414536	1.654998	-0.85	0.395	-4.709383	1.880311
Male#300% FPL and Above#Korean	-.3219722	.4380747	-0.73	0.465	-1.194112	.5501676
Male#300% FPL and Above#Filipino	.1126326	.5114213	0.22	0.826	-.9055291	1.130794
Male#300% FPL and Above#South Asian	.7520293	.6975848	1.08	0.284	-.6367555	2.140814
Male#300% FPL and Above#Vietnamese	.1015284	.386906	0.26	0.794	-.6687422	.871799
Male#300% FPL and Above#Southeast Asian	-1.006676	.6579154	-1.53	0.130	-2.316485	.3031327
Male#300% FPL and Above#Other Asian	1.250496	.9063237	1.38	0.172	-.5538563	3.054848
_cons	-.0592951	.0801971	-0.74	0.462	-.2189553	.1003651

Note: One or more parameters could not be estimated in 1 jackknife replicate;  
standard-error estimates include only complete replications.

of strata = 1

Number of obs = 11,134  
 Population size = 9,357,419  
 Replications = 79  
 Design df = 78  
 F( 71, 8) = 61.84  
 Prob > F = 0.0000  
 R-squared = 0.0475

255

WellBeing	Coef.	Jackknife Std. Err.	t	P> t	[95% Conf. Interval]	
gender						
Female	-.1742908	.0573405	-3.04	0.003	-.2884469	-.0601346
class						
0-99% FPL	-.4491214	.0690087	-6.51	0.000	-.5865071	-.3117357
100-199% FPL	-.2839785	.0559344	-5.08	0.000	-.3953355	-.1726216
200-299% FPL	-.2399116	.057467	-4.17	0.000	-.3543196	-.1255035
Asian						
Chinese	-.1635617	.1260552	-1.30	0.198	-.4145184	.0873949
Japanese	-1.142482	1.598093	-0.71	0.477	-4.32404	2.039077
Korean	.1337287	.0601224	2.22	0.029	.0140342	.2534233
Filipino	-.1108754	.1806003	-0.61	0.541	-.470423	.2486722
South Asian	-.0073591	.079097	-0.09	0.926	-.1648292	.150111
Vietnamese	.0128519	.1544997	0.08	0.934	-.2947335	.3204372
Southeast Asian	-.6599712	.6262816	-1.05	0.295	-1.906802	.5868597
Other Asian	.2914758	.2188734	1.33	0.187	-.1442676	.7272193

Asian#gender#class						
Non-Asians#Female#0-99% FPL	.1153192	.0978192	1.18	0.242	-.0794238	.3100622
Non-Asians#Female#100-199% FPL	-.1163857	.0879963	-1.32	0.190	-.2915728	.0588015
Non-Asians#Female#200-299% FPL	.0606292	.0941651	0.64	0.522	-.126839	.2480974
Chinese#Male#0-99% FPL	.1753816	.1919235	0.91	0.364	-.2067087	.5574719
Chinese#Male#100-199% FPL	.2262405	.171664	1.32	0.191	-.1155163	.5679972
Chinese#Male#200-299% FPL	.3094267	.1491859	2.07	0.041	.0124205	.606433
Chinese#Female#0-99% FPL	.144931	.1920842	0.75	0.453	-.2374793	.5273413
Chinese#Female#100-199% FPL	.1850233	.2250361	0.82	0.413	-.2629892	.6330358
Chinese#Female#200-299% FPL	.263261	.2268243	1.16	0.249	-.1883114	.7148334
Chinese#Female#300% FPL and Above	.0929816	.1735588	0.54	0.594	-.2525473	.4385106
Japanese#Male#0-99% FPL	-.5336313	1.84732	-0.29	0.773	-4.211363	3.1441
Japanese#Male#100-199% FPL	1.521743	1.618396	0.94	0.350	-1.700236	4.743721
Japanese#Male#200-299% FPL	1.585797	1.608364	0.99	0.327	-1.61621	4.787803
Japanese#Female#0-99% FPL	1.617162	1.605625	1.01	0.317	-1.579392	4.813716
Japanese#Female#100-199% FPL	1.424421	1.602212	0.89	0.377	-1.765338	4.61418
Japanese#Female#200-299% FPL	1.611418	1.553492	1.04	0.303	-1.481348	4.704184
Japanese#Female#300% FPL and Above	1.379529	1.589876	0.87	0.388	-1.785671	4.544729
Korean#Male#0-99% FPL	.2051075	.1062822	1.93	0.057	-.0064841	.4166991
Korean#Male#100-199% FPL	.012393	.175425	0.07	0.944	-.3368513	.3616373
Korean#Male#200-299% FPL	.0298173	.1350096	0.22	0.826	-.2389661	.2986008
Korean#Female#0-99% FPL	.0372869	.1932567	0.19	0.848	-.3474576	.4220314
Korean#Female#100-199% FPL	-.0911096	.1956806	-0.47	0.643	-.4806798	.2984605
Korean#Female#200-299% FPL	-.2215259	.4281825	-0.52	0.606	-1.073972	.63092

Korean#Female#300% FPL and Above	.0099998	.1173064	0.09	0.932	-.2235393	.2435389
Filipino#Male#0-99% FPL	-.1541336	.41087	-0.38	0.709	-.9721129	.6638456
Filipino#Male#100-199% FPL	.1154671	.2313091	0.50	0.619	-.3450338	.5759681
Filipino#Male#200-299% FPL	-.0191425	.2967379	-0.06	0.949	-.6099024	.5716173
Filipino#Female#0-99% FPL	.4039074	.4069286	0.99	0.324	-.4062252	1.21404
Filipino#Female#100-199% FPL	.3951657	.2170736	1.82	0.073	-.0369946	.8273261
Filipino#Female#200-299% FPL	.291597	.2974388	0.98	0.330	-.3005581	.8837521
Filipino#Female#300% FPL and Above	.1374778	.3602594	0.38	0.704	-.5797436	.8546992
South Asian#Male#0-99% FPL	.1130108	.1828733	0.62	0.538	-.251062	.4770836
South Asian#Male#100-199% FPL	.2154253	.1704436	1.26	0.210	-.1239017	.5547524
South Asian#Male#200-299% FPL	-.8741758	.6259374	-1.40	0.166	-2.120321	.3719698
South Asian#Female#0-99% FPL	.3046536	.1341872	2.27	0.026	.0375074	.5717998
South Asian#Female#100-199% FPL	.0560625	.1513328	0.37	0.712	-.2452179	.3573429
South Asian#Female#200-299% FPL	-.0878849	.324724	-0.27	0.787	-.7343607	.5585908
South Asian#Female#300% FPL and Above	-.0263676	.189242	-0.14	0.890	-.4031195	.3503843
Vietnamese#Male#0-99% FPL	.0969458	.1898534	0.51	0.611	-.2810232	.4749148
Vietnamese#Male#100-199% FPL	-.1067177	.2440174	-0.44	0.663	-.592519	.3790836
Vietnamese#Male#200-299% FPL	-.1760711	.3287662	-0.54	0.594	-.8305943	.478452
Vietnamese#Female#0-99% FPL	.2902087	.2009751	1.44	0.153	-.1099019	.6903194
Vietnamese#Female#100-199% FPL	.3067873	.320147	0.96	0.341	-.3305764	.9441509
Vietnamese#Female#200-299% FPL	.0704593	.2386474	0.30	0.769	-.4046512	.5455699
Vietnamese#Female#300% FPL and Above	.0843729	.1835324	0.46	0.647	-.2810121	.4497579
Southeast Asian#Male#0-99% FPL	.8499472	.656913	1.29	0.200	-.4578662	2.157761
Southeast Asian#Male#100-199% FPL	.9315512	.7136695	1.31	0.196	-.4892556	2.352358
Southeast Asian#Male#200-299% FPL	1.041225	.617625	1.69	0.096	-.1883722	2.270822
Southeast Asian#Female#0-99% FPL	1.088456	.6455303	1.69	0.096	-.1966963	2.373608
Southeast Asian#Female#100-199% FPL	.1389223	.7284688	0.19	0.849	-1.311348	1.589192
Southeast Asian#Female#200-299% FPL	.8414633	.6810904	1.24	0.220	-.5144836	2.19741
Southeast Asian#Female#300% FPL and Above	.7462857	.6731591	1.11	0.271	-.5938712	2.086443
Other Asian#Male#0-99% FPL	-.3323386	.4064256	-0.82	0.416	-1.14147	.4767926
Other Asian#Male#100-199% FPL	-.6215901	.5338732	-1.16	0.248	-1.68445	.4412698
Other Asian#Male#200-299% FPL	-.9227116	.8272262	-1.12	0.268	-2.569592	.7241692
Other Asian#Female#0-99% FPL	-.0866516	.4340018	-0.20	0.842	-.9506829	.7773797
Other Asian#Female#100-199% FPL	.1254842	.2489829	0.50	0.616	-.3702027	.6211712
Other Asian#Female#200-299% FPL	.06877	.3222823	0.21	0.832	-.5728449	.7103848
Other Asian#Female#300% FPL and Above	-.3196433	.2720941	-1.17	0.244	-.861341	.2220544
_cons	.2942781	.0315948	9.31	0.000	.2313777	.3571784

Note: One or more parameters could not be estimated in 1 jackknife replicate;  
standard-error estimates include only complete replications.

Number of strata = 1

Number of obs = 11,134  
 Population size = 9,357,419  
 Replications = 79  
 Design df = 78  
 F( 61, 18) = .  
 Prob > F = .  
 R-squared = 0.0333

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WellBeing	Coef.	Jackknife Std. Err.	t	P> t	[95% Conf. Interval]	
gender						
Female	-.1135213	.1595997	-0.71	0.479	-.4312599	.2042174
age						
21-30yrs	-.2216948	.1072688	-2.07	0.042	-.4352506	-.008139
31-40yrs	-.2258328	.1191843	-1.89	0.062	-.4631105	.0114449
41-50yrs	-.4241951	.1895245	-2.24	0.028	-.8015093	-.0468809
51-60yrs	-.787014	.3626297	-2.17	0.033	-1.508954	-.0650737
61-70yrs	-.9285731	.4937829	-1.88	0.064	-1.911619	.0544732
71-80yrs	-.9531222	.2950174	-3.23	0.002	-1.540457	-.3657876
Above 80yrs	-.6624665	.4020643	-1.65	0.103	-1.462915	.137982
maritalstatus						
Widowed/Separated/Divorced	-.3622259	.0738304	-4.91	0.000	-.509211	-.2152409
Living with Partner	-.5340767	.1501381	-3.56	0.001	-.8329787	-.2351747
Married	.0001728	.0963563	0.00	0.999	-.1916579	.1920036
gender#age						
Female#21-30yrs	-.0210607	.2151675	-0.10	0.922	-.4494263	.4073049
Female#31-40yrs	-.2347298	.2756831	-0.85	0.397	-.7835728	.3141132
Female#41-50yrs	-.1097227	.3212309	-0.34	0.734	-.7492442	.5297989
Female#51-60yrs	.4752471	.4391648	1.08	0.283	-.3990628	1.349557
Female#61-70yrs	.7076833	.5082512	1.39	0.168	-.3041671	1.719534
Female#71-80yrs	.5256124	.3996721	1.32	0.192	-.2700737	1.321299
Female#Above 80yrs	.1905281	.4289631	0.44	0.658	-.6634719	1.044528
gender#maritalstatus						
Female#Widowed/Separated/Divorced	.489408	.1595997	3.07	0.003	.1716693	.8071466
Female#Living with Partner	.0279727	.5830993	0.05	0.962	-1.132889	1.188834
Female#Married	.4036566	.2454416	1.64	0.104	-.0849801	.8922932

age#maritalstatus						
21-30yrs#Widowed/Separated/Divorced	.3529266	.1831002	1.93	0.058	-.0115979	.7174511
21-30yrs#Living with Partner	.6965968	.209613	3.32	0.001	.2792894	1.113904
21-30yrs#Married	.3194526	.1315542	2.43	0.017	.0575483	.5813569
31-40yrs#Widowed/Separated/Divorced	.4697109	.1546412	3.04	0.003	.161844	.7775778
31-40yrs#Living with Partner	.6361366	.2032781	3.13	0.002	.231441	1.040832
31-40yrs#Married	.2855261	.1513899	1.89	0.063	-.0158681	.5869202
41-50yrs#Widowed/Separated/Divorced	.6025887	.2474645	2.44	0.017	.1099247	1.095253
41-50yrs#Living with Partner	.6970564	.2736344	2.55	0.013	.1522921	1.241821
41-50yrs#Married	.2984935	.220562	1.35	0.180	-.1406117	.7375988
51-60yrs#Widowed/Separated/Divorced	.5560953	.4056356	1.37	0.174	-.2514632	1.363654
51-60yrs#Living with Partner	1.365594	.4044624	3.38	0.001	.5603708	2.170817
51-60yrs#Married	.5492201	.3598375	1.53	0.131	-.1671613	1.265601
61-70yrs#Widowed/Separated/Divorced	1.088033	.5107943	2.13	0.036	.0711196	2.104946
61-70yrs#Living with Partner	1.077194	.51918	2.07	0.041	.0435858	2.110802
61-70yrs#Married	.7146717	.4980014	1.44	0.155	-.2767729	1.706116
71-80yrs#Widowed/Separated/Divorced	.9599075	.3029012	3.17	0.002	.3568776	1.562937
71-80yrs#Living with Partner	1.751741	.683797	2.56	0.012	.3904057	3.113076
71-80yrs#Married	.7325046	.3002018	2.44	0.017	.1348487	1.33016
Above 80yrs#Widowed/Separated/Divorced	.3563202	.4559178	0.78	0.437	-.5513424	1.263983
Above 80yrs#Living with Partner	1.113822	.4926708	2.26	0.027	.1329899	2.094654
Above 80yrs#Married	.3942595	.4426011	0.89	0.376	-.4868915	1.275411

age#maritalstatus#gender						
21-30yrs#Widowed/Separated/Divorced#Female	-.3348284	.3109668	-1.08	0.285	-.9539158	.284259
21-30yrs#Living with Partner#Female	-.1646061	.6046254	-0.27	0.786	-1.368323	1.039111
21-30yrs#Married#Female	-.3384585	.3005957	-1.13	0.264	-.9368986	.2599817
31-40yrs#Widowed/Separated/Divorced#Female	-.5058343	.34374	-1.47	0.145	-1.190168	.1784995
31-40yrs#Living with Partner#Female	.1389534	.6566692	0.21	0.833	-1.168374	1.446281
31-40yrs#Married#Female	-.2262355	.3729245	-0.61	0.546	-.9686711	.5162001
41-50yrs#Widowed/Separated/Divorced#Female	-.5774856	.3741537	-1.54	0.127	-1.322368	.1673971
41-50yrs#Living with Partner#Female	.2333719	.6361826	0.37	0.715	-1.03317	1.499914
41-50yrs#Married#Female	-.3465437	.3847591	-0.90	0.371	-1.11254	.4194529
51-60yrs#Widowed/Separated/Divorced#Female	-1.103396	.4679012	-2.36	0.021	-2.034916	-.1718762
51-60yrs#Living with Partner#Female	-.437153	.7573148	-0.58	0.565	-1.944851	1.070545
51-60yrs#Married#Female	-.8073513	.4518479	-1.79	0.078	-1.706911	.0922088
61-70yrs#Widowed/Separated/Divorced#Female	-1.286453	.532987	-2.41	0.018	-2.347549	-.2253575
61-70yrs#Living with Partner#Female	-.3264208	.8628739	-0.38	0.706	-2.044271	1.391429
61-70yrs#Married#Female	-1.089579	.5537209	-1.97	0.053	-2.191953	.0127946
71-80yrs#Widowed/Separated/Divorced#Female	-.9007068	.4122221	-2.19	0.032	-1.721378	-.0800356
71-80yrs#Living with Partner#Female	-.2074118	.9622076	-0.22	0.830	-2.12302	1.708196
71-80yrs#Married#Female	-1.05712	.4510483	-2.34	0.022	-1.955088	-.1591519
Above 80yrs#Widowed/Separated/Divorced#Female	-.3676552	.4834813	-0.76	0.449	-1.330193	.5948822
Above 80yrs#Living with Partner#Female	.259485	.6938646	0.37	0.709	-1.121893	1.640863
Above 80yrs#Married#Female	-.6353882	.5923168	-1.07	0.287	-1.8146	.5438239
_cons	.2340159	.0738304	3.17	0.002	.0870308	.3810009

Note: One or more parameters could not be estimated in 1 jackknife replicate;  
standard-error estimates include only complete replications.

```

:crata = 1
Number of obs = 11,134
Population size = 9,357,419
Replications = 79
Design df = 78
F( 61, 18) = .
Prob > F = .
R-squared = 0.0333

```

WellBeing	Coef.	Jackknife Std. Err.	t	P> t	[95% Conf. Interval]	
gender						
Male	.1135213	.1595997	0.71	0.479	-.2042174	.4312599
age						
21-30yrs	-.2427555	.1879267	-1.29	0.200	-.6168888	.1313778
31-40yrs	-.4605626	.2368732	-1.94	0.055	-.932141	.0110158
41-50yrs	-.5339178	.2606498	-2.05	0.044	-1.052832	-.0150038
51-60yrs	-.3117669	.2432254	-1.28	0.204	-.7959915	.1724578
61-70yrs	-.2208898	.1717625	-1.29	0.202	-.5628427	.1210632
71-80yrs	-.4275097	.2086704	-2.05	0.044	-.8429405	-.012079
Above 80yrs	-.4719384	.1587415	-2.97	0.004	-.7879684	-.1559083
maritalstatus						
Widowed/Separated/Divorced	.127182	.1293045	0.98	0.328	-.1302434	.3846074
Living with Partner	-.506104	.5537038	-0.91	0.364	-1.608444	.5962356
Married	.4038294	.21926	1.84	0.069	-.0326838	.8403425
maritalstatus#gender						
Widowed/Separated/Divorced#Male	-.489408	.1595997	-3.07	0.003	-.8071466	-.1716693
Living with Partner#Male	-.0279727	.5830993	-0.05	0.962	-1.188834	1.132889
Married#Male	-.4036566	.2454416	-1.64	0.104	-.8922932	.0849801

maritalstatus#gender						
Widowed/Separated/Divorced#Male	-.489408	.1595997	-3.07	0.003	-.8071466	-.1716693
Living with Partner#Male	-.0279727	.5830993	-0.05	0.962	-1.188834	1.132889
Married#Male	-.4036566	.2454416	-1.64	0.104	-.8922932	.0849801
maritalstatus#age						
Widowed/Separated/Divorced#21-30yrs	.0180982	.2373763	0.08	0.939	-.4544818	.4906781
Widowed/Separated/Divorced#31-40yrs	-.0361233	.2984738	-0.12	0.904	-.630339	.5580923
Widowed/Separated/Divorced#41-50yrs	.0251031	.2741809	0.09	0.927	-.5207491	.5709553
Widowed/Separated/Divorced#51-60yrs	-.5473005	.2747157	-1.99	0.050	-1.094217	-.0003836
Widowed/Separated/Divorced#61-70yrs	-.1984202	.1979277	-1.00	0.319	-.5924641	.1956236
Widowed/Separated/Divorced#71-80yrs	.0592007	.2243531	0.26	0.793	-.3874521	.5058535
Widowed/Separated/Divorced#Above 80yrs	-.011335	.1984462	-0.06	0.955	-.4064111	.3837411
Living with Partner#21-30yrs	.5319906	.5769437	0.92	0.359	-.6166159	1.680597
Living with Partner#31-40yrs	.77509	.6227334	1.24	0.217	-.464677	2.014857
Living with Partner#41-50yrs	.9304282	.5817899	1.60	0.114	-.2278264	2.088683
Living with Partner#51-60yrs	.9284407	.6191157	1.50	0.138	-.3041239	2.161005
Living with Partner#61-70yrs	.7507731	.6446675	1.16	0.248	-.5326614	2.034207
Living with Partner#71-80yrs	1.544329	.6706493	2.30	0.024	.2091688	2.879489
Living with Partner#Above 80yrs	1.373307	.6073021	2.26	0.027	.1642615	2.582353
Married#21-30yrs	-.0190058	.2840055	-0.07	0.947	-.5844174	.5464057
Married#31-40yrs	.0592906	.3036251	0.20	0.846	-.5451806	.6637618
Married#41-50yrs	-.0480502	.3115171	-0.15	0.878	-.6682331	.5721327
Married#51-60yrs	-.2581313	.2936751	-0.88	0.382	-.8427934	.3265309
Married#61-70yrs	-.3749074	.2650789	-1.41	0.161	-.9026389	.1528242
Married#71-80yrs	-.3246156	.2833677	-1.15	0.255	-.8887573	.2395262
Married#Above 80yrs	-.2411286	.3776005	-0.64	0.525	-.9928735	.5106162

	gender#age						
	Male#21-30yrs	.0210607	.2151675	0.10	0.922	-.4073049	.4494263
	Male#31-40yrs	.2347298	.2756831	0.85	0.397	-.3141132	.7835728
	Male#41-50yrs	.1097227	.3212309	0.34	0.734	-.5297989	.7492442
	Male#51-60yrs	-.4752471	.4391648	-1.08	0.283	-1.349557	.3990628
	Male#61-70yrs	-.7076833	.5082512	-1.39	0.168	-1.719534	.3041671
	Male#71-80yrs	-.5256124	.3996721	-1.32	0.192	-1.321299	.2700737
	Male#Above 80yrs	-.1905281	.4289631	-0.44	0.658	-1.044528	.6634719
	gender#age#maritalstatus						
	Male#21-30yrs#Widowed/Separated/Divorced	.3348284	.3109668	1.08	0.285	-.284259	.9539158
	Male#21-30yrs#Living with Partner	.1646061	.6046254	0.27	0.786	-1.039111	1.368323
	Male#21-30yrs#Married	.3384585	.3005957	1.13	0.264	-.2599817	.9368986
	Male#31-40yrs#Widowed/Separated/Divorced	.5058343	.34374	1.47	0.145	-.1784995	1.190168
	Male#31-40yrs#Living with Partner	-.1389534	.6566692	-0.21	0.833	-1.446281	1.168374
	Male#31-40yrs#Married	.2262355	.3729245	0.61	0.546	-.5162001	.9686711
	Male#41-50yrs#Widowed/Separated/Divorced	.5774856	.3741537	1.54	0.127	-.1673971	1.322368
	Male#41-50yrs#Living with Partner	-.2333719	.6361826	-0.37	0.715	-1.499914	1.03317
	Male#41-50yrs#Married	.3465437	.3847591	0.90	0.371	-.4194529	1.11254
	Male#51-60yrs#Widowed/Separated/Divorced	1.103396	.4679012	2.36	0.021	.1718762	2.034916
	Male#51-60yrs#Living with Partner	.437153	.7573148	0.58	0.565	-1.070545	1.944851
	Male#51-60yrs#Married	.8073513	.4518479	1.79	0.078	-.0922088	1.706911
	Male#61-70yrs#Widowed/Separated/Divorced	1.286453	.532987	2.41	0.018	.2253575	2.347549
	Male#61-70yrs#Living with Partner	.3264208	.8628739	0.38	0.706	-1.391429	2.044271
	Male#61-70yrs#Married	1.089579	.5537209	1.97	0.053	-.0127946	2.191953
	Male#71-80yrs#Widowed/Separated/Divorced	.9007068	.4122221	2.19	0.032	.0800356	1.721378
	Male#71-80yrs#Living with Partner	.2074118	.9622076	0.22	0.830	-1.708196	2.12302
	Male#71-80yrs#Married	1.05712	.4510483	2.34	0.022	.1591519	1.955088
	Male#Above 80yrs#Widowed/Separated/Divorced	.3676552	.4834813	0.76	0.449	-.5948822	1.330193
	Male#Above 80yrs#Living with Partner	-.259485	.6938646	-0.37	0.709	-1.640863	1.121893
	Male#Above 80yrs#Married	.6353882	.5923168	1.07	0.287	-.5438239	1.8146
	_cons	.1204946	.1293045	0.93	0.354	-.1369308	.37792

Note: One or more parameters could not be estimated in 1 jackknife replicate;  
standard-error estimates include only complete replications.

Living with Partner#71-80yrs	1.544329	.6706493	2.30	0.024	.2091688	2.879489
Living with Partner#Above 80yrs	1.373307	.6073021	2.26	0.027	.1642615	2.582353
Married#21-30yrs	-.0190058	.2840055	-0.07	0.947	-.5844174	.5464057
Married#31-40yrs	.0592906	.3036251	0.20	0.846	-.5451806	.6637618
Married#41-50yrs	-.0480502	.3115171	-0.15	0.878	-.6682331	.5721327
Married#51-60yrs	-.2581313	.2936751	-0.88	0.382	-.8427934	.3265309
Married#61-70yrs	-.3749074	.2650789	-1.41	0.161	-.9026389	.1528242
Married#71-80yrs	-.3246156	.2833677	-1.15	0.255	-.8887573	.2395262
Married#Above 80yrs	-.2411286	.3776005	-0.64	0.525	-.9928735	.5106162
gender#age						
Male#21-30yrs	.0210607	.2151675	0.10	0.922	-.4073049	.4494263
Male#31-40yrs	.2347298	.2756831	0.85	0.397	-.3141132	.7835728
Male#41-50yrs	.1097227	.3212309	0.34	0.734	-.5297989	.7492442
Male#51-60yrs	-.4752471	.4391648	-1.08	0.283	-1.349557	.3990628
Male#61-70yrs	-.7076833	.5082512	-1.39	0.168	-1.719534	.3041671
Male#71-80yrs	-.5256124	.3996721	-1.32	0.192	-1.321299	.2700737
Male#Above 80yrs	-.1905281	.4289631	-0.44	0.658	-1.044528	.6634719

gender#age#maritalstatus						
Male#21-30yrs#Widowed/Separated/Divorced	.3348284	.3109668	1.08	0.285	-.284259	.9539158
Male#21-30yrs#Living with Partner	.1646061	.6046254	0.27	0.786	-1.039111	1.368323
Male#21-30yrs#Married	.3384585	.3005957	1.13	0.264	-.2599817	.9368986
Male#31-40yrs#Widowed/Separated/Divorced	.5058343	.34374	1.47	0.145	-.1784995	1.190168
Male#31-40yrs#Living with Partner	-.1389534	.6566692	-0.21	0.833	-1.446281	1.168374
Male#31-40yrs#Married	.2262355	.3729245	0.61	0.546	-.5162001	.9686711
Male#41-50yrs#Widowed/Separated/Divorced	.5774856	.3741537	1.54	0.127	-.1673971	1.322368
Male#41-50yrs#Living with Partner	-.2333719	.6361826	-0.37	0.715	-1.499914	1.03317
Male#41-50yrs#Married	.3465437	.3847591	0.90	0.371	-.4194529	1.11254
Male#51-60yrs#Widowed/Separated/Divorced	1.103396	.4679012	2.36	0.021	.1718762	2.034916
Male#51-60yrs#Living with Partner	.437153	.7573148	0.58	0.565	-1.070545	1.944851
Male#51-60yrs#Married	.8073513	.4518479	1.79	0.078	-.0922088	1.706911
Male#61-70yrs#Widowed/Separated/Divorced	1.286453	.532987	2.41	0.018	.2253575	2.347549
Male#61-70yrs#Living with Partner	.3264208	.8628739	0.38	0.706	-1.391429	2.044271
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Male#Above 80yrs#Living with Partner	-.259485	.6938646	-0.37	0.709	-1.640863	1.121893
Male#Above 80yrs#Married	.6353882	.5923168	1.07	0.287	-.5438239	1.8146
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## Biographical Information

Arati Maleku completed her Ph.D. in Social Work from the University of Texas at Arlington, School of Social Work. She received her Master of Social Work degree from Washington University of St. Louis, George Warren Brown School of Social Work and her Bachelor of Social Work degree from St. Xavier's College in Kathmandu, Nepal. Her professional background encompasses over ten years of work experience in the areas of health equity, community development, gender, program development, health philanthropy, evaluation engagement, and non-profit capacity building in national and international settings. Her research focuses on examining the overlapping effects of structural vulnerabilities that arise from people's position in a society through structural factors such as gender, race, ethnicity, age, and marital status on well-being among immigrant populations in the United States. Her research interests are in the areas of health equity, social determinants of health, community resilience, gender, and human migration. Her research focus are in the areas of intersectionality, translational research, community based participatory research, and multi-method research approaches. Over the course of her Ph.D. career, Arati Maleku has gained significant research skills through her work as principal investigator, co-investigator, and graduate research assistant. She has also taught community practice and research methods courses to undergraduate and graduate level students at the School of Social Work, University of Texas at Arlington as an independent instructor. Arati Maleku hopes to pursue academic career path in the near future.