An Evaluation of Food Insecurity Rates and Its Correlates in a Filipino American Population Sample Residing In Clark County, Nevada

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AN EVALUATION OF FOOD INSECURITY RATES AND ITS CORRELATES IN A
FILIPINO AMERICAN POPULATION SAMPLE RESIDING IN
CLARK COUNTY, NEVADA

By

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Bachelor of Science – Biology
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2010

A thesis submitted in partial fulfillment
of the requirements for the

Master of Public Health

Department of Environmental and Occupational Health
School of Community Health Sciences
Division of Health Sciences
The Graduate College

University of Nevada, Las Vegas
May 2018
This thesis prepared by

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entitled

An Evaluation of Food Insecurity Rates and its Correlates in a Filipino American Population Sample Residing in Clark County, Nevada

is approved in partial fulfillment of the requirements for the degree of

Master of Public Health
Department of Environmental and Occupational Health

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Abstract

Filipino Americans comprise over half of the Asian American population in Clark County, Nevada. In 2016, 1.6% of Asian American households in Clark County reported being food insecure, which was considerably lower than food insecurity rates for White, non-Hispanic households (14.5%). Yet, Clark County demographic data reveals that 24% of Filipino-headed households report incomes at 200% or below the federal poverty level compared to 33% for Whites. Food insecurity rates specific to Filipino Americans in Clark County are lacking. Moreover, available food insecurity data aggregates Filipinos with other Asian American subgroups, which ignores the heterogeneity inherent to the Asian American community. In order to evaluate food insecurity rates in Filipino Americans, questions from the USDA 6-Item Short Form Food Security Survey Module was used, as part of a larger health needs assessment conducted among 200 Filipino Americans residing in Clark County. Study participants were recruited at Filipino ethnic club events, Filipino-based organizations, Filipino church proceedings, and a Filipino grocery store. The purpose of this study was to identify and better understand the contextual factors influencing food insecurity in this study population, and to apply the Social Ecological Model as a theoretical framework. Overall, 27.1% of respondents reported experiencing food insecurity in the past year. A Chi-square test demonstrated a statistically significant difference in this Filipino American study sample’s food insecurity rates compared to the reported Clark County food insecurity rates for Asian American households. Univariate logistic regression analysis revealed that the intrapersonal and policy level of the Social Ecological Model significantly predicted food security status. Specifically, household incomes less than $20,000, an education level of high school or below, having no health insurance, and eating mainly Western or American foods were significant independent predictors.
of food insecurity among the Filipino American study sample. In the subsequent multivariate regression models containing the four independent predictors of food insecurity, all variables, except for an education level of high school or below, remained significant. The findings from this study will be used to inform future targeted interventions for the Filipino American communities in Clark County.
Acknowledgements

I just want to give a big thank you to my mom, dad, and sister. They mean the world to me, and without out their love, care, and support none of this would be possible. To my wonderful fiancée, who has been there for me throughout this entire process, thank you for all your love and support Kara. I am so glad and happy to be able to spend the rest of my life with you.

Also, I would like to thank my committee members for their help and support throughout my time here at UNLV. All of you have played an integral part in my overall success as a graduate student, and also helping me achieve my ultimate goal of mitigating health inequities through a career in medicine. Lastly, a big thank you to everyone that I have come across here in Las Vegas. I am eternally grateful for all the encouragement and support that I have felt while living here for the past two years. To my friends, family, committee members, colleagues, and everyone that has had an impact on my life, thank you from the bottom of my heart.
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Chapter 1: Introduction

The United States Department of Agriculture (USDA) defines food insecurity as “a household-level economic and social condition of limited or uncertain access to adequate food” (USDA, 2017a). Since 1995, domestic food insecurity rates have been measured through the U.S. Household Food Security Survey Module (HFSSM) (Bickel et al., 2000). Developed after approximately a decade of formative and translational research, the 18-item HFSSM has acted as a standardized tool for local, state, and national agencies to accurately and reliably measure food insecurity rates (Bickel et al., 2000).

Various studies have recognized that food insecurity is associated with adverse health outcomes and conditions across the lifespan (Gunderson, 2013; Lee et al., 2012). In children, food insecurity has been linked to nutritional deficiencies (Cook et al., 2004), higher probability of asthma (Kirkpatrick et al., 2010), higher odds of reporting fair/poor health (Cook et al., 2004), higher likelihood of adolescent dysthymia and suicidal ideation (Alaimo et al., 2002), poor psychosocial health (Olson, 1999), and a potential connection with childhood obesity and overweight status (Food Action and Research Center, 2015; Gunderson et al., 2009; Ke & Ford-Jones, 2015). For adults and elderly individuals, food insecurity has been associated with nutritional deficiencies (Sun Lee & Frongillo, 2001), higher likelihood of reporting fair/poor health (Sun Lee & Frongillo, 2001), diabetes (Seligman et al., 2007; Vozoris & Tarasuk, 2003; Gucciardi et al., 2014), increased rates of chronic disease (Seligman et al., 2009; Vozoris & Tarasuk, 2003), dyslipidemia, among women (Tayie & Zizza, 2009), and to some extent, obesity (Food Research and Action Center, 2015). Consequently, food insecurity holds major implications for the practice of public health.
Despite the robust efforts invested into understanding food insecurity and its health
effects, specific studies on Asian Americans and food insecurity are lacking. In general, Asian
Americans are among the most understudied ethnic minority groups (Dela Cruz et al., 2002;
Islam et al., 2010). Stereotypes that purport Asian Americans as a self-sufficient, well educated,
and upwardly mobile group may contribute to their limited body of research (Ghosh, 2003; Islam
et al., 2010). Nonetheless, the available literature on Asian American food insecurity indicates
that this topic warrants further investigation (Chaparro et al., 2009; Tseng et al., 2010; Li et al.,
2013).

Filipino Americans are an especially intriguing Asian American sub-group worth
studying due to their high reported rates of chronic disease (Cuasay et al., 2001; Fuller-Thomson
et al., 2017; Bhimla et al., 2016; Staimez et al., 2013) that also happen to share an independent
association with food insecurity. In Clark County, Nevada, Filipino Americans comprise over
half of the Asian American population or approximately five percent (5%) of the total population
(U.S Census Bureau, 2016). Despite their large proportion of the Asian American population,
food insecurity data specific to Filipino Americans in Clark County is unavailable because they
are aggregated with other Asian American sub-groups. The reported Asian American food
insecurity rates in 2016 for Clark County, Nevada was 1.6%, which is considerably lower than
food insecurity rates for White, non-Hispanics at 15.5% (CPS, 2016b). Yet, this is inconsistent
with Clark County data on low-income status, as 24% of Filipinos report household incomes of
200% below the federal poverty level compared to 33% of Whites (U.S. Census Bureau, 2015b).

In order to explore the nature of this contradiction, the researchers evaluated food
insecurity rates and its correlates among a sample of two hundred (n=200) Filipino Americans
residing in Clark County, as part of a larger pilot study that assessed the health needs of this
population. A chi-square goodness of fit analysis was used to compare food insecurity rates among the study sample to the overall food insecurity rates of the aggregate Asian American population in Clark County, NV. Logistic regression modeling was also conducted to determine which socio-economic variables predicted food insecurity in the study population. The researchers also utilized the Social Ecological Model to achieve a greater understanding of the sociocultural and environmental factors that influence food insecurity among our study participants. Moreover, by examining food insecurity through the Social Ecological Model’s levels of influence, the researchers were able to provide evidence of the critical need to implement multi-level interventions when attempting to mitigate food insecurity in Filipino Americans residing in Clark County. This is one of the first studies that evaluated food insecurity and its correlates in an exclusively Filipino American study sample.
Chapter 2: Background & Literature Review

The Concept of Food Insecurity: Definition & Historical Underpinnings

The President’s Task Force on Food Assistance issued a report in 1984 detailing the state of hunger and hunger relief operations in America (LaForce et al., 1984). Of particular significance, the report alluded to the yet to be established concept of food insecurity. The Task Force on Food Assistance stated that hunger within the context of U.S.-related social and economic conditions includes “the inability, even occasionally, to obtain adequate food and nourishment” (LaForce et al., 1984 p.34), and is linked but not equivalent to a state of poverty (Carlson et al., 1999).

Despite finding qualitative evidence of hunger, the Task Force on Food Assistance noted that survey methods at the time were unable to properly document the number of hungry individuals in the U.S. (LaForce et al., 1984). The report ultimately concluded that hunger was not a widespread health issue due to a lack of empirical evidence and consensus definition for hunger (LaForce et al., 1984; Wunderlich & Norwood, 2006). Consequently, their findings and recommendations stimulated public and private efforts to develop a comprehensive means of accurately and reliably measuring the prevalence and severity of domestic hunger (Bickel et al., 2000; Wunderlich & Norwood, 2006).

The following decade produced several landmark achievements in regards to formative and translational research on U.S.-related food insecurity. The USDA defined food insecurity as “a household-level economic and social condition of limited or uncertain access to adequate food” (USDA, 2017a). This definition is based on a 1990 Life Sciences Research Office (LSRO) report which contained a conceptual definition for food security, and conversely food insecurity (Wunderlich & Norwood, 2006; Anderson, 1990):
• Food security is access by all people at all times to enough food for an active, healthy life. Food security includes at a minimum: (1) the ready availability of nutritionally adequate and safe foods, and (2) an assured ability to acquire acceptable foods in socially acceptable ways (e.g., without resorting to emergency food supplies, scavenging, stealing, or other coping strategies).

• Food insecurity is limited or uncertain availability of nutritionally adequate and safe foods or limited or uncertain ability to acquire acceptable foods in socially acceptable ways.

Soon after the LSRO publication, the United States Department of Agriculture (USDA) and Department of Health and Human Services (DHHS) commenced a joint venture aimed at developing a survey instrument capable of identifying and measuring food insecurity at the national, state, and local levels (Wunderlich & Norwood, 2006). Their work which included collaborations with other government agencies, private-sector partners, and nutrition experts, culminated in a questionnaire that has become today’s U.S. Household Food Security Survey Module (Bickel et al., 2000).

Since 1995, the Food Security Survey has been included as an annual supplement to the monthly Community Population Survey (USDA, 2017b). Formative research efforts optimized the survey to capture the essential indicators present among households that experience episodes of food insecurity (Bickel et al., 2000). Although the questionnaire format and screening process has gone through minor revisions over the years, the eighteen core questions have remained unchanged (USDA, 2017b). Moreover, the survey distinguishes between the various levels of severity associated with food insecurity (Bickel et al., 2000).
The current household food security status designations (in order of increasing food insecurity status) are: high food security; marginal food security; low food security; very low food security (USDA, 2017d). The distinction between low and very low food security is important to note. Households with “low food security” status “experience reduced quality, quantity, and desirability of their diets, but the quantity and normal eating patterns [are] not substantially disrupted” (USDA 2017d). Households with “very low food” security status experience substantially reduced food intake and disruptions in eating patterns among one or more members of the household, in addition to “reduced quality, quantity, and desirability of their diets” (USDA, 2017c; USDA, 2017d).

Although limitations exist with this survey tool, the Food Security Survey has provided public health practitioners, government officials, policy makers, private enterprises, and community partners with a robust tool capable of assessing the level and severity of domestic food insecurity. Despite efforts to eradicate hunger and food insecurity in the U.S., these issues still exist in our society.

**Current State of Food Insecurity in the U.S.**

In 2016, the USDA estimated that 15.6 million households in the United States experienced insufficient access to food at some point during the year (USDA, 2017c). This corresponds to approximately 12.3% of all U.S. households (USDA, 2017c). National food insecurity rates have trended downward since 2011, when the overall rate was 14.9% (USDA, 2017b). A closer examination reveals geographic differences within the national data. Food insecurity rates were highest in the Southern region of the United States (13.5%), followed by the Midwest (12.2%), West (11.5%), and Northeast (10.8%) (USDA, 2017c). Food insecurity is
strongly correlated with low-income status, and states in the South have some of our nation’s highest poverty rates (Coleman-Jensen et al., 2017; Center for American Progress, 2016).

Racial and gender descriptors of food insecurity illustrate the social disparities related to food insecurity. In 2016, 22.5% of Black, non-Hispanic households and 18.5% of Hispanic households reported being food insecure (USDA, 2017c). Those rates were significantly higher than the 9.3% of White, non-Hispanic households that reported being food insecure (CPS, 2016a). Minor differences in food insecurity rates existed between males and females living in single individual households in 2016 (CPS, 2016a). However, single female households with children recorded higher food insecurity rates (31.6%) than single male households with children (21.7%) (CPS, 2016a).

Existing literature on the predictors of food insecurity also supports the national-level statistics, and provides additional characteristics associated with food insecurity. Furness et al. (2004) assessed the prevalence and correlates of food insecurity among low-income households (<300% of federal poverty level) in Los Angeles County. According to Furness and colleagues (2004), higher rates of food insecurity were reported by households whose incomes fell below 100% of the federal poverty level (FPL) (34.7%), followed by 100%-200% of the FPL (23.7%), and finally households with incomes 200%-300% of the FPL (17.3%). Moreover, households with children, households receiving public assistance, and households that reported past homelessness reported higher rates of food insecurity (Furness et al. 2014).

Although low-income status and food insecurity are highly correlated, it is important to highlight that poverty and food insecurity are distinct social conditions. According to Coleman-Jensen et al. (2017), 61.7% of food secure households reported incomes below the poverty level. Moreover, higher income households also experience episodes of food insecurity. Nord and
Bickel (2002) examined the connection between food insecurity in households with annual incomes greater than $50,000. They concluded that these higher income households were subject to food insecurity because of inconsistent incomes during parts of the year, presence of multiple economic units in a household that do not share resources, alternating household compositions, and unexpected life events such as accidents, illness, or loss of jobs (Nord & Bickel, 2002). In a similar study conducted among Canadian households with annual incomes greater than 60,000 Canadian dollars (approximately $46,701), Olabiyi & McIntyre (2014) found statistically significant increases in food insecurity among households that were occupied by renters, single-parents, larger household size, lower educational attainment, receipt of unemployment benefits, presence of chronic disease, smokers, and problems with gambling. However, the full contextual relationship between income and food insecurity is not well understood (Olabiyi & McIntyre, 2014).

Supplemental Nutrition Assistance Program (SNAP), or food stamp, participation has also been found to predict food insecurity (Goldberg & Mawn, 2014; Mayer et al., 2014; Gunderson & Oliveira, 2001). Mayer et al. (2014) explains that this is likely the case because SNAP participants also possess certain health and financial characteristics that pre-dispose them to episodes of food insecurity. However, research conducted by Ratcliffe and colleagues (2011), using data from the U.S. Survey of Income and Program Participation, documented that SNAP benefits reduces the likelihood of being food insecure by 31.2%. Efforts to identify the connection between food assistance participation and food insecurity are complicated due to the fact that enrollment into these programs are based on self-selection (Bartfield & Dunifon, 2006).

Current Food Insecurity Statistics in Clark County, Nevada
In 2016, 13.4% of households in Clark County, Nevada were food insecure, which is higher than the national average of 12.3% (Three Square Food Bank, 2017a; USDA, 2017c). According to the 2016 Current Population Survey, food insecurity rates in Clark County for White households were 14.5% and Black households were 15.5% (CPS, 2016b). Only 1.6% of Asian households in Clark County reported being food insecure in 2016 (CPS, 2016b). The entire population of food insecure Asian American households were designated under the most severe form of food insecurity, very low food security (CPS, 2016b).

**Food Insecurity & Chronic Disease**

Food insecurity holds major implications to the health of its affected populations. Correlations between food insecurity and certain chronic diseases are well documented. Thus, public health practitioners have a vested interest in understanding the key associations and causal mechanisms that underlie the development of chronic disease within a food insecure environment.

**Food Insecurity & Chronic Disease: Diabetes**

Gucciardi et al. (2014) published a comprehensive literature review on the intersection of food insecurity and diabetes. In their review, Gucciardi et al. (2014) describes several studies, which found significant correlations between food insecurity and diabetes (Seligman et al., 2007; Seligman et al., 2009; Seligman & Schillinger, 2010; Laraia et al., 2010; Fitzgerald et al., 2011).

Seligman et al. (2007) examined combined data from the 1999-2000 and 2001-2002 National Health Examination and Nutrition Examination Survey (NHANES). Their study estimated the prevalence of food insecurity amongst those who reported being food insecure, mildly food insecure, and severely food insecure as being 11.7%, 10.0%, and 16.1%, respectively. Seligman et al. (2007) also reported that severely food insecure individuals
possessed a 2.1 times higher adjusted odds ratio of having diabetes compared to food secure individuals.

Similarly, Seligman et al. (2009) assessed combined NHANES data from the years 1999-2000, 2001-2002, and 2003-2004, and found that the risk of clinically-confirmed diabetes was 50% higher in food-insecure households compared to food-secure households. They suggest possible reasons being: diabetes is more sensitive to diet-related issues, stress being linked to fat deposition, which is a strong risk factor for diabetes, and the replacement of healthy foods with inexpensive carbs, a behavior seen frequently among food insecure individuals, leads directly to the development of diabetes (Seligman et al., 2009).

Fitzgerald et al. (2011) conducted a case-control study exploring the association between food insecurity and diabetes among Latinas living in inner city Hartford, CT. After adjusting for age, employment status, acculturation, waist circumference, and lifestyle characteristics, they found that Latina adults experiencing “very low food security” were 3.3 times more likely to have type 2 diabetes than their “food secure” or “low food secure” counterparts (Fitzgerald et al., 2011). Additionally, Laraia et al. (2010) utilized data obtained from a North Carolina-based, prospective study that examined risk factors involved with preterm birth. Overall, they reported that gestational diabetes was significantly associated with food insecurity status (Laraia et al., 2010).

Gucciardi et al. (2014) also highlight the pertinent factors that place food-insecure diabetics at greater risk of adverse health outcomes and worsening disease progression. Many food-insecure households/individuals do not possess the fiscal resources to manage their diabetic food and healthcare needs. Consequently, they use a variety of coping strategies to attempt to meet those challenges. For example, some individuals will purchase low-cost and nutrient-poor
foods, involuntarily skip meals, or reduce the size of their meals (Marjerrison et al., 2011; Homenko et al., 2010). In food-insecure households with children, adults may reduce the size of their meals or skip them altogether to ensure that their children have adequate amounts of food (Marjerrison et al., 2011). Other coping behaviors include delaying diabetes treatment or foregoing their medication regimen in order to purchase food (Billimek & Sorkin, 2012; Biros et al., 2005). The sum of these coping strategies leads to poor glycemic control, increased risk of unhealthy weight status, and chronic disease co-morbidity (Gucciardi et al., 2014; Bawadi et al., 2012; Vozoris & Tarasuk, 2003).

**Food Insecurity & Chronic Disease: Obesity/Overweight Status**

The Food Research and Action Center (FRAC) (2015) conducted an extensive literature review on the connection between obesity and food insecurity. Their report indicates that the strongest correlation between obesity and food insecurity was found amongst women (FRAC, 2015). However, current scientific evidence suggests a mixed association between obesity and food insecurity (FRAC, 2015).

According to Sun Lee et al. (2012), cycles of food shortage and food sufficiency are thought to play a crucial role in shifting our body’s physiological processes to favor weight gain and visceral fat accumulation. The resulting stress from living in a food-insecure state may also contribute to the development of obesity and other chronic diseases (Sun Lee et al., 2012; FRAC, 2015). Animal models have illustrated that stressful conditions, combined with the availability of high-fat and high-sugar foods, leads to increased visceral adiposity and weight gain (Sun Lee et al., 2012). Moreover, the FRAC report (2015) highlights the disparate social conditions that have been linked to the development of obesity in low-income, food insecure households. Specifically, these households are subject to less opportunities for physical activity, greater
exposure to obesity-promoting marketing ads, limited access to nutrient rich and affordable foods, and limited access to quality health care (FRAC, 2015).

Leung et al.’s (2012) research has identified a statistically significant association between food insecurity and BMI among Asian women. For Asian women in their study, those who were classified as having “low food security” status had a statistically significant increase in BMI (+1.1 kg/m²) compared with food-secure Asian women. The same association however was not found in Asian men, non-Hispanic white women, African-American women, or multi-racial women. Interestingly, there was not a statistically significant increase in BMI among “very low food security” Asian women.

**Food Insecurity & Chronic Disease: Hypertension**

Vozoris & Tarasuk (2003) analyzed a population sample of Canada’s National Population Health Survey. Overall, they found that individuals in food insecure households had higher odds of reporting hypertension, diabetes, and heart disease.

Seligman et al. (2009) also present evidence linking food insecurity with hypertension in their low-income study population. Using data from the 1999-2004 NHANES dataset, they conclude that food insecurity may be a risk factor for hypertension and diabetes among non-elderly adults (Seligman et al. 2009). However, Seligman et al. (2009) does note that food insecurity is more strongly associated with diabetes than hypertension.

Lastly, Grilo et al. (2015) tested the effectiveness of two behavioral interventions aimed at reducing high blood pressure among food-secure and food-insecure individuals. Their findings indicated that food insecurity moderated the efficacy of the hypertension-based interventions (Grilo et al., 2015). Food insecure individuals experienced no significant reductions in blood pressure, while food secure individuals did experience significant reductions in blood pressure,
even after adjusting for income (Grilo et al., 2015). Grilo et al.’s (2015) results suggest that food insecurity may restrict the ability of hypertensive individuals to adhere to recommended dietary guidelines. Combined with Gucciardi et al.’s (2014) findings that food insecurity negatively affects diabetes management, food insecurity is a potentially salient factor for health promotion specialists to consider when attempting to modify diet-related chronic diseases such as hypertension, diabetes, and obesity.

**Food Insecurity & Chronic Disease: Conceptual Models**

Seligman & Schillinger (2010) describe food insecurity as a cyclical phenomenon predicated on financial resource constraints (see Figure 1). Households at risk for food insecurity alternate between states of food sufficiency and food insufficiency throughout the year (Seligman & Schillinger, 2010). This cycle of food scarcity and food sufficiency is associated with preferences for energy-dense foods, increased body fat, and decreased lean muscle mass (Seligman & Schillinger, 2010). In general, less “healthy” foods provide greater value in terms of price and calories compared to nutrient dense foods such as fruits and vegetables. Thus, in order to maintain caloric intake, food-insecure adults reduce the variety and nutritional quality of their diets, and focus on consuming low-cost, energy-dense, and nutrient-poor foods (Seligman & Schillinger, 2010). Moreover, during anticipated periods of food insufficiency, adults will over consume when access to food is available. Other coping behaviors include skipping meals or cutting meals (Seligman & Schillinger, 2010). Seligman & Schillinger (2010) explain that these behavioral adaptations may lead to the development of chronic diseases such as diabetes, hypertension, and obesity.

Similar to Gucciardi et al. (2014), Seligman & Schillinger’s (2010) model also considers the increased burden placed on individuals attempting to manage co-morbid states of food
insecurity and chronic disease. Seligman & Schillinger (2010) use diabetes as their central example. Food-insecure diabetics often cannot afford purchasing diabetes-related medication/healthcare and maintaining a suitable diet. At times, these individuals may reduce the amount of medication they take in order to have enough money for food (Seligman & Schillinger, 2010). Coupled with the coping strategies mentioned previously, this leads to poor glycemic control and subsequent disease progression (Seligman & Schillinger, 2010). The same rationale can be applied to food-insecure pre-diabetics, which is the likely cause of increased diabetes incidence rates among this population (Seligman & Schillinger, 2010).
Figure 1. Conceptual Depiction of the Cyclical Link between Food Insecurity and Chronic Disease (Seligman & Schillinger, 2010).

Laraia’s (2013) conceptual framework for describing the development of chronic disease within the context of household food insecurity is grounded in a life course approach to health (see Figure 2). One of the central principles in the model is that duration, severity, and timing of food insecurity episode(s) can create significant health impacts later in life (Laraia, 2013).
Moreover, five key conditions dictate the development of chronic disease in households that experience food insecurity (Laraia 2013, pp. 210):

(1) Household food insecurity is experienced as a chronic stressor;

(2) Household food insecurity will promote a stress response;

(3) The previous stress response results in a preference for and consumption of highly palatable foods;

(4) The previous stress response brought on by experiencing household food insecurity experienced during critical developmental states (e.g. in utero, infancy, peripuberty, pregnancy) is more damaging, and;

(5) Leads to visceral fat accumulation, insulin resistance, or diet-induced obesity that may result in increased risk of chronic disease.

Darling et al. (2015) provides empirical evidence for Laraia’s life course perspective to food insecurity and chronic disease. In their study, Darling et al. (2015) examined the relationship between a history of food insecurity and several mental and physical health outcomes. Their results indicated that young adults that experienced some prior episode(s) of food insecurity reported higher average BMIs than those who did not experience prior episode(s) of food insecurity (Darling et al., 2015). Additionally, adults with a previous history of food insecurity reported higher rates of depressive symptoms, stress, disordered eating patterns, and waist-height ratios (Darling et al., 2015).
Asian Americans & Food Insecurity

Food insecurity within the Asian American community is an understudied topic. However, the available body of evidence on Asian American food insecurity does indicate that this issue warrants further research. The American Association of Retired People (AARP) published a report in 2014, citing data from the 2012 American Community Survey, which revealed that elderly Asian Americans were more likely to be enrolled in food stamp programs compared to the overall U.S. senior citizen population (AARP, 2014). This statistic further supports the findings of Gunderson & Oliveira (2001) that food stamp enrollment is positively associated with food insecurity.

A recent study examining food insecurity among California residents from 2001 to 2011, found that U.S.-born Asians had similar food insecurity rates to U.S. born Whites (Walsemann et al., 2017). Walsemann et al., (2017) also reported that naturalized or legal permanent resident
Asian immigrants recorded greater food insecurity rates than U.S. born Whites (9.6% vs. 5.1%) (Walsemann et al., 2017).

Moreover, Chaparro et al. (2009) and Tseng et al. (2010) provide disaggregated food insecurity data and found significant heterogeneity within their respective Asian American research samples. Chaparro et al. (2009) conducted an examination of food insecurity prevalence amongst students attending the University of Hawaii. Filipino American students reported the highest rates of food insecurity at 33% (Chaparro et al., 2009). Likewise, Tseng et al. (2010) conducted an ethnic health assessment of Asian Americans and Pacific Islanders in California. Their research identified that the overall Asian American food insecurity rate was 7%. The Filipino food insecurity rate was also reported at 7%; Laotians reported the highest food insecurity rate at 26%, while Malaysians and Burmese reported 0% (Tseng et al., 2010).

Two additional articles have measured food insecurity rates in their Asian American study samples (Li et al., 2013; Sorkin et al., 2011). However, methodological limitations may reduce the accuracy and reliability of their results. Li et al.’s (2013) paper titled, Smoking Among Asian Americans, utilized a one-question assessment to report food insecurity prevalence rates. Koreans had the highest rates with 43.8% reporting, “sometimes or usually not having enough money to purchase nutritious meals” (Li et al., 2013). Asian Indians reported the lowest rates with 26.4% (Li et al., 2013). Filipinos in Lit et al.’s (2013) study were aggregated with Vietnamese, Cambodians, Thai, and Laotian, under the label of “Others”. Sorkin et al. (2011) conducted a mental health needs assessment among older Asian Americans, and utilized a two-question evaluation to determine food insecurity rates. Elderly Vietnamese individuals reported the highest food insecurity rates at 37.1%, while Japanese persons reported the lowest food
insecurity rates at 0.7% (Sorkin et al., 2011). Filipinos were noted to have food insecurity rates of 7.6% (Sorkin et al., 2011)

**Contemporary Asian American Issues in Research Studies: Model Minority**

Prominent Asian American researchers and advocates have noted that the general paucity of literature on Asian Americans can be attributed to the pervasive notion that Asian Americans, under the guise of being a “model minority”, do not experience adverse social or health outcomes (Yi et al., 2016; Islam et al., 2016; Devers et al., 2013). In response to the 1960s Civil Rights Movement and assertions by the African American community of systematic racism (Poon et al., 2016), William Peterson introduced the “model minority” concept in his 1966 New York Times article: *Success Story, Japanese American Style*. Peterson opines that the post-World War II success of Japanese Americans was due to their undying work ethic, strong family values, and respect for authority (Peterson, 1966). The “model minority” stereotype subsequently spread throughout various American media outlets (Zhang, 2010). Over the years, the “model minority” myth has been used as a tool for racial wedge politics (Poon et al., 2016). By attributing the success of Asian Americans to their socially favorable dispositional qualities, the “model minority” myth dismisses the notion of systematic oppression and racism, and disparages other ethnic minorities in an effort to maintain systematic white supremacy (Poon et al., 2016).

As it stands today, those who consider the “model minority” myth credible likely believe that “virtually all [members within a certain minority group] are well-educated, affluent, and self-sufficient” (Coloretti & Lu, 2015). Empirical evidence suggests that the public’s perceptions of Asian Americans are aligned with the media’s depiction of Asian Americans as a “model minority” (Zhang, 2010). As Zhang (2010) reports, participants in his study were more likely to
identify Asian Americans as academically gifted, hardworking, and technologically talented, compared to other racial groups.

Although the “model minority” stereotype may appear complimentary, it effectively implies that all Asian Americans are not disadvantaged or underprivileged (Wong & Halgin, 2006). Yi et al. (2016) asserts that the persistence of the “model minority” stereotype has led to the belief that Asian Americans are devoid of health concerns. Thus, diminishing the need for resources to be allocated for Asian American-related social and health disparities. Researchers have also intimated that the “model minority” myth has contributed to the relative dearth of academic literature and research into Asian Americans (Yi et al., 2016; Islam et al. 2011; Devers et al., 2013). Consequently, the health needs and underlying contextual factors that affect the health of Asian Americans remain poorly understood (Ghosh, 2003; Ro & Yee, 2010; Islam et al., 2016; Arista et al. 2014).

Contemporary Asian American Issues in Research Studies: Data Methodology

According to the Pew Research Center, Asian Americans exhibited the fastest population growth rate among all major racial groups between 2000 and 2015 (Lopez et al. 2017). Recent estimates place the total U.S. population of Asian Americans at around 20.4 million (Lopez et al. 2017). Overall, the general Asian American population possesses relatively high socioeconomic indicators. Over half of all U.S. Asians over the age of 25 have attained a bachelor’s degree or higher (U.S. Census, 2016). Asian Americans also reported an annual median household income of $73,060, greater than the overall U.S. annual median household income of $53,600 (Lopez et al. 2017). However, within the Asian American population, huge variations exist between the different Asian sub-groups. For example, according to the Center for American Progress, Asian Indians (72%) and Malaysians (58%) possessed the highest proportions of individuals attaining a
bachelor’s degree or higher. On the other hand, Cambodians (14%), Hmongs (14%), and Laotians (13%) possessed the lowest proportions of individuals attaining a bachelor’s degree or higher.

The practice of aggregating Asian American sub-group data in research studies and national surveys is common (Devers et al., 2013) and also problematic, as illustrated by the varying educational attainment statistics by Asian subgroup. In essence, data aggregation is an explicit assumption of homogeneity within the Asian American community. However, the Asian American population is highly heterogeneous in terms of socioeconomic indicators, health status, and general knowledge, attitudes, and beliefs (Sadler et al., 2003; Islam et al., 2010; Holland & Palappanian, 2012; Staimez et al., 2013; Ro & Yee, 2010). These aggregated datasets conceal and distort many of the socioeconomic and health disparities that are prevalent within the Asian American community (Holland & Palaniappan, 2012; Yi et al., 2016; Devers et al., 2013; Staimez et al., 2013). More importantly, aggregated Asian American datasets can potentially lead to inaccurate interpretations, which is particularly salient when critical decision makers use these datasets to craft local, state, and national-level policies and programs (Srinivasan & Guillermo, 2000).

Despite efforts by previous presidential administrations to promote the practice of Asian American data disaggregation (White House, 2016), several national surveys still collect limited information on Asian sub-group categories. The following is an excerpt from a report created by the Urban Institute under the direction of the U.S. Department of Health and Human Services (Devers et al., 2013, p. 20):

“Limited health information about Asian-American subpopulations is available in some federal surveys, including the National Health Interview Survey (NHIS), the National
Health and Nutrition Examination Survey (NHANES), the MEPS, and the Early Childhood Longitudinal Survey. However, within a racial group (Asians) that comprises only 4.4 percent of the populations, sample sizes of subpopulations are often too small to permit meaningful data analysis, particularly when covariates such as age, sex, or region are factored in. Also, a sampling bias arises in surveys that collect data only in English and Spanish, as is the case with most national surveys. For the first time, the most recent NHANES survey oversampled Asians (including Koreans) in larger cities and worked with the Asian community and advocacy groups for outreach. However, a lack of interviewers able to conduct the survey in the appropriate languages and other factors like cultural attitudes and beliefs about participating in surveys may have limited participation from Asian subpopulations, thus lowering the response rate for Asian subpopulations.”

Consequently, these challenging methodological issues point to a need for improved collection, reporting, and analysis of Asian American data that reflects the diverse needs of this heterogeneous community. Concerted efforts to disaggregate Asian Americans in national, state, and local datasets are still ongoing (Devers et al., 2013; Islam et al. 2011; Ghosh, 2003).

Discrediting the “model minority” stereotype, the aggregated food insecurity data for Asian Americans in Clark County, NV, and gaps in literature involving Asian American food insecurity provide the impetus for this study seeking to examine food insecurity rates and its correlates among Filipino Americans residing in Clark County, NV.

Filipino Americans & Associated Chronic Diseases

Filipino Americans are a highly diverse ethnic group that represents one of the largest sub-populations within the Asian American community (Lopez et al., 2017). Currently, U.S. Census estimates report that 2.75 million Filipinos reside in the United States (U.S. Census
Filipino Americans have a long history of immigration to the United States, dating back to 1898, during which time the U.S. colonized the Philippines as a result of the Spanish-American War (Dela Cruz et al. 2002). The most recent wave of Filipino immigrants, which encompass the prevailing group of Filipino Americans today, emigrated in response to the 1965 Immigration and Nationality Act (Dela Cruz et al. 2002). This immigration policy sought to reunify families and attract highly skilled workers to the United States (Dela Cruz et al. 2002). Consequently, many Filipino immigrants that arrived during this time were highly educated and highly skilled professionals (Dela Cruz et al. 2002).

Current demographic data on Filipino Americans report high socioeconomic indicators. According to the Pew Research Center, 46% of Filipinos in the United States possessed a bachelor’s degree or higher (Pew Research Center, 2017). In 2015, median Filipino-headed household incomes were estimated at $80,000 (Pew Research Center, 2017). However, recent studies have established that Filipino Americans carry a disproportionately high burden of chronic disease compared to other Asian American sub-groups, illustrating the need for disaggregating Asian American data. Moreover, research also indicates that Filipinos report chronic disease rates that are higher than non-Hispanic Whites and, in some cases, Hispanics and Blacks, which provides counter-evidence to the “model minority” stereotype. These same chronic diseases are also associated with food insecurity.

**Filipino Americans & Associated Chronic Diseases: Diabetes**

Fuller-Thomson et al. (2017) conducted a statistical analysis using combined California Health Interview Survey (CHIS) data for the years 2007, 2009, and 2011. Fuller-Thomson et al. (2017) found that the adjusted prevalence (age, sex, education, poverty status, fruit and vegetable consumption, immigrant status, exercise, overweight status, and smoking) of diabetes among
non-obese Filipino Americans was nearly three times higher than those found in non-obese, non-Hispanic Whites. Fuller-Thomson et al. (2017) posited that white rice, which is a large part of the Filipino diet, might be contributing to the high prevalence of diabetes in Filipinos. Likewise, Choi et al. (2013) examined California Health Interview Survey (CHIS) data for 2009. After adjusting for age, Filipinos had the highest prevalence of diabetes (15.8%) amongst all Asian American male sub-groups (Choi et al., 2013). Moreover, their adjusted multiple logistic regression model revealed that Filipinos had the greatest adjusted odds ratio (OR 4.0) of diabetes across all ethnic groups (Native Americans, Koreans, South Asians, Mexicans, African Americans, and Caucasians) (Choi et al., 2013).

Lee et al. (2011a) examined type 2 diabetes prevalence trends among Asian Americans from the National Health Interview Survey (NHIS) years 1997-2008. Filipino Americans had the second highest adjusted odds ratio of prevalent type 2 diabetes, second only to Asian Indians (Lee et al., 2011a). Lee et al. (2011a) also reported that Filipinos showed significant upward trends in BMI and diabetes prevalence. Additionally, Bhimla et al. (2016) conducted a comprehensive health needs assessment of Filipino Americans in Philadelphia. 21.8% of their study participants self-reported being diagnosed with diabetes (Bhimla et al., 2016). Lastly, Cuasay et al. (2001) reported a 16.1% prevalence rate of type 2 diabetes among their Filipino study sample residing in the Houston Metropolitan area. Mean BMI for diabetic respondents (26.1 kg/m²) was also higher than that for non-diabetic respondents (24.4 kg/m²) (Cuasay et al., 2001).

Filipino Americans & Associated Chronic Diseases: High Cholesterol and Obesity

Staimez et al. (2013) published a systematic review that synthesized the available prevalence rate estimates on overweight, obesity, and diabetes among the major Asian American
subgroups. In the summary, Staimez et al. (2013) stated that Filipinos reported having the highest age and sex-adjusted proportions of overweight and obesity status (Oza-Frank et al., 2009). Moreover, the greatest diabetes prevalence rates were found among Filipino women in the Filipino Women’s Health Study (Araneta et al., 2002). Filipinos also possessed the highest reported mean BMI (Kim et al., 2008).

Jih et al. (2014) analyzed 2009 CHIS data, and concluded that Filipinos should be prioritized for overweight/obesity screenings. Their results indicated that Filipinos had the highest mean BMI (25.5 kg/m²) among the six major Asian sub-groups (Filipinos, Vietnamese, Chinese, Indian, Japanese, and South Asian). Notably, Jih et al. (2014) utilized World Health Organization (WHO) Asian-adjusted BMI cut-off measures, and discovered that Filipinos (78.6%) had overweight or obesity prevalence rates higher than African Americans (64.9%) and Hispanic populations (69.7%). In 2002, WHO proposed lowering the BMI cut-off points for Asians to reflect their increased risk of chronic disease at lower BMI figures relative to other racial groups (WHO 2004). However, enforcement and adoption of these guidelines has not been universal (WHO 2004).

Afable et al. (2016) also used WHO Asian-adjusted BMI measures, and reported that 49.5% of Filipinos in their study had BMIs in the 23 – 27.49 kg/m² range (overweight) and 21.8% had BMIs greater than or equal to 27.5 kg/m² (obese). Their findings also included a significant association between overweight status and Filipinos immigrants who lived in the U.S. for more than 10 years and concurrently moved to the U.S. prior to their 30th birthday (Afable et al., 2016). As such, Afable et al. (2016) suggest that the acculturation process experienced by Filipino Americans may be influencing these risk factor measurements associated with high cholesterol and obesity.
Additionally, Bhimla et al. (2016) reported a high cholesterol prevalence rate of 57.1% in their Filipino American study sample. Ye et al.’s (2009) unadjusted prevalence rate of obesity was highest amongst Filipinos in comparison to Asian Indians, Chinese, and other Asians.

**Filipino Americans & Associated Chronic Diseases: Hypertension**

Hypertension is another chronic disease that is highly prevalent within the Filipino American community. Bhimla et al.’s (2016) Filipino health needs assessment reported that 67.5% of study participants self-reported having been diagnosed with hypertension. Ma et al. (2017) published an article specifically addressing the hypertension findings from Bhimla et al’s (2016) research. In particular, Ma et al. (2017) revealed that only one participant in the study met the American Heart Association’s recommended fruit and vegetable intake. Moreover, physical inactivity and salt intake predicted hypertensive status (Ma et al., 2017). Three fourths of their participants added extra salt to their food and 76.1% of their study population failed to obtain more than 150 minutes of moderate to vigorous exercise per week (Ma et al., 2017).

Barnes et al. (2008) conducted a secondary analysis on data from the 2004-2006 NHIS Family Core and the Sample Adult Core components. Barnes et al. (2008) found that Filipino adults (27%) were more likely to self-report having hypertension amongst all Asian sub-groups, and nearly half of all Filipino adults were overweight or obese. Similarly, Ye et al. (2009) compared cardiovascular disease risk factors among four Asian American subgroups (Chinese, Asian Indian, Filipino, and other Asians) using the NHIS 2003-2005 data. Ye et al. (2009) reported that Filipinos were more likely to have hypertension compared to Chinese, Asian Indian, other Asians, and non-Hispanic Whites. Lastly, Ursua et al. (2013) conducted an analysis of hypertension risk factors among a large sample of Filipino Americans living in New York City. Fifty-three percent (53%) of their study sample reported having hypertension (Ursua et al.,
Among individuals without hypertension, 62% were considered pre-hypertensive (Ursua et al., 2013). Ursua et al. (2013) also reported that longer residency in the U.S. predicted hypertension, which is similar to Afable et al.’s (2016) finding that longer duration in the U.S. predicted overweight status.

Filipino Americans: Diet and Acculturation

Acculturation is defined as “the process by which a group, usually a minority group, adopts the cultural patterns of a dominant or host group” (Satia-Abouta, 2003 pp. 73). Within the confines of this study, literature examining the connection between acculturation and food insecurity reveals that this relationship varies among different immigrant groups (Dhokarh et al., 2011; Ward et al., 2011; Caspi et al., 2016; Popovic-lipovac et al., 2015). Popovic-lipovac and colleagues (2015) conducted a review on the various factors that impact dietary change among immigrant women, and found that the high prices associated with “healthy” food and limited access to traditional foods from their country of origin, led to the purchase of cheaper food products that were high in fat and sugar. Popovic-lipovac et al.’s (2015) findings suggest that environmental factors, namely restricted access to familiar foods and healthy foods, may be contributing to a food insecure environment for immigrants.

For Asian immigrant groups, research assessing food insecurity and acculturation is lacking. Nonetheless, studies have revealed that Asian immigrants who undergo the process of dietary acculturation shift from traditional diets consisting of fish, fruits, and vegetables to foods high in sugar, fat, and salt, and consequently develop increased risk for chronic disease (Vargas & Jurado, 2014; Unger et al., 2004; Serafica, 2014). In Filipino Americans, studies conducted by Vargas & Jurado (2015) and Serafica et al. (2013) found that Filipinos with higher Western dietary acculturation (larger Western influence in the foods eaten) had increased fat and sugar
intake, as well as BMI and waist circumference. However, Vargas & Jurado’s (2015) study participants that reported high Filipino dietary acculturation scores (larger Filipino influence in foods eaten) were not found to have improved health risk factors. Vargas & Jurado (2015) suggest that “festival food syndrome”, which posits that high-caloric foods usually reserved for celebrations and special occasions in the immigrant’s home country, are being consumed at a higher rate, thus removing any protective effect arising from the traditional diet.

Dela Cruz and colleagues (2013) investigated the acculturation level, food intake, dietary changes and practices, health status perceptions, and diet-related health indicators of Filipino Americans living in Southern California. Overall, their participants indicated consuming more beef, pork, chicken, and dairy in the United States than in the Philippines because those specific foods were more affordable in the U.S. (Dela Cruz et al. 2013). Participants also cited an increase in their intake of fresh fruits and vegetables (Dela Cruz et al. 2013). Dela Cruz et al.’s (2013) findings suggest that food insecurity may not be an issue in their study population. However, it should be noted that their total sample size was thirty (n=30) participants.

Jordan & Jordan (2010) examined the self-care behaviors of Filipinos with type II diabetes. Their findings indicated that older Filipino Americans and those who were older when they immigrated to the U.S. ate fewer fatty diets, but also consumed less fruits and vegetables than younger Filipino Americans and those who were younger when they immigrated to the U.S. (Jordan & Jordan). Jordan & Jordan (2010) suggest that fruits and vegetables which are necessary components of a health-promoting diabetic diet may not be affordable for Filipinos, especially those relying solely on Social Security Income (Jordan & Jordan, 2010). Ultimately, Jordan & Jordan (2010) conclude that additional research is needed to better understand if these varying Filipino dietary practices are being influenced by cultural reasons or economic reasons.
Similarly, Arista et al. (2014) recommends that further studies be conducted that examine nutrition-related issues and their determinants within the Asian American community.

**Current Statistics on Filipino Americans in Clark County, NV**

Filipino Americans comprise over half of the Asian American population in Clark County, NV and approximately five percent of the total population in Clark County, NV (U.S. Census Bureau, 2016a). According to an interview conducted by the Nevada National Public Radio affiliate KNPR with Dr. Robert Lang, UNLV professor and director of Brookings Mountain West, part of the reason Clark County supports a large Filipino population was due to the recruitment of skilled healthcare workers from the Philippines, brought in to alleviate Nevada’s nursing shortage and bolster the state’s healthcare infrastructure (Christiansen, 2015).

Much like the national-level statistics, Filipino Americans in Clark County, NV report relatively high socioeconomic indicators. For example, 40% of the Filipinos over the age of 25 possess a bachelor’s degree or higher, compared to 23.3% of the general Clark County population (U.S. Census Bureau, 2016b; U.S. Census Bureau, 2016c). The median household income of Filipinos in Clark County for 2016 was $71,794, higher than the overall median household income in Clark County, which was reported to be $54,384 (U.S. Census Bureau, 2016b; U.S. Census Bureau, 2016c).

However, a more detailed examination of available Clark County demographic data reveals some stark differences from the reported high socioeconomic indicators. The estimated per-capita income reported by Filipinos in Clark County is lower ($27,127) than the estimated per-capita income reported by the overall Clark County population ($27,295). The percentage of Filipinos in Clark County that live at or under 200% of the FPL in 2016 was 26% (U.S. Census, 2015b). Specific poverty rates for Filipino, single female households with related children under
the age of five were reported to be 77.5%. The poverty rate for the same type of household in the general Clark County population was 47.6%. Also, 7% of all Filipino households in Clark County utilized Supplemental Nutrition Assistance Program (SNAP, also known as, food stamps) benefits in 2016 (U.S. Census, 2016c).

**Social Ecological Model of Health Behavior**

The Social Ecological Model provides researchers with a theoretical framework capable of conceptualizing the various intrapersonal, interpersonal, social, and environmental factors that influence the health behaviors of an individual or group of individuals (McLeroy et al. 1988). McLeroy et al. (1988) introduced a version of the Social Ecological Model which is a variation of Brofenbrenner’s (1979) Social Ecological Model. McLeroy’s et al.’s (1988) Social Ecological Model includes five levels of behavioral determinants and are defined as the following (McLeroy et al., 1988 pp. 355):

1) Intrapersonal factors - characteristics of the individual such as knowledge, attitudes, behavior, self-concept, skills, etc. This includes the developmental history of the individual.

2) Interpersonal processes and primary groups - formal and informal social network and social support systems, including the family, work group, and friendship networks.

3) Institutional factors - social institutions with organizational characteristics, and formal (and informal) rules and regulations for operation.

4) Community factors - relationships among organizations, institutions, and informal networks within defined boundaries.

5) Public policy - local, state, and national laws and policies.
As depicted in the figure above, McLeroy’s (1988) model emphasizes that contextual factors, along with individual attributes, play a prominent role in affecting health. Moreover, these different levels interact in a dynamic and interdependent fashion to impact the practice, adoption, or rejection of a specific health-related behavior (McLeroy et al., 1988). The model also assumes that proper changes in these contextual factors will ultimately produce changes in the individuals that are the focus of the Social Ecological Model (McLeroy et al., 1988). As such, a social-ecological approach emphasizes the relationship between the various levels of social and environmental influences, and attempts to modify these identified factors through health promotion-based interventions (McLeroy et al., 1988).

The Social Ecological Model has been used in many different contexts including applications to food insecurity and nutrition-related behaviors. Goldberg & Mawn (2014) used
McLeroy et al.’s (1988) Social Ecological Model as a conceptual framework to predict food insecurity status among elderly adults. Through their multivariate statistical analysis, Goldberg & Mawn (2014) found that variables in each Social Ecological Model level, except for the community level, predicted food insecurity. Specifically, race and ethnicity (intrapersonal), level of educational attainment (intrapersonal), severity of depression (intrapersonal), lack of help with financial support (interpersonal), lack of private insurance coverage (institutional/organizational), and SNAP participation (policy) were significantly correlated with food insecurity in their senior adult population sample (Goldberg & Mawn, 2014).

Schroeder & Smaldone (2015) also adapted a version of McLeroy et al.’s (1988) Social Ecological Model and identified three significant levels of influence (individual, community, and society) in which nurses may intervene and advocate for their food insecure patients. Moreover, the Social Ecological model has been used to examine the factors associated with children’s weight status (Ohri-Vachaspati et al., 2014), and has even been applied to explore the determinants that influence fruit and vegetable intake in low-income African American women (Robinson, 2008).

**Summary**

Despite the large body of research invested into food insecurity and its related antecedents, consequences, and correlates, literature regarding Asian American food insecurity is lacking. Experts and researchers have suggested that the model minority stereotype, combined with the methodological issues of aggregating Asian American data sets, has contributed to a dearth of research into Asian American populations.

Empirical data on Asian American food insecurity rates in Clark County, NV provides an example of the forces mentioned above. Filipinos comprise over half of the Asian American
population in Clark County and approximately five percent (5%) of the total population. However, food insecurity rates specific to Filipinos are unavailable because they are aggregated with other Asian American sub groups. According to 2016 Current Population Survey data, 1.6% of Asian households are food insecure in Clark County. Clark County demographic data also indicates that Filipinos possess high socioeconomic indicators such as median household income ($71,794) and educational attainment (40% of Filipinos over the age of 25 have a bachelor’s degree or higher), which may lead one to conclude that food insecurity is not a relevant issue among the Filipino community. However, a closer examination of these Filipino demographics reveals discrepancies that are incongruent with the low reported rates of food insecurity among Asian American households.

This study examined food insecurity rates and its social context in an exclusively Filipino American population sample who reside in Clark County. This study is a novel first step to better understanding the salient socio-demographic variables that are correlated with food insecurity in Filipino Americans. Moreover, viewing this issue through the lens of the Social Ecological Model revealed the potential significance of macro-level, or contextual factors, that could influence food insecurity in this population.
Chapter 3: Study Aims

To better understand Filipino American food insecurity rates and explore possible correlates, the researchers included a subset of questions that measured food insecurity, as part of a larger pilot study that was conducted to comprehensively assess the health needs of Filipino Americans in Clark County, Nevada. This project surveyed two hundred (n=200) Filipino Americans who reside in Clark County, NV. The Social Ecological Model was utilized as the theoretical framework to further identify the context associated with the sociocultural and environmental factors that influenced food insecurity of Filipino Americans. This study was uniquely positioned in exploring the Filipino American population, as one of the first studies to specifically examine food insecurity rates and its correlates in an exclusively Filipino American population sample. The following research questions were investigated:

1. Do food insecurity rates in Asian Americans in Clark County, as reported by the Current Population Survey, differ significantly from the food insecurity rates among Filipino Americans who reside in Clark County, Nevada?

   $H$: A statistically significant difference in food insecurity rates will exist between Filipino Americans who reside in Clark County, NV and the total Asian American population in Clark County, as reported by the Current Population Survey.

   $H_0$: No statistically significant difference in food insecurity rates will exist between Filipino Americans who reside in Clark County, NV and the total Asian American population in Clark County, as reported by the Current Population Survey.

2. Are socio-demographic factors associated with food insecurity among Filipino Americans that reside in Clark County, NV?
*H*: Socio-demographic factors will be statistically significant predictors of food insecurity among Filipino Americans that reside in Clark County, NV.

*H₀*: Socio-demographic factors will not be statistically significant predictors of food insecurity among Filipino Americans that reside in Clark County, NV.
Chapter 4: Methodology

Study Design & Participant Recruitment

A cross-sectional study design using primary data and secondary data from the 2016 Current Population Survey on food insecurity rates in Clark County, Nevada was employed for this research. A convenience sample of two hundred and thirty four (n=234) Filipinos residing in Clark County participated in this study. The final statistical analysis included a sample of two hundred (n=200) respondents. The sample size of two hundred (n=200) was estimated in Decision Analyst STATSTM (Version 2.0) by using a 95% confidence interval, 7% acceptable error, an unknown proportion of 50%, and a total population of 39,303 Filipinos residing in the following cities of Clark County, Nevada: Las Vegas City + North Las Vegas + Paradise (U.S. Census Bureau 2010a; U.S. Census Bureau 2010b; U.S. Census Bureau 2010c).

Study participants were recruited at Filipino ethnic club events, Filipino-based organizations, Filipino church proceedings, and a Filipino grocery store. Prior to the recruitment phase, the principal investigator approached two Filipino ethnic clubs and several prominent Filipino community leaders to identify Filipino community events and other Filipino-based community resources that could serve as potential data collection sites. Because this study focused on the specific health needs of Filipinos residing in Clark County, NV, only participants who met the following criteria were asked to participate:

a) Must self-identify as Filipino;

b) Reside in Clark County, NV;

c) Be over 18 years of age.
**Primary Data Collection**

The survey did not capture any identifiable information related to the respondents and the University of Nevada, Las Vegas Institutional Review Board (IRB) reviewed the protocol and provided a letter of exemption for primary data collection (protocol number: 1046862-1) (see Appendix C for IRB review form). Primary data was collected from April 2017 to August 2017.

At the data collection sites, the research team approached potential participants with a self-administered instrument packet, containing an informed consent form (see Appendix E for informed consent form) and the Filipino health needs survey. The informed consent form included a detailed explanation of the study aims, inclusion criteria, and survey procedures. Voluntary involvement was communicated to the study participants, and implied consent was achieved through completion of the survey. Local Filipino community stakeholders also served a vital role in facilitating the distribution and collection of the health needs assessment. Filipino community stakeholders were provided information on the study aims, informed consent process, and inclusion criteria prior to the data collection. Participants that met the inclusion criteria were given the choice of completing the self-administered paper survey in person, by mail, or completing an identical online survey created through SurveyMonkey™ at their own preferred time and place. Completed surveys were stored in a secured database in the principal investigator’s office that only key members of the research team were able to access. Incentives in the form of food items (e.g. bags of rice and saltine crackers) were only given during data collection at the Filipino grocery store.

**Instrumentation & Secondary Data Sources**

**Six-Item Short form Food Security Survey.** The researchers utilized the “U.S. Household Food Security Survey Module: Six-Item Short Form” (USDA ERS, 2012) to measure
food insecurity rates and severity in our study population (see Appendix D for survey questions). Developed in 1999 by researchers at the National Center for Health Statistics and Abt Associates Inc. (Bickel et al., 2000), the short form survey has been recognized as a reliable and valid instrument for measuring food insecurity (Blumberg et al., 1999). Blumberg et al.’s (1999) evaluation of the short form survey indicated that it had good overall concordance, high sensitivity (92.0%), and high specificity (99.4%) in determining overall food insecurity prevalence.

The six-item food security survey was added as a subset of questions within the larger Filipino health needs assessment. Short form survey items utilized in this study were worded to reflect the food insecure experiences of the individual (see Appendix D for complete Filipino Health Needs Assessment questions). Although the full eighteen-item U.S. Household Food Security Survey Module is the preferred tool for capturing food insecurity data, the length of our seventy-item Filipino health needs assessment warranted the use of the short form survey. The USDA Guide to Measuring Household Food Security (Bickel et al., 2000) also states that the use of the short form survey is warranted during instances in which respondent burden is too great.

Filipino Health Needs Assessment Survey. The Filipino health needs assessment used in this study is based on a survey constructed by Bhimla et al. (2016). Their comprehensive Filipino health needs assessment was completed in Philadelphia and contained questions regarding demographics and acculturation, health behaviors, health conditions, access and barriers to healthcare, and perceived Filipino community health needs (Bhimla et al., 2016). Bhimla et al. (2016) translated all measures to Tagalog and pre-tested the survey to ensure its scientific and cultural appropriateness. According to Bhimla et al. (2016), the survey went
through multiple revisions as a result of feedback received during the pilot testing of the instrument among Filipino Americans.

This study utilized all fifty-eight items from Bhimla et al.’s (2016) health needs assessment. In addition to the six-item food security survey, the research team supplemented Bhimla et al.’s (2016) health needs assessment with questions on height, weight, women’s health, and stress related to immigration and Affordable Care Act legislation. The final Filipino health needs assessment contained seventy-six items. The final statistical analysis included response variables from the larger Filipino health needs assessment (see Table 1). Completion of the entire survey took approximately 15-20 minutes. The survey was available in English and Tagalog. All survey questions are included in the appendix.

**Secondary Data Sources.** Statistics on Filipino American food insecurity rates in Clark County are collected through the annual food security survey supplement to the Current Population Survey (USDA 2017b). Filipinos are aggregated with the larger Asian American race designation (U.S. Census 2015). As such, the most current Asian American food insecurity rates in Clark County, was used as a proxy for Filipino American food insecurity rates in Clark County as reported by the Current Population Survey (see Appendix A and Appendix B for CPS figures).

**Statistical Analysis & Theoretical Application**

Upon completion of data collection, surveys were reviewed for completion. Respondents who failed to answer at least half of the survey or provided zip code residences outside of Clark County, NV were removed from the final statistical analysis. Survey responses were manually entered and double-checked by another member of the research team for errors. One hundred eighty four (184) respondents completed the paper version of the survey, while sixteen (16)
respondents elected to complete the online version of the survey. The total sample size for the final statistical analysis was two hundred (n=200).

Statistical analysis was completed using SPSS™ Version 24. Food security status was the main outcome (dependent variable). Descriptive analyses were also conducted in order to summarize the relevant socio-demographic data of the study sample.

Food security status, was determined using the short form survey guide (USDA ERS, 2012) which dictates that raw scores (the number of affirmative answers) be coded as follows:

- Raw score 0-1 – High or Marginal Food Security
- Raw score 2-4 – Low food security
- Raw score 5-6 – Very low food security

In the final analysis, food security status was dichotomized to “food secure” and “food insecure”. Respondents that were classified as “low food security” and “very low food security” were categorized as “food insecure”. Similarly, respondents that were classified as “high or marginal food security” were categorized as “food secure”. A chi-square goodness of fit test was conducted to compare food insecurity rates in our study population with food insecurity rates of “Asians Only” in Clark County as reported by the 2016 Current Population Survey. For the chi-square test, the unweighted sample from the 2016 Current Population Survey was utilized. Subsequently, logistic regression modeling was conducted to determine which socio-demographic variables of interest (independent variables) were associated with food insecurity in this study population.

Univariate logistic regression modeling was conducted first to ascertain which variables were significant independent predictors of food insecurity. Next, each independently significant variable was included in a multivariate logistic regression model, and checked for significance.
A multivariate logistic regression model was generated that included all variables of interest, regardless of its significance during the initial univariate regression analyses. Tests for multicollinearity among the independent variables were also performed (see Appendix F for multicollinearity test).

Table 1 lists all socio-demographic variables that were evaluated. The variable definition, corresponding question and possible responses, and recoded responses for statistical analyses are also included in Table 1. “Other” responses were reviewed and coded to the appropriate response choice. The variables, type of health insurance, high cholesterol status, and hypertension status contained a “Not sure” response choice. “Not sure” responses were categorized as non-affirmative answers and were coded to their respective non-affirmative response (i.e. no health insurance and no chronic disease status).
### Table 1

*Independent Variables of Interest: Definition, Survey Question with Responses, and Recoded Response Variables*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Definition</th>
<th>Survey Question &amp; Responses</th>
<th>Recoded Response Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>Length of time that respondent has lived</td>
<td>#7) In which year were you born? _________</td>
<td>Continuous Variable: Current year (2017) subtracted by recorded year of participants’ birth</td>
</tr>
</tbody>
</table>
| Annual Household Income         | Total amount of job-related money the respondent’s household accrues in a year | #18) What is your annual household income (Only include the combined income of you and your spouse, if applicable)?
1) Less than $10,000
2) $10,000-$20,000
3) $20,000-$29,999
4) $30,000-$40,000
5) Above $40,000                                    | Categorical Variable: a) Less than $20,000 (included responses: 1; 2) b) $20,000 - $40,000 (included responses: 3; 4) c) Above $40,000 (included response: 5) |
| Body Mass Index (BMI)           | Measure of body fat based on height and weight (NIH, n.d.)                | #9) How much do you weigh? __________
#10) What is your height? __________ | Continuous Variable: Weight was reported as pounds and height was reported as X feet Y inches. Both measures were converted to kilograms and meters, respectively. BMI was then calculated by dividing weight (kg) by height squared (m²) |
| Highest Education Level Attained|Respondent’s highest level of education completed                        | #15) What is the highest grade of school you completed?
1) No education or elementary school
2) Below high school graduate
3) High school
4) University (or college or associate degree)
5) Graduate and above (Masters or Doctorate) | Categorical Variable: a) High school or below (included responses: 1; 2; 3) b) College or Associate Degree (included response: 4) c) Graduate or above (Masters or Doctorate) (included response: 5) |
| Employment Status              | The current status of respondent’s participation in the workforce         | #16) Which of the following describes you currently?
1) Employed
2) Unemployed
3) Retired
4) Homemaker
5) Student
6) Other: _________ | Categorical Variable: a) Employed (response: 1) b) Unemployed (responses: 2; 4; 5) c) Retired (response: 3) |
<p>| Self-reported Chronic Disease Status - Hypertension | Current self-reported hypertension status of the respondent | #50) Have you ever been told by a doctor, nurse, or other health care professional that you have high blood pressure? 1) Yes 2) Yes, but only during pregnancy (females only) 3) No 4) Told borderline high or pre-hypertensive 5) Not sure | Categorical Variable: a) Yes (response: 1) b) No (responses: 2; 3; 4; 5) |
| Self-reported Chronic Disease Status - High Cholesterol | Current self-reported high cholesterol status of the respondent | #55) Have you ever been told by a doctor, nurse, or other healthcare professional that you blood cholesterol is high? 1) Yes 2) No 3) Not Sure | Categorical Variable: a) Yes (response: 1) b) No (responses: 2; 3) |
| Self-reported Chronic Disease Status - Diabetes | Current self-reported diabetes status of the respondent | #54) Has a doctor, nurse or other health care professional ever told you that you had any of the following conditions? Check all that apply. 1) Heart Attack 2) Angina or Coronary Heart Disease 3) Stroke 4) Asthma 5) COPD 6) Arthritis, rheumatoid arthritis, gout, lupus, or fibromyalgia 7) Depressive disorder 8) Kidney disease 9) Diabetes 10) Oral Cancer 11) Breast Cancer 12) Hepatitis B 13) Liver Cancer 14) Any other type of Cancer _______ 15) Any other type of chronic condition ______ 16) none | Categorical Variable: a) Yes (checked diabetes) b) No (did not check diabetes) |
| Household Makeup - Children Under the Age of 18 in Household | Children under the age of 18 currently living in the household | #14) Which of the following family member(s) currently live with you in your household? Select all that apply. | Categorical Variable: a) Household with children under 18 (response: 1; can also include any combination of other responses) |</p>
<table>
<thead>
<tr>
<th>Years Lived in the United States (Acculturation)</th>
<th>The total number of years respondent has resided in the United States</th>
<th>#12) How many years have you lived in the United States? _____</th>
<th>Categorical Variable: a) 0 – 10 years b) 11 – 25 years c) 25 years or more</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of Food Usually Eaten (Acculturation)</td>
<td>Type of food usually eaten by the respondent</td>
<td>#19) What foods do you usually eat? Check one. a) American or Western food b) Filipino food c) Both American and Filipino food equally</td>
<td>Categorical Variable: a) American or Western food b) Filipino food c) Both</td>
</tr>
<tr>
<td>Geographic Location by City Jurisdiction</td>
<td>Respondent’s area of residence as determined by city jurisdiction from City of Las Vegas Zip Code Map (Department of Technologies, 2017)</td>
<td>#1) What is the zip code of where you live? _____</td>
<td>Categorical Variable: a) Henderson b) City of Las Vegas c) Clark County¹ d) North Las Vegas</td>
</tr>
<tr>
<td>Type of Health Insurance Coverage</td>
<td>Current type of health insurance possessed by the respondent</td>
<td>#56) What type of health insurance do you currently have? Check the one response that applies to you. 1) No insurance 2) Medicare 3) Medicaid 4) Employer-sponsored (either your employer or spouse’s employer) 5) Other:____ 6) Not sure</td>
<td>Categorical Variable: a) No Insurance (responses: 1; 6) b) Private Insurance (responses: 4) c) Public Insurance (responses: 2; 3)</td>
</tr>
</tbody>
</table>

¹ Zip codes were coded into the listed city jurisdictions that corresponded to the Las Vegas Metro Area Zip Codes map (see Appendix E for map figure) provided by the City of Las Vegas (Department of Technologies, 2017). As a note, some areas within Clark County do not belong to a specific city jurisdiction and are labeled as “Clark County”. Reported zip codes not depicted on the Las Vegas Metro Area Zip Codes map (Department of Technologies, 2017) but were in Clark County were located using Google Maps. Subsequently, these zip code locations were matched to the Las Vegas Metro Area Zip Code map (Department of Technologies, 2017) based on major cross streets, and coded to the appropriate city. Zip codes that belonged to county islands were coded to the surrounding city jurisdiction. Zipcodes with overlapping city jurisdictions were coded based on which city jurisdiction held the majority land area within that zipcode.
Social Ecological Model Application

The socio-demographic variables listed above were examined using the Social Ecological Model, and designated under one of the five levels of McLeroy’s (1988) model based on the conceptual definition for the corresponding Social Ecological level and/or previous studies that utilized the Social Ecological Model in a similar capacity. The intrapersonal level included: age, body mass index, annual household income, employment status, highest educational level attained, self-reported chronic disease status (diabetes, hypertension, high cholesterol), years lived in the U.S., and usual type of food eaten. The interpersonal level included: presence of children under 18 in the household. The community level included: geographic location by city jurisdiction. The policy level included: type of health insurance coverage.

Results from the logistic regression model revealed the statistical association between the different levels of the Social Ecological Model and their degree of influence on the food security status of the study population. The variables and their corresponding Social Ecological level that significantly predict food insecurity will be identified, and inform future researchers and program planners of the relevant factors that affect food insecurity within the Filipino American community.
Chapter 5: Results

Study Population: Descriptive Results

The overall characteristics of this Filipino population sample are summarized in Table 2 (see below). In total, two hundred thirty-four (n=234) individuals participated in this study, but thirty-four (n=34) surveys were discarded due to incompletion or not meeting the inclusion criteria. Although the survey was available in Tagalog, all of the participants elected to complete the survey in English. The final statistical analysis included two hundred (n=200) participants.

The majority of respondents were female (65.1%), with a mean age of 49.4 years (± 18.1), employed (61.9%), had attended or completed some form of college education (81.6%), and reported household incomes above $40,000 (54%). Moreover, 67% of study participants indicated living in a household without children under the age of 18, and 51.3% resided in areas of Clark County that were not part of any specific city jurisdiction, as depicted on the Metro Las Vegas Zip Code map (see Appendix G for zip code map). Approximately 82% of respondents were born outside the United States, and the average years of living in the U.S. was nearly 25 years (24.9 years ± 13.9). 69.2% of respondents indicated that they usually ate both, Filipino and Western/American food, while 9.2% of respondents indicated that they usually ate Western/American food.

Concerning health-related statistics, high rates of hypertension (48%), high cholesterol (46%), and diabetes (25.3%) existed in this study population of Filipino Americans. According to a 2016 National Center for Health Statistics report, the percentage of U.S. adults over 20 years of age with hypertension, high cholesterol, and diabetes was 33.5%, 11.1%, and 12.7%, respectively (National Center for Health Statistics, 2017). The mean BMI among this Filipino

---

2 All participants in the final analysis resided in zip codes within Clark County, Nevada.
study was determined to be 25.3 kg/m\(^2\) ± 6.6. In general, the majority of respondents possessed some form of health insurance (89%).
Table 2

Summary of Socio-Demographic Characteristics

<table>
<thead>
<tr>
<th>Socio-Demographic Variables</th>
<th>Responses (n, %)³</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, years, (mean ± SD)</td>
<td>49.4 ± 18.1</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>70 (35.0%)</td>
</tr>
<tr>
<td>Female</td>
<td>130 (65.0%)</td>
</tr>
<tr>
<td>Educational Status</td>
<td></td>
</tr>
<tr>
<td>High school or below</td>
<td>36 (18.3%)</td>
</tr>
<tr>
<td>College or associate</td>
<td>109 (55.3%)</td>
</tr>
<tr>
<td>Graduate and above</td>
<td>52 (26.4%)</td>
</tr>
<tr>
<td>Employment status</td>
<td></td>
</tr>
<tr>
<td>Employed</td>
<td>123 (62.1%)</td>
</tr>
<tr>
<td>Unemployed</td>
<td>21 (10.6%)</td>
</tr>
<tr>
<td>Retired</td>
<td>54 (27.3%)</td>
</tr>
<tr>
<td>Annual Household Income</td>
<td></td>
</tr>
<tr>
<td>Less than $20,000</td>
<td>40 (21.1%)</td>
</tr>
<tr>
<td>$20,000-$40,000</td>
<td>48 (25.3%)</td>
</tr>
<tr>
<td>Above $40,000</td>
<td>102 (53.7%)</td>
</tr>
<tr>
<td>Household Composition</td>
<td></td>
</tr>
<tr>
<td>Households with children</td>
<td>43 (24.3%)</td>
</tr>
<tr>
<td>under 18</td>
<td></td>
</tr>
<tr>
<td>Households without children</td>
<td>134 (75.7%)</td>
</tr>
<tr>
<td>under 18</td>
<td></td>
</tr>
<tr>
<td>Residence by City Boundaries</td>
<td></td>
</tr>
<tr>
<td>Henderson</td>
<td>25 (12.8%)</td>
</tr>
<tr>
<td>City of Las Vegas</td>
<td>59 (30.3%)</td>
</tr>
<tr>
<td>North Las Vegas</td>
<td>11 (5.6%)</td>
</tr>
<tr>
<td>Clark County (no city</td>
<td>100 (51.3%)</td>
</tr>
<tr>
<td>jurisdiction)</td>
<td></td>
</tr>
<tr>
<td>Years Resided in the United</td>
<td></td>
</tr>
<tr>
<td>States, years, (mean ± SD)</td>
<td>24.9 ± 13.9</td>
</tr>
<tr>
<td>Usual Type of Food Eaten</td>
<td></td>
</tr>
<tr>
<td>Filipino food</td>
<td>42 (21.5%)</td>
</tr>
<tr>
<td>Western or American food</td>
<td>18 (9.2%)</td>
</tr>
<tr>
<td>Both</td>
<td>135 (69.2%)</td>
</tr>
<tr>
<td>BMI, kg/m², (mean ± SD)</td>
<td>25.3 ± 6.6</td>
</tr>
<tr>
<td>Self-Reported Diabetes Status</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>46 (23.8%)</td>
</tr>
<tr>
<td>No</td>
<td>147 (7.2%)</td>
</tr>
<tr>
<td>Self-Reported Hypertension Status</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>92 (46.9%)</td>
</tr>
<tr>
<td>No</td>
<td>104 (53.1%)</td>
</tr>
<tr>
<td>Self-Reported High Cholesterol Status</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>91 (46%)</td>
</tr>
<tr>
<td>No</td>
<td>107 (54%)</td>
</tr>
<tr>
<td>Type of Health Insurance</td>
<td></td>
</tr>
<tr>
<td>Private insurance</td>
<td>102 (53%)</td>
</tr>
<tr>
<td>Public insurance</td>
<td>70 (36%)</td>
</tr>
<tr>
<td>No insurance</td>
<td>22 (11%)</td>
</tr>
</tbody>
</table>

³ Responses are in the form: n (percentage of participants reporting response); unless noted in the variable title
Food Insecurity: Descriptive Results & Chi-Square Test

In total, one hundred ninety-two (n=192) study participants completed the food insecurity portion of the Filipino health needs assessment. About 27% of respondents reported being food insecure in the past year. Specifically, 72.9% were categorized as high/marginal food security, 21.9% of the sample was classified as low food security, and 5.2% were classified as very low food security. The chi-square goodness of fit test indicated that a statistically significant difference existed between food insecurity rates reported by this study population and the unweighted food insecurity rates reported by “Asians Only” in the 2016 Clark County Current Population Survey ($\chi^2 = 31.91, p < 0.00001$).\(^4\) In 2016, “Asian only” households in Clark County possessed a food insecurity rate of 1.6% (CPS, 2016).

Univariate Logistic Regression Analysis

Univariate logistic regression was performed to independently assess the impact of each variable of interest on the likelihood that participants would report being food insecure. Among the thirteen variables evaluated, four were found to be statistically significant (see Appendix F for all univariate regression models). These included annual household income, highest education level attained, type of health insurance coverage, and type of food usually eaten.

With regards to annual household income, respondents with incomes below $20,000 (OR = 4.58, 95% CI: 1.9–10.5, $p < 0.001$) possessed a higher likelihood of reporting food insecurity than those with incomes at $20,000 - $40,000 (OR = 2.8, 95% CI: 1.2–6.4, $p = 0.015$). In this model, participants whose household incomes were greater than $40,000 served as the reference group (see Table 3).

\(^4\) The chi-square results presented in the text were in comparison with the unweighted Current Population Survey Clark County “Asian Only” sample. Qualitatively similar results were obtained when conducting a chi-square goodness of fit test with the weighted Clark County CPS sample ($\chi^2 = 13,646,609.43, p < 0.00001$).
Table 3

*Logistic Regression Model 1: Annual Household Income Predicting Likelihood of Reporting Food Insecurity*

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>df</th>
<th>P-Value</th>
<th>Odds Ratio</th>
<th>95% CI Lower</th>
<th>95% CI Upper</th>
</tr>
</thead>
<tbody>
<tr>
<td>Above $40,000 - Ref</td>
<td></td>
<td></td>
<td>13.818</td>
<td>2</td>
<td>0.001</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than $20,000</td>
<td>1.522</td>
<td>0.424</td>
<td>12.901</td>
<td>1</td>
<td>0.000</td>
<td>4.582</td>
<td>1.997</td>
<td>10.514</td>
</tr>
<tr>
<td>$20,000 - $40,000</td>
<td>1.030</td>
<td>0.423</td>
<td>5.937</td>
<td>1</td>
<td>0.015</td>
<td>2.800</td>
<td>1.223</td>
<td>6.410</td>
</tr>
<tr>
<td>Constant</td>
<td>-1.723</td>
<td>0.280</td>
<td>37.774</td>
<td>1</td>
<td>0.000</td>
<td>0.179</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Participants that attained a high school level education or below were 2.67 (OR: 2.67, 95% CI: 1.01–7.02, \( p = 0.047 \)) times more likely of reporting food insecurity in comparison to those that reported having a graduate degree or above. No significant results were identified among respondents that indicated completing a college or associate’s degree. In this model, possessing a graduate degree or above served as the reference group.
Table 4

*Logistic Regression Model 2: Highest Educational Level Attained Predicting Likelihood of Reporting Food Insecurity*

<table>
<thead>
<tr>
<th>Educational Level</th>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>df</th>
<th>P-Value</th>
<th>Odds Ratio</th>
<th>95% CI Lower</th>
<th>95% CI Upper</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graduate Degree or Above - Ref</td>
<td></td>
<td></td>
<td>4.267</td>
<td>2</td>
<td>0.118</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>College or Associate Degree</td>
<td>0.313</td>
<td>0.418</td>
<td>0.560</td>
<td>1</td>
<td>0.454</td>
<td>1.367</td>
<td>0.603</td>
<td>3.101</td>
</tr>
<tr>
<td>High School or Below</td>
<td>0.981</td>
<td>0.494</td>
<td>3.942</td>
<td>1</td>
<td>0.047</td>
<td>2.667</td>
<td>1.013</td>
<td>7.022</td>
</tr>
<tr>
<td>Constant</td>
<td>-1.386</td>
<td>0.354</td>
<td>15.374</td>
<td>1</td>
<td>0.000</td>
<td>0.250</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Type of health insurance was also a significant independent predictor of food insecurity. Specifically, respondents without health insurance were more 4.8 times more likely to report being food insecure compared to respondents that indicated they possessed private insurance (OR = 4.8, 95% CI: 1.8–12.7, \( p = 0.002 \)). No significant difference was found among respondents with public health insurance (see Table 5).
Table 5

Logistic Regression Model 3: Type of Health Insurance Coverage Predicting Likelihood of Reporting Food Insecurity

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>df</th>
<th>P-Value</th>
<th>Odds Ratio</th>
<th>95% CI Lower</th>
<th>95% CI Upper</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private Insurance - Ref</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public Insurance</td>
<td>0.490</td>
<td>0.365</td>
<td>1.808</td>
<td>1</td>
<td>0.179</td>
<td>1.633</td>
<td>0.799</td>
<td>3.336</td>
</tr>
<tr>
<td>No Insurance</td>
<td>1.569</td>
<td>0.496</td>
<td>10.009</td>
<td>1</td>
<td>0.002</td>
<td>4.800</td>
<td>1.816</td>
<td>12.685</td>
</tr>
<tr>
<td>Constant</td>
<td>-1.386</td>
<td>0.250</td>
<td>30.749</td>
<td>1</td>
<td>0.000</td>
<td>0.250</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Respondents that reported usually eating American or Western food were 3.6 times more likely to report experiencing food insecurity compared to those that usually ate Filipino food (OR = 3.6, 95% CI: 1.8 − 12.7, \( p = 0.002 \)). Statistical significance was not established among participants that indicated they usually ate both, Filipino and Western/American food (see Table 6).

Table 6

Logistic Regression Model 4: Usual Type of Food Eaten Predicting Likelihood of Reporting Food Insecurity

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>df</th>
<th>P-Value</th>
<th>Odds Ratio</th>
<th>95% CI Lower</th>
<th>95% CI Upper</th>
</tr>
</thead>
<tbody>
<tr>
<td>Filipino - Ref</td>
<td></td>
<td>4.744</td>
<td></td>
<td></td>
<td>0.093</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Western/American</td>
<td>1.269</td>
<td>0.626</td>
<td>4.101</td>
<td>1</td>
<td>0.043</td>
<td>3.556</td>
<td>1.042</td>
<td>12.136</td>
</tr>
<tr>
<td>Both</td>
<td>0.170</td>
<td>0.428</td>
<td>0.158</td>
<td>1</td>
<td>0.691</td>
<td>1.185</td>
<td>0.513</td>
<td>2.740</td>
</tr>
<tr>
<td>Constant</td>
<td>-1.269</td>
<td>0.377</td>
<td>11.303</td>
<td>1</td>
<td>0.001</td>
<td>0.281</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Multivariate Logistic Regression Analysis

Multivariate regression analysis was used to examine the relationship between food insecurity and the four variables found to be significant independent predictors of food insecurity (annual household income, highest education level attained, type of food usually eaten, and type of health insurance coverage) (see Table 7). This model was statistically significant ($\chi^2 = 28.857$, df = 8, n = 180, $p<0.001$), indicating that it was able to distinguish between respondents who were food secure and food insecure. The variables contained within the model explained between 14.8% (Cox & Snell R square) and 21.8% (Nagelkerke R squared) of the variance in food security status among the sample population, and correctly classified 76.1% of cases.

The strongest predictor of reporting food insecurity was usually consuming Western or American food (OR = 7.3, 95% CI: 1.7 – 30.9, $p = 0.007$). Moreover, not having health insurance (OR = 5.2, 95% CI: 1.7 – 16.3, $p = 0.005$) and household incomes less than $20,000 (OR = 4.11, 95% CI: 1.4 – 11.9, $p = 0.009$) remained significant predictors of food insecurity. Although attaining a high school education or below was a significant predictor of food insecurity in the initial univariate analysis, statistical significance was not achieved when controlling for annual household income, type of food usually eaten, and health insurance status. Similarly, household incomes of $20,000 - $40,000 was not a significant predictor of food insecurity in this model (see Table 7). Multicollinearity tests were also performed, and indicated these particular variables were not highly inter-correlating (see Appendix F for multi-collinearity test).
Table 7

Logistic Regression Model 5: All Statistically Significant Independent Variables of Interest

Predicting Likelihood of Reporting Food Insecurity

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>df</th>
<th>P-Value</th>
<th>Odds Ratio</th>
<th>95% CI Lower</th>
<th>95% CI Upper</th>
</tr>
</thead>
<tbody>
<tr>
<td>Above $40,000 - Ref</td>
<td></td>
<td></td>
<td>6.872</td>
<td>2</td>
<td>0.032</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less Than $20,000</td>
<td>1.415</td>
<td>0.540</td>
<td>6.872</td>
<td>1</td>
<td>0.009</td>
<td>4.117</td>
<td>1.429</td>
<td>11.859</td>
</tr>
<tr>
<td>$20,000 - $40,000</td>
<td>0.602</td>
<td>0.486</td>
<td>1.532</td>
<td>1</td>
<td>0.216</td>
<td>1.825</td>
<td>0.704</td>
<td>4.734</td>
</tr>
<tr>
<td>Graduate Degree or Above - Ref</td>
<td>0.121</td>
<td></td>
<td>0.121</td>
<td>2</td>
<td>0.941</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>College or Associate Degree</td>
<td>0.129</td>
<td>0.483</td>
<td>0.071</td>
<td>1</td>
<td>0.790</td>
<td>1.137</td>
<td>0.442</td>
<td>2.929</td>
</tr>
<tr>
<td>High School or Below</td>
<td>0.219</td>
<td>0.646</td>
<td>0.115</td>
<td>1</td>
<td>0.735</td>
<td>1.245</td>
<td>0.351</td>
<td>4.418</td>
</tr>
<tr>
<td>Private Insurance - Ref</td>
<td></td>
<td></td>
<td>8.094</td>
<td>2</td>
<td>0.017</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public Insurance</td>
<td>0.351</td>
<td>0.422</td>
<td>0.694</td>
<td>1</td>
<td>0.405</td>
<td>1.421</td>
<td>0.622</td>
<td>3.247</td>
</tr>
<tr>
<td>No Insurance</td>
<td>1.652</td>
<td>0.582</td>
<td>8.056</td>
<td>1</td>
<td>0.005</td>
<td>5.220</td>
<td>1.668</td>
<td>16.339</td>
</tr>
<tr>
<td>Filipino Food - Ref</td>
<td></td>
<td></td>
<td>7.666</td>
<td>2</td>
<td>0.022</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Western or American Food</td>
<td>1.987</td>
<td>0.737</td>
<td>7.274</td>
<td>1</td>
<td>0.007</td>
<td>7.295</td>
<td>1.721</td>
<td>30.914</td>
</tr>
<tr>
<td>Both</td>
<td>0.604</td>
<td>0.528</td>
<td>1.309</td>
<td>1</td>
<td>0.253</td>
<td>1.829</td>
<td>0.650</td>
<td>5.143</td>
</tr>
<tr>
<td>Constant</td>
<td>-2.719</td>
<td>0.652</td>
<td>17.364</td>
<td>1</td>
<td>0.000</td>
<td>0.066</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A multivariate regression analysis that included all variables of interest, regardless of
their significance during the initial univariate regression analyses, is shown in Table 8. This
model was statistically significant ($\chi^2 = 42.03$, df = 21, n = 138, $p = 0.004$) and explained
between 26.3% (Cox Snell R Square) and 39% (Nagelkerke R Square) of the variance in food
security status, and correctly classified 79.7% of cases evaluated.

Similar to the previous model, attaining a high school education or below was not found
to be a significant predictor of reporting food insecurity. Likewise, the strongest predictor of
reporting food insecurity was “usually consuming Western or American food” (OR = 102.6, 95% CI: 8.7 – 1216.9, p < 0.001). Although “usually eating Western or American food” was a significant predictor of food insecurity, the wide confidence interval associated with this variable indicates that this specific measurement may not be accurate, and is likely a product of the small sample size analyzed in model 6 (n = 138). Usually eating both, Western/American food and Filipino food, was also a significant predictor of food insecurity (OR = 5.3, 95% CI: 1.1 – 25.1, p = 0.034). Furthermore, annual household incomes less than $20,000 (OR = 7.2, 95% CI: 1.8 – 29.5, p = 0.006) and possessing no health insurance (OR = 8.8, 95% CI: 1.7 – 46.3, p = 0.01) were significant predictors of reporting food insecurity (see Table 8).
Table 8

Logistic Regression Model 6: All Variables of Interest Predicting Likelihood of Reporting Food Insecurity

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>df</th>
<th>P-Value</th>
<th>Odds Ratio</th>
<th>95% CI Lower</th>
<th>95% CI Upper</th>
</tr>
</thead>
<tbody>
<tr>
<td>Households with Children Under 18 Years of Age</td>
<td>1.093</td>
<td>0.755</td>
<td>2.097</td>
<td>1</td>
<td>0.148</td>
<td>2.983</td>
<td>0.679</td>
<td>13.094</td>
</tr>
<tr>
<td>Henderson - Ref</td>
<td>1.900</td>
<td>3</td>
<td>0.593</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>City of Las Vegas</td>
<td>0.229</td>
<td>0.881</td>
<td>0.068</td>
<td>1</td>
<td>0.795</td>
<td>1.257</td>
<td>0.224</td>
<td>7.063</td>
</tr>
<tr>
<td>Clark County</td>
<td>0.825</td>
<td>0.778</td>
<td>1.124</td>
<td>1</td>
<td>0.289</td>
<td>2.283</td>
<td>0.496</td>
<td>10.494</td>
</tr>
<tr>
<td>North Las Vegas</td>
<td>-0.101</td>
<td>1.414</td>
<td>0.005</td>
<td>1</td>
<td>0.943</td>
<td>0.904</td>
<td>0.057</td>
<td>14.448</td>
</tr>
<tr>
<td>Age</td>
<td>0.020</td>
<td>0.025</td>
<td>0.601</td>
<td>1</td>
<td>0.438</td>
<td>1.020</td>
<td>0.970</td>
<td>1.072</td>
</tr>
<tr>
<td>Above $40,000 - Ref</td>
<td>9.164</td>
<td>2</td>
<td>0.010</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less Than $20,000</td>
<td>1.973</td>
<td>0.721</td>
<td>7.492</td>
<td>1</td>
<td>0.006</td>
<td>7.193</td>
<td>1.751</td>
<td>29.549</td>
</tr>
<tr>
<td>$20,000 - $40,000</td>
<td>-0.005</td>
<td>0.745</td>
<td>0.000</td>
<td>1</td>
<td>0.994</td>
<td>0.995</td>
<td>0.231</td>
<td>4.282</td>
</tr>
<tr>
<td>Body mass index</td>
<td>0.001</td>
<td>0.040</td>
<td>0.001</td>
<td>1</td>
<td>0.982</td>
<td>1.001</td>
<td>0.925</td>
<td>1.083</td>
</tr>
<tr>
<td>Graduate Degree or Above - Ref</td>
<td>0.907</td>
<td>2</td>
<td>0.635</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>College or Associate Degree</td>
<td>0.660</td>
<td>0.693</td>
<td>0.907</td>
<td>1</td>
<td>0.341</td>
<td>1.935</td>
<td>0.497</td>
<td>7.530</td>
</tr>
<tr>
<td>High School or Below</td>
<td>0.540</td>
<td>0.978</td>
<td>0.305</td>
<td>1</td>
<td>0.581</td>
<td>1.716</td>
<td>0.289</td>
<td>11.664</td>
</tr>
<tr>
<td>Employed - Ref</td>
<td>3.575</td>
<td>2</td>
<td>0.167</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unemployed</td>
<td>1.693</td>
<td>0.912</td>
<td>3.447</td>
<td>1</td>
<td>0.063</td>
<td>5.435</td>
<td>0.910</td>
<td>32.455</td>
</tr>
<tr>
<td>Retired</td>
<td>0.508</td>
<td>0.825</td>
<td>0.379</td>
<td>1</td>
<td>0.538</td>
<td>1.662</td>
<td>0.330</td>
<td>8.378</td>
</tr>
<tr>
<td>Positive Self-Reported Hypertension Status</td>
<td>1.178</td>
<td>0.757</td>
<td>2.421</td>
<td>1</td>
<td>0.120</td>
<td>3.249</td>
<td>0.737</td>
<td>14.332</td>
</tr>
<tr>
<td>Positive Self-Reported High Cholesterol Status</td>
<td>-0.358</td>
<td>0.641</td>
<td>0.311</td>
<td>1</td>
<td>0.577</td>
<td>0.699</td>
<td>0.199</td>
<td>2.456</td>
</tr>
<tr>
<td>Positive Self-Reported Diabetes Status</td>
<td>0.947</td>
<td>0.681</td>
<td>1.932</td>
<td>1</td>
<td>0.165</td>
<td>2.577</td>
<td>0.678</td>
<td>9.791</td>
</tr>
<tr>
<td>Resided in US for 25 or more Years - Ref</td>
<td>4.896</td>
<td>2</td>
<td>0.086</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resided in US for 0 - 10 Years</td>
<td>-0.491</td>
<td>0.825</td>
<td>0.355</td>
<td>1</td>
<td>0.552</td>
<td>0.612</td>
<td>0.122</td>
<td>3.081</td>
</tr>
<tr>
<td>Resided in US for 11 - 25 Years</td>
<td>1.219</td>
<td>0.725</td>
<td>2.826</td>
<td>1</td>
<td>0.093</td>
<td>3.384</td>
<td>0.817</td>
<td>14.015</td>
</tr>
<tr>
<td>Usually Eat Filipino Food - Ref</td>
<td>13.692</td>
<td>2</td>
<td>0.001</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Usually Eat Western/American Food</td>
<td>4.631</td>
<td>1.262</td>
<td>13.467</td>
<td>1</td>
<td>0.000</td>
<td>102.596</td>
<td>8.650</td>
<td>1216.919</td>
</tr>
<tr>
<td>Usually Eat Both</td>
<td>1.675</td>
<td>0.791</td>
<td>4.488</td>
<td>1</td>
<td>0.034</td>
<td>5.339</td>
<td>1.133</td>
<td>25.148</td>
</tr>
<tr>
<td>Private Insurance - Ref</td>
<td>7.366</td>
<td>2</td>
<td>0.025</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public Insurance</td>
<td>0.084</td>
<td>0.724</td>
<td>0.013</td>
<td>1</td>
<td>0.908</td>
<td>1.087</td>
<td>0.263</td>
<td>4.495</td>
</tr>
<tr>
<td>No Insurance</td>
<td>2.179</td>
<td>0.845</td>
<td>6.656</td>
<td>1</td>
<td>0.010</td>
<td>8.841</td>
<td>1.688</td>
<td>46.294</td>
</tr>
<tr>
<td>Constant</td>
<td>-7.399</td>
<td>2.291</td>
<td>10.428</td>
<td>1</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
</tr>
</tbody>
</table>
Chapter 6: Discussion

Research Question #1

Overall, the food insecurity prevalence rate among Filipinos in this study differed significantly from the 2016 Clark County “Asian only” food insecurity rate as reported by the Current Population Survey (27.1% vs. 1.6%, \( p < 0.00001 \)). This finding supports the hypothesis (H) to research question #1: A significant difference in food insecurity rates will exist between Filipino Americans who reside in Clark County, NV and the total Asian American population in Clark County, as reported by the Current Population Survey. As a result, the hypothesis is accepted and the null hypothesis to research question #1 is rejected.

Relatively high rates of food insecurity among Asian American sample populations have been documented in previous studies (Chaparro et al., 2009; Li et al., 2013; Sorkin et al., 2011). However, unlike Li et al. (2013) and Sorkin et al. (2011), which employed a one-question and two-question evaluation of food security status, respectively, this study utilized the USDA Short Form Food Security Survey Module (USDA ERS, 2012). Consequently, the results from this study are unique as they are a product of a validated and widely used food security survey instrument (Blumberg et al., 1999). Moreover, this study is the first to evaluate food insecurity and its correlates, and incorporate the Social Ecological Model in an exclusively Filipino American study sample.

Low rates of food insecurity have also been reported among Asian Americans in population-based research studies (Furness et al., 2004; Jernigan et al., 2016). As such, the discrepancy in food insecurity rates between this Filipino American study sample and the Clark County “Asian only” sample could be due to several factors.
Methodological issues with the collection and reporting of Asian American food insecurity data in Clark County, Nevada may explain the significant difference in food insecurity rates documented in this study. The possibility exists that limited English proficiency (LEP) among the Asian American community in Clark County could have led to a sampling bias. One-third of Asian Americans identified themselves as LEP in the 2000 U.S. Census, which is four times higher than the general population (Islam et al., 2010). LEP and linguistically isolated individuals generally possess lower socioeconomic status (Islam et al., 2010). According to Kim & Keefe (2010), Asian immigrants with limited English-speaking skills may not have the ability to sufficiently answer survey questions, and will either refuse participation or be considered ineligible to participate by the surveyor. Moreover, an interview conducted by the Urban Institute with prominent Asian American researchers, Dr. Chau Trinh-Shevrin and Priscilla Huang, specified that cultural attitudes toward the aversion of survey participation also reduced response rates in Asian subpopulations (Devers et al., 2013). Thus, studies conducted among Asian Americans contain higher numbers of English-speaking, well acculturated, more educated, and higher-income respondents (Kim & Keefe, 2010). This sampling bias would then suggest that the 1.6% food insecurity rate reported among “Asian only” households in Clark County could be underestimated and misrepresentative of the various Asian American subgroups.

Furthermore, the design of the Current Population Survey utilizes a 4-8-4 sampling scheme (U.S. Census Bureau, n.d.). Respondents are surveyed for four consecutive months, out for eight months, followed by another survey period that lasts for four consecutive months, at which point the respondent is permanently removed from the sample (U.S. Census Bureau, n.d.). This sampling scheme was intended to limit respondent burden and ensure continuity (U.S. Census Bureau, n.d.). However, combined with the fact that the Household Food Security Survey
Module lacks rigorous language translations (Kwan et al., 2015), other than in Spanish, the notion of participating in a non-native language survey for nearly eight months could be quite intimidating and burdensome. Other methodological threats such as a lack of disaggregated data, inconsistent/non-standardized definitions for Asian Americans, uneven distribution of geographic representation, and small sample sizes in large national surveys have been identified as problems in the collection and reporting of Asian American data (Holland & Palaniappan, 2012; Islam et al., 2010; Ro & Yee, 2010; Yi et al., 2016).

Given that food insecurity rates in this Filipino American study were significantly higher than the Clark County CPS “Asian only” sample, suggests a need to disaggregate the data and recognize the heterogeneity inherent to the Asian American community in Clark County. Moreover, national surveys like the Current Population Survey may leverage these findings to establish a more effective protocol to sample Asian sub-populations, including Filipinos, in order to more accurately reflect the differences in social and health-related outcomes among the Asian subgroups.

Research Question #2

The hypothesis (H) to research question #2, socio-demographic factors will be statistically significant predictors of food insecurity among Filipino Americans that reside in Clark County, Nevada, is supported by evidence from the logistic regression analyses. Thus, the researchers accept this hypothesis to research question #2, and reject the null hypothesis.

Statistical significance was found in both univariate regression and multivariate regression models among annual household incomes below $20,000 (p <0.001; p =0.009; p =0.006)\(^5\), usually eating American/Western food (p <0.05; p =0.007; p <0.001), and possessing

\(^5\) The reported p-values in parenthesis correspond to: the univariate regression model of the variable of interest; p-value according to Model 5 (see Table 7); and the p-value according to Model 6 (see Table 8).
no health insurance (p = 0.002; p = 0.005; p < 0.05). Applying the Social Ecological Model, the intrapersonal (household income below $20,000 and eating American-Western food) and policy (no health insurance) levels accounted for significant variance in predicting food insecurity status among this Filipino American sample population (see Table 9).

Based on Model 6 (see Table 8), which contained all variables of interest, the intrapersonal level of the Social Ecological Model most strongly influenced the reporting of food insecurity in this study. Usually eating Western/American food had the largest odds ratio associated with reporting food insecurity (OR: 102.6, p < 0.001; see Table 8). Similarly, respondents that reported annual household incomes below $20,000 possessed 7.2 times higher odds of reporting food insecurity compared to respondents with incomes above $40,000. The majority of variables (77%) analyzed were placed in the intrapersonal level. Individuals that indicated not having health insurance were 8.8 times more likely to report being food insecure compared to individuals with private health insurance, which for this study was classified as a policy level factor, and supports the current body of evidence that there are multiple levels within the Social Ecological Model that influence food insecurity among the Filipino population that resides in Clark County, NV.

The increased odds ratios among these statistically significant variables in the multivariate model compared to their individual univariate models suggests a potential additive effect, as it relates to reporting food insecurity, between the intrapersonal and policy level of the Social Ecological model. As the Social Ecological Model posits, the different theoretical levels interact in a dynamic and reciprocal manner to influence the target health behavior or outcome (McLeroy et al., 1988). Thus, the model assumes that the individual and their social environment
(represented by the different levels of the Social Ecological Model) also work in an interdependent manner.
Table 9

List of Variables of Interest: Corresponding Level within the Social Ecological Model and Statistical Significance in Univariate and Multivariate Models

<table>
<thead>
<tr>
<th>Social Ecological Level</th>
<th>Corresponding Variable of Interest</th>
<th>Statistically Significant Predictor of Food Insecurity – Univariate Model</th>
<th>Statistically Significant Predictor of Food Insecurity – Multivariate Model 5</th>
<th>Statistically Significant Predictor of Food Insecurity – Multivariate Model 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intrapersonal</td>
<td>Annual Household Income</td>
<td>• Less than $20,000**</td>
<td>• Less than $20,000*</td>
<td>• Less than $20,000*</td>
</tr>
<tr>
<td>Intrapersonal</td>
<td>Highest Educational Level Attained</td>
<td>• High School or Below*</td>
<td>No Statistical Significance Achieved</td>
<td>No Statistical Significance Achieved</td>
</tr>
<tr>
<td>Intrapersonal</td>
<td>Type of Food Usually Eaten</td>
<td>• Western or American*</td>
<td>• Western or American*</td>
<td>• Western or American**</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Both*</td>
</tr>
<tr>
<td>Intrapersonal</td>
<td>Age</td>
<td>No Statistical Significance Achieved</td>
<td>No Statistical Significance Achieved</td>
<td>No Statistical Significance Achieved</td>
</tr>
<tr>
<td>Intrapersonal</td>
<td>Body Mass Index</td>
<td>No Statistical Significance Achieved</td>
<td>No Statistical Significance Achieved</td>
<td>No Statistical Significance Achieved</td>
</tr>
<tr>
<td>Intrapersonal</td>
<td>Employment Status</td>
<td>No Statistical Significance Achieved</td>
<td>No Statistical Significance Achieved</td>
<td>No Statistical Significance Achieved</td>
</tr>
<tr>
<td>Intrapersonal</td>
<td>Self-Reported Diabetes Status</td>
<td>No Statistical Significance Achieved</td>
<td>No Statistical Significance Achieved</td>
<td>No Statistical Significance Achieved</td>
</tr>
<tr>
<td>Intrapersonal</td>
<td>Self-Reported Hypertension Status</td>
<td>No Statistical Significance Achieved</td>
<td>No Statistical Significance Achieved</td>
<td>No Statistical Significance Achieved</td>
</tr>
<tr>
<td>Intrapersonal</td>
<td>Self-Reported High Cholesterol Status</td>
<td>No Statistical Significance Achieved</td>
<td>No Statistical Significance Achieved</td>
<td>No Statistical Significance Achieved</td>
</tr>
<tr>
<td>Intrapersonal</td>
<td>Years Lived in the United States</td>
<td>No Statistical Significance Achieved</td>
<td>No Statistical Significance Achieved</td>
<td>No Statistical Significance Achieved</td>
</tr>
<tr>
<td>Interpersonal</td>
<td>Household with Children Under the Age of 18</td>
<td>No Statistical Significance Achieved</td>
<td>No Statistical Significance Achieved</td>
<td>No Statistical Significance Achieved</td>
</tr>
<tr>
<td>Community</td>
<td>Geographic Location by City Jurisdiction</td>
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</tr>
</tbody>
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* P-Value < 0.05
** P-Value < 0.001

At the intrapersonal level, annual household income significantly predicted food insecurity. The links between low-income status and food insecurity are well-documented (Goldberg & Mawn, 2015; Coleman-Jensen et al., 2017; Furness et al. 2004; Foley et al., 2009).
In the univariate regression model containing annual household income (see Table 3), a step-wise gradient existed in which higher odds of food insecurity was observed as the classified income brackets decreased (less than $20,000: OR = 4.5, \( p < 0.001 \); $20,000 - $40,000: OR = 2.8, \( p = 0.02 \)). Furness et al. (2004) also reported a similar step-wise gradient among their study sample of low-income households in Los Angeles County.

However, upon controlling for education level, health insurance status, and type of food usually eaten (see Table 7), household incomes of $20,000 - $40,000 (OR = 1.8, 95% CI: 0.7 – 4.7, \( p = 0.22 \)) were no longer found to be significant predictors of food insecurity among the study sample. In many ways, the loss of statistical significance among this income bracket resulting from the interaction between the socio-demographic variables is indicative of the complex nature of food insecurity. Although socioeconomic disadvantage is a strong predictor of food insecurity, not all socioeconomically disadvantaged individuals are food insecure (Coleman-Jensen et al., 2017). Similarly, some higher income households also experience food insecurity (Olabiyi & McIntyre, 2014; Nord & Bickel, 2002). A complete understanding of the factors contributing to and mitigating food insecurity is yet to be achieved. Policy makers, researchers, and Filipino-based community resource workers should be cognizant of the connection between food insecurity and income status among Filipinos, specifically individuals possessing annual household incomes below $20,000, as evidenced by this study.

Possessing a high school degree or lower (highest level of education attained), was also a significant predictor of food insecurity during the initial univariate analysis (see Table 4). However, this variable was not found to be statistically significant in the multivariate regression models (see Table 7 and 8). A possible explanation is that educational attainment was actually a significant predictor of food insecurity in the univariate model (see Table 4) due to its correlation.
with annual household incomes (Baum & Payea, 2005). Thus, in the multivariate models, educational attainment lost its significance likely because annual household incomes served as a stronger predictor of reporting food insecurity. Moreover, the small sample size analyzed possibly influenced the divergence in statistically significant results between the univariate and multivariate regression models.

As mentioned earlier, the intrapersonal level factor of usually eating Western/American food was the strongest predictor of food insecurity in Model 6 as evidenced by the reported odds ratio (OR: 102.6, p < 0.001; see Table 8). This variable of interest served as a proxy for acculturation status. Acculturation is commonly defined as “the process by which a group, usually a minority group, adopts the cultural patterns of a dominant or host group” (Satia-Abouta, 2003 pp. 73). Thus, usually eating Filipino foods was assumed to indicate less acculturation, while individuals who reported eating usually Western/American food were considered more acculturated. Acculturation and its relation to food security status have not been extensively studied in Filipino American populations, or Asian Americans in general. However, despite finding a strong significant association between the type of food usually eaten and food insecurity, the relationship between acculturation and food insecurity in this study sample is inconclusive.

Years lived in the United States, which served as another acculturation proxy measure, was found not to be significantly associated with food insecurity. Greenwald & Zajfen (2015) also reported that years of residence in the United States was not a significant predictor of food insecurity among immigrants in a San Diego, California based neighborhood. Moreover, the wide confidence intervals reported for usually eating Western/American food (95% CI: 8.6, 1216.9) in the multivariate regression model (Model 6; see Table 8), provides quantitative
evidence that the accuracy and precision of this variable, as it relates to predicting food insecurity, is limited.

Previous studies conducted on ethnic minorities and immigrant populations have documented an association between food insecurity and proxy measures for both, less acculturative status and greater acculturative status (Dhokarh et al., 2011; Gorman et al., 2011; Caspi et al., 2016; Ward et al., 2011), which further highlights the complexity of this relationship. The connection between acculturation and food insecurity varies among different immigrant groups (Popovic-Lipovac et al., 2015; Dhokarh et al., 2011; Ward et al., 2011; Caspi et al., 2016), and therefore requires additional research to further identify how acculturation impacts the Filipino community.

Among Filipino American immigrants who report adopting Western dietary behaviors, prior studies have shown an increased consumption of meat, dairy products, fast food hamburgers, and fats and sugars (Vargas & Jurado, 2016; Serafica et al., 2013; Dela Cruz et al., 2013). Dela Cruz et al. (2013) notes that dairy and meats are cheaper in the United States compared to the Philippines, and that participants in their study consumed higher amounts of fruits and vegetables since moving to the United States. Vargas & Jurado (2016) also reported a similar increase in fruit and vegetable intake among their Filipino American study sample. Dela Cruz et al. (2013) suggests that these dietary changes are an indication of improved socioeconomic status, implying that food insecurity likely does not play a role in the dietary acculturation patterns of Filipino Americans.

Nonetheless, the possibility exists that consuming mainly American or Western foods presented a cheaper option compared to eating mainly Filipino foods, and may imply a possible behavioral coping mechanism practiced by our study’s food insecure respondents. However,
without qualitative evidence supporting this conclusion, our finding that Western/American foods were significant predictors of food insecurity is difficult to interpret. Future studies seeking to expand upon food insecurity and acculturation in Filipino Americans should utilize a longitudinal study design as well as previously validated Filipino-specific acculturation surveys rather than proxy measures (Serafica et al., 2013; Vargas & Jurado, 2016). A mixed methods approach may also provide added insight, through key informant interviews and focus group sessions, on the acculturation patterns adopted by food insecure Filipino Americans.

Acculturation has also been associated with increased risk of chronic disease among Filipino Americans (Afable et al., 2016; Ursua et al., 2013; Vargas & Jurado, 2014). In this study, self-reported chronic disease diagnoses (diabetes, hypertension, and high cholesterol) were not significant predictors of food insecurity in either univariate or multivariate regression models. This finding differs from prior studies that linked food insecurity with diabetes (Gucciardi et al., 2014; Seligman et al., 2007; Seligman et al., 2009; Seligman & Schillinger, 2010; Laraia et al., 2010; Fitzgerald et al., 2011), hypertension (Seligman et al., 2010; Vozoris & Tarasuk, 2003), and high cholesterol (Sun Lee et al., 2012; FRAC, 2015; Seligman et al., 2010). Thus, the suggestion that food insecurity is influencing chronic disease status through acculturation in this Filipino American study sample is not supported by this study’s findings.

Among the contextual levels of the Social Ecological Model, only a lack of health insurance coverage, which represented the policy level, was a significant predictor of food insecurity. Previous studies conducted by Goldberg & Mawn (2015) and Seligman et al. (2010) have documented a similar association between a lack of health insurance and food insecurity. Indeed, the reciprocal nature between competing financial demands of uninsured medical care and purchasing a sufficient quantity and quality of food could explain this connection.
& Schillinger (2010) describe this relationship as being a vicious cycle in which food insecure individuals manage by reducing the amount of medication they take in order to afford food to eat, and likewise, going hungry in order to afford their medications. However, as Goldberg & Mawn (2015) conclude, additional research is required to fully explicate the link between food insecurity and health insurance status. With the recent efforts to repeal the Affordable Care Act, this particular field of research should gain increased attention.

Regardless, the policy level of the Social Ecological Model was a significant contextual determinant to food insecurity in this study, which highlights a critical feature of the Social Ecological Model (McLeroy et al., 1988). The Social Ecological Model posits that changes among the macro-level determinants to health will ultimately produce changes in an individual (McLeroy et al., 1988). As such, multi-level health promotion efforts that focus on social-environmental factors, as well as individual factors, are necessary to affect health outcomes and health behaviors (Cook et al., 2014; McLeroy et al., 1988). Ecological models, such as the Social Ecological Model (McLeroy et al., 1988), do this by unequivocally identifying and addressing the larger, environmental, organizational, community, and policy-related determinants to health.

Prominent Filipino American researchers, as well as Asian American researchers in general, have acknowledged the need to conduct studies that investigate Asian American health-related outcomes within the context of social ecological models (Dela Cruz et al., 2002; Ro & Yee, 2010). This Filipino American food insecurity study provides evidence that certain environmental factors play a role in determining the food security status among Filipinos. Based on the study findings, Filipino community advocates and leaders should seek to support legislative provisions that expand or provide health insurance coverage to the uninsured as it will likely have a corrective effect on the food insecure-experiences of Filipino Americans in Clark
County. Overall, Filipino community advocates need to consider multi-level, intercollaborative interventions when attempting to mitigate food insecurity among Filipino Americans in Clark County.

Statistically significant results were not achieved at the interpersonal level (households with children under the age of 18) and community level (geographic area of residence). The small sample size in this study likely influenced the lack of statistically significant data among these levels. Previous research has established that households with children under the age of 18 are more likely to report experiencing episodes of food insecurity (Coleman-Jensen et al., 2017; Furness et al., 2004). Moreover, food insecurity-related research that utilized an ecological approach has revealed significant interpersonal, community, and environmental influences on household food security status (Goldberg & Mawn, 2015; Bartfeld & Dunifon, 2006; Bruening et al., 2012; Foley et al., 2009). These factors include poor access to supermarkets, households with three or more children, differences in state food assistance infrastructure, and median rent levels (Bruening et al., 2012; Bartfeld & Dunifon, 2006; Foley et al., 2009). Although this Filipino food insecurity study did not find statistically significant results among the interpersonal and community levels, results from prior studies should not be ignored. Future research should continue to examine food insecurity in the Filipino American community through the lens of the Social Ecological Model and work toward building a complete picture of the social and environmental factors that influence food insecurity in this unique population.

Limitations

The results from this study should be viewed in light of its limitations. First, the cross-sectional study design employed for this research project did not allow for the establishment of a temporal association between food insecurity and the various socio-demographic variables.
analyzed. Although a correlation can be ascertained in cross-sectional studies, such as this one, a true causal relationship between the outcome (food insecurity) and risk factors (variables of interest) cannot be determined.

Second, the convenience sampling approach utilized for data collection limits the external validity of this study’s findings. Relatedly, the large confidence intervals reported in the logistic regression analysis models, likely a consequence of small sample size, reduced the precision of the results. Additional studies among Filipino American groups in different regions of the United States should be conducted before any conclusions about the predictors of food insecurity in the general Filipino American population can be made.

Third, the self-reported nature of the Filipino Health Needs Assessment Survey is susceptible to recall bias. Moreover, social desirability bias, defined as “the tendency of an individual to convey an image in keeping with social norms and to avoid criticism in a ‘testing’ situation” (Herbert et al., 1995), is also an issue when conducting self-reported questionnaires (Bowling, 2005). Despite the limitations inherent to self-reported surveys, this method is regarded as a feasible and effective means of collecting actionable information for research purposes among a large population (Garfield et al., 2011).

Fourth, it should be noted that the chi-square comparison was performed between to different sample types. The food insecurity rates reported by the Clark County CPS sample is based on the full 18-item Household Food Security Survey Module and was administered in reference to the household (Bickel et al., 2000; U.S. Department of Labor, 2006). This study’s Filipino food insecurity rates were reported based on the USDA Short Form Food Security Survey Module and was administered in reference to the individual.
Lastly, while the 18-item Household Food Security Survey Module (HFSSM) has been found to be a valid and reliable instrument for assessing food insecurity in Asian and Pacific Islander populations (Derrickson et al., 2000), three items contained within the HFSSM displayed problematic response rates among Asian and Pacific Islanders residing in Hawaii (Derrickson et al., 2000). These items included, “I/We couldn’t afford to eat balanced meals”; “In the last 12 months, since last (name of current month), did (you/you or other adults in your household) ever cut the size of your meals or skip meals because there wasn't enough money for food?”; “(In reference to the previous question) How often did this happen—almost every month, some months but not every month, or in only 1 or 2 months?” (Derrickson et al., 2000). These three items are contained within the Short Form Food Security Survey Module, and may present potential issues with regards to the validity and utility of these measures (Blumberg et al., 1999). However, as Derrickson et al. (2000) acknowledge, their study findings should be limited to Asian/ Pacific Islanders living in Hawaii, as significant differences exist among Asian/ Pacific Islanders residing in different geographic regions of the United States.

Despite these limitations, the USDA Economic Research Service has stated that the short form survey is an appropriate tool to measure food insecurity rates during instances when respondent burden is high (USDA ERS, 2017e; Blumberg et al., 1999; Bickel et al., 2000). As such, the short form survey was utilized in this study to reduce respondent burden as the Filipino Health Needs Assessment contained seventy items, sans the six short form food security questions. Although this may have led to an overestimate of food insecurity prevalence in this Filipino study sample, these results should be considered an essential, preliminary investigation into a severely understudied topic: predictors of food insecurity status among Filipino Americans. The study findings also illustrate a pressing need to conduct further research, which
expands upon the current understanding of food insecurity in Asian American populations. Future research on food insecurity in Asian American subgroups should recognize the cultural limitations reported by Derrickson et al. (2000) on the Short Form Food Security Survey Module, and utilize the full 18-item HFSSM to conduct food security assessments.
Chapter 7: Conclusion

Food insecurity, defined as a household-level economic and social condition of limited or uncertain access to adequate food, is a complex and multi-faceted condition of resource-constrained food deprivation. As one of the first studies to employ the Social Ecological Model as a theoretical framework to guide the evaluation of food insecurity rates and its correlates in an exclusively Filipino American population sample, these results are an essential first step to understanding the breadth of factors that influence food insecurity in this unique Asian subgroup. Consequently, the study findings hold major implications for local Filipino community leaders and advocates in Clark County, Nevada.

Overall, 27.1% of Filipino American respondents reported experiencing food insecurity at some point during the year, with 5.1% of participants reporting very low food security, the most severe form of food insecurity. From the Social Ecological perspective, study results indicate that food insecurity is a challenge at the intrapersonal (annual household incomes below $20,000 and usually eating American/Western food) and policy level (lack of health insurance). A critical assumption of the Social Ecological Model is that changes among the macro-level, contextual determinants to health will ultimately produce changes among individuals (McLeroy et al., 1988). Thus, the knowledge gained from this study on the correlates of food insecurity among Filipino Americans in Clark County can be used to inform local community stakeholders, and subsequently translated into tangible prevention and support programs. Targeted interventions and health promotion programs should employ a multi-level, intercollaborative means of modifying the above-mentioned Social Ecological factors. For example, local Filipino community advocates should seek to support legislative provisions that expand or provide health
insurance to uninsured persons, as it will likely have a remedial effect on the experiences of uninsured, food insecure Filipino Americans.

Future research should continue to apply a social ecological approach to identify the numerous social, political, environmental, cultural, and contextual elements that affect food insecurity in Filipino Americans. As evidenced by this study, disaggregation of the reported Clark County food insecurity data among Asian Americans is necessary to accurately monitor food insecurity prevalence rates of the various Asian subgroups that reside in Clark County. Researchers should also expand upon this research base, and include other areas of the United States with large populations of Filipino Americans in order to produce more generalizable results and establish definitive conclusions on the factors affecting food insecurity in Filipino Americans. Moreover, other aspects, such as the specific acculturation and coping mechanisms practiced by food insecure Filipino Americans should also be a research priority for researchers, community based organizations, and local community stakeholders.
Chapter 8: Funding

No external funding sources were used to support this project.
Appendix A: 2016 Food Insecurity Rates by Race Weighted –
Clark County, Nevada (CPS, 2016b)

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<th>Total HRFS12MD</th>
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## Appendix B: 2016 Food Insecurity Rates by Race Unweighted –

**Clark County, Nevada (CPS, 2016c)**

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Appendix C: University of Nevada Las Vegas – Office of Human Subjects Research

Institutional Review Board Form

UNLV Biomedical IRB - Exempt Review
Exempt Notice

DATE: April 3, 2017

TO: Francisco Sy, MD, DrPH
FROM: Office of Research Integrity - Human Subjects

PROTOCOL TITLE: [1046862-1] An Assessment of Filipino Health in the Greater Las Vegas Area: A Pilot Study

ACTION: DETERMINATION OF EXEMPT STATUS

EXEMPT DATE: April 3, 2017

REVIEW CATEGORY: Exemption category # 2

Thank you for your submission of New Project materials for this protocol. This memorandum is notification that the protocol referenced above has been reviewed as indicated in Federal regulatory statutes 45CFR46.101(b) and deemed exempt.

We will retain a copy of this correspondence with our records.

PLEASE NOTE:
Upon final determination of exempt status, the research team is responsible for conducting the research as stated in the exempt application reviewed by the ORI - HS and/or the IRB which shall include using the most recently submitted Informed Consent/Assent Forms (Information Sheet) and recruitment materials. The official versions of these forms are indicated by footer which contains the date exempted. If your project involves paying research participants, it is recommended to contact Carisa Shaffer, ORI Program Coordinator at (702) 895-2794 to ensure compliance with subject payment policy.

Any changes to the application may cause this protocol to require a different level of IRB review. Should any changes need to be made, please submit a Modification Form. When the above-referenced protocol has been completed, please submit a Continuing Review/Progress Completion report to notify ORI - HS of its closure.

If you have questions, please contact the Office of Research Integrity - Human Subjects at IRB@unlv.edu or call 702-895-2794. Please include your protocol title and IRBNet ID in all correspondence.

Office of Research Integrity - Human Subjects
4505 Maryland Parkway - Box 451047 - Las Vegas, Nevada 89154-1047
(702) 895-2794 - FAX: (702) 895-0905 - IRB@unlv.edu
Appendix D: Filipino Health Needs Assessment Survey

Francisco Sy, MD, DrPH, Principal Investigator, University of Nevada Las Vegas

Health Needs Assessment Survey in Filipino Americans
in the Greater Las Vegas Area

Directions: The purpose of this survey is to understand the health needs among Filipinos in the Greater Las Vegas Area. Your participation in this survey is voluntary.

1. DEMOGRAPHIC and ACCULTURATION QUESTIONS
   The following questions ask about your background. Please check or circle the response you wish to select. For some questions you will need to fill in the blank.
   1. What is the zip code of where you live? ____________________________
   2. What is your primary mode of transportation?
      ___ 1) Own Private Vehicle
      ___ 2) Public Transportation
      ___ 3) Walking
      ___ 4) Other: ________________________________
   3. How well do you speak English? (Check one)
      ___ 1) Not at all
      ___ 2) Not well
      ___ 3) I speak English well
      ___ 4) I speak English fluently
   4. How well do you read English? (Check one)
      ___ 1) Not at all
      ___ 2) Not very well
      ___ 3) Well
      ___ 4) Very well
   5. What language do you speak most often at home? (Check one)
      ___ 1) English
      ___ 2) Ilocano
      ___ 3) Cebuano
      ___ 4) Tagalog
      ___ 5) Bicolano
      ___ 6) Other language: ____________________________
   6. Do you feel that you can easily fill out this survey without help?
      ___ 1) Yes
      ___ 2) No  If you answered “No”, please contact research study staff at Francisco.sy@unlv.edu
   7. In which year were you born? ____________

1
8. What is your gender?
   ____ 1) Male
   ____ 2) Female


10. What is your height? ______________ ft. ______________ in.

11. Were you born in the United States?
    ____ 1) Yes
    ____ 2) No  → If you answered “No”, in which country were you born? ________

12. How many years have you lived in the United States? ________ (total years)

13. What is your current marital status? (Check one)
    ____ 1) Married/living as married
    ____ 2) Never married
    ____ 3) Divorced/Separated
    ____ 4) Widowed
    ____ 5) Other

14. Which of the following family member(s) currently live with you in your household (Select all that apply)?
    ____ 1) Children under the age of 18
    ____ 2) Children over the age of 18
    ____ 3) Parent(s)
    ____ 4) Grandparent(s)
    ____ 5) Sibling(s)
    ____ 6) Uncle(s)/Aunt(s)
    ____ 7) Cousin(s)
    ____ 8) Grandchildren
    ____ 9) Other

15. What is the highest grade of school you completed? (Check one)
    ____ 1) No education or elementary school
    ____ 2) Below high school graduate
    ____ 3) High school
    ____ 4) University (or college or associate degree)
    ____ 5) Graduate and above (Masters or Doctorate)

16. Which of the following describes you currently? (Check one)
    ____ 1) Employed
    ____ 2) Unemployed
    ____ 3) Retired
    ____ 4) Homemaker
    ____ 5) Student
    ____ 6) Other: ___________________
17. (For those employed) Which of the following best describes your current occupation?
   ___1) Casino Employee
   ___2) Grocery Store Worker
   ___3) Retail Job
   ___4) Healthcare Worker
   ___5) School Employee
   ___6) Other: _______________________

18. What is your annual household income (Only include the combined income of you and your spouse (if applicable)? (Check one)
   ___1) Less than $10,000
   ___2) $10,000-$19,999
   ___3) $20,000-$29,999
   ___4) $30,000-$40,000
   ___5) Above $40,000

19. What foods do you usually eat? (Check one)
   ___1) American or Western food
   ___2) Filipino Food
   ___3) Both American and Filipino food equally

II. HEALTH BEHAVIORS

20. How often do you smoke cigarettes? Please check one.
    ___1) Every day
    ___2) Some days
    ___3) Not at all

21. How long has it been since you last smoked a cigarette, even one or two puffs? Please check one.
    ___1) Never smoked a cigarette
    ___2) Within the past month (less than 1 month ago)
    ___3) Within the past 3 months (1 month but less than 3 months)
    ___4) Within the past 6 months (3 months but less than 6 months)
    ___5) Within the past year (6 months but less than 1 year ago)
    ___6) Within the past 5 years (1 year but less than 5 years ago)
    ___7) Within the past 10 years (5 years but less than 10 years ago)
    ___8) 10 years or more

22. Not counting decks, porches, or garages, during the past week, how many days did someone other than you smoke tobacco inside your home while you were at home?
    ____________ days within the past week
    (number of days)

23. Do you currently use other tobacco products (for example: chewing tobacco, inhaled tobacco, or place tobacco on the inside of your lips) every day, some days, or not at all? Please check one.
    ___1) Every day
    ___2) Some days
    ___3) Not at all
24. During the past month, how many days did you have at least one drink of any alcoholic beverage. This can include beer, wine, a malt beverage or any other liquor?

_____ days within the month
(number of days)

25. One drink is equivalent to a 12-ounce beer, a 3-ounce glass of wine, or a drink with one shot of liquor. During the past month, on the days when you drank, about how many drinks did you have daily?

_____ drinks on an average day when you drank alcoholic beverage
(number of drinks)

26. One serving of fruit is usually a whole piece of fruit like an apple, orange or pear. For fruits like grapes, a serving consists of 6-8 grapes. For fruit such as cantaloupe, a serving is 1 cup or a handful of cantaloupe. Fruits can be fresh, frozen, or canned. How many servings of fruit do you have in a normal week? Please DO NOT count fruit drinks like orange juice or Snapple.

_____ servings of fruit for a normal week

27. For vegetables such as carrots, broccoli, or potatoes, one serving consists of 1 cup or handful of the vegetable. Vegetables can be fresh, frozen or canned. How many servings of vegetables do you have in a normal week? Please DO NOT count lettuce or any other leafy vegetables.

_____ servings of vegetables for a normal week

28. A serving size of fish is the same size as a deck of cards. Thinking back over the past week, how often did you eat a serving of fish?

_____ 1) ≥5 servings/day
_____ 2) 4 servings/day
_____ 3) 3 servings/day
_____ 4) 2 servings/day
_____ 5) 1 serving/day
_____ 6) 0 serving/day

29. A serving size of chicken or pork is the same size as a deck of cards. Thinking back over the past week, how often did you eat a serving of chicken or pork?

_____ 1) ≥5 servings/day
_____ 2) 4 servings/day
_____ 3) 3 servings/day
_____ 4) 2 servings/day
_____ 5) 1 serving/day
_____ 6) 0 serving/day

30. Thinking back over the past week, how often did you eat sweets? (e.g. sugar sweetened soda, cake, ice cream, leche flan, turon, kutsinta, puto)

_____ 1) 2 or more per day
_____ 2) 1 per day
_____ 3) 5-6 per week
_____ 4) 2-4 per week
_____ 5) 1 per week
_____ 6) Never
31. Thinking back over the past week, how often did you add salt to your food?
   ____ 1) Every meal
   ____ 2) Once a day
   ____ 3) 4-6 times per week
   ____ 4) 1-3 times per week
   ____ 5) Never

32. Thinking back over the past week, how often did you add salty condiments/sauces (e.g. Patis) to your food?
   ____ 1) Every meal
   ____ 2) Once a day
   ____ 3) 4-6 times per week
   ____ 4) 1-3 times per week
   ____ 5) Never

33. Thinking back over the past week, how often did you eat fast food? (e.g. McDonald’s, Jollibee, Red Ribbon)
   ____ 1) 2 or more per day
   ____ 2) 1 per day
   ____ 3) 5-6 per week
   ____ 4) 2-4 per week
   ____ 5) 1 per week
   ____ 6) Never

34. Exercising at a moderate or vigorous level comes from lifting heavy loads, playing sports, riding a bicycle or walking at a faster pace than normal. This kind of activity makes your heart beat faster, your breathing heavier than normal, but you are still able to talk. In a typical day, how much time do you spend doing moderate to vigorous activities?
   _______ minutes per day

35. In a typical week, how many days do you do moderate to vigorous intensity activity for at least 30 minutes as part of your daily routine?
   _______ days per week

36. How long has it been since you had your last dental cleaning by a dentist or dental hygienist?
   ____ 1) Within the past year (anytime less than 12 months ago)
   ____ 2) Within the past 2 years (1 year but less than 2 years
   ____ 3) Within the past 5 years (2 years but less than 5 years)
   ____ 4) 5 or more years ago
   ____ 5) Never had a dental cleaning

37. If you lived in the Philippines, have you ever undergone a tooth extraction procedure?
   ____ 1) Yes
   ____ 2) No
   ____ 3) Not sure
Questions are for **FEMALES ONLY**:

38. **Females only**: How long has it been since you had your last mammogram? A mammogram is an x-ray of each breast to look for breast cancer.
   ____ 1) Within the past year (anytime less than 12 months ago)
   ____ 2) Within the past 2 years (1 year but less than 2 years)
   ____ 3) Within the past 5 years (2 years but less than 5 years)
   ____ 4) 5 or more years ago
   ____ 5) Never had a mammogram

39. **Females only**: Was this mammogram you referred to in the previous question (Leave blank if respondent has never had a mammogram):
   ____ 1) Part of a routine checkup/preventative care
   ____ 2) Because of a breast problem you noticed, like a lump or pain
   ____ 3) Because you had previous breast cancer
   ____ 4) Other:

40. **Females only**: If you were recommended to have a mammogram, but did not, which best describes the reason (Select only one)?
   ____ 1) Lack of insurance/could not afford
   ____ 2) I don’t have time
   ____ 3) I don’t think I need one
   ____ 4) I am too shy
   ____ 5) Other:

41. **Females only**: A clinical breast examination is when a doctor, nurse, or other health professional feels the breast for lumps. How long has it been since you had a clinical breast examination?
   ____ 1) Within the past year (anytime less than 12 months ago)
   ____ 2) Within the past 2 years (1 year but less than 2 years)
   ____ 3) Within the past 5 years (2 years but less than 5 years)
   ____ 4) 5 or more years ago
   ____ 5) Never had a clinical breast examination

42. **Females only**: A breast self-exam is highly encouraged for women of all ages to allow them to become familiar with how their breast looks and feels so that they can alert their healthcare professional of any changes. How often do you perform a breast self-exam?
   ____ 1) Once a week
   ____ 2) Once a month
   ____ 3) Once a year
   ____ 4) Once within the past 2 years
   ____ 5) Never done a breast self-exam

43. **Females only**: Would you be more likely to go to a female physician or health provider for exams and tests regarding breast and reproductive system?
   ___ Yes
   ___ No
   ___ No preference
44. **Females only:** How long has it been since you had your last Pap smear? A Pap test is a test for cervical cancer.
   ___ 1) Within the past year (anytime less than 12 months ago)
   ___ 2) Within the past 2 years (1 year but less than 2 years)
   ___ 3) Within the past 5 years (2 years but less than 5 years)
   ___ 4) 5 or more years ago
   ___ 5) Never had a Pap smear

   Question is for **MALES 40 YEARS OLD OR OLDER ONLY**:

45. **For males 40 years of age or older:** How long has it been since you had your last PSA test? A PSA (prostate-specific antigen) test is a blood test used to check men for prostate cancer.
   ___ 1) Within the past year (anytime less than 12 months ago)
   ___ 2) Within the past 2 years (1 year but less than 2 years)
   ___ 3) Within the past 5 years (2 years but less than 5 years)
   ___ 4) 5 or more years ago
   ___ 5) Never had a PSA test

**THE REMAINING QUESTIONS OF THE ASSESSMENT ARE FOR ALL PARTICIPANTS:**

46. Have you ever been tested for HIV? Do not count tests you may have had if they were part of a blood donation.
   ___ 1) Yes
   ___ 2) No
   ___ 3) Not sure

47. Have you ever had a hepatitis B vaccination?
   ___ 1) Yes
   ___ 2) No

48. Do you have a doctor whom you usually see when you are sick?
   ___ 1) No
   ___ 2) Yes

49. About how long ago was your last general health check-up?
   ___ 1) Within the past year (anytime less than 12 months ago)
   ___ 2) Within the past 2 years (1 year but less than 2 years)
   ___ 3) Within the past 5 years (2 years but less than 5 years)
   ___ 4) 5 or more years ago
   ___ 5) Never
III. HEALTH CONDITIONS

50. Have you EVER been told by a doctor, nurse, or other health care professional that you have high blood pressure?
   ___ 1) Yes
   ___ 2) Yes, but only during pregnancy (females only)
   ___ 3) No
   ___ 4) Told borderline high or pre-hypertensive
   ___ 5) Not sure

51. Blood cholesterol is a fatty substance found in blood. Have you EVER had your blood cholesterol checked?
   ___ 1) Yes
   ___ 2) No
   ___ 3) Not sure

52. About how long ago has it been since you had your blood cholesterol checked?
   ___ 1) Within the past year (anytime less than 12 months ago)
   ___ 2) Within the past 2 years (1 year but less than 2 years
   ___ 3) Within the past 5 years (2 years but less than 5 years
   ___ 4) 5 or more years ago
   ___ 5) Never

53. Have you EVER been told by a doctor, nurse, or other health care professional that your blood cholesterol is high?
   ___ 1) Yes
   ___ 2) No
   ___ 3) Not sure

54. Has a doctor, nurse, or other health care professional EVER told you that you had any of the following conditions? Check all that apply.
   ___ 1) Heart attack (as called myocardial infarction)
   ___ 2) Angina or Coronary Heart Disease
   ___ 3) Stroke
   ___ 4) Asthma
   ___ 5) COPD (chronic obstructive pulmonary disorder)
   ___ 6) Arthritis, rheumatoid arthritis, gout, lupus, or fibromyalgia
   ___ 7) Depressive disorder
   ___ 8) Kidney disease
   ___ 9) Diabetes
   ___ 10) Oral cancer
   ___ 11) Breast cancer
   ___ 12) Hepatitis B
   ___ 13) Liver Cancer
   ___ 14) Any other type of cancer, please specify: __________________________
   ___ 14) Any other type of chronic health condition, please specify: ____________________
   ___ 15) None

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55. Are you taking medication for any of the following conditions? Check all that apply.
   _____ 1) High blood pressure
   _____ 2) High blood cholesterol
   _____ 3) Heart attack (as called myocardial infarction)
   _____ 4) Angina or Coronary Heart Disease
   _____ 5) Stroke
   _____ 6) Asthma
   _____ 7) COPD (chronic obstructive pulmonary disorder)
   _____ 8) Arthritis, rheumatoid arthritis, gout, lupus, or fibromyalgia
   _____ 9) Depressive disorder
   _____ 10) Kidney disease
   _____ 11) Diabetes
   _____ 12) Oral cancer
   _____ 13) Breast cancer
   _____ 14) Any other type of cancer, please specify: ____________________________
   _____ 15) Any other type of chronic health condition, please specify: ____________________________
   _____ 16) None

IV. ACCESS AND BARRIERS TO MEDICAL CARE
The following questions ask about your medical care. For each question, please check the one answer that applies to you.

56. What type of health insurance do you currently have? (Check the one response that applies to you)
   _____ 1) No insurance
   _____ 2) Medicare
   _____ 3) Medicaid
   _____ 4) Employer-sponsored (either your employer or spouse’s employer)
   _____ 5) Other: ____________________________
   _____ 6) Not sure

57. What language does your physician usually speak with you?
   _____ 1) English
   _____ 2) Ilocano
   _____ 3) Cebuano
   _____ 4) Tagalog
   _____ 5) Bicolano
   _____ 6) Other language: ____________________________
   _____ 6) Do not have a physician

58. Do you have trouble getting time off from work to go to the doctor for check-ups?
   _____ 1) No
   _____ 2) Yes
   _____ 3) I do not work so this is not an issue
59. Which health conditions do you think are a problem in your Filipino community among adults? Check all that apply.
   ___ 1) High blood pressure
   ___ 2) High blood cholesterol
   ___ 3) Heart attack (as called myocardial infarction)
   ___ 4) Angina or Coronary Heart Disease
   ___ 5) Stroke
   ___ 6) Asthma
   ___ 7) COPD (chronic obstructive pulmonary disorder)
   ___ 8) Arthritis, rheumatoid arthritis, gout, lupus, or fibromyalgia
   ___ 9) Depressive disorder
   ___ 10) Kidney disease
   ___ 11) Diabetes
   ___ 12) Oral cancer
   ___ 13) Breast cancer
   ___ 14) Any other type of cancer, please specify: ___________________________
   ___ 15) Any other type of chronic health condition, please specify: ___________________________
   ___ 16) None

60. Which health conditions do you think should be better addressed in your Filipino community among adults? Check all that apply.
   ___ 1) High blood pressure
   ___ 2) High blood cholesterol
   ___ 3) Heart attack (as called myocardial infarction)
   ___ 4) Angina or Coronary Heart Disease
   ___ 5) Stroke
   ___ 6) Asthma
   ___ 7) COPD (chronic obstructive pulmonary disorder)
   ___ 8) Arthritis, rheumatoid arthritis, gout, lupus, or fibromyalgia
   ___ 9) Depressive disorder
   ___ 10) Kidney disease
   ___ 11) Diabetes
   ___ 12) Oral cancer
   ___ 13) Breast cancer
   ___ 14) Any other type of cancer, please specify: ___________________________
   ___ 15) Any other type of chronic health condition, please specify: ___________________________
   ___ 16) None

61. Who do you think should address the health conditions you identified above affecting adults in your Filipino community? Check all that apply.
   ___ 1) Filipino community
   ___ 2) Local doctors and health care professionals
   ___ 3) Local doctors and health care professionals that can speak native language
   ___ 4) Local health department
   ___ 5) State health department
   ___ 6) Federal government
   ___ 7) Pharmaceutical companies
   ___ 8) Other: __________________________________________
62. Which health conditions do you believe are related to the Filipino diet in your community? Check all that apply.
   ___ 1) High blood pressure
   ___ 2) High blood cholesterol
   ___ 3) Heart attack (as called myocardial infarction)
   ___ 4) Angina or Coronary Heart Disease
   ___ 5) Stroke
   ___ 6) Asthma
   ___ 7) COPD (chronic obstructive pulmonary disorder)
   ___ 8) Arthritis, rheumatoid arthritis, gout, lupus, or fibromyalgia
   ___ 9) Depressive disorder
   ____ 10) Kidney disease
   ____ 11) Diabetes
   ____ 12) Oral cancer
   ____ 13) Breast cancer
   ____ 14) Any other type of cancer, please specify: ___________________________
   ____ 15) Any other type of chronic health condition, please specify: ___________________________
   ____ 16) None

63. Which health conditions do you believe are related to the genetics of Filipinos in your community? Check all that apply.
   ___ 1) High blood pressure
   ___ 2) High blood cholesterol
   ___ 3) Heart attack (as called myocardial infarction)
   ___ 4) Angina or Coronary Heart Disease
   ___ 5) Stroke
   ___ 6) Asthma
   ___ 7) COPD (chronic obstructive pulmonary disorder)
   ___ 8) Arthritis, rheumatoid arthritis, gout, lupus, or fibromyalgia
   ___ 9) Depressive disorder
   ____ 10) Kidney disease
   ____ 11) Diabetes
   ____ 12) Oral cancer
   ____ 13) Breast cancer
   ____ 14) Hepatitis B
   ____ 15) Any other type of cancer, please specify: ___________________________
   ____ 16) Any other type of chronic health condition, please specify: ___________________________
   ____ 17) None
64. Which health conditions do you believe can be controlled without medical intervention among the Filipinos in your community? Check all that apply.
   ____ 1) High blood pressure
   ____ 2) High blood cholesterol
   ____ 3) Heart attack (as called myocardial infarction)
   ____ 4) Angina or Coronary Heart Disease
   ____ 5) Stroke
   ____ 6) Asthma
   ____ 7) COPD (chronic obstructive pulmonary disorder)
   ____ 8) Arthritis, rheumatoid arthritis, gout, lupus, or fibromyalgia
   ____ 9) Depressive disorder
   ____ 10) Kidney disease
   ____ 11) Diabetes
   ____ 12) Oral cancer
   ____ 13) Breast cancer
   ____ 14) Hepatitis B
   ____ 15) Any other type of cancer, please specify: ___________________________________________________________________
   ____ 16) Any other type of chronic health condition, please specify: ___________________________________________________________________
   ____ 17) None

VI. Food Insecurity
The following questions ask about your level of access to food. For the next 6 questions (65 to 70) you will read several statements people have made about their food situation. Please check the one answer that best applies to you.

65. “The food that I bought ran out, and I didn’t have money to get more.” Was that often, sometimes, or never true for you in the last 12 months?
   ____ 1) Often true
   ____ 2) Sometimes true
   ____ 3) Never true
   ____ 4) I don’t know or Refused

66. “I couldn’t afford to eat balanced meals.” Was that often, sometimes, or never true for you in the last 12 months?
   ____ 1) Often true
   ____ 2) Sometimes true
   ____ 3) Never true
   ____ 4) I don’t know or Refused

67. In the last 12 months, did you ever cut the size of your meals or skip meals because there wasn’t enough money for food?
   ____ 1) Yes
   ____ 2) No (Skip #68)
   ____ 3) I don’t know (Skip #68)
68. [IF YES FOR #67] How often did this happen—almost every month, some months but not every month, or in only 1 or 2 months?
   ___1) Almost every month
   ___2) Some months but not every month
   ___3) Only 1 or 2 months
   ___4) I don’t know or Refused

69. In the last 12 months, did you ever eat less than you felt you should because there wasn’t enough money for food?
   ___1) Yes
   ___2) No
   ___3) I don’t know

70. In the last 12 months, were you ever hungry but didn’t eat because there wasn’t enough money for food?
   ___1) Yes
   ___2) No
   ___3) I don’t know

VII. IMPACT OF PRESIDENT TRUMP EXECUTIVE ORDERS AND ACA REPEAL
The following questions are intended to assess your level of concern regarding the recent immigrant and travel executive orders enacted by President Donald Trump and the possible repeal of the Affordable Care Act (Obamacare). The specific Executive Orders we are referring to are the “immigration ban” and deportation of undocumented immigrants. For each question, please check the answer that applies to you. Some questions may require a written answer.

71. Have the recent Executive Orders on deporting undocumented immigrants and immigration travel ban enacted by President Donald Trump impacted you or your family?
   ___1) Yes
   ___2) No
   ___3) I don’t know or prefer not to answer

72. What is your personal level of anxiety/stress surrounding these Executive Orders on deporting undocumented immigrants and immigration travel ban? (Please check just one response).
   ___1) I don’t feel stressed and/or anxious about the Immigration Executive Order
   ___2) I feel just a little bit stressed and/or anxious about the Immigration Executive Order
   ___3) I feel moderately stressed and/or anxious about the Immigration Executive Order
   ___4) I feel extremely stressed and/or anxious about the Immigration Executive Order

73. If you are feeling anxiety/stress about these Executive Orders on deporting undocumented immigrants and immigration travel ban, what is the source of this concern? (Check all that apply to you).
   ___1) I am worried about my own future
   ___2) I am worried about my family’s future
   ___3) I am worried my friends and family back in the Philippines won’t be able to come to the U.S.
   ___4) Executive Orders do not affect me or anyone that I know
   ___5) Other: __________________________
74. Will a repeal of the Affordable Care Act (Obamacare) impact you or your family?
   ____ 1) Yes
   ____ 2) No
   ____ 3) I don’t know or prefer not to answer

75. What is your personal level of anxiety/stress surrounding a possible repeal of the Affordable Care Act (Obamacare)? (Please check just one response).
   ____ 1) I don’t feel stressed and/or anxious about Obamacare repeal
   ____ 2) I feel just a little bit stressed and/or anxious about Obamacare repeal
   ____ 3) I feel moderately stressed and/or anxious about Obamacare repeal
   ____ 4) I feel extremely stressed and/or anxious about Obamacare repeal

76. If you are feeling anxiety/stress about a possible repeal of the Affordable Care Act (Obamacare), what is the source of this concern (Check all that apply to you)?
   ____ 1) I am worried about my ability to keep my health insurance
   ____ 2) I am worried about my family’s ability to keep their health insurance
   ____ 3) I am worried it will affect the general Filipino American community
   ____ 4) An Obamacare repeal does not affect me or anyone that I know
   ____ 5) Other:
INFORMED CONSENT

Department of Environmental and Occupational Health

TITLE OF STUDY: An Assessment of Filipino American Health in the Greater Las Vegas Area: A Pilot Study

INVESTIGATOR(S): Prescott Cheong, Saruna Ghimire and Dr. Francisco S. Sy

For questions or concerns about the study, you may contact Dr. Francisco S. Sy at francisco.sy@unlv.edu.

For questions regarding the rights of research subjects, any complaints or comments regarding the manner in which the study is being conducted, contact the UNLV Office of Research Integrity – Human Subjects at 702-895-2794, toll free at 877-895-2794 or via email at IRB@unlv.edu.

Purpose of the Study
You are invited to participate in a research study. The purpose of these study is to assess the health needs of Filipino Americans in Las Vegas area.

Participants
You are being asked to participate in the study because you fit this criteria: self-identified as a Filipino American, aged 18 years or older and currently reside in the Las Vegas area.

Procedures
If you volunteer to participate in this study, you will be asked to be interviewed on questions related to your health behaviors, perceived health conditions and any of any diseases you were diagnosed with.

Benefits of Participation
There will be a raffle drawing for non-perishable food items like a sack of rice as incentives for participants in this study. We hope to learn more about the health status and health behaviors of Filipino American communities in Las Vegas which will help in developing future interventions and promoting the health of the community.
Risks of Participation
There are risks involved in all research studies. This study may include only minimal risks. You may become uncomfortable when answering some questions.

Cost / Compensation
There is no financial cost to you to participate in this study. The study will take 15-20 minutes of your time.

Confidentiality
All information gathered in this study will be kept as confidential as possible. No reference will be made in written or oral materials that could link you to this study. All records will be stored in a locked facility at UNLV for about 2 years after completion of the study. After the storage time the information gathered will be destroyed.

Voluntary Participation
Your participation in this study is voluntary. You may refuse to participate in this study or in any part of this study. You may withdraw at any time without prejudice to your relations with UNLV. You are encouraged to ask questions about this study at the beginning or any time during the research study.

Participant Consent:
I have read the above information and agree to participate in this study. I have been able to ask questions about the research study. I am at least 18 years of age. A copy of this form has been given to me.

__________________________________________  __________________________
Signature of Participant                                             Date

__________________________________________  __________________________
Participant Name (Please Print)
### Table 1

**Independent Variables of Interest: Definition, Survey Question with Responses, and Recoded Response Variables**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Definition</th>
<th>Survey Question &amp; Responses</th>
<th>Recoded Response Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>Length of time that respondent has lived</td>
<td>#7) In which year were you born? ____________</td>
<td>Continuous Variable: Current year (2017) subtracted by recorded year of participants’ birth</td>
</tr>
</tbody>
</table>
| Annual Household Income      | Total amount of job-related money the respondent’s household accrues in a year | #18) What is your annual household income (Only include the combined income of you and your spouse, if applicable)?  
1) Less than $10,000  
2) $10,000-$20,000  
3) $20,000-$29,999  
4) $30,000-$40,000  
5) Above $40,000 | Categorical Variable:  
a) Less than $20,000 (included responses: 1; 2)  
b) $20,000 - $40,000 (included responses: 3; 4)  
c) Above $40,000 (included response: 5) |
| Body Mass Index (BMI)        | Measure of body fat based on height and weight (NIH, n.d.)                 | #9) How much do you weigh? ____________  
#10) What is your height? ____________                                                                 | Continuous Variable: Weight was reported as pounds and height was reported as X feet Y inches. Both measures were converted to kilograms and meters, respectively. BMI was then calculated by dividing weight (kg) by height squared (m²) |
| Highest Education Level Attained | Respondent’s highest level of education completed                          | #15) What is the highest grade of school you completed?  
1) No education or elementary school  
2) Below high school graduate  
3) High school  
4) University (or college or associate degree)  
5) Graduate and above (Masters or Doctorate) | Categorical Variable:  
a) High school or below (included responses: 1; 2; 3)  
b) College or Associate Degree (included response: 4)  
c) Graduate or above (Masters or Doctorate) (included response: 5) |
| Employment Status            | The current status of respondent’s participation in the workforce          | #16) Which of the following describes you currently?  
1) Employed  
2) Unemployed  
3) Retired  
4) Homemaker  
5) Student | Categorical Variable:  
a) Employed (response: 1)  
b) Unemployed (responses: 2; 4; 5)  
c) Retired (response: 3) |
| Self-reported Chronic Disease Status - Hypertension | Current self-reported hypertension status of the respondent | #50) Have you ever been told by a doctor, nurse, or other health care professional that you have high blood pressure?  
1) Yes  
2) Yes, but only during pregnancy (females only)  
3) No  
4) Told borderline high or pre-hypertensive  
5) Not sure | Categorical Variable:  
a) Yes (response: 1)  
b) No (responses: 2; 3; 4; 5) |
| Self-reported Chronic Disease Status - High Cholesterol | Current self-reported high cholesterol status of the respondent | #53) Have you ever been told by a doctor, nurse, or other healthcare professional that you blood cholesterol is high?  
1) Yes  
2) No  
3) Not Sure | Categorical Variable:  
a) Yes (response: 1)  
b) No (responses: 2; 3) |
| Self-reported Chronic Disease Status - Diabetes | Current self-reported diabetes status of the respondent | #54) Has a doctor, nurse or other health care professional ever told you that you had any of the following conditions? Check all that apply.  
1) Heart Attack  
2) Angina or Coronary Heart Disease  
3) Stroke  
4) Asthma  
5) COPD  
6) Arthritis, rheumatoid arthritis, gout, lupus, or fibromyalgia  
7) Depressive disorder  
8) Kidney disease  
9) Diabetes  
10) Oral Cancer  
11) Breast Cancer  
12) Hepatitis B  
13) Liver Cancer  
14) Any other type of Cancer  
15) Any other type of chronic condition  
16) none | Categorical Variable:  
a) Yes (checked diabetes)  
b) No (did not check diabetes) |
| Household Makeup - Children Under the Age of 18 in Household | Children under the age of 18 currently living in the household | #14) Which of the following family member(s) currently live with you in your household? Select all that apply. | Categorical Variable:  
a) Household with children under 18 (response: 1; can also include any combination of other responses) |
| Years Lived in the United States (Acculturation) | The total number of years respondent has resided in the United States | #12) How many years have you lived in the United States? ______ | Categorical Variable:  
  a) 0 – 10 years  
  b) 11 – 25 years  
  c) 25 years or more |
|-------------------------------------------------|-------------------------------------------------|-------------------------------------------------|-------------------------------------------------|
| Type of Food Usually Eaten (Acculturation)      | Type of food usually eaten by the respondent    | #19) What foods do you usually eat? Check one.  
  a) American or Western food  
  b) Filipino food  
  c) Both American and Filipino food equally | Categorical Variable:  
  a) American or Western food  
  b) Filipino food  
  c) Both |
| Geographic Location by City Jurisdiction        | Respondent’s area of residence as determined by city jurisdiction from City of Las Vegas Zip Code Map (Department of Technologies, 2017) | #1) What is the zip code of where you live? ____ | Categorical Variable:  
  a) Henderson  
  b) City of Las Vegas  
  c) Clark County¹  
  d) North Las Vegas |
| Health Insurance Coverage                       | Current type of health insurance possessed by the respondent | #56) What type of health insurance do you currently have? Check the one response that applies to you.  
  1) No insurance  
  2) Medicare  
  3) Medicaid  
  4) Employer-sponsored (either your employer or spouse’s employer)  
  5) Other:____  
  6) Not sure | Categorical Variable:  
  a) No Insurance (responses: 1; 6)  
  b) Private Insurance (responses: 4)  
  c) Public Insurance (responses: 2; 3) |

¹ Zip codes were coded into the listed city jurisdictions that corresponded to the Las Vegas Metro Area Zip Codes map (see Appendix E for map figure) provided by the City of Las Vegas (Department of Technologies, 2017). As a note, some areas within Clark County do not belong to a specific city jurisdiction and are labeled as “Clark County”. Reported zip codes not depicted on the Las Vegas Metro Area Zip Codes map (Department of Technologies, 2017) but were in Clark County were located using Google Maps. Subsequently, these zip code locations were matched to the Las Vegas Metro Area Zip Code map (Department of Technologies, 2017) based on major cross streets, and coded to the appropriate city. Zip codes that belonged to county islands were coded to the surrounding city jurisdiction. Zipcodes with overlapping city jurisdictions were coded based on which city jurisdiction held the majority land area within that zipcode.
Table 2

Summary of Socio-Demographic Characteristics

<table>
<thead>
<tr>
<th>Socio-Demographic Variables</th>
<th>Responses (n, %)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age, years, (mean ± SD)</strong></td>
<td>49.4 ± 18.1</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>70 (35.0%)</td>
</tr>
<tr>
<td>Female</td>
<td>130 (65.0%)</td>
</tr>
<tr>
<td><strong>Educational Status</strong></td>
<td></td>
</tr>
<tr>
<td>High school or below</td>
<td>36 (18.3%)</td>
</tr>
<tr>
<td>College or associate</td>
<td>109 (55.3%)</td>
</tr>
<tr>
<td>Graduate and above</td>
<td>52 (26.4%)</td>
</tr>
<tr>
<td><strong>Employment status</strong></td>
<td></td>
</tr>
<tr>
<td>Employed</td>
<td>123 (62.1%)</td>
</tr>
<tr>
<td>Unemployed</td>
<td>21 (10.6%)</td>
</tr>
<tr>
<td>Retired</td>
<td>54 (27.3%)</td>
</tr>
<tr>
<td><strong>Annual Household Income</strong></td>
<td></td>
</tr>
<tr>
<td>Less than $20,000</td>
<td>40 (21.1%)</td>
</tr>
<tr>
<td>$20,000-$40,000</td>
<td>48 (25.3%)</td>
</tr>
<tr>
<td>Above $40,000</td>
<td>102 (53.7%)</td>
</tr>
<tr>
<td><strong>Household Composition</strong></td>
<td></td>
</tr>
<tr>
<td>Households with children under 18</td>
<td>43 (24.3%)</td>
</tr>
<tr>
<td>Households without children under 18</td>
<td>134 (75.7%)</td>
</tr>
<tr>
<td><strong>Residence by City Boundaries</strong></td>
<td></td>
</tr>
<tr>
<td>Henderson</td>
<td>25 (12.8%)</td>
</tr>
<tr>
<td>City of Las Vegas</td>
<td>59 (30.3%)</td>
</tr>
<tr>
<td>North Las Vegas</td>
<td>11 (5.6%)</td>
</tr>
<tr>
<td>Clark County</td>
<td>100 (51.3%)</td>
</tr>
<tr>
<td><strong>Years Resided in the United States, years, (mean ± SD)</strong></td>
<td>24.9 ± 13.9</td>
</tr>
<tr>
<td><strong>Usual Type of Food Eaten</strong></td>
<td></td>
</tr>
<tr>
<td>Filipino food</td>
<td>42 (21.5%)</td>
</tr>
<tr>
<td>Western or American food</td>
<td>18 (9.2%)</td>
</tr>
<tr>
<td>Both</td>
<td>135 (69.2%)</td>
</tr>
<tr>
<td><strong>BMI, kg/m², (mean ± SD)</strong></td>
<td>25.3 ± 6.6</td>
</tr>
<tr>
<td><strong>Self-Reported Diabetes Status</strong></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>46 (23.8%)</td>
</tr>
<tr>
<td>No</td>
<td>147 (7.2%)</td>
</tr>
<tr>
<td><strong>Self-Reported Hypertension Status</strong></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>92 (46.9%)</td>
</tr>
<tr>
<td>No</td>
<td>104 (53.1%)</td>
</tr>
<tr>
<td><strong>Self-Reported High Cholesterol Status</strong></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>91 (46%)</td>
</tr>
<tr>
<td>No</td>
<td>107 (54%)</td>
</tr>
<tr>
<td><strong>Type of Health Insurance</strong></td>
<td></td>
</tr>
<tr>
<td>Private insurance</td>
<td>102 (53%)</td>
</tr>
<tr>
<td>Public insurance</td>
<td>70 (36%)</td>
</tr>
<tr>
<td>No insurance</td>
<td>22 (11%)</td>
</tr>
</tbody>
</table>
Table 3

**Logistic Regression Model 1: Annual Household Income Predicting Likelihood of Reporting Food Insecurity**

<table>
<thead>
<tr>
<th>Category</th>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>df</th>
<th>P-Value</th>
<th>Odds Ratio</th>
<th>95% CI Lower</th>
<th>95% CI Upper</th>
</tr>
</thead>
<tbody>
<tr>
<td>Above $40,000 - Ref</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than $20,000</td>
<td>1.522</td>
<td>0.424</td>
<td>12.901</td>
<td>1</td>
<td>0.000</td>
<td>4.582</td>
<td>1.997</td>
<td>10.514</td>
</tr>
<tr>
<td>$20,000 - $40,000</td>
<td>1.030</td>
<td>0.423</td>
<td>5.937</td>
<td>1</td>
<td>0.015</td>
<td>2.800</td>
<td>1.223</td>
<td>6.410</td>
</tr>
<tr>
<td>Constant</td>
<td>-1.723</td>
<td>0.280</td>
<td>37.774</td>
<td>1</td>
<td>0.000</td>
<td>0.179</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4

**Logistic Regression Model 2: Highest Educational Level Attained Predicting Likelihood of Reporting Food Insecurity**

<table>
<thead>
<tr>
<th>Category</th>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>df</th>
<th>P-Value</th>
<th>Odds Ratio</th>
<th>95% CI Lower</th>
<th>95% CI Upper</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graduate Degree or Above - Ref</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>College or Associate Degree</td>
<td>0.313</td>
<td>0.418</td>
<td>0.560</td>
<td>1</td>
<td>0.454</td>
<td>1.367</td>
<td>0.603</td>
<td>3.101</td>
</tr>
<tr>
<td>High School or Below</td>
<td>0.981</td>
<td>0.494</td>
<td>3.942</td>
<td>1</td>
<td>0.047</td>
<td>2.667</td>
<td>1.013</td>
<td>7.022</td>
</tr>
<tr>
<td>Constant</td>
<td>-1.386</td>
<td>0.354</td>
<td>15.374</td>
<td>1</td>
<td>0.000</td>
<td>0.250</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 5

*Logistic Regression Model 3: Type of Health Insurance Coverage Predicting Likelihood of Reporting Food Insecurity*

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>df</th>
<th>P-Value</th>
<th>Odds Ratio</th>
<th>95% CI Lower</th>
<th>95% CI Upper</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private Insurance - Ref</td>
<td>-</td>
<td></td>
<td></td>
<td>2</td>
<td>0.006</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public Insurance</td>
<td>0.49</td>
<td>0.365</td>
<td>1.808</td>
<td>1</td>
<td>0.179</td>
<td>1.808</td>
<td>0.179</td>
<td>3.336</td>
</tr>
<tr>
<td>No Insurance</td>
<td>1.569</td>
<td>0.496</td>
<td>10.009</td>
<td>1</td>
<td>0.002</td>
<td>4.8</td>
<td>1.816</td>
<td>12.685</td>
</tr>
<tr>
<td>Constant</td>
<td>-1.386</td>
<td>0.25</td>
<td>30.749</td>
<td>1</td>
<td>0.001</td>
<td>0.25</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 6

*Logistic Regression Model 4: Usual Type of Food Eaten Predicting Likelihood of Reporting Food Insecurity*

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>df</th>
<th>P-Value</th>
<th>Odds Ratio</th>
<th>95% CI Lower</th>
<th>95% CI Upper</th>
</tr>
</thead>
<tbody>
<tr>
<td>Filipino - Ref</td>
<td>-</td>
<td></td>
<td></td>
<td>2</td>
<td>0.093</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Western/American</td>
<td>1.269</td>
<td>0.626</td>
<td>4.101</td>
<td>1</td>
<td>0.043</td>
<td>3.556</td>
<td>1.042</td>
<td>12.136</td>
</tr>
<tr>
<td>Both</td>
<td>0.170</td>
<td>0.428</td>
<td>0.158</td>
<td>1</td>
<td>0.691</td>
<td>1.185</td>
<td>0.513</td>
<td>2.740</td>
</tr>
<tr>
<td>Constant</td>
<td>-1.269</td>
<td>0.377</td>
<td>11.303</td>
<td>1</td>
<td>0.001</td>
<td>0.281</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 7

*Logistic Regression Model 5: All Statistically Significant Independent Variables of Interest*

*Predicting Likelihood of Reporting Food Insecurity*

<table>
<thead>
<tr>
<th>Category</th>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>df</th>
<th>P-Value</th>
<th>Odds Ratio</th>
<th>95% CI Lower</th>
<th>95% CI Upper</th>
</tr>
</thead>
<tbody>
<tr>
<td>Above $40,000 - Ref</td>
<td></td>
<td></td>
<td>6.872</td>
<td>2</td>
<td>0.032</td>
<td>4.117</td>
<td>1.429</td>
<td>11.859</td>
</tr>
<tr>
<td>Less Than $20,000</td>
<td>1.415</td>
<td>0.54</td>
<td>6.872</td>
<td>1</td>
<td>0.009</td>
<td>4.117</td>
<td>1.429</td>
<td>11.859</td>
</tr>
<tr>
<td>$20,000 - $40,000</td>
<td>0.602</td>
<td>0.486</td>
<td>1.532</td>
<td>1</td>
<td>0.216</td>
<td>1.825</td>
<td>0.704</td>
<td>4.734</td>
</tr>
<tr>
<td>Graduate Degree or Above - Ref</td>
<td></td>
<td></td>
<td>0.121</td>
<td>2</td>
<td>0.941</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>College or Associate Degree</td>
<td>0.129</td>
<td>0.483</td>
<td>0.071</td>
<td>1</td>
<td>0.79</td>
<td>1.137</td>
<td>0.442</td>
<td>2.929</td>
</tr>
<tr>
<td>High School or Below</td>
<td>0.219</td>
<td>0.646</td>
<td>0.115</td>
<td>1</td>
<td>0.735</td>
<td>1.245</td>
<td>0.351</td>
<td>4.418</td>
</tr>
<tr>
<td>Private Insurance - Ref</td>
<td></td>
<td></td>
<td>8.094</td>
<td>2</td>
<td>0.017</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public Insurance</td>
<td>0.351</td>
<td>0.422</td>
<td>0.694</td>
<td>1</td>
<td>0.405</td>
<td>1.421</td>
<td>0.622</td>
<td>3.247</td>
</tr>
<tr>
<td>No Insurance</td>
<td>1.652</td>
<td>0.582</td>
<td>8.056</td>
<td>1</td>
<td>0.005</td>
<td>5.22</td>
<td>1.668</td>
<td>16.339</td>
</tr>
<tr>
<td>Filipino Food - Ref</td>
<td></td>
<td></td>
<td>7.666</td>
<td>2</td>
<td>0.022</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Western or American Food</td>
<td>1.987</td>
<td>0.737</td>
<td>7.274</td>
<td>1</td>
<td>0.007</td>
<td>7.295</td>
<td>1.721</td>
<td>30.914</td>
</tr>
<tr>
<td>Both</td>
<td>0.604</td>
<td>0.528</td>
<td>1.309</td>
<td>1</td>
<td>0.253</td>
<td>1.829</td>
<td>0.65</td>
<td>5.143</td>
</tr>
<tr>
<td>Constant</td>
<td>-2.719</td>
<td>0.652</td>
<td>17.364</td>
<td>1</td>
<td>0</td>
<td>0.066</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 8

Logistic Regression Model 6: All Variables of Interest Predicting Likelihood of Reporting Food Insecurity

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>df</th>
<th>P-Value</th>
<th>Odds Ratio</th>
<th>95% CI Lower</th>
<th>95% CI Upper</th>
</tr>
</thead>
<tbody>
<tr>
<td>Households with Children Under 18 Years of Age</td>
<td>1.093</td>
<td>0.755</td>
<td>2.097</td>
<td>1</td>
<td>0.148</td>
<td>2.983</td>
<td>0.679</td>
<td>13.094</td>
</tr>
<tr>
<td>Henderson - Ref</td>
<td></td>
<td></td>
<td>1.900</td>
<td>3</td>
<td>0.593</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>City of Las Vegas</td>
<td>0.229</td>
<td>0.881</td>
<td>0.068</td>
<td>1</td>
<td>0.795</td>
<td>1.257</td>
<td>0.224</td>
<td>7.063</td>
</tr>
<tr>
<td>Clark County</td>
<td>0.825</td>
<td>0.778</td>
<td>1.124</td>
<td>1</td>
<td>0.289</td>
<td>2.283</td>
<td>0.496</td>
<td>10.494</td>
</tr>
<tr>
<td>North Las Vegas</td>
<td>-0.101</td>
<td>1.414</td>
<td>0.005</td>
<td>1</td>
<td>0.943</td>
<td>0.904</td>
<td>0.057</td>
<td>14.448</td>
</tr>
<tr>
<td>Age</td>
<td>0.020</td>
<td>0.025</td>
<td>0.601</td>
<td>1</td>
<td>0.438</td>
<td>1.020</td>
<td>0.970</td>
<td>1.072</td>
</tr>
<tr>
<td>Above $40,000 - Ref</td>
<td></td>
<td></td>
<td>9.164</td>
<td>2</td>
<td>0.010</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less Than $20,000</td>
<td>1.973</td>
<td>0.721</td>
<td>7.492</td>
<td>1</td>
<td>0.006</td>
<td>7.193</td>
<td>1.751</td>
<td>29.549</td>
</tr>
<tr>
<td>$20,000 - $40,000</td>
<td>-0.005</td>
<td>0.745</td>
<td>0.000</td>
<td>1</td>
<td>0.994</td>
<td>0.995</td>
<td>0.231</td>
<td>4.282</td>
</tr>
<tr>
<td>Body mass index</td>
<td>0.001</td>
<td>0.040</td>
<td>0.001</td>
<td>1</td>
<td>0.982</td>
<td>1.001</td>
<td>0.925</td>
<td>1.083</td>
</tr>
<tr>
<td>Graduate Degree or Above - Ref</td>
<td></td>
<td></td>
<td>0.907</td>
<td>2</td>
<td>0.365</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>College or Associate Degree</td>
<td>0.660</td>
<td>0.693</td>
<td>0.907</td>
<td>1</td>
<td>0.341</td>
<td>1.935</td>
<td>0.497</td>
<td>7.530</td>
</tr>
<tr>
<td>High School or Below</td>
<td>0.540</td>
<td>0.978</td>
<td>0.305</td>
<td>1</td>
<td>0.581</td>
<td>1.716</td>
<td>0.252</td>
<td>11.664</td>
</tr>
<tr>
<td>Employed - Ref</td>
<td></td>
<td></td>
<td>3.575</td>
<td>2</td>
<td>0.167</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unemployed</td>
<td>1.693</td>
<td>0.912</td>
<td>3.447</td>
<td>1</td>
<td>0.063</td>
<td>5.435</td>
<td>0.910</td>
<td>32.455</td>
</tr>
<tr>
<td>Retired</td>
<td>0.508</td>
<td>0.825</td>
<td>0.379</td>
<td>1</td>
<td>0.538</td>
<td>1.662</td>
<td>0.330</td>
<td>8.378</td>
</tr>
<tr>
<td>Positive Self-Reported Hypertension Status</td>
<td>1.178</td>
<td>0.757</td>
<td>2.421</td>
<td>1</td>
<td>0.120</td>
<td>3.249</td>
<td>0.737</td>
<td>14.332</td>
</tr>
<tr>
<td>Positive Self-Reported High Cholesterol Status</td>
<td>-0.358</td>
<td>0.641</td>
<td>0.311</td>
<td>1</td>
<td>0.577</td>
<td>0.699</td>
<td>0.199</td>
<td>2.456</td>
</tr>
<tr>
<td>Positive Self-Reported Diabetes Status</td>
<td>0.947</td>
<td>0.681</td>
<td>1.932</td>
<td>1</td>
<td>0.165</td>
<td>2.577</td>
<td>0.678</td>
<td>9.791</td>
</tr>
<tr>
<td>Resided in US for 25 or more Years - Ref</td>
<td></td>
<td></td>
<td>4.896</td>
<td>2</td>
<td>0.086</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resided in US for 0 - 10 Years</td>
<td>-0.491</td>
<td>0.825</td>
<td>0.355</td>
<td>1</td>
<td>0.552</td>
<td>0.612</td>
<td>0.122</td>
<td>3.081</td>
</tr>
<tr>
<td>Resided in US for 11 - 25 Years</td>
<td>1.219</td>
<td>0.725</td>
<td>2.826</td>
<td>1</td>
<td>0.093</td>
<td>3.384</td>
<td>0.817</td>
<td>14.015</td>
</tr>
<tr>
<td>Usually Eat Filipino Food - Ref</td>
<td></td>
<td></td>
<td>13.692</td>
<td>2</td>
<td>0.001</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Usually Eat Western/American Food</td>
<td>4.631</td>
<td>1.262</td>
<td>13.467</td>
<td>1</td>
<td>0.000</td>
<td>102.596</td>
<td>8.650</td>
<td>1216.919</td>
</tr>
<tr>
<td>Usually Eat Both</td>
<td>1.675</td>
<td>0.791</td>
<td>4.488</td>
<td>1</td>
<td>0.034</td>
<td>5.339</td>
<td>1.133</td>
<td>25.148</td>
</tr>
<tr>
<td>Private Insurance - Ref</td>
<td></td>
<td></td>
<td>7.366</td>
<td>2</td>
<td>0.025</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public Insurance</td>
<td>0.084</td>
<td>0.724</td>
<td>0.013</td>
<td>1</td>
<td>0.908</td>
<td>1.087</td>
<td>0.263</td>
<td>4.495</td>
</tr>
<tr>
<td>No Insurance</td>
<td>2.179</td>
<td>0.845</td>
<td>6.656</td>
<td>1</td>
<td>0.010</td>
<td>8.841</td>
<td>1.688</td>
<td>46.294</td>
</tr>
<tr>
<td>Constant</td>
<td>-7.399</td>
<td>2.291</td>
<td>10.428</td>
<td>1</td>
<td>0.001</td>
<td>0.001</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 9

List of Variables of Interest: Corresponding Level within the Social Ecological Model and Statistical Significance in Univariate and Multivariate Models

<table>
<thead>
<tr>
<th>Social Ecological Level</th>
<th>Corresponding Variable of Interest</th>
<th>Statistically Significant Predictor of Food Insecurity – Univariate Model</th>
<th>Statistically Significant Predictor of Food Insecurity – Multivariate Model 5</th>
<th>Statistically Significant Predictor of Food Insecurity – Multivariate Model 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intrapersonal</td>
<td>Annual Household Income</td>
<td>• Less than $20,000**</td>
<td>• Less than $20,000**</td>
<td>• Less than $20,000**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• $20,000 - $40,000*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intrapersonal</td>
<td>Highest Educational Level Attained</td>
<td>• High School or Below*</td>
<td>No Statistical Significance Achieved</td>
<td>No Statistical Significance Achieved</td>
</tr>
<tr>
<td>Intrapersonal</td>
<td>Type of Food Usually Eaten</td>
<td>• Western or American*</td>
<td>• Western or American*</td>
<td>• Western or American**</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Both*</td>
</tr>
<tr>
<td>Intrapersonal</td>
<td>Age</td>
<td>No Statistical Significance Achieved</td>
<td>No Statistical Significance Achieved</td>
<td>No Statistical Significance Achieved</td>
</tr>
<tr>
<td>Intrapersonal</td>
<td>Body Mass Index</td>
<td>No Statistical Significance Achieved</td>
<td>No Statistical Significance Achieved</td>
<td>No Statistical Significance Achieved</td>
</tr>
<tr>
<td>Intrapersonal</td>
<td>Employment Status</td>
<td>No Statistical Significance Achieved</td>
<td>No Statistical Significance Achieved</td>
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</tr>
<tr>
<td>Intrapersonal</td>
<td>Self-Reported Diabetes Status</td>
<td>No Statistical Significance Achieved</td>
<td>No Statistical Significance Achieved</td>
<td>No Statistical Significance Achieved</td>
</tr>
<tr>
<td>Intrapersonal</td>
<td>Self-Reported Hypertension Status</td>
<td>No Statistical Significance Achieved</td>
<td>No Statistical Significance Achieved</td>
<td>No Statistical Significance Achieved</td>
</tr>
<tr>
<td>Intrapersonal</td>
<td>Self-Reported High Cholesterol Status</td>
<td>No Statistical Significance Achieved</td>
<td>No Statistical Significance Achieved</td>
<td>No Statistical Significance Achieved</td>
</tr>
<tr>
<td>Intrapersonal</td>
<td>Years Lived in the United States</td>
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<td>No Statistical Significance Achieved</td>
<td>No Statistical Significance Achieved</td>
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<td>Interpersonal</td>
<td>Household with Children Under the Age of 18</td>
<td>No Statistical Significance Achieved</td>
<td>No Statistical Significance Achieved</td>
<td>No Statistical Significance Achieved</td>
</tr>
<tr>
<td>Community</td>
<td>Geographic Location by City Jurisdiction</td>
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<td>No Statistical Significance Achieved</td>
</tr>
<tr>
<td>Institutional/Organizational</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Policy</td>
<td>Type of Health Insurance Coverage</td>
<td>• No Health Insurance*</td>
<td>• No Health Insurance*</td>
<td>• No Health Insurance*</td>
</tr>
</tbody>
</table>

* P-Value < 0.05
** P-Value < 0.001
Table 10

**Logistic Regression Model of Las Vegas Zip code Jurisdictions Predicting Likelihood of Reporting Food Insecurity**

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>df</th>
<th>P-Value</th>
<th>Odds Ratio</th>
<th>95% CI Lower</th>
<th>95% CI Upper</th>
</tr>
</thead>
<tbody>
<tr>
<td>Henderson - Ref</td>
<td>3.132</td>
<td>3</td>
<td>3.132</td>
<td>3</td>
<td>0.372</td>
<td>0.615</td>
<td>0.206</td>
<td>1.835</td>
</tr>
<tr>
<td>City of Las Vegas</td>
<td>-0.486</td>
<td>0.558</td>
<td>0.760</td>
<td>1</td>
<td>0.383</td>
<td>0.615</td>
<td>0.206</td>
<td>1.835</td>
</tr>
<tr>
<td>Clark County</td>
<td>0.171</td>
<td>0.497</td>
<td>0.119</td>
<td>1</td>
<td>0.730</td>
<td>1.187</td>
<td>0.448</td>
<td>3.144</td>
</tr>
<tr>
<td>North Las Vegas</td>
<td>-0.560</td>
<td>0.900</td>
<td>0.387</td>
<td>1</td>
<td>0.534</td>
<td>0.571</td>
<td>0.098</td>
<td>3.333</td>
</tr>
<tr>
<td>Constant</td>
<td>-0.944</td>
<td>0.445</td>
<td>4.496</td>
<td>1</td>
<td>0.034</td>
<td>0.389</td>
<td></td>
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</tr>
</tbody>
</table>

Table 11

**Logistic Regression Model of Positive Self-Reported Diabetes Status Predicting Likelihood of Reporting Food Insecurity**

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>S.E.</th>
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<th>df</th>
<th>P-Value</th>
<th>Odds Ratio</th>
<th>95% CI Lower</th>
<th>95% CI Upper</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive Self-Reported Diabetes Status</td>
<td>0.512</td>
<td>0.374</td>
<td>1.870</td>
<td>1</td>
<td>0.172</td>
<td>1.668</td>
<td>0.801</td>
<td>3.475</td>
</tr>
<tr>
<td>Constant</td>
<td>-1.136</td>
<td>0.194</td>
<td>34.189</td>
<td>1</td>
<td>0.000</td>
<td>0.321</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 12

*Logistic Regression Model of Positive Self-Reported High Cholesterol Status Predicting Likelihood of Reporting Food Insecurity*

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>df</th>
<th>P-Value</th>
<th>Odds Ratio</th>
<th>95% CI Lower</th>
<th>95% CI Upper</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive Self-Reported High Cholesterol Status</td>
<td>-0.271</td>
<td>0.331</td>
<td>0.670</td>
<td>1</td>
<td>0.413</td>
<td>0.763</td>
<td>0.399</td>
<td>1.459</td>
</tr>
<tr>
<td>Constant</td>
<td>-0.889</td>
<td>0.217</td>
<td>16.814</td>
<td>1</td>
<td>0.000</td>
<td>0.411</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 13

*Logistic Regression Model of Positive Self-Reported Hypertension Status Predicting Likelihood of Reporting Food Insecurity*

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>df</th>
<th>P-Value</th>
<th>Odds Ratio</th>
<th>95% CI Lower</th>
<th>95% CI Upper</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive Self-Reported Hypertension Status</td>
<td>0.387</td>
<td>0.327</td>
<td>1.403</td>
<td>1</td>
<td>0.236</td>
<td>1.473</td>
<td>0.776</td>
<td>2.794</td>
</tr>
<tr>
<td>Constant</td>
<td>-1.166</td>
<td>0.234</td>
<td>24.865</td>
<td>1</td>
<td>0.000</td>
<td>0.312</td>
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</table>
Table 14

*Logistic Regression Model of Years Lived in the United States Predicting Likelihood of Reporting Food Insecurity*

<table>
<thead>
<tr>
<th></th>
<th>B</th>
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<th>Wald</th>
<th>df</th>
<th>P-Value</th>
<th>Odds Ratio</th>
<th>95% CI Lower</th>
<th>95% CI Upper</th>
</tr>
</thead>
<tbody>
<tr>
<td>25 or More Years - Ref</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.954</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 - 10 Years</td>
<td>0.071</td>
<td>0.470</td>
<td>0.023</td>
<td>1</td>
<td>0.879</td>
<td>1.074</td>
<td>0.427</td>
<td>2.699</td>
</tr>
<tr>
<td>11 - 25 Years</td>
<td>0.500</td>
<td>0.376</td>
<td>1.766</td>
<td>1</td>
<td>0.184</td>
<td>1.649</td>
<td>0.789</td>
<td>3.446</td>
</tr>
<tr>
<td>Constant</td>
<td>-1.170</td>
<td>0.270</td>
<td>18.807</td>
<td>1</td>
<td>0.000</td>
<td>0.310</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 15

*Logistic Regression Model of Households with Children under the Age of 18 Predicting Likelihood of Reporting Food Insecurity*

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>df</th>
<th>P-Value</th>
<th>Odds Ratio</th>
<th>95% CI Lower</th>
<th>95% CI Upper</th>
</tr>
</thead>
<tbody>
<tr>
<td>Households with Children Under 18 Years</td>
<td>-0.515</td>
<td>0.438</td>
<td>1.378</td>
<td>1</td>
<td>0.240</td>
<td>0.598</td>
<td>0.253</td>
<td>1.411</td>
</tr>
<tr>
<td>Constant</td>
<td>-0.932</td>
<td>0.194</td>
<td>23.080</td>
<td>1</td>
<td>0.000</td>
<td>0.394</td>
<td></td>
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</table>
Table 16

Logistic Regression Model of Body Mass Index Predicting Likelihood of Reporting Food Insecurity

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>df</th>
<th>P-Value</th>
<th>Odds Ratio</th>
<th>95% CI Lower</th>
<th>95% CI Upper</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body Mass Index</td>
<td>-0.015</td>
<td>0.027</td>
<td>0.329</td>
<td>1</td>
<td>0.566</td>
<td>0.985</td>
<td>0.934</td>
<td>1.038</td>
</tr>
<tr>
<td>Constant</td>
<td>-0.641</td>
<td>0.691</td>
<td>0.861</td>
<td>1</td>
<td>0.354</td>
<td>0.527</td>
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</tr>
</tbody>
</table>

Table 17

Logistic Regression Model of Age Predicting Likelihood of Reporting Food Insecurity

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>df</th>
<th>P-Value</th>
<th>Odds Ratio</th>
<th>95% CI Lower</th>
<th>95% CI Upper</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>-0.009</td>
<td>0.009</td>
<td>0.938</td>
<td>1</td>
<td>0.333</td>
<td>0.991</td>
<td>0.974</td>
<td>1.009</td>
</tr>
<tr>
<td>Constant</td>
<td>-0.549</td>
<td>0.464</td>
<td>1.399</td>
<td>1</td>
<td>0.237</td>
<td>0.577</td>
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</tr>
</tbody>
</table>

Table 18

Logistic Regression Model of Employment Status Predicting Likelihood of Reporting Food Insecurity

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>df</th>
<th>P-Value</th>
<th>Odds Ratio</th>
<th>95% CI Lower</th>
<th>95% CI Upper</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employed</td>
<td></td>
<td></td>
<td>1.885</td>
<td>2</td>
<td>0.390</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unemployed</td>
<td>0.671</td>
<td>0.499</td>
<td>1.809</td>
<td>1</td>
<td>0.179</td>
<td>1.956</td>
<td>0.736</td>
<td>5.200</td>
</tr>
<tr>
<td>Retired</td>
<td>0.227</td>
<td>0.374</td>
<td>0.368</td>
<td>1</td>
<td>0.544</td>
<td>1.255</td>
<td>0.603</td>
<td>2.612</td>
</tr>
<tr>
<td>Constant</td>
<td>-1.156</td>
<td>0.217</td>
<td>28.484</td>
<td>1</td>
<td>0.000</td>
<td>0.315</td>
<td></td>
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</table>
Table 19

Multicollinearity Test of Variables of Interest

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>Std. Error</th>
<th>Beta</th>
<th>T</th>
<th>P-Value</th>
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<th>95% CI Upper</th>
<th>Tolerance</th>
<th>VIF</th>
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</thead>
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<tr>
<td>(Constant)</td>
<td>1.549</td>
<td>0.457</td>
<td></td>
<td>3.393</td>
<td>0.001</td>
<td>0.646</td>
<td>2.453</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Households with Children Under the Age of 18</td>
<td>-0.043</td>
<td>0.098</td>
<td>-0.044</td>
<td>-0.444</td>
<td>0.658</td>
<td>-0.237</td>
<td>0.150</td>
<td>0.708</td>
<td>1.411</td>
</tr>
<tr>
<td>Years Lived in the US</td>
<td>-0.005</td>
<td>0.055</td>
<td>-0.009</td>
<td>-0.087</td>
<td>0.931</td>
<td>-0.114</td>
<td>0.105</td>
<td>0.682</td>
<td>1.467</td>
</tr>
<tr>
<td>Usual Type of Food Eaten</td>
<td>0.028</td>
<td>0.046</td>
<td>0.053</td>
<td>0.606</td>
<td>0.545</td>
<td>-0.064</td>
<td>0.120</td>
<td>0.897</td>
<td>1.115</td>
</tr>
<tr>
<td>Self-Reported High Cholesterol Status</td>
<td>0.002</td>
<td>0.088</td>
<td>0.002</td>
<td>0.025</td>
<td>0.980</td>
<td>-0.172</td>
<td>0.177</td>
<td>0.670</td>
<td>1.492</td>
</tr>
<tr>
<td>Self-Reported Hypertension Status</td>
<td>-0.071</td>
<td>0.096</td>
<td>-0.081</td>
<td>-0.734</td>
<td>0.464</td>
<td>-0.262</td>
<td>0.120</td>
<td>0.566</td>
<td>1.767</td>
</tr>
<tr>
<td>Self-Reported Diabetes Status</td>
<td>-0.074</td>
<td>0.102</td>
<td>-0.071</td>
<td>-0.730</td>
<td>0.467</td>
<td>-0.276</td>
<td>0.127</td>
<td>0.730</td>
<td>1.371</td>
</tr>
<tr>
<td>Age</td>
<td>-0.002</td>
<td>0.003</td>
<td>-0.082</td>
<td>-0.579</td>
<td>0.564</td>
<td>-0.009</td>
<td>0.005</td>
<td>0.344</td>
<td>2.909</td>
</tr>
<tr>
<td>Annual Household Income</td>
<td>-0.131</td>
<td>0.054</td>
<td>-0.254</td>
<td>-2.417</td>
<td>0.017</td>
<td>-0.238</td>
<td>-0.024</td>
<td>0.629</td>
<td>1.589</td>
</tr>
<tr>
<td>Body Mass Index</td>
<td>0.003</td>
<td>0.006</td>
<td>0.049</td>
<td>0.531</td>
<td>0.596</td>
<td>-0.009</td>
<td>0.016</td>
<td>0.800</td>
<td>1.250</td>
</tr>
<tr>
<td>Educational Status</td>
<td>-0.007</td>
<td>0.068</td>
<td>-0.011</td>
<td>-0.107</td>
<td>0.915</td>
<td>-0.141</td>
<td>0.127</td>
<td>0.627</td>
<td>1.595</td>
</tr>
<tr>
<td>Current Employment Status</td>
<td>0.029</td>
<td>0.057</td>
<td>0.059</td>
<td>0.504</td>
<td>0.615</td>
<td>-0.084</td>
<td>0.141</td>
<td>0.498</td>
<td>2.008</td>
</tr>
<tr>
<td>Zip codes by Jurisdiction</td>
<td>0.018</td>
<td>0.046</td>
<td>0.035</td>
<td>0.401</td>
<td>0.689</td>
<td>-0.073</td>
<td>0.110</td>
<td>0.908</td>
<td>1.102</td>
</tr>
<tr>
<td>Health Insurance Status</td>
<td>0.112</td>
<td>0.059</td>
<td>0.178</td>
<td>1.882</td>
<td>0.062</td>
<td>-0.006</td>
<td>0.229</td>
<td>0.777</td>
<td>1.287</td>
</tr>
</tbody>
</table>
Appendix G: Relevant Figures

Figure 1. Conceptual Depiction of the Cyclical Link Between Food Insecurity and Chronic Disease (Seligman & Schillinger, 2010).
Figure 2. Conceptual Framework Describing the Influence of Household Food Insecurity on Chronic Conditions and Disease Outcomes (Laraia, 2013).

Figure 3. Graphic Representation of the Social Ecological Model Adapted from McLeroy et al. (1988) (American College Health Association, n.d.)
Figure 4. Las Vegas Metro Area Zip Codes Depicting City Jurisdictions
References


doi:10.1093/jn/120.suppl_11.1555


to Address Chronic Diseases in Asian Americans, Native Hawaiians, and Pacific Islanders. *Preventing Chronic Disease, 11*. doi:10.5888/pcd11.140272


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Curriculum Vitae

Prescott Manheim Cheong | cheonp1@unlv.nevada.edu

EDUCATION

Masters in Public Health (Social Behavioral Health Concentration) Expected Spring 2018
University of Nevada, Las Vegas
Faculty Advisor: Dr. Courtney Coughenour
Committee Co-Chair: Dr. Courtney Coughenour
Committee Co-Chair: Marya Shegog
Committee Member: Dr. Francisco Sy
Graduate College Representative: Dr. Ian McDonough

Bachelor of Science in Biology (Physiology Concentration) June 2010
University of Washington, Seattle

RESEARCH INTERESTS

Food Insecurity; Health disparities; Asian American health disparities; Mitigating health inequities through culturally competent interventions; Health Policy

RESEARCH EXPERIENCE

Graduate Research Assistant, University of Nevada Las Vegas May 2016 – Present
School of Community Health Sciences, Dr. Courtney Coughenour
- Co-authored a publication involving a qualitative study assessing community stakeholder attitudes on the links between health and expanding full-day kindergarten in Southern Nevada.
- Conducted open and axial coding of qualitative data collected from various focus groups related to a health impact assessment on expanding full-day kindergarten in Southern Nevada.
- Prepared and presented one-hour guest lectures on food insecurity, food waste, and food rescue in Dr. Coughenour’s injury prevention and built environment courses (PBH 205; PBH 340).
- Collaborated with two other student assistants to evaluate the nutritional value of 99 Cent Stores in the Greater Las Vegas area by utilizing the NEMS nutritional assessment tool.
- Conducted focus group sessions for a project related to determining what information is most valuable to consumers in regards to mitigating food insecurity and food waste.
- Drafting manuscript on the topic of best practices in the food rescue process
- Assisted Dr. Coughenour with grading class assignments, administering exams, and other miscellaneous tasks.

Graduate Research Assistant, University of Nevada Las Vegas January 2017 – Present
School of Community Health Sciences, Dr. Francisco Sy
- Contributed to the completion of a health needs assessment survey project for Filipino Americans in the Greater Las Vegas area by drafting additional questions for the survey, assisting principal investigator in the IRB process, recruiting study participants, data analysis, and other additional tasks involved with the project.
- Will co-author the manuscript of our findings from the Filipino American health needs assessment survey.

TEACHING AND MENTORING EXPERIENCE

City Year Corps Member, City Year, Inc. August 2010 – May 2011
Seattle, WA
- Committed over 1700+ volunteer work hours during a 10 month period with City Year – an AmeriCorps sponsored national non-profit focused on lowering drop rates in low-performing schools by employing 17-24 year olds to tutor and mentor at-risk youth
- Created lesson plans and implemented a flexible in-school instructional program specifically designed to teach suspended middle school students positive behavioral and study skills
• Tracked and monitored 14 low performing 7th graders by establishing a personal rapport with each student and providing academic support before, during, and after school which led to improved classroom performance
• Provided teachers with classroom assistance and individualized tutoring for targeted low performing students in a math enrichment class resulting in improved state assessment scores by 25 percentile points
• Led an after-school skateboarding club which offered students a unique opportunity to practice a non-traditional sport in a safe setting
• Co-led an after-school club focused on service-learning which gave students an opportunity to positively impact their community and expand their knowledge on social injustices
• Oversaw the donations process at our school site and procured over $700 dollars worth of goods for various City Year related projects and events

**Undergraduate Review Specialist, University of Washington Biology Dept.**  
*Seattle, WA*  
*June 2010 – August 2010*

- Presented and developed a one-hour weekly review session for the intro to animal and plant physiology course (Biol 220) which summarized lecture material and encouraged students to actively participate by engaging them in question and answer problems.
- Created a video library of the weekly lab sections for future students to use as a reference guide.
- Attended daily lectures and clarified any material presented in class to students via email and review sessions.

**Undergraduate Teaching Assistant, University of Washington Biology Dept.**  
*Seattle, WA*  
*March 2010 – June 2010*

- Responsible for teaching a weekly lab section to 20 students for the intro to Mendelian genetics, evolution, biodiversity of life forms, ecology, and conservation biology (Biol 180), which involved reviewing the purpose of the lab, explaining lab protocol and what is expected of the students, troubleshooting with students throughout the lab, and grading assignments.
- Attended daily lectures to encourage active learning among students and clarified material presented during lecture periods via office hours and email
- Assisted in grading midterms and final exam

**Undergraduate Peer Teaching Assistant, University of Washington, Ethnic Studies**  
*Seattle, WA*  
*March 2010 – June 2010*

- Attended daily lectures for American Ethnic Studies (AES 151) to encourage active learning among students and clarified material presented during lecture periods via office hours, email, and school message board.
- Assisted in grading midterms and final exam

**HONORS AND AWARDS**

- **Dean’s List, University of Washington**  
- **Stacy Darling Scholarship, University of Nevada, Las Vegas**  
  - Spring 2017

**PUBLICATIONS**


**INVITED TALKS**


PROFESSIONAL EXPERIENCE

Physician Scribe, Nevada Professional Scribes
Las Vegas, NV
April 2016 – Present
 • Responsible for documenting the entire physician-patient encounter in real time using EMR system assigned to the group practice.
 • Collaborated with numerous physicians in general surgery and oncology to ensure that clinical notes were accurately scribed and to the physicians’ preference.
 • Created and presented training material for potential employees to learn the terminology, expectations, and procedures involved with scribing.

Mobile Operations Lead Phlebotomist, Puget Sound Blood Center
Seattle, WA
April 2015 – March 2016
 • Responsible for the daily on-site operations and logistics of mobile blood drives
 • Led a team of 4 other co-workers which involved delegating tasks, pro-actively encouraging teamwork, controlling donor flow, resolving work place conflicts in collaboration with my supervisor, and mentoring new staff members
 • Trained in collection of apheresis donations (plateletpheresis, plasmapheresis, and double red blood cells) and performed over 50 apheresis procedures
 • Served on several LEAN Six Sigma groups to improve our blood product shipment process

Blood Collection Services Specialist (Phlebotomist), Puget Sound Blood Center
Seattle, WA
August 2013 – April 2015
 • Performed over 3000 whole blood collections in accordance with Puget Sound Blood Center & FDA standard operating procedures
 • Screened potential donors and evaluated their eligibility (including taking/assessing BP, pulse, temperature, & HCT) in order to ensure the safety, quality, and purity of our blood supply
 • Monitored, documented, and provided quality care for donors experiencing vasovagal reactions
 • Educated donors on our mission, values, and procedures while exhibiting professionalism and excellent customer service skills

Behavior Technician, Behavior Management for Adults and Children Service
Seattle, WA
April 2013 – June 2013
 • Provided one on one support as a paraprofessional for an 18 year old special needs student diagnosed with EBD (emotional behavioral disorder), Autism, and Mood Disorder
 • Implemented various IEP related programs and behavioral management plans daily
 • Recorded numerous data on behavioral issues and daily activities

Behavioral Interventionist, Autism Comprehensive Educational Services
Honolulu, HI
August 2012 – March 2013
 • Trained in applied behavioral analysis (ABA) with over 360+ hours of experience utilizing ABA principles to teach children with disabilities (mainly autism) in a one on one home and group setting.
 • Maintained proper and professional relationships with our clients and their families
 • Implemented various individualized curriculums, programs, and behavioral management plans under the supervision of an BCBA/BCaBA
 • Recorded and graphed data on the outcomes of programs and effectiveness of behavioral management strategies

Marketing Intern/Social Media Co-Manager, L&L Hawaiian Barbecue
Honolulu, HI
Jan 2012 – August 2012
 • Assisted the marketing team with writing and distributing press releases, brainstorming ideas regarding promotional projects, and supporting L&L at various promotional events
• Implemented and managed a new social media strategy that centered around a positive fan experience for L&L Facebook users resulting in increased page traffic and 172% increase in users “talking about” L&L
• Created various graphic designs, tab images, and promotional posters with GIMP for L&L’s Facebook page and events
• Input data and calculated figures for various projects undertaken by L&L

COMMUNITY SERVICE EXPERIENCE

Front Desk Volunteer, Volunteers in Medicine of Southern Nevada  
Las Vegas, NV  
April 2016 - Present

• Managed the front desk responsibilities which included: assisting patients with registration papers, checking-in patients, answering phone calls, and making appointment phone reminders
• Assisted staff with miscellaneous administrative and clerical tasks

Student Volunteer, Aloha Medical Mission  
Majuro, Marshall Islands  
October 2014 – October 2014

• Participated as a student volunteer on a 10-day medical mission to Majuro, Marshall Islands, focused on providing impoverished individuals with free surgical procedures.
• Served 40 hours as a surgery tech/assistant for numerous procedures including cholecystectomies, tumor removals, anal fistula, hernia repairs, and circumcisions.
• Assisted physicians by providing administrative and scribe support during pre-operative screenings and examinations.

Front Desk Registrar Volunteer, RotaCare Clinic – Lake City  
Seattle, WA  
June 2013 – July 2014

• Co-managed the front desk responsibilities which included: assisting patients with registration papers, maintaining patient flow, and electronically inputting new patient information, demographics, and office visits
• Provided patients with excellent service by consistently greeting patients with a smile and answering questions in a positive manner

Adult Day Health Volunteer, Bailey Boushay House  
Seattle, WA  
August 2009 – April 2010

• Coordinated and led a “volunteer day” which involved 15 volunteers participating in several projects including landscaping and general upkeep
• Assisted social workers and staff with coordinating activities and socializing with Bailey Boushay House residents resulting in an enjoyable and safe environment for everybody
• Organized and distributed meals to Bailey Boushay House residents during their lunch time hour
• Gained valuable experience in socializing and interacting with HIV/AIDS populations

Pre-med Volunteer, Volunteers for Intercultural and Definitive Adventures  
Costa Rica/Panama  
Sept 2009 – Sept 2009

• 2 week medical excursion to Costa Rica and Panama to provide free health care services to underprivileged communities (logged 53 hours of direct patient health care)
• Assisted physicians by charting patient histories and presenting patient information, performed basic physical examinations and assessments including quick strip urinalysis, blood sugar monitoring, and recorded patient vital signs (via a translator as needed)
• Collaborated with medical staff to provide a differential diagnosis and proposed treatment plans for each patient
• Experienced cultural and language exchanges in the form of home stays, field excursions, and outdoor activities

General Health Presenter, Students in the Community  
Seattle, WA  
October 2008 – June 2009

• Constructed and presented health topics such as preventing sexually transmitted diseases, high blood pressure, healthy diets, pain management, and heart health at transitional housing centers for the homeless population (Aloha Inn and Women’s Referral Center).