



**SAN FRANCISCO FOOD BANK**

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# **San Francisco's Hungry: Who is Utilizing Food Bank Pantry Services?**

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This report was prepared for the San Francisco Food Bank. It was conducted by Sandy Chan, Melissa Kornblau, Abigail Birnbaum, Brenda Farrell, and Yuhua Zhang, under the direction of Dr. Sheldon Gen, all from San Francisco State University's Department of Public Administration.

All findings and opinions expressed in this report are the authors' alone, and not necessarily those of San Francisco State University nor the San Francisco Food Bank.

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### **Abstract**

This paper presents information about the characteristics of San Francisco's hungry. Specifically, it presents data regarding over 200 clients of various food pantries associated with the San Francisco Food Bank who completed a 2005 survey on hunger conducted by America's Second Harvest. The research design for this study is cross-sectional; information was gathered from clients at 18 pantry locations. Three dependent variables, food insecurity, chronic service usage and emergency service usage were created. Using Chi-Square, T-tests and ANOVA, tests were run on various independent variables including demographic and geographic data to test their statistical relationship, if any, with the dependent variables. It was found that family structure, the presence of elderly individuals in the household, poor health amongst household members, citizenship status, the receipt of General Assistance and applying for food stamps were all statistically related to the food security status of the household. It was also found that food security and distance traveled to reach the pantry site varied significantly by San Francisco district. Although there has been a substantial amount of research conducted on populations using food bank services, there has been relatively little research focusing on San Francisco's food insecure residents. This paper represents a significant step in better understanding who the San Francisco Food Bank serves and the hungry population in San Francisco in general.

Key words: food bank; food insecurity; chronic usage; pantry

## Introduction

While the United States of America is one of the wealthiest countries in the world, there are still people here who struggle to put enough nutritious food on the table. Many factors can lead a household or individual into food insecurity. Some of these factors are easily resolved while others are not. In other words, food insecurity is a temporary concern for some while for others it is a chronic problem. Additionally, there are people who need food assistance only in emergency situations, such as when household members lose their employment. Due to the different degrees of food insecurity, organizations that aim to help increase food security must have services that reach diverse populations facing a myriad of circumstances.

Recent estimates are that about 12.6 million households, or 11%, of all U.S. households were food insecure at some point during 2007 (Nord, 2008). Broadly defined, food insecurity is when people do not have enough resources to purchase an adequate amount of food to live an active healthy lifestyle (Nord, 2008). Those with lower incomes are more prone to suffer from food insecurity. However, numerous studies have found that food insecurity impacts people across a range of demographics including all racial and ethnic groups, households of all compositions, and all geographic areas (Anonymous, 2002).

Many charitable organizations have looked and continue to look for ways to most effectively meet the needs of food insecure people. Food banks have become one of the most visible organizations fighting against hunger in America. Food banks are key distributors to organizations that directly serve the hungry. Such organizations include pantries that distribute non-prepared foods and grocery products, soup kitchens that provide prepared meals, and emergency shelters that provide shelter and one or more meals a day (Mathematica Policy Research, Inc., 2006). The government has also made attempts to prevent hunger through food stamps, special supplemental nutrition program for women, infants, and children, and home meals delivered to the elderly (Durbin, 1995). However, the question remains, are current programs reaching the hungry or are there underserved populations?

This paper intends to describe what variables have a high degree of association with food insecurity. This paper will specifically analyze the food security of San Francisco residents who utilize food pantry services. Pantries were chosen over soup kitchens and shelters because the data collected for this study shows that they have a higher usage rate. This paper will analyze chronic versus temporary food insecurity, as well as emergency food insecurity for San Francisco pantry clients.

San Francisco provides an ideal case study because of its racially, ethnically, economically, and educationally diverse population. In addition, San Francisco has a large legal and illegal immigrant population that leads to questions regarding potential social, cultural, and language barriers when accessing food services. Because San Francisco is home to many diverse household compositions, it is an ideal place to analyze a multitude of variables and explore what factors most commonly lead to food insecurity. Also, because San Francisco is made up of residents that are representative of America's population, information gathered can provide insight for other cities in the United States fighting food insecurity.

This paper will analyze data collected in San Francisco with America's Second Harvest (ASH) survey instrument. The data was gathered in 2005.

While numerous food programs exist in America for people to utilize, issues of access and equity continually arise. Unfortunately, food provider programs are unsure if they are actually meeting the needs of the hungry and question if there are populations going underserved. It is our

hope that the research presented in this paper will shed some light on who San Francisco's hungry are and that our findings will provide food banks and other food providers a better understanding of how to reach and best serve food insecure populations.

## **Research Questions**

Our research seeks to answer the following questions:

- 1) What is the relationship between food insecurity and household structure, demographics, and government aid for SF Food Bank pantry clients?
- 2) What is the relationship between chronic and emergency service usage, and household structure, demographics and government aid for SF Food Bank pantry clients?
- 3) To what extent are SF Food Bank pantries located in food insecure areas?

## **Literature Review**

Food banks have become an entrenched part of the welfare landscape since the 1990s, which were host to welfare reform that shifted government spending “away from traditional cash assistance to new types of aid such as job training, health insurance, child care, and child assistance” (Ellwood & Boyd, 2000, as cited in Joassart-Marcelli & Wolch, 2003). This shift has left the poorest communities that depend on steady income at a higher risk of going hungry. As such, the nonprofit sector has increasingly been called upon to provide assistance to this population. This literature review will set the background for our research questions, exploring work that has been done on chronic versus temporary food insecurity, household and individual characteristics that are conducive to food insecurity, the affect of food stamps on poor communities and their food bank usage, and the geographic distribution of services available to the food insecure. It concludes with a justification of the need for our research for the San Francisco Food Bank, which serves an ethnically diverse population in a city that has one of the highest costs of living in the world.

### **Chronic versus Temporary Food Insecurity**

The chronic versus temporary nature of food bank services usage has seldom been the sole focus of studies of food bank clientele. However, demographic studies have shown results similar to those expected given the change in the welfare landscape of the 1990s. Specifically, studies in the 1990s began finding that food bank and soup kitchen usage was, for most clientele, on a habitual rather than emergency basis despite the initial intentions of food banks to act as emergency providers (Rauschenbach et al., 1990, Starkey et al., 1998).

More recent studies have looked in depth at trade-offs made by those chronically food insecure and how food assistance programs and those who use them regularly fit into society in general. In the Michalski (2003) study of food bank users in Toronto, where over 60% of clientele used food bank services at least monthly or more, the authors examined coping strategies, including going hungry and spending less money on transportation and entertainment. In this context, usage of food banks is just one coping strategy out of many for those living in poverty and is a part of a “social economy” which is just one of many economies available to people in general.

Perhaps one of the most intriguing studies done of the chronically food insecure is by

Harnelin et al. (1999). A purposive sampling of low income families, this study examined the household-level and societal impacts of chronic food insecurity for families with children. It suggests broad costs to society when families with children are chronically food insecure, including decreased constructive participation in society, increased health care costs, and an erosion of the transfer of knowledge from one generation to the next. This study also examines the social acceptability of using food bank services and shows a pattern of adaptation on the part of households and society as a whole as need persists. It presents interesting ideas for future work and compelling reasons chronic food insecurity should continue to be studied and fought.

### **Household Structure and Demographics**

The characteristics of these populations have also been of interest to researchers. Studies conducted in the United States have found that household structure can act as a predictive determinant of food insecurity. For example, the composition of lower income households (the number of children and working adults and the health of family members) provides insight into which households are more likely to become food insecure. Changes in household structure, for instance a new baby or a divorce, also affect the likelihood that a low income family will become food insecure. Such events are referred to as “triggers.”

Recent studies have found commonalities in the household structures of food insecure homes. For instance, households headed by single women with children face the highest levels of food insecurity (Anonymous, 2002). Changing from a married household to a female-headed household (due to divorce, separation, or becoming widowed) will most likely lead to food insecurity (Newman, 2006). Low to middle income single female headed families with children are 5.5 times more likely than any other family structure to be food insufficient (Siefert, Heflin, Corcoran, & William, 2004). Finally, if the head of a household has a low education level, that household is more likely to be food insecure (Newman, 2006).

Unemployment is also a predictive indicator of food insecurity. Households that have a total annual income above the poverty line can experience food insecurity if they go through several weeks or months with less income due to a job loss (Nord, 2008). In addition, research continues to find that a household that has an unemployed member will more likely face food insecurity than a similar household with the same income but no unemployed members (Nord, 2008). In general, lower income families face more frequent and larger income fluctuations than do higher income families and are therefore more likely to be food insecure (Newman, 2006).

Studies have also found that households with a disabled member are much more likely to be food insecure than households with no disabled members (Nord, 2008). A work-limiting disability substantially increases the risk of being food insecure for low-income households (Nord, 2002). In fact, research shows that 37% of all low-income households with very low food security had at least one working age adult who was unable to attain employment because of a disability (Nord, 2002).

Many federally funded government programs, such as the Congregate Meals Program and the Home Delivered Meals Program, aim to protect the elderly from food insecurity. However, in 2000, 94% of households with an elderly person (65 and older) were food secure throughout the year (Nord, 2002). In fact, at all income levels households consisting of entirely elderly persons were less likely to be food insecure (Nord, 2002). Research attributes the food security of elders to stable sources of income (such as Social Security and pensions) and because they have assets, such as homes, apartments and cars (Nord, 2002).

Triggers that most frequently lead to food insecurity are irregular income (especially sudden drops), change in marital status (such as a divorce), an additional household member (such as a birth of a child), the loss of employment, and becoming or gaining a disabled household member (Newman, 2006 & Nord, 2002). In general, the importance of remaining married and having a high percentage of working household members is critical in avoiding food insecurity.

Household composition also has an effect on a household's likelihood in being food insecure. Blisard and Stewart (2007) found a relationship between food spending and household composition (income, race and age) in their study of the Consumer Expenditure Survey. Average per person food spending was found to increase with household income. Black households spent much less per person on food than White households. Per person food spending increased with the age of the household head up to age 64 and then declined. Kaiser, Baumrind and Dumbauld (2007) supported Blisard and Stewarts' findings and made additional findings from the California Women's Health Survey. For example, the prevalence of food insecurity in California women was 25.7%. Being Hispanic or Black was associated with greater food insecurity than other ethnic groups. Finally, they found that the following groups are suffering from food insecurity more than others: those with less than a 12th grade education; those who are less than 55 years old; those who are Spanish-speaking; and those who have spent less than half of their lives in the United States. In general, research has found that food insecurity is more prevalent in individuals who are female, Black or Latino, low income, poorly educated, unemployed or non-U.S.-citizens.

### **Government Aid and Food Insecurity**

Many in the lower economic spectrum rely on government assistance to help make ends meet, and in particular, to supplement their nutritional needs. What follows is a brief overview of Federal food assistance programs and the deterrents to participation in these programs.

In their study on the emergency food assistance system, Briefel et al. note various programs developed by the federal government to help low income populations with their food needs. Such programs include the National School Lunch Program (NLSP), the School Breakfast Program (SBP), the Summer Food Service Program (SFSP), the Special Supplemental Nutrition Program for Women, Infants and Children (WIC), which targets pregnant low income women and children under 5, the Nutrition Services Incentive Program (NSIP), which targets the elderly, and the Food Stamp Program, which is the largest and most researched of the programs and provides vouchers for its participants to purchase food. Briefel et al. report that 69% of people that get assistance from at least one federal food program are also food pantry clients, suggesting that government food assistance alone is insufficient in addressing the nutritional requirements of low-income needy populations. This finding also points to the important role of food pantries and soup kitchens in supplementing the dietary needs of these populations.

In reviewing the literature, certain key points stand out in the analysis. Despite that the Food Stamp program is the largest of the government assistance programs, it is noted in much of the research that those who qualify do not make use of the program and that utilization of this form of aid has been declining. California, in particular, has seen a lack of involvement, with only 46% of those eligible participating in 2004, compared to a 60% participation rate nationwide (Harrison et al, 2007). According to California Food Policy Advocates research on the utilization of federal food programs by San Francisco county residents, 54% of those eligible in San Francisco County do not participate in the Food Stamp program and 62.7% of eligible residents

do not take part in the Summer Food Program ([www.cfpa.net](http://www.cfpa.net) 2008).

Some factors that influence participation in Federal nutritional assistance like the Food Stamp program include a significant drop in income or changes in household composition, for example due to divorce, combined with a drop in income (Bhattarai & Duffy 2003). Additionally, being disabled, non-white, less educated, unemployed, and a single parent are also factors that increase the likelihood of food stamp use (Rank & Hirschl 2005). Reasons cited for not participating Federal food assistance programs vary. One of the most common reasons cited for not applying is doubts over eligibility. In regards to the Food Stamp program, some do not participate because they have a preference for private over public assistance or they are unaware of how to get benefits (Briefel et al. 2003). Additionally, the burdensome and complicated paperwork involved in the application process has also been cited as a barrier. According to the Bhattarai and Duffy study (2005), the average length of a food stamp application is 12 pages, and in most states, applicants have to make repeated and drawn-out visits to the food stamp office during work hours to complete the application process. This study also cites a “fear of stigma” by Hispanics in particular in regards to participation in public or private public assistance. Considering this last fact along with findings by Borjas that more immigrants suffer from food insecurity than natives, yet fewer immigrants qualify or apply for federal assistance (Borjas 2002), one can conclude that immigrants could be a potential target for nutrition assistance by private programs such as food pantries and soup kitchens. The immigrant population and the barriers to participation by other qualified populations are important considerations in establishing additional targets for aid by the San Francisco Food Bank.

### **Geography of Hunger**

Relatively little research has been done on the geographic distribution of services available to the food insecure, but it is gaining wider attention as nonprofit organizations are assessing the value and reach of their services. Joassart-Marcelli & Wolch (2003) have found that non-profit organizations tend to locate in middle-class communities, which have higher levels of public expenditures and intergovernmental grants, rather than areas that have the most need. This apparent irony is attributable to several factors. First, such conditions make a nonprofit organization more financially viable. After all, an organization must be able to sustain itself before it can help others. Furthermore, functional linkages with similar or complementary entities, for example hospitals and other community networks, and the willingness of communities to host such service facilities are factored into a nonprofit organization’s decision to locate in a specific area. Civic culture and participation, which is more prevalent in communities with homeowners rather than renters, are conducive to a nonprofit locating in the vicinity. On the other hand, if “not in my backyard” (NIMBY)-ism is strong in a community, a nonprofit may not be able to locate there (Joassart-Marcelli & Wolch, 2003). For these reasons, the neediest of the needy are not always served or they are underserved.

Another concern is the duplication of services by organizations that are too close to one another. Wallace (2003) found a mismatch between Milwaukee’s food pantries and their clients, where some parts of the city had several programs clustered within a few blocks of one another, while other neighborhoods had few or none. Similarly, Allard (2004, as cited in Peck, 2008) found that “center-city poor have greater access to services than those in suburbs and that demographic changes do not necessarily match well to the location of service provision.” While it appears that clients might choose to go to several pantries due to differences in perceived food

quality or operation hours, this duplication of services comes at the expense of the needy individuals who do not live close to a service site. McPherson (2006) points out that the disabled and 65+ age groups may be particularly sensitive to the location of food service sites, as physical accessibility and transport barriers become important concerns.

### **Why is our research needed?**

The purpose of this research is to aid the San Francisco Food Bank in assessing its effectiveness in achieving its mission to end hunger in San Francisco. As the heart of the multi-cultural Bay Area, San Francisco is home to a variety of ethnic groups, many of which are predominantly immigrant. It offers many social services to the needy while being one of the most expensive cities to live in the world. As such, San Francisco faces challenges, in addition to poverty, that other cities around the world may not have to overcome, such as catering to a population that is disparate in values, language, income and education, among others. We aim to help the San Francisco Food Bank understand its clientele, in particular those who use its pantries, so that it can better serve the city's hungry.

## **Methods**

### **Research Design**

The research design that was used to carry out the research project described in this paper offers “snapshots” of San Francisco’s hungry residents. While the Food Bank provides services to shelters, soup kitchens, and pantries, past surveys indicate that the majority of San Francisco’s hungry use pantry sites to fulfill their dietary needs. Due to the pantries’ high rates of usage, findings presented in this paper focus on the characteristics of pantry clients only although the survey was administered at soup kitchens and shelters as well.

The research design employed for this study is cross-sectional. When analyzing cross-sectional data, causal relationships can be inferred from the data. Cross-sectional studies highlight relationships between the dependent and independent variables that have statistical association. However, cross-sectional studies do not control for threats to internal validity. The major uncontrolled threat to cross-sectional studies is the inability to control subject selection or assignment. For example, the surveyors could not control who came to the pantry sites. Nevertheless, by employing sophisticated analytical techniques to the data set, it is possible to make plausible inferences about causal relationships.

Pantry sites in San Francisco were systematically selected for this study. First, the Food Bank had to complete a survey administered by America’s Second Harvest that described the programs operating in San Francisco. San Francisco Food Bank surveys were then used for creating client surveys. For example, how the Food Bank responded to questions such as their program size, days of operation, and number of clients served, impacted where client surveys would be administered. Based on information from the Food Bank survey, pantry sites in San Francisco were then randomly selected to conduct client surveys.

### **Unit of analysis**

Client surveys administered by the Food Bank were intended to “characterize” the people

using food services and their households to gain a better understanding of what their needs were. However, as mentioned previously, this study analyzes pantry users specifically. Therefore, the unit of analysis in this study is households of San Francisco pantry clients. Survey questions were based on previous America Second Harvest questionnaires.

### **Sampling method and data collection**

The sampling method used to select pantry clients was systematic and random. Local volunteers were given explicit instructions on how to select and administer the surveys to clients. In order to gather a random selection of clients at the pantry sites, volunteers had to do the following:

- Regardless of the situation or procedures at the site, volunteers had to show up to the site on the day and time assigned.
- Volunteers had to have a “start-with” number to identify the first person to interview.
- Volunteers had a “take-every” number, that allowed for the selection of the next person for interviewing. The “take-every” number refers to the number of people to be counted to determine the next client to participate. For example, if the “start-with” number is 4, and the “take-every” number is 11, then the interviewers will start with person number 4 and take every 11<sup>th</sup> person after that person for interviewing (America’s Second Harvest, 2005).

Volunteers were asked to complete an average of ten surveys. Surveys were conducted in different languages depending on the client being interviewed. The survey consisted of 82 multiple-choice questions and was expected to take 15 to 20 minutes to carry out depending how the individuals answered the questions. The survey questions were nominal, ratio, and ordinal, asking clients questions pertaining to their income, household size, race, age, sex, ethnicity, years of education, and so on.

After all surveys had been conducted, approximately 18 pantry sites were surveyed and around 200 clients completed the survey.

### **Variables**

For the purposes of this research paper, three dependent variables were created- food insecurity, chronic pantry usage, and emergency pantry usage. The dependent variable food insecurity was measured using an index of questions from the survey as outlined in the U.S. Department of Agriculture’s “Guide to Measuring Household Food Security, Revised 2000” (Bickel et al., 2000), the same method used in the America’s Second Harvest report on the data. Please see Appendix B for the questions used in the index. Chronic service usage was measured by a response of *Every month (12 months)*, *Almost every month (10-11 month)*, or *Most months (6-9 months)* to the question: *Now, thinking about the past year, did you or anyone in your household use a pantry...* while the variable of emergency service usage was created from a *Just this month* response to the same question. Independent variables considered include demographic characteristics, health characteristics, government aid received, and geographic information of the respondents. Where independent variables were not directly associated with a question in the survey, the variables were created by the researchers from a combination of survey responses. All of the information (with the exception of the literature review) presented in this paper was extracted from the client survey.

## Results

As discussed, our analysis focuses on the responses given by 203 clients surveyed at approximately 18 food pantries throughout San Francisco. In addition to the dependent variables which were created to facilitate data analysis, many independent variables which we believed would be of interest to the San Francisco Food Bank were created as well. These client characteristics were not directly answered by any one question on the survey and cover a wide array of aspects of clients' lives. A list of newly created variables and descriptive statistics associated with each in the pantry survey respondents can be found in Table 1.

**Table 1 - Descriptive Statistics for Created Variables in Pantry Clients**

<b>Dependent Variables</b>	
Food Insecure	55%
Chronic Pantry Usage	75%
Emergency Pantry Usage	5%
<b>Independent Variables</b>	
<i>Demographics:</i>	
Family Structure variable-	
Married with Children	11%
Married without Children	19%
Single Woman (no children)	13%
Single Man (no children)	46%
Single Mother	10%
Single Father	1%
Elderly (age≥65) in Household	65%
Household Size (mean)	2.3
Household Size (median)	2
Household Size (mode)	1
<i>Health:</i>	
Poor Health in Household (other than respondent)	21%

These independent variables, as well as many others which were directly measured by the survey, were examined to see their effects on the dependent variables and their value, if any, as a predictor of the dependent variables. The independent variables in total represent the wide range of characteristics examined in other studies in relation to food bank usage and food insecurity as seen in our literature review.

Generally, Chi-square tests of independence were run on the independent variables to test whether there was a statistically significant relationship between the value of the dependent variables and each of the independent variables. Table 2 shows the characteristics which had a statistically significant relationship with at least one of the dependent variables as a result of the Chi-square tests. All Chi-square results are significant at the  $p < .05$  level.

### Household Structure and Demographics

**Family Structure-** A variable was created to account for the type of family structure of the respondent which included possible values of Single Woman (no children), Single Man (no children), Single Mother, Single Father, Married with Children and Married without Children. The variable proved related to the food security status of the respondent  $\chi^2 (4, N=197) = 12.6$   $p < .05$  with Single Mother and Single Father collapsed into a Single Parent category to remove cells with an expected count less than 5. The values which contributed the most to this result are Single Man which had a disproportionately high amount of food insecurity and Married without Children, which showed a disproportionately low level of food insecurity. This result corresponds with the literature on food insecurity generally which shows that single individuals have a higher risk of being food insecure than do married couples.

**Household Size-** Because household size is measured at the interval level it was possible to run t-tests to compare the mean size of those food insecure to those households that are not. A T-test with a null hypothesis that the mean household size of food insecure households was greater than

**Table 2 - Independent Variables with Statistically Significant Relationships to Dependent Variables**

<b>Dependent Variables</b>	<b>Food Insecurity</b>	<b>Chronic Usage</b>	<b>Emergency Usage</b>
Family Structure	X		
Household Size	X		
Elderly (age≥65) in Household	X		
Poor Health in Household	X		
Citizenship Status	X		
Hispanic Origin		X	
Ever Applied for food stamps (Household)	X		
Receive General Assistance	X		

two resulted in a failure to reject the null hypothesis at the 95% confidence level, meaning that the mean size of food insecure households is greater than two. Similarly, a one-tailed test

comparing the mean size of food secure households to food insecure households proved by a small margin that food insecure households were on average larger than food secure households at the 95% confidence level.

**Elderly-** A similar test also showed that the presence of someone in the household above the age of 65 affects food security  $\chi^2 (1, N=203) = 14.1 p < .001$ . This test shows that those households with a member the age of 65 or greater are less likely to be food insecure than expected, while those without are statistically more at risk of food insecurity. This result supports prior research which has found elderly individuals to be more food secure than other age groups.

**Health-** Having a member of the household in poor health also proved statistically related to the household's food security  $\chi^2 (1, N=202) = 6.1 p < .05$ .

**Citizenship Status-** Citizenship status of the survey respondent was statistically related to food insecurity  $\chi^2 (1, N=195) = 5.9 p < .05$ . While 84% of pantry clients reported being citizens, this group had a larger than expected value of food insecurity, while the non-citizen group had a smaller than expected value.

**Hispanic Origin-** Finally, there was a statistically significant relationship between whether or not a survey respondent reported being of Hispanic origin and chronic usage of food pantry services  $\chi^2 (1, N=194) = 6.5 p < .05$ . Respondent of Hispanic origin were less likely to use pantry services chronically than were those of other than Hispanic origin.

### **Government Aid**

**Government Assistance-** The household's receipt of general assistance in the past month and a household's having ever applied for food stamps both proved to be related to food insecurity,  $\chi^2 (1, N=200) = 5.1 p < .05$  and  $\chi^2 (1, N=193) = 10.9 p < .01$  respectively. In both cases, receipt of the aid results in a higher than expected frequency of food insecurity.

Many other variables tested statistically significant yet had too few observations to comply with the Chi-square rule that no expected values be less than 5. These include employment status and food insecurity, WIC participation and chronic usage, and ethnic group and chronic usage. It was interesting to find that there was not a relationship between ethnic group and food insecurity or emergency usage while many other researchers found Hispanic or Black race/ethnic group to be associated with greater food insecurity (Kaiser, 2007; Blisard, 2007; Chávez, 2007). It was also found that there was no relationship between gender or the

presence of someone under the age of 18 in the household and our dependent variables.

### Geography

As the literature review suggests, geographic factors of agencies providing food services is a relatively new area of study. As the San Francisco Food Bank considers more in depth who their clients are and what services are needed in the area, geographic factors could play a major role if relevant analysis is completed. In this study, we attempted to do several analyses regarding the geographic location of pantry services (please see Appendix C for a complete description of the methods used). In one analysis, each survey respondent’s zip code was compared to the zip code of the district in which the client’s pantry was located to determine the mean distance traveled to reach the site. The mean distances by neighborhood can be found in Table 3.

**Table 3 – Mean Distance Traveled from Residence To Pantry Site by Neighborhood**

District	Mean Distance (miles)
Bayview/Hunters Point	.06
Glen Park/Diamond Heights/Castro	2.13
Mission	.20
North Beach/Chinatown	1.12
Oceanview/Merced/Ingleside	1.70
Potrero Hill	2.54
Richmond	.43
SOMA & Treasure Island	.60
Sunset	1.48
Tenderloin	.86
Visitacion Valley/Portola	1.12
Western Addition/Haight	.52
Outside of SF	19.42

A T-test of the data found that with 95% confidence clients are traveling on average less than one mile to reach the pantry site at which they were surveyed. However, an ANOVA test of the same data showed that clients from almost all districts of the city were traveling statistically different distances than clients from all other districts. This could have potential implications if the Food Bank wishes to provide services equally throughout the city. A look at Table 3 shows that while the average distance traveled to obtain food is less than a mile, clients from certain districts are traveling significantly more than a

mile.

Food insecurity varies by district as well. A graph in Appendix C shows the frequency of food insecurity rates amongst pantry clients by district in San Francisco. While the SOMA & Treasure Island district by far has the greatest number of food insecure households, Table 4 below shows that percentage-wise, Bayview/Hunters Point has the largest percentage of food insecure pantry clients. Contrarily, the Potrero Hill district did not have any food insecurity in its pantry clients’ households.

**Table 4 - Percentage Food Insecurity For Select San Francisco Districts**

District	Food Insecure
Bayview/Hunters Point	58%
Mission	50%
Oceanview/Merced/Ingleside	50%
Potrero Hill	0%

Finally, an attempt was made to look at the “daily threat of hunger” by district- a variable which is defined by the San Francisco Food Bank as households in the San Francisco area with a household income of less than 150% of

the national poverty rate. While any tests of statistical significance for this proved fruitless because of the large number of respondents who declined to state their household income from the previous year, a description of the methods employed can be found in Appendix C and may provide a basis for further studies.

## **Conclusion**

Results of our analysis of San Francisco's hungry population support some of the findings in the literature regarding the various characteristics that can make someone vulnerable to food insecurity. For example, our findings indicate that being single, in poor health, a U.S. citizen (as compared to non-citizens) and reliant on government assistance are all factors that can make a San Francisco resident susceptible to food insecurity. In addition, our research found that the level of food insecurity of San Francisco city residents can vary depending on the district, with Hunters Point showing the greatest number of food insecure pantry clients.

Analysis also pointed to the fact that persons of Hispanic origin are less likely to be chronic users of food pantries. This effect could possibly be related to the fear of stigma, as noted in the literature, by people of Hispanic origin when it comes to a reliance on public or private assistance. However, an interesting finding in our research was the lack of a relationship between ethnicity and food insecurity or emergency usage. This finding is contradictory to much of the literature which points to a clear correlation between being black or Hispanic and suffering from food insecurity.

While our study focused on examining the attributes of San Francisco's hungry population and resulted in some interesting findings, our research was mostly limited to using chi-square analysis. Although this type of analysis is useful in determining relationships between variables, it fails to assess the magnitude of the relationship. An additional limitation was that although several other significant relationships were determined, they could not be used in this analysis due to certain rules related to the use of chi-square analysis whereby none of the values used should have an expected count of less than 5.

Furthermore, our study has threats to external and internal validity. In terms of external validity, San Francisco is relatively unique in that it is home to an ethnically and economically diverse population that has more access than other cities to social and economic support services. Cities that lack the setting of a strong community support system may not find similar results if the same study is conducted. In terms of internal validity, the nature of cross-sectional studies prevents us from being able to control the exposure to independent variables. We cannot assume, for example, that those whom we found food insecure are otherwise similar to those who are not, as we have not looked into confounding factors. Other variables might co-vary with food insecurity and may be responsible for the relationships we found. In order to claim internal validity, we would have had to use multiple regression to test whether the relationships persisted even when accounting for other variables that might be confounding.

As such, we recommend that future research focus on creating a regression model using the variables found to be significant, such as family structure, citizenship status or reliance on government aid, to see which contribute most to the dependent variables (e.g. food insecurity and chronic usage) and to see if the those relationships persist. These findings could then be compared to census data for San Francisco in order to possibly pinpoint certain populations that are more at risk for food insecurity and can be targeted for assistance. These vulnerable populations could include immigrants, or non-citizens who due to stigma, language barriers,

complexity and fear of backlash, refuse to rely on government aid or food bank services to alleviate their food insecurity. In addition, further research into the results of this study is also warranted, as, contrary to much of the literature, we failed to find a relationship between ethnic group and food insecurity. Lastly, future research could be expanded to include kitchens and shelters in order to determine how these programs could be more effective in meeting the needs of food bank clientele.

## Appendix A

### Variables and operational measurements

Variables	Description of variables	Operational Measures	Level of Measurement
<b>Program type</b>	Whether the users are pantry users	58	nominal
<b>Food Insecurity</b>			
Food Bank usage	Generally describes how often people use a pantry	61B	ordinal, interval
Food Insecurity	Dependent variable 1: anyone who answered with a 1 or a 2 to questions 42, 44a or 49	42, 43, 44, 45, 46, 44A	nominal
Chronic Usage	Dependent variable 2: anyone who visited food bank services 6 months or more in the last 12 months	61B, 70	nominal
Emergency Usage	Dependent variable 3, anyone who visited food bank services less than 6 months in the last 12 months	61B, 70	nominal
<b>Geography</b>			
Residential District	13 neighborhoods + 1 (outside SF)	SF map, FB report	nominal
Distance	from program zip code to residential zip code (miles)	from program zip code to residential zip code (81A)	interval
Program zip code	zip code of the program	cover page of survey "zip code of program site"	nominal
<b>Family structure (sex, marital status, children)</b>			
Single status	Marital status is single	9	nominal
Marr + children	Married with children	9, pg 3 for children	nominal
Single mother	Single women with children	1, 9, pg 3 for children	nominal
Single men	Single men	1, 9	nominal
Single father	Single men with children	2, 9	nominal
Single women	Single women	2, 9	nominal
<b>Health</b>			
Poor health	Health condition is poor or not (response 5 on question 20)	20	nominal
Poor health status family	Household member's health condition is poor or not	21a	nominal
Workers comp	Response 7 on question 30	30	nominal

<b>Demographics</b>			
Sex	User is male or female	2	nominal
Age range of respondent	Interviewees' age range	3	ordinal
Elderly in household(>64 for all users)	Amongst all pantry users, how many are age greater than 64	3	nominal
Under 18 in household(for all users)	Amongst all pantry users, how many are with age less than 18	3	nominal
Ethnic group	Which ethnic group the interviewee belongs to: White, Black, Asian or Latino/Hispanic and others	11, 11a, 12	nominal
Hispanic origin	Whether the interviewee is of Hispanic origin or not	11	nominal
Monthly Income range	What was household's total income last month	29a	ordinal
Education level	The education level of the interviewee	10	ordinal
Employment status	The employment status of the interviewee	6	nominal
Citizenship	Whether the interviewee is a US citizen	5	nominal
Size of household	How many household members does interviewee have	1	interval
<b>Government assistance</b>			
Household applied for food stamps	Whether the interviewee or his/her household member has ever applied for food stamps	32	nominal
Household using food stamps now	Whether the interviewee or his/her household member receives food stamps now	33	nominal
Why not receive food stamps	Why the interviewee or his/her household member does not receive food stamps	35	nominal
Why not applied for food stamps	Why the interviewee or his/her household member not applied for food stamps	38	nominal
Household welfare assistance	What welfare assistance does the interviewee or his/her household member have	25e, f, g	nominal

## Appendix B

### Questions Used to Create Food Insecurity Index\*

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42. "The food that (I/we) bought just didn't last, and (I/we) didn't have money to get more." Was that often, sometimes, or never true for (you/your household) in the last 12 months?

[ 1 ] Often true

[ 2 ] Sometimes true

[ 3 ] Never true

[ D ] Don't know

[ R ] Refused

43. "(I/we) couldn't afford to eat balanced meals." Was that often, sometimes, or never true for (you/your household) in the last 12 months?

[ 1 ] Often true

[ 2 ] Sometimes true

[ 3 ] Never true

[ D ] Don't know

[ R ] Refused

44. In the last 12 months, since (date 12 months ago) 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?

[ 1 ] Yes

[ 2 ] No (GO TO 45)

[ D ] Don't know (GO TO 45)

[ R ] Refused (GO TO 45)

44a. 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

[ D ] Don't know

[ R ] Refused

45. In the last 12 months, did you ever eat less than you felt you should because there wasn't enough money to buy food?

[ 1 ] Yes

[ 2 ] No

[ D ] Don't know

[ R ] Refused

46. In the last 12 months, were you ever hungry but didn't eat because you couldn't afford enough food?

[ 1 ] Yes

[ 2 ] No

[ D ] Don't know

[ R ] Refused

\* Index following format specified in "Guide to Measuring Household Food Security, Revised 2000" (Bickel et al., 2000)

## Appendix C

### Frequency Distributions for Created Independent Variables

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#### Geography

Please see details in appendix D.

#### Pantry users

Variables	Characteristics	Frequency	Percentage (%)
<b><u>Family Structure</u></b>			
Single mom	Single mom	40	10.1
Single woman	Single woman	52	13.2
Single dad	Single dad	5	1.3
Single man	Single man	181	45.8
Married with children	Married with children	42	10.6
Married without children	Married without children	75	19
<b><u>Demographics</u></b>			
Age range of interviewee			
	<18	1	0.5
	18-29	6	3
	30-49	64	31.5
	50-64	56	27.6
	≥65	76	37.4
All users with age ≥ 65 (including household members)			
	age ≥ 65	113	55.7
	age < 65	90	44.3
All pantry users with age < 18			
	age ≥ 18	153	75.4
	age < 18	50	24.6
Ethnic group of interviewee			
	White	48	24.4
	Black	51	25.9
	Asian	52	26.4
	Hispanic/Latino	31	15.7

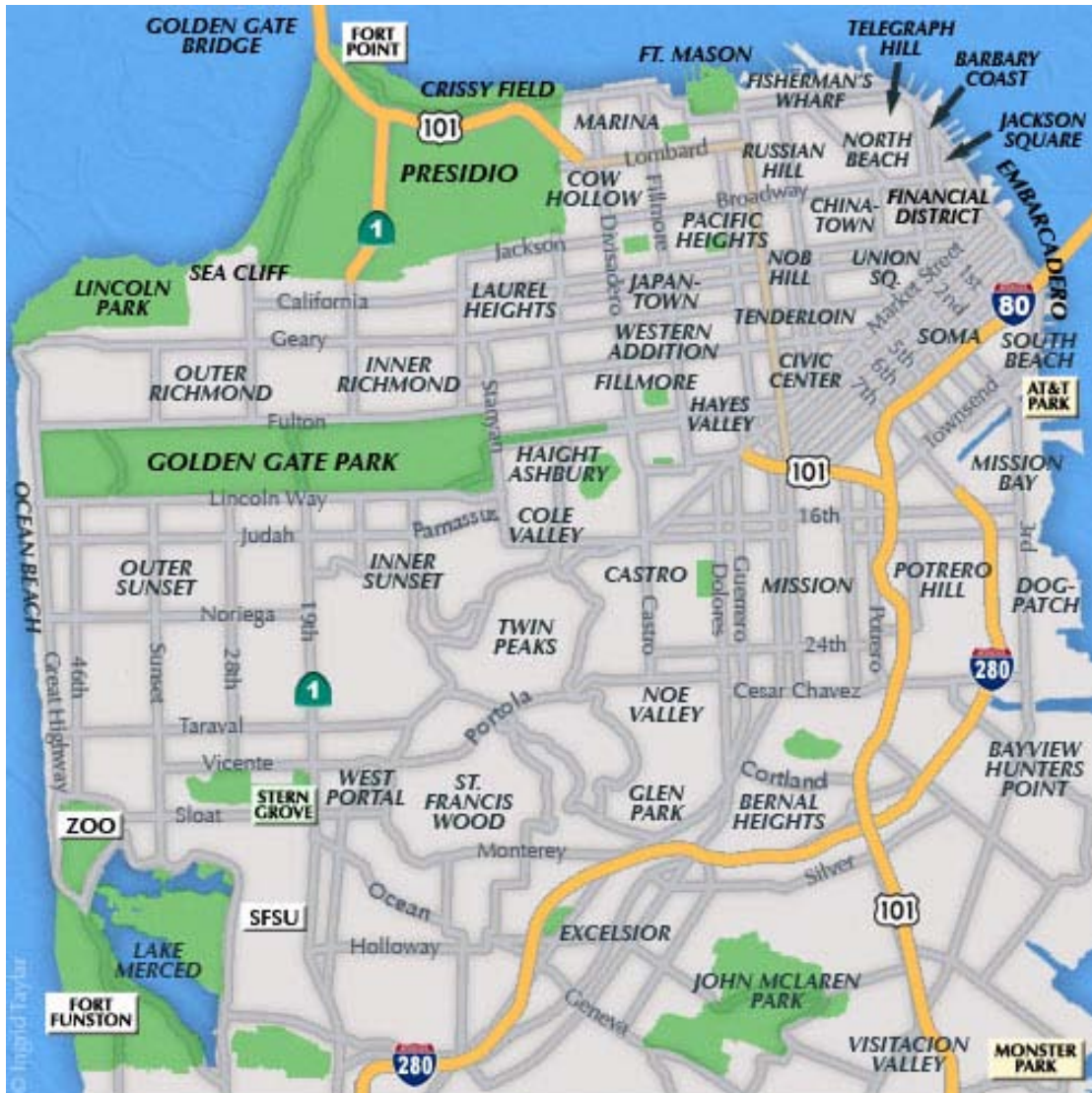
	Other	15	7.6
Household size of all users (including household members)			
	1	79	38.9
	2	56	27.6
	3≤size≤5	55	27.1
	size≥6	13	6.4

## Appendix D

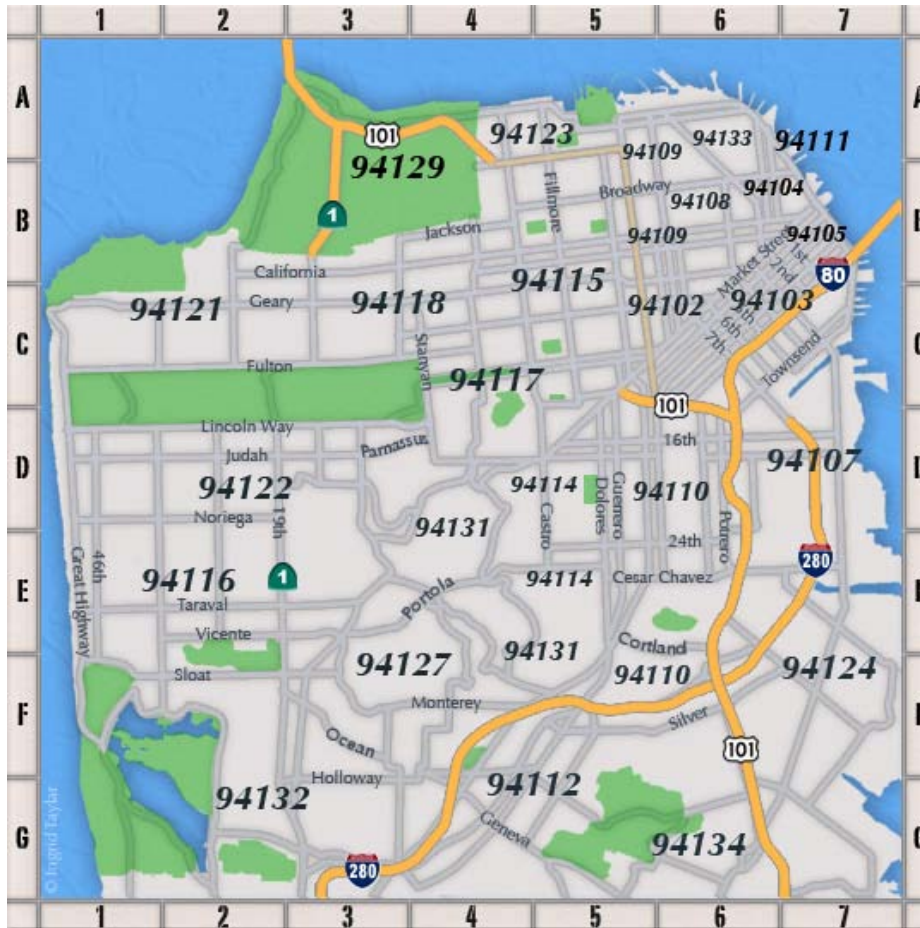
### Geography

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#### Map of San Francisco by District



## Map of San Francisco by Zip Code



For the variable “district,” zip codes were assigned to districts in the dataset using the same breakdown of districts that the SF Food Bank uses in its *A Look at Hunger in San Francisco – Neighborhood Profiles of Hunger and Food Programs* report, with the exception of the combined districts of Outer Mission, Excelsior and Bernal Heights, whose zip codes 94112 and 94110, overlap with the Oceanview/Merced/Ingleside (OMI) and Mission districts, respectively.

1 Bayview – 94124

2 Glenpark/Diamond Heights/Castro – 94114, 94131

3 Mission – 94110

4 North beach/Chinatown – 94133, 94108, 94109 (Nob/Russian Hill), 94123 (Marina, Cow Hollow)

5 Oceanview/Merced/Ingleside (OMI) – 94112, 94132

6 Potrero hill – 94107, 94155

7 Richmond – 94118, 94121

8 Soma (includes Treasure Island) – 94130, 94103, 94104, 94105

9 Sunset – 94122, 94116

10 Tenderloin – 94102, 94142 (PO Box only)

11 Visitacion Valley/Portola – 94134

12 Western Addition/Height – 94117, 94115

13 Outside of SF – 84403, 92102, 93401, 94014, 94063, 94401, 94601, 94604, 94609, 94704, 95490

Non-existent zip codes in the dataset: 94003, 90415

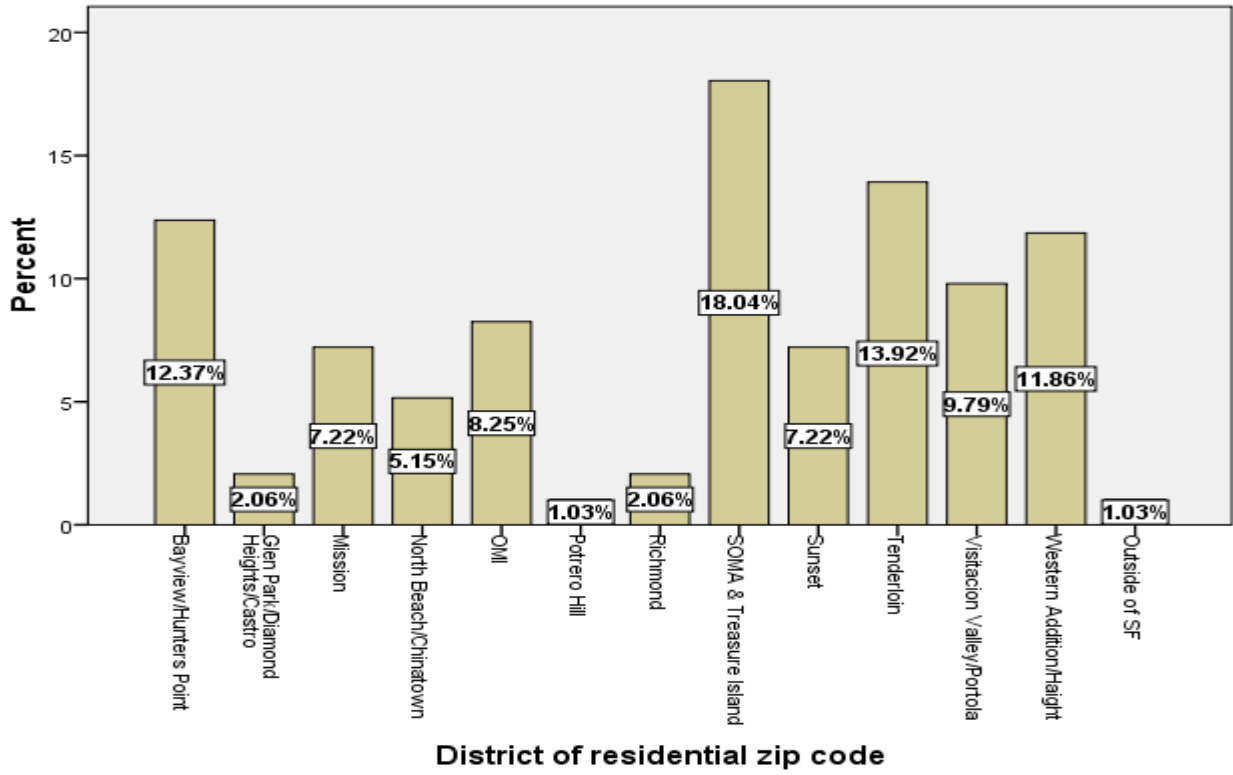
Distances between zip codes for the variable “distance” were calculated using Zip-code.com’s distance calculator at <http://www.zip-codes.com/zip-code/94109/zip-code-94109.asp>

The bivariate variable “povlev150” was coded using 150% of the 2005 poverty level rates based on the U.S. Department of Health and Human Services poverty guidelines.

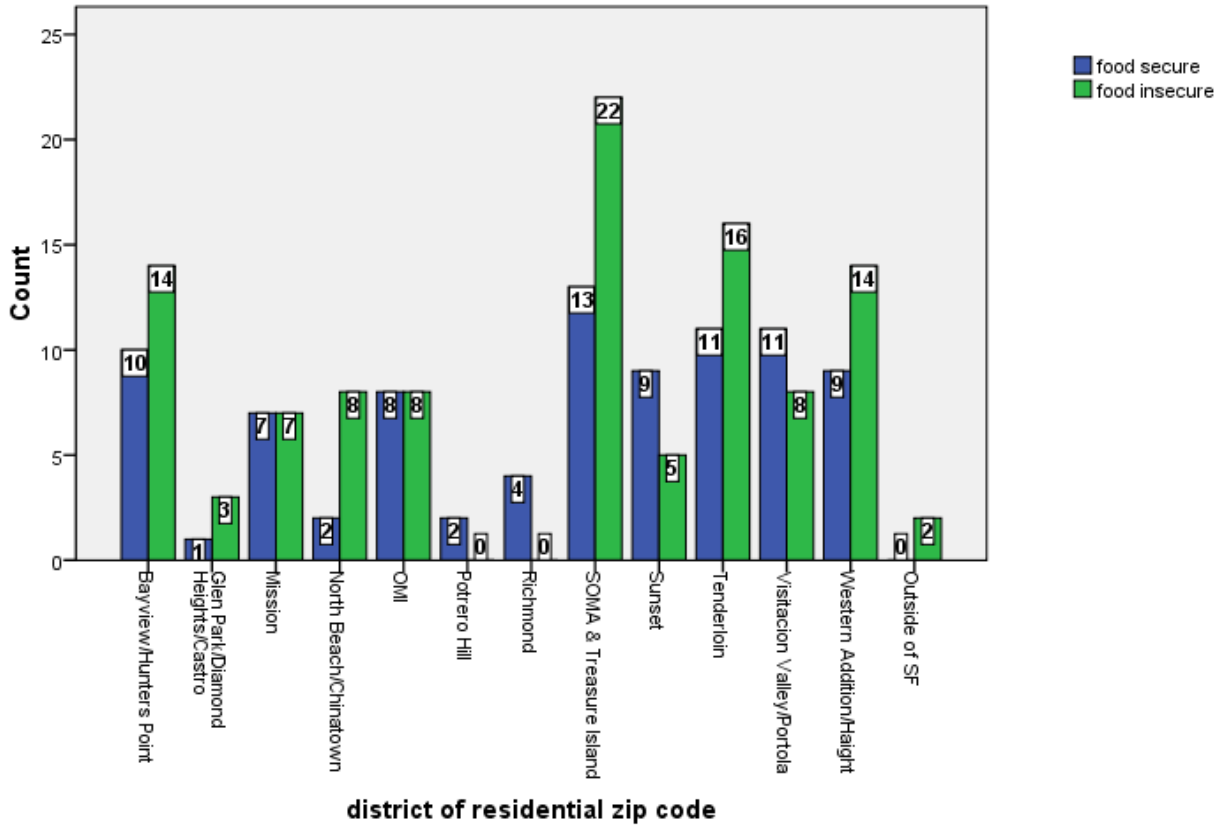
<http://aspe.hhs.gov/poverty/05poverty.shtml>

<b>Household Size</b>	<b>150% of 2005 poverty level</b>
1	14355
2	19245
3	24135
4	29025
5	33915
6	38805
7	43695
8	48585
For each additional person	+ 4890

### Pantry Clients by District

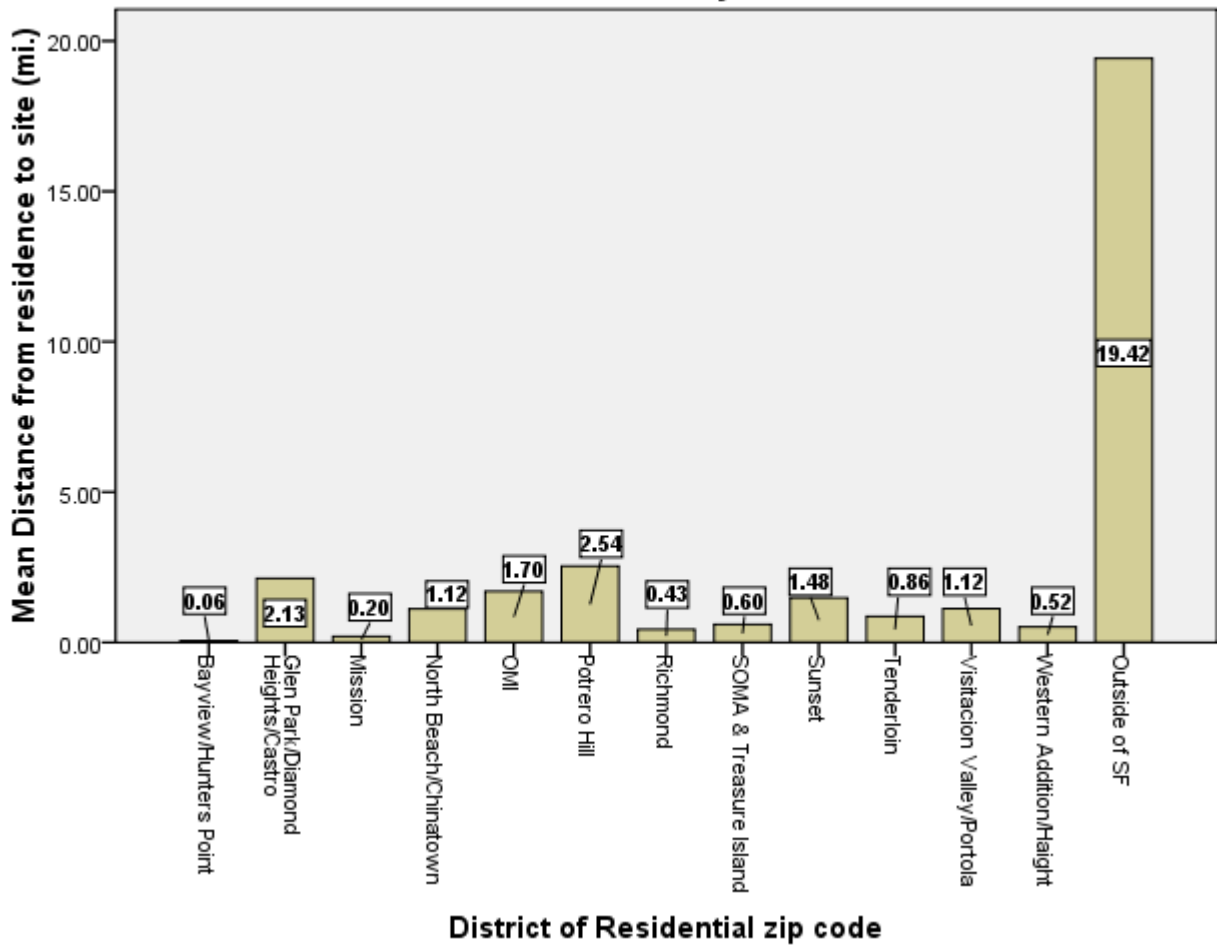


### Food Insecurity Amongst Pantry Clients by District



Note: 194 of 203 pantry clients reported their residential zip codes.

Mean Distance Traveled by District



## Appendix E

### Tests with Significant results

#### Chi-square tests

##### 1. Family structure vs. Food insecurity

**foodinsecure1 \* family structure collapsed - Cross tabulation**

			family structure collapsed more					
			Single parent	Single women	Single men	Married with children	Married without children	Total
foodinsecure1 not food insecure	Count		14	9	17	18	31	89
	Expected Count		14.9	12.2	24.4	14.9	22.6	89.0
food insecure	Count		19	18	37	15	19	108
	Expected Count		18.1	14.8	29.6	18.1	27.4	108.0
Total	Count		33	27	54	33	50	197
	Expected Count		33.0	27.0	54.0	33.0	50.0	197.0

#### Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	12.602 <sup>a</sup>	4	.013
Likelihood Ratio	12.752	4	.013
Linear-by-Linear Association	5.325	1	.021
N of Valid Cases	197		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 12.20.

##### 2. Poor Health of others vs. Food insecurity

**foodinsecure1 \* Health status of other household members Cross-tabulation**

Count

		Health status of other household members		Total
		Else	poor health	Else
foodinsecure1	.00	65	26	91
	1.00	95	16	111
Total		160	42	202

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	6.085 <sup>b</sup>	1	.014		
Continuity Correction <sup>a</sup>	5.256	1	.022		
Likelihood Ratio	6.079	1	.014		
Fisher's Exact Test				.015	.011
Linear-by-Linear Association	6.055	1	.014		
N of Valid Cases	202				

a. Computed only for a 2x2 table

b. 0 cells (.0%) have expected count less than 5. The minimum expected count is 18.92.

**3. The elderly vs. Food insecurity**

**Case Processing Summary**

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
foodinsecure1 * elders with age >= 65	203	100.0%	0	.0%	203	100.0%

**foodinsecure1 \* elders with age >= 65 Crosstabulation**

			elders with age >= 65		Total
			age<65	age >=65	
foodinsecure1	not food insecure	Count	38	54	92
		Expected Count	51.2	40.8	92.0
		% within elders with age >= 65	33.6%	60.0%	45.3%
	food insecure	Count	75	36	111
		Expected Count	61.8	49.2	111.0
		% within elders with age >= 65	66.4%	40.0%	54.7%
Total		Count	113	90	203
		Expected Count	113.0	90.0	203.0
		% within elders with age >= 65	100.0%	100.0%	100.0%

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	14.060 <sup>b</sup>	1	.000		
Continuity Correction <sup>a</sup>	13.016	1	.000		
Likelihood Ratio	14.185	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	13.991	1	.000		
N of Valid Cases	203				

a. Computed only for a 2x2 table

b. 0 cells (.0%) have expected count less than 5. The minimum expected count is 40.79.

**4. Citizenship vs. Food insecurity**

**Citizenship status p1 \* foodinsecure1 Cross tabulation**

			foodinsecure1		
			not food insecure	food insecure	Total
Citizenship status p1	no	Count	20	11	31
		Expected Count	13.8	17.2	31.0
	yes	Count	67	97	164
		Expected Count	73.2	90.8	164.0
Total		Count	87	108	195
		Expected Count	87.0	108.0	195.0

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	5.908 <sup>a</sup>	1	.015		
Continuity Correction <sup>b</sup>	4.989	1	.026		
Likelihood Ratio	5.904	1	.015		
Fisher's Exact Test				.018	.013
Linear-by-Linear Association	5.877	1	.015		
N of Valid Cases	195				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 13.83.

b. Computed only for a 2x2 table

## 5. Ever applied for food stamps vs. Food insecurity

Have you or anyone in your family applied for food stamps? \* foodinsecure1 Cross tabulation

			foodinsecure1		
			not food insecure	food insecure	Total
Have you or anyone in your family applied for food stamps?	no	Count	60	48	108
		Expected Count	48.7	59.3	108.0
	yes	Count	27	58	85
		Expected Count	38.3	46.7	85.0
	Total	Count	87	106	193
		Expected Count	87.0	106.0	193.0

### Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	10.874 <sup>a</sup>	1	.001	.001	.001
Continuity Correction <sup>b</sup>	9.934	1	.002		
Likelihood Ratio	11.033	1	.001		
Fisher's Exact Test					
Linear-by-Linear Association	10.818	1	.001		
N of Valid Cases	193				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 38.32.

b. Computed only for a 2x2 table

## 6. Receipt of general assistance vs. Food insecurity

Do you or anyone in your HH get money in the last month from general assistance? \* foodinsecure1 Cross tabulation

			foodinsecure1		
			not food insecure	food insecure	Total
Do you or anyone in your HH get money in the last month from general assistance?	no	Count	87	94	181
		Expected Count	82.4	98.6	181.0
	yes	Count	4	15	19
		Expected Count	8.6	10.4	19.0
	Total	Count	91	109	200
		Expected Count	91.0	109.0	200.0

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	5.060 <sup>a</sup>	1	.024		
Continuity Correction <sup>b</sup>	4.029	1	.045		
Likelihood Ratio	5.431	1	.020		
Fisher's Exact Test				.029	.020
Linear-by-Linear Association	5.035	1	.025		
N of Valid Cases	200				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 8.65.

b. Computed only for a 2x2 table

**7. Hispanic origin vs. Chronic food bank service usage**

**Are you Spanish, Latino, or of Hispanic descent or origin? \* chronicu\_collapsed Cross tabulation**

		chronicu_collapsed		
		0	1	Total
Are you Spanish, Latino, or of No Hispanic descent or origin?	Count	35	124	159
	Expected Count	41.0	118.0	159.0
Yes	Count	15	20	35
	Expected Count	9.0	26.0	35.0
Total	Count	50	144	194
	Expected Count	50.0	144.0	194.0

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	6.515 <sup>a</sup>	1	.011		
Continuity Correction <sup>b</sup>	5.471	1	.019		
Likelihood Ratio	6.010	1	.014		
Fisher's Exact Test				.018	.012
Linear-by-Linear Association	6.482	1	.011		
N of Valid Cases	194				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 9.02.

b. Computed only for a 2x2 table

## 8. WIC program participation vs. Chronic food bank service usage

Do you currently participate in The Women, Infants, and Children program called WIC? \*  
chronicu\_collapsed Cross tabulation

			chronicu_collapsed		
			0	1	Total
Do you currently participate in The Women, Infants, and Children program called WIC?	no	Count	44	146	190
		Expected Count	47.5	142.5	190.0
	yes	Count	6	4	10
		Expected Count	2.5	7.5	10.0
	Total	Count	50	150	200
		Expected Count	50.0	150.0	200.0

### Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	6.877 <sup>a</sup>	1	.009	.017	.017
Continuity Correction <sup>b</sup>	5.053	1	.025		
Likelihood Ratio	5.826	1	.016		
Fisher's Exact Test					
Linear-by-Linear Association	6.843	1	.009		
N of Valid Cases	200				

a. 1 cells (25.0%) have expected count less than 5. The minimum expected count is 2.50.

b. Computed only for a 2x2 table

## T-tests

### 1. Household Size vs. Food insecurity

#### Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Household size	Equal variances assumed	4.235	.041	1.894	201	.060	.43194	.22812	-.01786	.88175
	Equal variances not assumed			1.851	170.435	.066	.43194	.23334	-.02867	.89256

**2. T-test with hypothesis “mean of household size of insecure households is greater than two”.**

**One-Sample Statistics**

	N	Mean	Std. Deviation	Std. Error Mean
Household size	111	2.1441	1.42604	.13535

**One-Sample Test**

	Test Value = 2					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Household size	1.065	110	.289	.14414	-.1241	.4124

**ANOVA**

**F-test with hypothesis that the mean distance that pantry clients are traveling to obtain food is the same amongst all the districts. The results showed that clients from almost all districts were traveling a statistically different distance from all other districts to obtain food.**

<b>ANOVA</b>					
<b>Distance from residence to site in miles</b>					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	741.934	12	61.828	45.735	.000
Within Groups	235.227	174	1.352		
Total	977.161	186			

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