



Healthy Food Access in WIC Households

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Authors

This report was compiled by graduate students of the University of Washington Nutritional Science program as their final project for Nutrition 531 - Public Health Nutrition: Sarah Bailey, Elisabet Eppes, Emily Faerber, Kailee Farnum, Bridget Igoe, Jamie Kowatch, Richard Lau, Juli Louttit, Kelly Peterson, Katie Potestio, Sarah Shimer, Lola Stronach, Angela Tam, and Amanda Wood.

Introduction

Access to healthy food is a fundamental aspect of the Special Supplemental Nutrition Program for Women, Infants and Children (WIC). Healthy food is defined as food that provides the nutrients necessary to meet dietary guidelines and provide a balanced diet to support a healthy and active lifestyle (1). This report is the detailed compilation of results from an evaluation of healthy food access in Seattle-King County WIC families. This report intends to elucidate food security issues and how they relate to the WIC program, as well as to communicate the outcomes of the food access evaluation in WIC families. The main goals of this evaluation are to improve food security in WIC families while integrating WIC into initiatives that target the low-income areas of south King County.

The WIC program is funded by federal, state, and local governments and provides health screenings, nutrition and health counselling, breastfeeding promotion and support, referrals to other health care workers and social assistance programs, as well as vouchers for nutritious foods. In order to be eligible for WIC benefits, a family or individual must be determined as low income, a woman who is pregnant, breastfeeding (up to 12 months), post-partum (up to 6 months), an infant, a child under the age of five years, or have a medical or nutritional need. WIC participation has been shown to lead to longer pregnancies, a reduced infant mortality rate, increased breastfeeding rates, increased nutrient density in children's diet, and a savings in health care costs. WIC-approved foods support good nutrition by following the Dietary Guidelines for Americans, preventing malnutrition, and supporting cultural food choices. In 2009, Washington State saw 134 million WIC food dollars spent, of which 796,000 went to local farmers for fruits and vegetables (2).

WIC works diligently to ensure families have access to healthy foods. Access is defined by four major categories: economic access, physical access, nutritional access, and cultural access. The primary measure of economic access to food is food insecurity, defined as "limited or intermittent access to nutritionally adequate, safe and acceptable foods accessed in socially acceptable ways (3)". This concept of food insecurity can be further broken down into low food security and very low food security. Low food security refers to a situation where there are multiple food access problems but little, if any, reduction in food intake. Very low food security indicates eating patterns are disrupted and food intake is reduced. The determinants of food insecurity include high housing costs, high utility costs, lack of education, transportation costs, and health care costs. Food insecurity is more common in urban areas compared to rural areas, and it tends to be associated with an event that puts stress on the household budget (3). Households with children and households with a single

mother are at a greater risk for food insecurity (4, 5). Also, those households living near or below the federal poverty level experience higher rates of food insecurity (3).

In 2009, 14.7% of U.S. households were food insecure; this is the highest rate since the first national food insecurity survey in 1995 (6). In Washington State, approximately 15% of all households were food insecure and in King County 6% of households were food insecure (1, 7). These rates may be climbing due to the most recent recession and resultant high unemployment rates in the U.S. and in Washington State (1).

Food insecurity is assessed using an annual eighteen question survey tool developed by the U.S. Food Security Measurement Project and was validated in 2006 by the Institute of Medicine (8). The USDA Six-Item Food Security Scale was developed by researchers at the National Center for Health Statistics and includes the strongest subset of six questions from the national annual survey to assess food insecurity due to financial constraints (9).

Another way to measure food access and food security is to determine how many households participate in the USDA's Supplemental Nutrition Assistance Program (SNAP). This program is the USDA's largest nutrition assistance program. Participation in SNAP is dependent upon income at or below 130% of the poverty level, less than \$2,000 in countable resources (e.g. bank accounts), employment, and immigration status. In 2010, it had an average monthly participation of 40 million people at the national level and 1 million people in Washington State (10). Participation in SNAP follows trends in the poverty and unemployment rate, ensuring it is another good indicator of food security status (11).

The main determinants of physical access to healthy food include income level, distance to a healthy food provider, living in an ethnically dominated neighborhood, and living in a rural area (12-22). A study encompassing all U.S. food access surveys from 1985 – 2008 found that rural, ethnic minority, and low income households had the least access to stores with healthy foods (15). Low income and ethnic minority neighborhoods also have less supermarket chain stores (18, 23, 24). In Seattle-King County, however, studies have shown there are no geographically determined food deserts, defined as the inability to easily access sources of healthy food within a one mile radius (25). Yet, these measures do not take into account public transportation costs or the layout of the land, including steep hills and unsafe neighborhood walkways (26-28).

Despite the fact that there are no true food deserts in the Seattle-King County area, there are still other barriers to accessing nutrient dense foods, such as cultural barriers. One potential cultural barrier in the U.S. is the inconvenience of time-intensive food preparation that is generally

required for fresh healthy foods. A study comparing the food preferences of recent immigrant women with U.S.-born English speaking women found that the U.S.-born women were more concerned with the convenience of food than with the nutritional quality, and were more likely to purchase pre-made food products and fast food. This indicates that the current social norms in the U.S. trend toward unhealthy food purchasing habits (4).

There are also cultural barriers for first generation immigrants who struggle to adjust to the U.S. food culture that emphasizes this convenience food over fresh food (4). First-generation immigrants may have a more difficult time finding produce and healthy foods they are familiar with and represent their cultural backgrounds (29). Several studies have also demonstrated that the longer immigrant families live in the U.S., the more they assimilate to U.S. culture and consume popular unhealthy convenient foods (4, 29, 30). One recent study suggested that in low-income African-American neighborhoods, residents may have never had the chance to develop a taste for high quality produce because much of the produce available to low income residents is typically old and bruised. Ultimately, this can lead to decreased produce purchases and increased food insecurity (4, 29). This is important information to consider as many WIC clients are first and second generation immigrants, African-American, and/or have cultural food preferences (31).

In order to improve access to healthy foods and reduce food insecurity here in Seattle-King County, it needs to be determined how WIC families are currently using their WIC benefits, as well as where they presently stand with access to healthy food. In this report, three WIC clinics in Seattle-King County were surveyed - White Center, High Point, and Highline - to assess food insecurity and elucidate where WIC clients use their WIC benefits. The information obtained will build a clearer picture of healthy food access in WIC families that receive services from these clinics in the low-income areas of Seattle-King County. In addition, outcomes from this evaluation will provide valuable information to help plan future directions for local WIC programs.

Methods

Study Design

This is a descriptive, cross-sectional study designed to assess the current status of access to healthy foods and food insecurity in families who participate in WIC. In-person interviews were conducted by Nutritional Sciences graduate students from the University of Washington between January 13 and February 3, 2011 at three WIC clinics in Seattle-King County: White Center Public Health Center, High Point Medical Clinic, and Highline Medical Group (Appendix A). Project researchers obtained prior approval of all procedures by the Institutional Review Board of the University of Washington.

Key Informant Interview

Clients were given recruitment information sheets (Appendix B) at appointment check-in by the WIC staff. Once the client indicated to WIC staff a desire to participate, the graduate student researchers were introduced to the clients. Graduate students researchers verified that the subjects were WIC participants or parents of WIC participants and were at least 18 years of age and able to complete the survey in English. At this point, the graduate student read a consent statement and obtained oral consent from the subject before beginning the survey questions. Personal information was not collected, and all data collected remained anonymous and confidential. Study participants were given the opportunity to enter their name into a daily drawing for a \$25 Visa gift card.

Food Access and Security Survey

The first eight questions of the survey (Appendix C) were designed to gather qualitative data regarding WIC families' current state of access to healthy food by inquiring about their food shopping patterns, use of food assistance benefits, and access to culturally relevant foods. The next three questions were designed to determine quantitatively how many participants also used SNAP, and their perception of ease with which they could obtain nutritious and culturally relevant foods. These questions were derived from previous studies conducted by the University of Washington to determine food access. The final portion of the survey was the USDA Six-item Short Form of the Food Security Survey Module. This survey tool correctly classifies 97.7% of food insecure households and has high specificity and sensitivity with minimal bias for measuring food security, food insecurity, and hunger up through the intermediate range of severity (9). Data from the survey was

compiled and analyzed by a group of six student researchers and maintained on a secure server. Paper copies of the data collection forms were destroyed upon completion of data analysis.

Analysis of Key Informant Interview Data

Aggregate data was collected into a Microsoft Excel spreadsheet database and qualitative responses for each question were recorded and tallied. In total, 92 respondents completed the survey. However, for Question 6 and follow-up Question 7, there were only 84 responses included in the analysis. This information was analyzed to determine food-shopping patterns in this WIC sample. Food security status was determined by assigning food security scale scores based on responses to the USDA Six-Item Short Form of the Food Security Survey Module, according to methods outlined in the USDA Guide to Measuring Household Food Security (9).

Data Mapping

Participants provided information regarding the location of the main store used for grocery shopping as well as where WIC checks are typically used. This information was evaluated to determine the exact addresses of these grocery stores. This information was combined with data from the Washington State Geospatial Data Archive and the Washington State Department of Health website to create a map of the surveyed WIC clinics and all grocery stores reported (32, 33). Count data for each grocery store were integrated using ArcMap software (ArcGIS 9.3, ESRI, Inc.) so that stores with higher counts were represented on the map with larger dots. This provided a visual representation of which grocery stores were most frequented by the respondents and their locations relative to the WIC clinics.

Results

Household Food Security & SNAP Usage

Ninety-two WIC clients from the three Seattle WIC centers agreed to participate in our survey. The majority (65%) of these respondents were WIC clients at the White Center Public Health Center (Table 1).

Based on the USDA's Six-Item Short Form food security scale, 51% of all respondents were living in food insecure households (Table 1). Twenty-nine percent of all respondents were of low food security status and 22% of all respondents were of very low food security status (data not shown).

Table 1: Characteristics of survey respondents (n=92)

WIC Clinic	n (%)
White Center	60 (65%)
High Point	20 (22%)
Highline	12 (13%)
<i>Total, n, (%)</i>	92 (100%)
SNAP usage	n
White Center	43
High Point	16
Highline	5
<i>Total, n, (%)</i>	64 (70%)
Food Insecure*	n
White Center	31
High Point	9
Highline	7
<i>Total, n, (%)</i>	47 (51%)

*Food-insecure households include those with low food security and very low food security

Survey participants were asked whether anyone in their household received SNAP benefits in the last 12 months. Sixty-four of the 92 respondents (70%) reported SNAP usage in their households (Table 1). Table 2 displays reported SNAP usage among food-insecure respondents. In our sample, 38% of all respondents were food insecure and reported that someone in their household did utilize SNAP in the last 12 months. Conversely, 13% of all respondents were also food insecure, yet reported that no one in their household utilized SNAP in the last 12 months (Table 2). A total of 47 respondents were identified to be food insecure; of these, 25% (n=12) reported they did not access SNAP (Tables 1, 2).

Table 2: Food Insecurity* and SNAP access of survey respondents

	Not accessing SNAP, n	Food Insecure and not accessing SNAP, n	Food Insecure and accessing SNAP, n
White Center (n=60)	17	5	26
High Point (n=20)	4	3	6
Highline (n=12)	7	4	3
Total (n=92), n, %	28 (30%)	12 (13%)	35 (38%)

*Food-insecure households include those with low food security and very low food security

Grocery Store Utilization

Survey participants were asked to name the main store where their household purchases food. Respondents reported a total of thirteen food retailers as “main” stores; Safeway, Albertsons, and WinCo Foods were the most commonly reported. Specifically, 46% reported Safeway as their “main” store, compared to 15% who reported Albertsons, and 13% who reported WinCo Foods (Figure 1). Worth noting is that 22% of all respondents reported shopping at one Safeway location in particular - 9620 28th Ave SW, Seattle, WA 98126. This same Safeway location was also the most reported Safeway for WIC check redemption (Map 1).

Survey participants were also asked to name any other stores where their household purchases food. Like the “main” store question, Safeway, Albertsons, and WinCo Foods were the most commonly reported “other” stores, separate from the “main” store. Interestingly, 34 stores were reported as “other” stores compared to only 13 stores reported as “main” stores; however, respondents were allowed to name up to 5 “other” stores versus only one “main” store. “Other” stores also represented a more diverse range of food retailers (Figure 2). This survey population reported food shopping at a variety of stores within a wide geographic range (Map 1).

Map: “Main” grocery store where respondents (n=92) reported their household purchases food

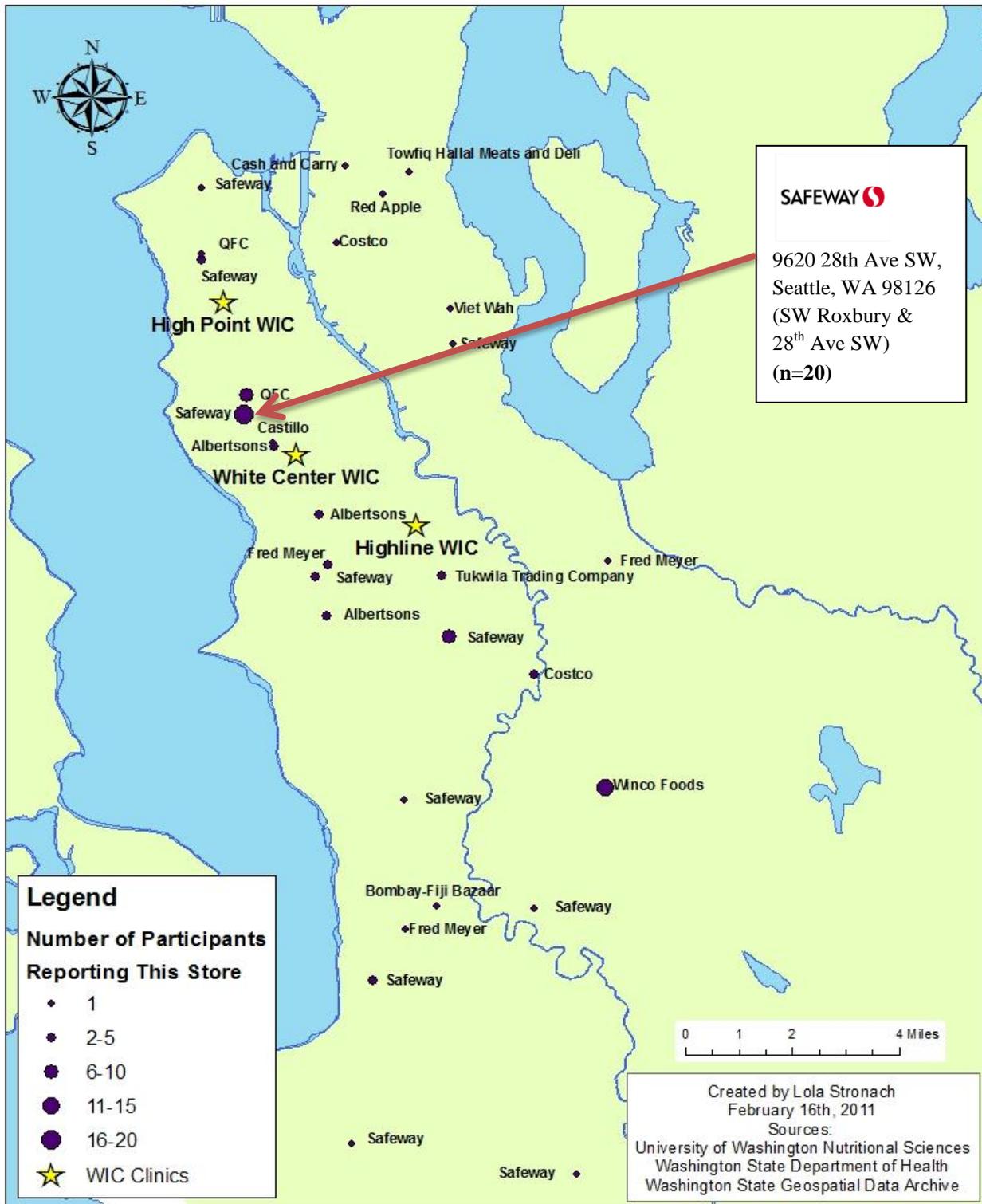
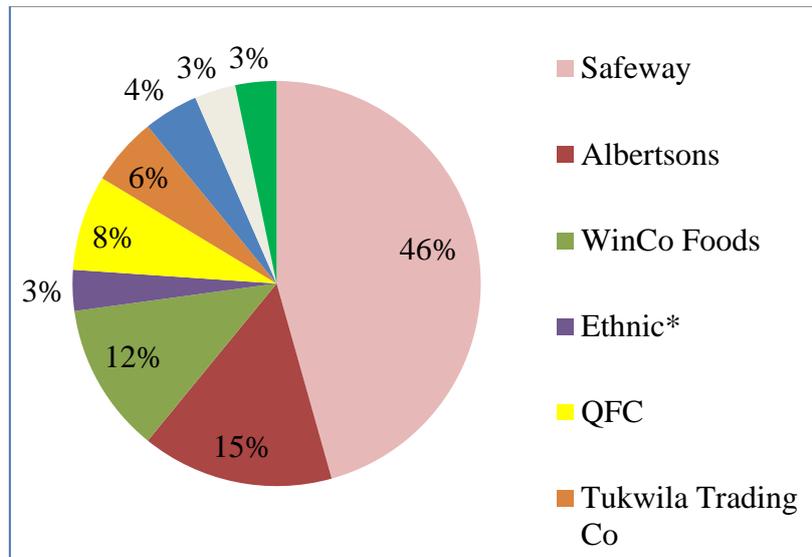
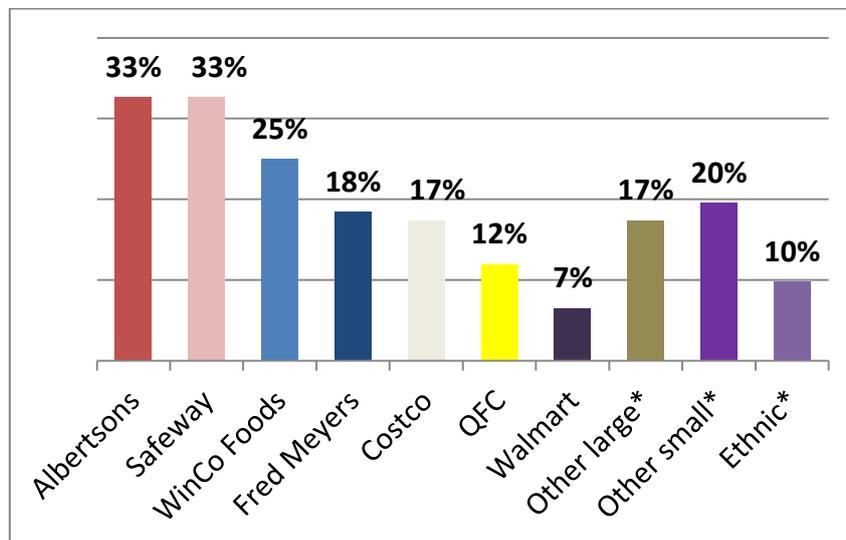


Figure 1: “Main” grocery stores where respondents (n=92) reported their household purchases food



***Ethnic:** Bombay-Fiji Bazaar, Castillo, Towfiq Halla Meat & Deli, Viet Wah; ***Other retailers:** Red Apple, Cash & Carry

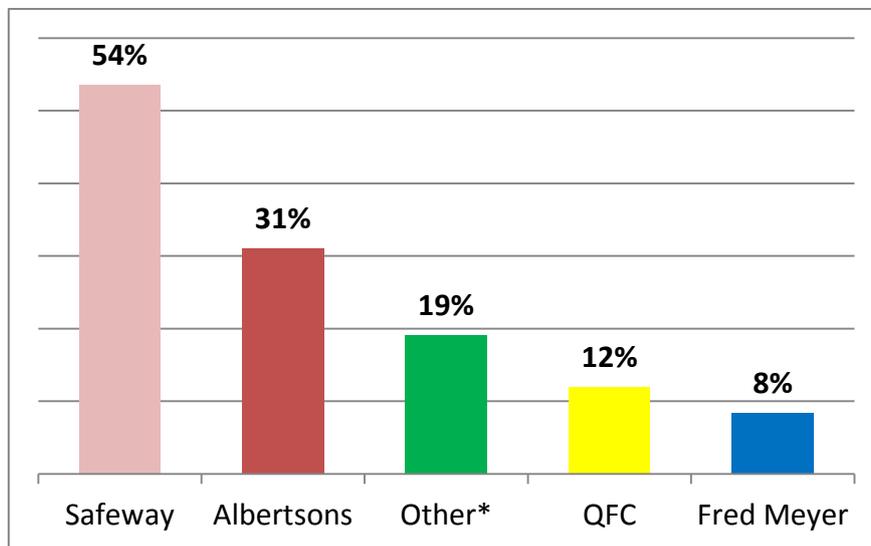
Figure 2: “Other” grocery stores where respondents (n=92) reported their household purchases food



***Other large retailers:** Trader Joes, Walgreens, Central Market, Red Apple, Seafood City, Sam’s Club, Target, Thriftway, Whole Foods; ***Other small retailers:** Saars, Tukwila Trading Co., Grocery Outlet, Larry in Tukwila, Sarah’s Market, Melina Market, High Point Mini Mart, Lam Seafood, Burney& Boys; ***Ethnic:** Viet Wah, Cambodian-Inco store, Asian supermarket, Somalian store, Africana store, Hing Long, Marwa, Castillo, 99 Ranch Market

Survey participants were also asked where they spend their WIC checks; Safeway was the most frequently reported store. Forty-three percent of respondents (n=84) reported redeeming some of their WIC check at Safeway, compared to 25% who reported spending their WIC check at Albertsons (Figure 3). As stated previously, the Safeway located specifically at 9620 28th Ave SW, Seattle, WA 98126 was the most reported Safeway for WIC check redemption. We also found that 59% of respondents reported spending at least some of their WIC check at the same store that they had previously deemed their “main” store.

Figure 3: Grocery stores where respondents (n=84) reported they redeem some of their WIC checks



***Other:** Burney & Boys, Target, Saars, Tukwila Trading Co., Thriftway, Sarah's Market, Walgreens, Central Market, WinCo, Towfiq, Walmart, Marwa, Somalian Store

The most commonly reported primary method of transportation to any store to purchase food was by car. The results for method of transportation were very similar for traveling to “main” stores or “other” stores, thus only travel to “main” store is presented here. Ninety-three percent of all 92 respondents reported they primarily travel by car to reach their “main” store. Eighty-four percent of all respondents reported they use their own car, while nine percent reported they travel in a friend’s and/or family car. Only five percent reported they primarily walk to the “main” store where they purchase food (data not shown).

Other Sources Where Respondents Obtain Food

Twenty-eight percent of all 92 respondents reported they obtained food from friends and family. A separate 28% reported they obtained food from farmers’ markets and 26% reported they obtained food from food banks.

Reported Ease or Difficulty in Providing Nutritious and Culturally Appropriate Foods

Eighty-five percent of all 92 respondents reported it is very easy or not too hard to provide their family with foods that are nutritious. Ninety-seven percent of all respondents reported it is very easy or not too hard to provide their family with foods that are right for their culture or religion.

Discussion

Household Food Security

According to survey results, 51% of respondents were living in food insecure households. The United States Department of Agriculture Economic Research Service determined that in 2006, the nationwide rate of food insecurity among households receiving WIC benefits in the previous 30 days was 37.2%, with 27.9% experiencing low food security and 9.3% experiencing very low food security (34). This is compared to our survey results of 51% food insecure with 29% experiencing low food security and 22% experiencing very low food security. Thus, the respondents who participated in this survey experienced food insecurity at a higher rate than the national average in 2006.

Food insecurity is associated with a number of adverse health effects related to inadequate intake of key nutrients (3) including iron deficiency, anemia, developmental risk factors, and increased hospitalizations (35). Further, food insecurity is associated with increased rates of overweight and obesity, depression, behavioral problems in preschool-aged children, and lower educational achievement in kindergartners (3, 35). WIC has been effective in improving health outcomes of children and decreasing health care costs (36), and has also been shown to reduce the risk of household food insecurity (35). Thus, WIC has great potential to influence the health and quality of life of its participants. However, the above average rate of food insecurity found among the surveyed respondents at the White Center, High Point, and Highline WIC clinics may be leading to a number of deleterious effects. It is important to note, though, that these above average findings may be due to the current economic downturn not reflected in the 2006 national data.

SNAP Usage

Of the total number of respondents surveyed, 70% reported living in a household in which an individual had received SNAP benefits in the last 12 months. In contrast, 25% of food insecure respondents (12 out of 47) reported that their household did not receive SNAP benefits in the previous 12 months. An important question to consider is why a sizable percentage of food insecure households may not be accessing SNAP benefits. The information gathered through this survey does not indicate whether respondents are eligible for SNAP benefits, so it is possible some of the food insecure respondents did not qualify. Households are financially eligible for WIC if the household income is less than or equal to 185% of the federal poverty level (36), whereas household income

must be less than or equal to 130% of the federal poverty level to meet SNAP financial income eligibility requirements (10). Studies have previously determined that individuals receiving WIC are more likely to use SNAP benefits/food stamps (37). However, there are several limitations of the SNAP benefit program and application process that may deter eligible households from applying. For example, the SNAP benefits application process can be burdensome, especially for individuals for whom English is a second language. Other reasons for eligible households not accessing SNAP benefits include not knowing they are eligible/lack of information, concern that it may affect citizenship, and concern over the stigma that is often associated with SNAP benefits (37).

It is important to consider other factors that might be contributing to the high rate of food insecurity among the respondents, as even some households that are accessing both WIC and SNAP benefits continue to be food insecure. Food prices vary by region across the U.S.; the highest prices are found in the Western U.S. and are approximately 11% higher than the national average. This is important to keep in mind, as SNAP bases their assistance levels on the average national food prices (38). This means the value of SNAP benefits for those living in the Western U.S. will purchase less than in other parts of the country.

Grocery Store Utilization

Safeway was the most commonly cited store by the respondents, not only as the “main” store where clients purchased food but also where respondents use WIC checks. With regard to WIC check redemption, over two-thirds of respondents report using some of their WIC checks at either Safeway or Albertsons (Figure 3). However, respondents identified a variety of stores where their household purchases some food, across a relatively large geographical distance. The geographical range of the stores accessed by the respondents suggests that the distance to a store is not a main determining factor. However, the surveys did not assess reasons for choosing a specific store or its location, so it is possible the respondents are in fact choosing retailers that are nearest to their home, work, childcare, or other locations to which the respondents are traveling.

Interestingly, 59% of the respondents reported that they redeem at least some of their WIC checks at the same store they also identified as the “main” store where their household purchases food. In this survey population, 3% reported an ethnic grocery store as their “main” store and 5% reported ethnic grocery stores as an “other” store where their household purchased food. Very few respondents reported redeeming WIC checks at ethnic grocery stores. Again, it is important to remember that these surveys were only conducted in English and therefore WIC clients who are not

able to communicate in English are not represented in these results. The exemption of non-English speaking clients likely minimizes WIC clients' use of ethnic grocery stores seen in these results.

While this survey did identify trends in food purchasing—specifically the preference of many clients for Safeway, Albertsons, and WinCo Foods—the results also indicate that the composition of stores where survey participants chose to redeem their WIC checks differed markedly from the composition of stores identified as “main” stores where their household purchased food. So, 59% of respondents report redeeming WIC checks at the same store identified as their household's main source of purchased food, but 41% choose to redeem WIC checks at a store other than their identified “main” store. Specifically, WinCo Foods, Tukwila Trading Company, Costco, and ethnic stores were more infrequently cited as stores where respondents used their WIC checks. Participants were not asked to identify reasons for choosing specific stores to redeem WIC checks; therefore, further sampling of diverse WIC populations would be beneficial in identifying factors that affect WIC clients' choice of stores to use WIC checks.

The survey results also showed that 84% of respondents used their own car to shop for groceries. While this result would have interesting policy implications, we do not believe it can be generalized beyond our surveyed population. We surveyed WIC participants and it is possible that WIC participants are more likely than WIC non-participants in the same area to have cars. Studies have shown that lack of access to transportation is a barrier to receiving SNAP benefits and it seems reasonable that lack of transportation may also be a barrier to receiving WIC benefits (39, 40). This survey result might also be biased by the fact that we only surveyed English speaking WIC participants and had a small sample size (n=92) that limited the generalizability of the results. Additionally, the fact that most of the respondents had their own car may have affected the geographic range of stores indicated in our results. WIC non-participants in the community may be less likely to own cars and therefore not travel as far to shop for groceries. Further research is necessary to explore this issue because the behavior of WIC non-participants is beyond the scope of our study.

Other Sources Where Respondents Obtain Food

In addition to also using SNAP benefits, more than 25% of WIC households reported receiving food from friends and family, a farmers' market, and/or food bank during the past year. The fact that the households used multiple forms of assistance may be at least in part because of regional price disparities that increase the cost of food in the Western U.S., as mentioned previously (41). This may

lead to a greater proportion of people in the Western U.S. requiring more than one form of food assistance to feed their households. The fact that many families rely on forms of assistance beyond SNAP and WIC makes it clear that existing amounts of assistance are insufficient to fully resolve food insecurity. This finding also highlights the importance of food banks as partners with governmental food assistance programs in providing nutritious foods. An opportunity exists for partnering with food banks to provide nutrition education as well as maximizing the nutrient density of participants' diets.

Reported Ease or Difficulty in Providing Nutritious and Culturally Appropriate Foods

Although our survey was unable to determine whether WIC households were using their WIC checks at farmers' markets, 28% of the respondents reported getting food from a farmers' market. This shows that WIC participants are at least interested in receiving food from this type of source, and programs to encourage this practice should be preserved or expanded in order to increase fruit and vegetable intake and stimulate the local economy. Farmers' markets are especially important in low-income neighborhoods where the quality and variety of foods available at retail outlets is likely to be diminished (26, 42-44). Farmers' markets offer another opportunity for a partnership that strengthens the community and improves access to fresh and nutritious foods.

The majority of those surveyed (85%) responded that it was very easy or not too hard to provide nutritious food to their families. However, because nutritious food was not defined in this question, it is unclear what these results mean. Further research on what the respondents perceived as nutritious and whether the participants are actually able to provide their families with a varied diet that meets the USDA Dietary Guidelines for Americans is necessary to fully understand these results.

Finally, the majority of those surveyed (97%) responded that it was very easy or not too hard to provide their families with food that was culturally appropriate. It is important to note the role farmers' markets may have had in providing healthy and culturally appropriate foods to the respondents. Because immigrants have a greater commitment to food preparation, they may be more likely to buy fresh produce and be attracted to the variety available at farmers' markets (4). However, we must remember that this result was most likely significantly biased by the fact we only surveyed English-speaking participants. Both of these results are surprising because they are counter to existing studies in the area that show that access to healthy foods is lower in low-income neighborhoods (23, 24) and that culturally appropriate foods are more expensive than more widely

consumed foods (30). Our results may differ because of the efforts of existing interventions in the neighborhood such as the WIC Farmer’s Market Nutrition Program, the King County Food and Fitness Initiative, Food Empowerment Education and Sustainability Team (FEEST), Communities Putting Prevention to Work: Healthy Foods Here Program (CPPW), White Center Community Development Association and the Delridge Neighborhood Development Association, (45-51).

Limitations

This study was limited by the fact that we only surveyed participants who spoke English. Only surveying the English-speaking participants makes our sample not representative of all WIC participants or the neighborhoods in which the WIC clinics reside. Although this was probably influential in all of our results, this may have caused us to miss minority groups that are known to be at a greater risk of food insecurity (7) and may have been particularly influential in the results regarding culturally appropriate food as well as the rate of inclusion of ethnic grocery stores. It is also important to note that the names of WIC clients who participated in the survey were entered in a drawing for a \$25 gift card; food insecure individuals may have been more inclined to participate in the survey, given the prospect of winning the gift card. This bias may have potentially exaggerated the rate of food insecurity among WIC clients. Additionally, we are unable to characterize people who live in the White Center, High Point, and Highline neighborhoods, but do not participate in WIC.

As previously stated, it is possible that participation in WIC makes a person more likely to own a car. This would have affected the geographic range of the stores represented in the study, as well as the ease with which participants were able to provide their families with nutritional and culturally appropriate foods because they would be able to travel farther for such foods. Also, though the results were not shown, it is difficult to know what information can be inferred from the store-type question (e.g. supermarket, medium size grocery, ethnic grocery, etc.) because the store-types were not defined in the survey. The results of the current question show only the respondents’ perception of the type of store in which they shop (Appendix C and D). Similarly, our results regarding the ability of families to obtain nutritious foods were limited by the lack of definition of nutritious foods. While the respondents perceived a high ability to provide nutritious foods, further studies would be improved by defining this term.

As with similar studies, our results may also be limited by investigator and response bias. Investigator bias may have been introduced as student surveyors may not have been appropriately trained on how to administer the survey correctly. Our small sample size (n=92) further limits the

generalizability of our results. Additional research is needed to understand the habits of all residents of the neighborhood, including those who do not participate in WIC and non-English speakers.

Recommendations

Based upon both the background of our research and the findings from the survey, we have arrived at seven recommendations to improve food security in the neighborhoods of White Center, High Point, and Highline. The need to improve food insecurity in these neighborhoods is corroborated by the current level of food insecurity ascertained by our study (51% of all respondents were living in food-insecure households). These recommendations include: 1) SNAP usage be increased; 2) Communication between high-use food stores and WIC clinics be increased; 3) Each WIC clinic should be associated with a nearby food bank; 4) Access to healthy foods from food banks, corner stores, and farmers' markets be improved; 5) Nutrition education to WIC clients should be improved; 6) More research be conducted in this line of study; and 7) Ongoing monitoring of WIC client shopping behaviors and food insecurity should be conducted.

SNAP Usage

Usage of SNAP among WIC client families is fairly high - about 70% of respondents said they or someone in their household had used SNAP in the past 12 months. However, 25% of respondents who were food insecure were not accessing SNAP. These individuals may have been rendered food insecure by not accessing SNAP benefits, despite being more than likely eligible. SNAP has been shown to be effective at reducing food insecurity (52). Therefore, our first recommendation is to strengthen programs already in place that increase SNAP usage among this population. One possible strategy is for WIC clinic staff to increase their promotion of the use of SNAP through posters, brochures, and consultations with clients. Two possible barriers to this promotion include problems with language and literacy. Thus, accessibility of SNAP may be further improved by streamlining the application process to make it easier to apply for individuals who are not literate or whose first language is not English.

Increased Communication between WIC and Food Stores

Our second recommendation is to increase communication between high-WIC-use food stores and WIC clinics. The stores where people use their WIC checks the most, Safeway and Albertsons, should be engaged in discussions with local WIC clinics in order to better promote healthy foods in these stores that can be purchased with WIC checks. Some methods of promotion include better labeling

of nutritious, WIC-approved products, and offering “frequent-user” cards that can be redeemed for a nutritious store item after a certain number of WIC-approved purchases. This increased communication will be beneficial for both parties, as WIC clinics will be better able to serve their clientele by improving access to healthy foods in these stores and the stores will be receiving more business from WIC clients.

Associating WIC Clinics with Food Banks

The White Center WIC clinic is located just next door to the White Center Food Bank. Our third recommendation is that this model be emulated in the High Point and Highline neighborhoods. The convenience of having a food bank located so close to a WIC clinic would most likely increase the accessibility of healthy food bank foods for WIC clients.

Improving Access to Healthy Foods in Food Banks, Corner Stores, and Farmer’s Markets

Food banks represent a food source for 28% of survey respondents; as such, the quality of foods offered in food banks is of utmost importance. The White Center Community Development Association is already involved in stocking local food banks with healthy foods, including fresh produce. This undertaking should be emulated in the Highline and High Point neighborhoods (50).

Corner stores and ethnic grocers accounted for about 15% of “other” food stores, and so should also be providing a greater amount and variety of fruits, vegetables, and other healthy foods. Several such initiatives already exist. The Healthy Corner Stores initiative (part of the King County Food and Fitness Initiative) as well as CPPW’s Healthy Food Economic Incentive Program (“Healthy Foods Here”) are challenging store owners to change their business model in order to promote healthier choices, as well as attempting to increase the number of corner stores that are able to accept WIC checks by providing assistance to small business owners (45, 46, 48). The initial results, particularly from the Healthy Corner Stores Initiative, seem to be positive (48). These programs ought to be supported and promoted as part of an overall plan to reduce food insecurity. Programs such as the White Center Community Development Association’s Fresh Marketplace Initiative, which provides media outlets and assistance for healthy foods, should also be promoted.

In addition to food banks and corner stores, farmers’ markets are also crucial places to increase access to healthy foods, particularly when one considers that 28% of survey respondents reported procuring food from farmers’ markets in the past year. One proposed policy that should be

promoted stipulates that SNAP EBT dollars should count double at farmers' markets. This piece of legislation is already being considered for the next U.S. Farm Bill (53). The WIC Farmers' Market Nutrition Program, which is already available at many markets across the state of Washington, should be promoted as well.

Improving Nutrition Education among WIC Clients

Our fifth recommendation is for a change in educational techniques when it comes to good nutrition. One relatively new and innovative educational strategy that we hope can be implemented throughout these neighborhoods is the idea of community kitchens. We believe that the absolute number of community kitchens should be increased, as well as their funding. Current community kitchen programs, including Delridge's SOUL Community Kitchens, have already proven to be effective in South King County (51). These kitchens would host cooking classes and recipe exchanges, use fresh foods and culturally appropriate recipes, and provide samples of these foods to participants. Once these kitchens become more widely available in White Center, High Point, and Highline, WIC clinics should become involved in disseminating information about these kitchens to WIC clients via brochures or some other information medium. A more specific community kitchen program that targets youth and uses fresh local produce should also be tested in the neighborhoods of White Center, High Point, and Highline. The FEEST Program, also located in Delridge, could serve as a prototype for the kinds of programs that would be effective at not only improving access to healthy food, but also developing communities and supporting civic engagement (45, 46).

More Research Needed

Our sixth recommendation is for more research to be conducted in the areas of healthy food access and food security, particularly for the sections of South King County that were the focus of this study. We have three main research areas we would like to see explored.

First, we hope to see research further exploring WIC clients' shopping behaviors. Rich areas of study in shopping behavior include: 1) modes of transportation (e.g., why aren't WIC clients taking buses? Is this low usage due to inadequate bus infrastructure? Or is it due to a preference for the convenience of cars?), and 2) food store choice (e.g., why are people choosing the stores that they are? Why don't the primary grocery store and the grocery store where WIC checks are used match up for each individual?).

Second, we hope that future studies will seek to establish the impact of zoning on food access in these communities.

Third and finally, we would like to see more studies devoted to determining the connection between use of farmers' markets and the WIC farmers' market voucher program (e.g., is farmers' market use limited to the spending of WIC vouchers in the summertime?).

If these recommendations are heeded by the stakeholders in this issue (including policy-makers, city planners, researchers, community organizations, local institutions, educators, public health professionals, local store owners, farmers', and food bank operators), food insecurity in the neighborhoods of White Center, High Point, and Highline will be greatly reduced.

Ongoing Monitoring of WIC Client Behaviors and Food Security in this Population

Our seventh and final recommendation is for WIC client behaviors and food security levels to be monitored periodically in years to come.

Appendix A: WIC Clinics

White Center Public Health Center

10821 8th Ave SW
Seattle Wa, 98146
Phone: 206-296-4646
Fax: 206-296-4595

Highline Medical Group

13030 Military Rd S, Suite 108
Tukwila Wa, 98168
Phone: 206-242-0885
Fax: 206-242-8558

High Point Medical Clinic

6020 35th Ave SW
Seattle Wa, 98126
Phone: 206-461 6949

Appendix B: The Recruitment Flyer

WIC Family Food Access Project



Students from the University of Washington want to talk with WIC families about:

- Where your family shops for food
- How your family uses food assistance programs
- If your family has enough food

The survey will take about 5 or 10 minutes.

If you complete the survey you can enter your name in a drawing for a \$25 gift card.



Please let WIC staff know if you would like to talk with the students

Appendix C: The Questionnaire

Oral Consent

I'm a graduate student at the University of Washington, and I'd like to ask you a few survey questions. First, I'd like to give you the information you need to decide if you want to take the survey. The survey will take about 5 to 10 minutes. This survey will be used to provide WIC staff and other Seattle-King County Public Health staff with information about access to food in WIC families. You do not have to complete this survey if you don't want to. Some questions may make you uncomfortable and you can tell us that you don't want to answer these questions. You will continue to get WIC checks if you do not take the survey. We will not ask you for your name or other information that could identify you. We will take our completed surveys back to the university and destroy your survey results once we have put them in a computer. The results of the survey will be confidential, and the reports will not provide information about any one person. You will not benefit directly from completing the survey, but if changes are made as a result of this survey, some parents may find it easier to feed their families.

After you fill out the survey, the WIC staff will put your name in a drawing for a \$25.00 Safeway gift card. We will have a drawing at the end of the day for everybody who took a survey here at your WIC clinic today. To be part of the drawing, you'll need to fill out a slip of paper with your name and address so we can mail you the card. Your name and address will be put in a box for the drawing and will not be attached to your survey.

1. What is the name of the main store where your household purchases most of your foods to eat?

- Albertsons
- Central Market
- Costco
- Fred Meyers
- Grocery Outlet
- PCC
- QFC
- Red Apple
- Safeway
- Top Foods
- Trader Joes
- WinCo Foods
- Ranch
- Other Specify _____
- Don't know or refused

2. Would you consider this store to be:

- corner store or convenience store
- small neighborhood grocery store
- ethnic grocery store (for example halal, or Asian market)
- medium size grocery store
- supermarket
- large warehouse store
- drug store
- Other _____
- Don't know or refused

3. Can you please tell me what street or intersection this store is on or show me on this map about where this store is?

(Administrator has map of south King County and writes approximate cross streets based on where client points)

- Don't know or refused

4. What is your PRIMARY method of getting to and from this store? (Please check one)

- Bus/Access Van
- Own Car
- Ride with Friends
- Walk
- Bike
- Taxi
- Other _____
- Don't know or refused

**5. What are the names of other stores where your household purchases foods to eat?
What kinds of stores do you consider these stores to be? How do you get there?**

Store	Kind of Store	Transportation
	a. corner store or convenience store b. small neighborhood grocery store c. ethnic grocery store (for example halal, or Asian market) d. medium size grocery store e. supermarket f. large warehouse store g. drug store h. Other _____	a. Bus/Access Van b. Own Car c. Ride with Friends d. Walk e. Bike f. Taxi g. Other _____
<input type="checkbox"/> Albertsons		
<input type="checkbox"/> Central Market		
<input type="checkbox"/> Costco		
<input type="checkbox"/> Fred Meyers		
<input type="checkbox"/> Grocery Outlet		
<input type="checkbox"/> PCC		
<input type="checkbox"/> QFC		
<input type="checkbox"/> Rad Apple		
<input type="checkbox"/> Safeway		
<input type="checkbox"/> Top Foods		
<input type="checkbox"/> Trader Joes		
<input type="checkbox"/> WinCo Foods		
<input type="checkbox"/> Ranch		
Other Specify _____ _____		
<input type="checkbox"/> Don't know or refused		

6. What is the name of the store where you use your WIC checks _____?

7. Can you please tell me what street or intersection this store is on or show me on this map about where this store is?

8. Please check any other places where your household got food in the past 12 months:

- Food Bank or Food Pantry, please list: _____
- Garden, please list _____
- Farmers Market, please list _____
- Friends and Family
- Other: please list _____
- Don't know or refused

9. IN THE PAST 12 MONTHS, did anyone in this household receive SNAP (Food Stamps or a Food Stamp benefit card)?

- Yes
- No
- Don't know or refused

10. How easy or hard is it for you to provide your family with foods that are nutritious?

- Very easy
- Not too hard
- Hard
- Don't know or refused

11. How easy is it for you to provide your family with foods that are right for your culture or religion?

- Very easy
- Not too hard
- Hard
- Don't know or refused

HH3. I'm going to read you several statements that people have made about their food situation. For these statements, please tell me whether the statement was often true, sometimes true, or never true for (you/your household) in the last 12 months—that is, since last (name of current month).

The first statement is, "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?

- Often true
- Sometimes true
- Never true
- DK or Refused

HH4. "(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?

- Often true
- Sometimes true
- Never true
- DK or Refused

AD1. 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?

- Yes
- No (Skip AD1a)
- DK (Skip AD1a)

AD1a. [IF YES ABOVE, ASK] How often did this happen—almost every month, some months but not every month, or in only 1 or 2 months?

- Almost every month
- Some months but not every month
- Only 1 or 2 months
- DK

AD2. In the last 12 months, did you ever eat less than you felt you should because there wasn't enough money for food?

- Yes
- No
- DK

AD3. In the last 12 months, were you every hungry but didn't eat because there wasn't enough money for food?

- Yes
- No
- DK

Appendix D: Complete Results

1. Primary Grocery Store

Store	White Center	High Point	Highline	Total
Albertsons	12	2	0	14
Bombay- Fiji	1	0	0	1
Cash and Carry	0	1	0	1
Castillo	1	0	0	1
Costco	2	1	0	3
Fred Meyers	3	0	1	4
QFC	4	2	0	6
Red Apple	0	0	1	1
Safeway	27	12	4	43
Towfiq	0	1	0	1
Tukwila Trading Company	1	0	4	5
Viet Wah	1	0	0	1
Winco Foods	8	1	2	11

2. Primary Store Type

Store	White Center	High Point	Highline	Total
Corner/Convenience	2	0	0	2
Small Neighborhood Grocery	6	0	3	9
Ethnic Grocery	1	1	2	4
Medium Size Grocery	14	3	3	20
Supermarket	31	10	2	43
Large Warehouse	6	3	2	11
Drug	0	0	0	0
Don't Know/Refused	0	2	0	2

3. Primary Store Address

Store	Address	White Center	High Point	Highline	Total
Albertsons	15840 1ST AVE S	4	1	0	5
Albertsons	12725 1ST AVE S	4	0	0	4
Albertsons	10616 16TH AVE SW	4	1	0	5
Bombay-Fiji	24700 36TH AVE S	1	0	0	1
Cash & Carry	1760 4TH AVE S	0	1	0	1
Castillo	10438 16TH AVE SW	1	0	0	1
Costco	4401 4TH AVE S	1	0	0	1
Costco	400 COSTCO DR	1	1	0	2
Fred Meyer	25250 PACIFIC HWY S	1	0	0	1
Fred Meyer	14300 1ST AVE S	2	0	0	2

Fred Meyer	365 RENTON CENTER WAY SW	0	0	1	1
QFC	4550 42ND AVE SW	1	0	0	1
QFC	2500 SW BARTON ST	3	3	0	6
Red Apple	2701 BEACON AVE S	0	0	1	1
Safeway	1207 S 320TH ST	1	0	0	1
Safeway	101 AUBURN WAY S	1	0	0	1
Safeway	210 WASHINGTON AVE S	1	0	0	1
Safeway	4754 42ND AVE SW	3	1	0	4
Safeway	138 SW 148TH ST	3	1	0	4
Safeway	4011 S 164TH ST	3	1	3	7
Safeway	9620 28TH AVE SW	12	8	0	20
Safeway	2622 CALIFORNIA AVE SW	0	1	0	1
Safeway	21401 PACIFIC HWY S	0	0	1	1
Safeway	27035 PACIFIC HWY S	2	0	0	2
Safeway	3900 S OTHELLO ST	1	0	0	1
Towfiq Hallal	2000 23RD AVE S	0	1	0	1
Tukwila Trading Co	3725 S 144TH ST	1	0	4	5
Viet Wah	6040 MARTIN LUTHER KING JR WAY S	1	0	0	1
Winco Foods	21100 91ST PL S	8	1	2	11

4. Primary Store Access

Access	White Center	High Point	Highline	Total
Bus/Access Van	1	1	0	2
Own Car	48	18	11	77
Ride with Friends	7	1	0	8
Walk	4	0	1	5
Bike	0	0	0	0
Taxi	0	0	0	0
Don't Know/Refused	0	0	0	0

5a. Secondary Stores

Store	White Center	High Point	Highline	Total
Africana Store	1	0	0	1
Albertsons	27	2	1	30
Burney and Boys	1	0	0	1
Cambodian-Inco Store	0	1	0	1
Castillo	1	0	0	1
Central Market	1	0	0	1
Costco	10	4	2	16
Fred Meyers	9	7	1	17
Hing Long	1	0	0	1
High Point Mini-Mart	0	1	0	1
Grocery Outlet	2	0	0	2

Larry's Market	0	1	0	1
Lam Seafood	1	0	0	1
Marwa	1	0	0	1
Melina Market	0	1	0	1
QFC	7	4	0	11
Ranch	1	1	1	3
Red Apple	2	0	0	2
Saars	3	0	0	3
Safeway	19	7	4	30
Sam's Club	0	2	0	2
Sarah's Marketplace	1	0	0	1
Seafood City	0	0	1	1
Somalian Store	0	2	0	2
Target	1	0	0	1
Thriftway	0	1	0	1
Trader Joes	2	1	1	4
Tukwila Trading Company	2	0	1	3
Viet Wah	1	0	0	1
Walgreens	1	2	0	3
Walmart	6	0	0	6
Whole Foods	0	1	0	1
Winco Foods	17	4	2	23

5b. Secondary Store Type

Store Type	White Center	High Point	Highline	Total
Corner/Convenience	3	0	0	3
Small Neighborhood Grocery	5	2	1	8
Ethnic Grocery	9	5	0	14
Medium Size Grocery	32	8	5	45
Supermarket	50	18	7	75
Large Warehouse	17	5	2	24
Drug	1	1	0	2
Don't Know/Refused	0	2	0	2
Other	3	0	0	3

5c. Secondary Store Access

Access	White Center	High Point	Highline	Total
Bus/Access Van	4	0	0	4
Own Car	102	34	15	151
Ride with Friends	9	2	0	11
Walk	6	2	0	8
Bike	0	0	0	0
Taxi	0	0	0	0
Don't Know/Refused	0	0	0	0

6. Primary WIC Stores

Store	White Center	High Point	Highline	Total
Albertsons	17	2	0	19
Burney and Boys	1	0	0	1
Fred Meyers	3	1	1	5
Marwa	1	0	0	1
QFC	5	2	0	7
Red Apple	0	0	1	1
Saars	1	0	0	1
Safeway	28	12	5	45
Sarah's Marketplace	1	0	0	1
Somalian Store	0	2	0	2
Towfiq	0	1	0	1
Tukwila Trading Company	1	0	2	3
Winco Foods	0	0	1	1

7. Primary WIC Address

Store	Address	White Center	High Point	Highline	Total
Albertsons	10616 16TH AVE SW	7	1	0	8
Albertsons	12725 1ST AVE S	1	0	0	1
Albertsons	15840 1ST AVE S	8	1	0	9
Albertsons	4621 NE SUNSET BLVD	1	0	0	1
Burney and Boys	11225 1ST AVE S	1	0	0	1
Fred Meyer	14300 1ST AVE S	3	1	0	4
Fred Meyer	365 RENTON CENTER WAY SW	0	1	0	1
Marwa	15035 TUKWILA INTERNATIONAL BLVD	1	0	0	1
QFC	2500 SW BARTON ST	4	2	0	6
QFC	4550 42ND AVE SW	1	0	0	1
Red Apple	2701 BEACON AVE S	0	0	1	1
Saar's	14905 4TH AVE SW	2	0	0	2
Safeway	101 AUBURN WAY S	1	0	0	1
Safeway	1207 S 320TH ST	1	0	0	1
Safeway	138 SW 148TH ST	5	2	0	7
Safeway	200 S 3RD ST	0	0	1	1
Safeway	210 WASHINGTON AVE S	1	0	0	1
Safeway	21401 PACIFIC HWY S	0	0	1	1
Safeway	2622 CALIFORNIA AVE SW	0	2	0	2

Safeway	27035 PACIFIC HWY S	2	0	0	2
Safeway	2725 NE SUNSET BLVD	1	0	0	1
Safeway	3900 S OTHELLO ST	1	0	0	1
Safeway	4011 S 164TH ST	3	0	2	5
Safeway	4754 42ND AVE SW	2	0	0	2
Safeway	9620 28TH AVE SW	11	8	0	19
Somali Grocery	14604 TUKWILA INTERNATIONAL BLVD	0	1	0	1
Towfiq Hallal	2000 23RD AVE S	0	1	0	1
Tukwila Trading Co	3725 S 144TH ST	1	0	2	3
Winco Foods	21100 91ST PL S	0	0	1	1

8a. Other Food Sources

Food Source	White Center	High Point	Highline	Total
Food Bank/Pantry	21	4	3	28
Garden	6	1	0	7
Farmer's Market	22	5	3	30
Friends and Family	20	7	3	30
Others	4	2	0	6
Don't Know/Refused	1	1	3	5

9. Receive SNAP

Receive SNAP?	White Center	High Point	Highline	Total
Yes	43	16	5	64
No	17	4	7	28

10. Providing Nutritious Food

Provide Nutritious Food?	White Center	High Point	Highline	Total
Very Easy	24	4	2	30
Not Too Hard	29	12	7	48
Hard	7	4	3	14
Don't Know/Refused	0	0	0	0

11. Providing for Culture/Religion

Provide Nutritious Food?	White Center	High Point	Highline	Total
Very Easy	44	10	5	59
Not Too Hard	15	8	7	30
Hard	1	1	0	2
Don't Know/Refused	0	1	0	1

HH3: Food Didn't Last

	White Center	High Point	Highline	Total
Often True	12	1	1	14
Sometimes True	30	13	7	50
Never True	17	6	4	27
Don't Know/Refused	1	0	0	1

HH4: Can't Afford Balanced Meals

	White Center	High Point	Highline	Total
Often True	7	2	0	9
Sometimes True	24	11	8	43
Never True	29	6	4	39
Don't Know/Refused	0	1	0	1

AD1: Cut/Skip Meals

	White Center	High Point	Highline	Total
Yes	18	3	4	25
No	42	17	7	66
Don't Know	0	0	1	1

AD1a: How Often

	White Center	High Point	Highline	Total
Almost Every Month	3	1	0	4
Some Months	8	1	2	11
Only 1 or 2 Months	7	0	2	9
Don't Know	0	1	0	1

AD2: Not Enough Money For Food

	White Center	High Point	Highline	Total
Yes	19	4	3	26
No	41	16	9	66
Don't Know	0	0	0	0

AD3: Eat Less

	White Center	High Point	Highline	Total
Yes	17	2	2	21
No	42	18	10	70
Don't Know	1	0	0	1

Overall USDA Food Security

	White Center	High Point	Highline	Total
Very Low	16	2	2	20
Low	15	7	5	27
High/Moderate	29	11	5	45

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