

USING MULTIPLE HOUSEHOLD FOOD INVENTORIES TO MEASURE FOOD
AVAILABILITY IN THE HOME

A Thesis

by

CHEREE SISK

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE

August 2009

Major Subject: Nutrition

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Approved by:

Chair of Committee,	Joseph R. Sharkey
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ABSTRACT

Using Multiple Household Food Inventories to Measure Food Availability in the Home.

(August 2009)

Cheree Sisk, B.S., Baylor University

Chair of Advisory Committee: Dr. Joseph Sharkey

The purpose of this study was to determine the feasibility of conducting multiple household food inventories over the course of 30 days to examine weekly food variability. Household food availability influences the foods individuals choose to consume; therefore, by assessing the home food environment a better understanding of what people are eating can be obtained. Methods of measuring home food availability have been developed and tested in recent years; however most of these methods assess food availability on one occasion only. This study aimed to capture “usual” availability by using multiple assessments.

After the development and pre-testing of the 171-item home observation guide to determine the presence and amount of food items in the home (refrigerator, freezer, pantry, elsewhere), two trained researchers recruited a convenience sample of 9 households (44.4% minority), administered a baseline questionnaire (personal info, shopping habits, food resources, and food security), and conducted 5 in-home assessments (5-7 day interval) over a 30-day period. Each in-home assessment included shopping and fast food activities since the last assessment and an observational survey of

types and amounts of foods present. The final in-home assessment included an audio recorded interview on food habits and beliefs.

Complete data were collected from all 9 women (32.8 y \pm 6.0; 3 married; 4 \pm 1.6 adults/children in household; 4 SNAP; 6 food insecure) and their households. Weekly grocery purchases (place, amount, and purpose) use (frequency) varied from once (n=1) to every week (n=5); 4 used fast food 2-3 times/wk for 4 weeks. Quantity and types of fresh and processed fruits and vegetables varied by week and by family. The feasibility of conducting multiple in-home assessments was confirmed with 100% retention from all participants. This methodology is important in that it provided detailed information on intra-monthly variation in food availability. The findings suggest the inadequacy of a single measure to assess food availability in the home.

DEDICATION

I want to dedicate this to my beloved husband who is serving our country in Afghanistan right now. His incredible ability to encourage and lift me up has been vital in this process. I can only hope that someday I will be able to work as hard as he does. His drive and motivation to do well are unlike anyone I have ever known. He inspires me to do my best. This would not have been possible without his wisdom, encouragement, love, and support. Thank you, Dave, I love you so much.

This dedication would not be complete without thanking my Heavenly Father for saving me and being my rock. He is the foundation upon which my life is built, for without Him I am nothing. The short amount of time I spend on Earth is nothing compared to the eternity I will spend with Him. It is so comforting to rest in Him, and the hope He has so graciously given to me. Thank you, Lord Jesus, for your grace.

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1. INTRODUCTION: BACKGROUND

Obesity and overweight continue to present broad-scale problems across the United States. Body mass index (BMI) is used as an indicator of body fatness and is calculated by dividing weight in kilograms by height in meters squared [weight (kg)/height (m²)]. [1] The Centers for Disease Control and Prevention (CDC) define obesity as a BMI ≥ 30 kg/m², and overweight as a BMI 25 kg/m² – 29.9 kg/m². [1, 2] The most recent National Health and Nutrition Examination Survey (NHANES) estimates 66 percent of U.S. adults are overweight or obese. [2] Over the past decade, the number of individuals with an unhealthy BMI (>25 kg/m²) has doubled. This increasing prevalence of obesity poses many health threats including type 2 diabetes, hypertension, dyslipidemia, chronic inflammation, asthma, endothelial dysfunction, some cancers, osteoarthritis, cardiovascular disease, and premature death. [3, 4] With the burden of so many chronic diseases resulting from obesity, it is a major public health concern. [5] In order to improve modifiable disease states, which are often the most difficult to change, intervention programs and health organizations must understand the variety of factors contributing to this national problem.

This thesis follows the style and the format of *BMC Public Health*.

Focusing on populations with the greatest risk for developing obesity is a big step toward preventing chronic diseases. Special attention has recently been directed towards the prevalence of obesity in specific populations. Minority groups, especially African American and Hispanic populations [6-9], persons with low income and educational attainment [9], and individuals living in rural areas[10, 11] have the greatest obesity rates. Among these common factors, poverty may be one of the highest in terms of contributing to overall nutritional health. [12] Focusing on underlying factors contributing to health disparities such as poverty level, educational attainment, certain ethnic groups, and rural areas will equip intervention groups with the information needed to better target these high risk populations.

While certain populations may be at a greater risk for developing obesity, it is not difficult to argue poor diet as a major precursor.[13] In fact, the result of poor diet is second only to tobacco as a cause of morbidity and mortality in the United States. [14] Evidence suggests calorie consumption has risen markedly since 1980, while calorie expenditure has stayed relatively the same. [15] High-energy dense diets typically contain highly processed, high fat, nutrient poor foods, and have been associated with higher rates of heart disease, obesity and type 2 diabetes.[4, 13, 16-18] Therefore, the World Health Organization recommends reducing foods that are energy dense and nutrient poor as a way of stemming out the global obesity epidemic. [16] One way to reduce energy density and increase nutrient consumption is by including a wide variety of fruits and vegetables in the diet. Strong epidemiological evidence suggests fruits and vegetables provide an abundant source of nutrients that prevent a number of disease

conditions, and aid in maintaining a healthy body weight. [19-22] Healthy People 2010 recommends consuming at least 5 servings of fruits and vegetables for anyone over age two [22], while the new Food Guide pyramid recommends consuming 9-11 servings of fruits and vegetables a day for disease prevention. [22] In addition, the American Heart Association (AHA) recommends limiting fats like saturated fat and cholesterol, limiting sodium, and consuming adequate amounts of fiber in order to improve overall health. [23] The AHA recommends consuming low fat milk products, whole wheat grain products, and lean meats to promote weight control. [23] Unfortunately, the general population fails to meet these recommendations on a daily basis, and the negative effects of poor diet continue to increase across the nation.[15, 20, 21, 24]

1.1 What Is Fueling the Pandemic: Factors Affecting Food Choice

There is very little argument that food choice (i.e. the act of choosing certain foods) affects nutritional health. In order to effectively modify dietary habits, the factors that influence food choice must be well understood. [25] Figure 1 is a conceptual model depicting the relationship between overall nutritional health and factors influencing food choice. The focal point of the model is home food availability. The availability of foods in the home is strongly associated with food choice. [12] In fact, Rasmussen and colleagues report home food availability and accessibility as one of the most important determinants of eating behavior. [20] Although this understanding exists, research studies have failed to identify various social factors influencing the availability of foods in the home. In order to understand these social factors' influence on home food

availability the various decisions behind food purchasing behavior must be well understood.

Two key factors that may affect the presence or absence of certain foods in the home are the availability of food outlets and household composition. [10, 26-28] Food outlet availability including the frequency of grocery store trips plays a direct role in the amount of and type of food in the home. [10, 11] Likewise, the amount of food procured is influenced by the composition of the household. [29-31] These factors coupled with variables such as culture, environment, socioeconomic status, and geographic location can widely influence the decisions the household makes with regard to food purchasing. [4, 12, 27, 32] Another obvious factor influencing food choice, often related to culture and environmental influence, is liking or preference for certain foods. [17] Raynor and colleagues describe liking as “the hedonic appraisal of food, in terms of experiencing pleasure or displeasure, which is generally based on the food's sensory attributes.” [17] All of these components contribute to the “why” of individual’s choices with regard to certain foods. By studying the reasons why certain populations and individuals choose various types of foods, inference can be made to develop public health methods that improve nutritional intake. [33]

1.2 Cultural Influences on Food Choice

Culture is deeply rooted in strong historical antecedents. Rituals coupled with belief systems, community and family structure, human endeavor, and economic and political systems all influence cultural habits. [33] Cultural influences result in different food beliefs, traditions, and may affect preparation of certain foods. [25] For example,

McIntosh and colleagues found that when parents do not perceive dinner as an important family ritual, children tend to consume a greater percent of their energy intake from fat. [34] This emphasizes the importance of examining the influence of traditions and culture on food habits when developing intervention programs, because each demographic may require a different approach based on their traditions and beliefs. In a study by Kristal and colleagues, dietary fat patterns were examined among African American, Hispanic, and Caucasian women who participated in a low-fat diet intervention study. [8] The intervention study examined the amount and types of fats that were present in the diets of the groups of women. The amount of fat did not differ significantly among each group, but the source of the fats differed between the groups. African Americans consumed less fat from dairy and more from meat products than Caucasians, while Caucasians consumed most of their fat from flavoring added to foods like breads or vegetables. The Hispanic group consumed the majority of their fat from fried vegetables and high-fat salads. Culture plays a direct role in the preparation and preference for certain food items. Therefore, by understanding cultural differences in food choices interventions can target the food preferences of different groups. This is relevant as there is mounting evidence that calorie consumption and obesity is increasing among all race, gender, and socioeconomic groups.

1.3 Economic Influences

Socioeconomic status is often described by characteristics such as education, occupation, income, and food program participation. Socioeconomic status influences food choice to such a large extent that most nutritional programs or studies measure this

when accounting for other variables. [4] The Child and Adolescent Trial for Cardiovascular Health (CATCH) found that lower socioeconomic status contributes to the likelihood of inadequate fruit and vegetable consumption. [14] Inadequate fruit and vegetable consumption has been noted in multiple studies of lower income populations. [16, 24, 28, 35-37] Cullen and colleagues reported that lower income households have fewer fruits, fruit juice, and vegetables availability in their homes. [24] Food choice and inadequate micronutrient consumption could be related to the high price of some healthy foods. Recent data suggests cost is second only to taste when making purchase decisions. [4] Drewnowski reports healthful food such as lean meats, fish, fresh vegetables, and fruit cost more than cheaper, less healthful alternatives. [38] However, USDA's Center for Nutrition Policy and Promotion (CNPP) includes fruits and vegetables as part of a thrifty and low cost food plan.[39] They suggest fruits and vegetables can be incorporated into a lower cost food plan if fewer energy dense foods are purchased. Energy dense foods are typically consumed instead of fruits and vegetables due to the longer shelf life. [4] Casey and colleagues examined U.S. children living in lower income households and compared their nutrient intake with higher income households. [37] Children in the low income households had a higher cholesterol intake and were receiving less than 70% of the recommended dietary allowance of vitamin C, vitamin B, folate, calcium, phosphorus, magnesium, iron, and zinc.

Low micronutrient intake has been linked to obesity. [40] Childhood obesity has steadily increased over the past two decades, and this trend has been marked more

among children of low socioeconomic status than among the general population. [41] Habits from childhood are likely to carry over to adulthood, which is a problem for families who are unable to purchase nutrient-dense foods. [41] Andrieu colleagues compared micronutrient intake and energy density across different socioeconomic groups. [16] The amount the participants spent on food directly correlated with their energy and micronutrient intake. Participants who spent more money on foods consumed fewer calories and more micronutrients per day than those who spent significantly less. In the most severe cases of poverty, individuals were not only unable to purchase nutrient-rich foods, but they simply cannot afford to purchase *enough* foods to eat.

The United States Department of Agriculture (USDA) defines food insecurity as “the limited or uncertain availability of nutritionally adequate and safe foods or limited or uncertain ability to acquire acceptable foods in a socially acceptable way.” [42] The USDA divides food security into four ranges: high food security, marginal food security, low food security, and very low food security. [42] Food insecurity often results in hunger because of a lack of finances to access enough food. [37] Food insufficiency is a broader term used to describe inadequate food intake due to various factors such as lack of access to foods, food stores, or low income. [4] In the U.S., over 14 million children under age 18 live in a home where they do not always get enough food to eat. [4] Texas has the third highest rate of food insecurity in the country with 1 in every 5 adults and 1 in every 4 children suffering from food insecurity. [43] Food insecurity is a serious issue, because children living in these households can develop poor mental acuity,

physical function, and other serious health problems. [4] Households who struggle with food insecurity often have patterns of "feast or famine", where family members exhibit behaviors similar to those of hunters and gathers where food is eaten in excess when it is available but severely under-eaten during times of famine. [4] The relationship between food insufficiency and mental health was studied in a group of 724 single women receiving welfare. [44] Mental health proved to be significantly compromised in this group with 42% meeting the qualifications for major depressive disorder. In addition, 57% had physical limitations, and 37% had poor self-related health. The severity of this issue has resulted in the development of a number of programs to reduce food insecurity and hunger across the globe. One step toward improving food habits is examining the influence of environmental factors on food choice.

1.4 Role of Environment

The environment is characterized in several ways. The macro-level environment usually refers to physical, legal and policies that influence food choice, whereas micro-level is typically related to the home or community levels. [45] Swinburn defines the environment as "the sum of influences that the surroundings, opportunities, or conditions of life have on promoting obesity in individuals or populations." [32] His research focuses on creating a "leptogenic" environment, one that encourages healthful food choices and physical activity to prevent obesity. He associates macro-environment with government, health systems, and society's attitudes or beliefs, while he associates the microenvironment with local schools, workplaces, homes, and neighborhoods. McLeroy and colleagues developed an ecological framework that explains the connection between

the environment and individual behavior. [46] This framework was created to promote individual change by uncovering environmental factors that influence behavior. The model emphasizes the need for health promotion interventions to target individual as well as environmental factors affecting behavior. Examining the connection between individuals and their environment may be one of the most effective strategies for improving population-wide eating habits, because the environment influences the behavior of individuals, and therefore the types of foods purchased and consumed. [12, 47]

The local food environment plays a distinct role in dietary choices. [48] The availability of grocery stores, supermarkets, restaurants, and convenient stores within the community contribute to the types of foods consumers buy for in-home and away-from-home consumption. [27, 49] Residents living in areas with limited grocery store access have higher rates of obesity, and consume fewer fruits, vegetables, and low-fat dairy products. [49] This is of concern for individuals who do not have adequate transportation to drive to grocery stores or supermarkets. [49] Bustillos and colleagues explain that a number of individuals are turning to non-conventional food stores such as discount supercenters, wholesale clubs, drug stores, mass merchandisers, and “dollar” stores. [49] This is especially common in rural areas where the number of supermarkets and grocery stores are limited. [49] Popkin and colleagues propose that a direct association can be made between proximity to supermarkets/health food stores and diet and weight status. [45] They also suggest that fast food establishments contribute to obesity by offering high fat, calorically dense foods. Even though 67% of food is still

prepared in the home, individuals are consuming calories outside the home more than ever before. [4, 12] This may be a trend that will not be reversed. The challenge to healthy eating lies in modifying the environment to support healthy choices. [32] The home environment is one of the most effective targets when aiming to create healthier dietary habits. [4]

1.5 Home Nutrition Environment

Research shows roughly two thirds (68%) of the food people eat is still prepared within the home. [12] Availability and accessibility of certain foods within the home have been strongly associated with food choice. [12] By evaluating the types and amounts of foods available in the home, a better understanding of what people are eating can be obtained.[32, 50] Stimulus control strategies have been used in behavioral obesity interventions to learn more about the affects of availability on food consumption. [17] Stimulus control strategies are based on the theory that environmental cues influence behavior. [17] This theory suggests individuals are more likely to consume foods that are readily available. [17] In a study by Raynor and colleagues, researchers examined the relationship between liking low verses high fat foods. [17] A correlation was made between the liking for high fat foods and consumption and with the presence of these foods in the home. In addition, Grimm and colleagues conducted a study to determine whether soft drink consumption increases with availability. [51] They found children, with parents who frequently consumed and purchased soft drinks for the home, were more likely to consume soft drinks. It can be challenging to modify home availability of certain foods, especially if preference for these foods is high. However,

an intervention study examined the results of simply replacing sugar-sweetened beverages with non-caloric beverages in the home. [52] This attempt was successful, because adolescents, ages 13-18, decreased their consumption of sugar beverages by simply reducing their availability in the home. This is promising evidence to support the idea that changing the home food environment can decrease the consumption of unhealthy foods.

If the availability of unhealthy foods in the home is replaced with healthful foods, this may improve the consumption of healthier food items. Families with the greatest motivation and desire to eat fruits and vegetables had more fruits and vegetables available in the home than families with low availability of fruits and vegetables. [14] For example, Neumark-Sztainer and colleagues examined various factors contributing to fruit and vegetable intake among adolescents. [19] They examined the correlation between fruit and vegetable intake and personal, behavioral, and socio-environmental factors within the home. Among these factors the strongest determinants of fruit and vegetable intake were availability and taste preferences. Although palatability was highly correlated with intake, they found availability influenced intake even when food preference was low. This suggests the presence of fruit and vegetables in the home increases consumption even when taste preference is low.

1.6 Availability versus Accessibility

Availability refers to the presence of foods in the home, while accessibility is whether or not these foods are present in a location or form that will facilitate their consumption. [24] For example, consider a household containing large amounts of

candy. The presence of candy in a bowl on the kitchen table would make it highly accessible, whereas candy pushed to the very back of the top shelf in the pantry make it less accessible but still available to eat. Painter and colleagues suggested that visibility and easy access to certain foods affect consumption. [53] Likewise, Cullen and colleagues examined the relationship between the consumption of fruits, vegetables, and fruit juice, with accessibility and availability. [24] They found that children with preferences for fruits, vegetables, and juice, consumed them when they were available in the home. However, children who did not have a preference for these foods were more likely to consume them when they were available and accessible in the home. Therefore, certain individuals may need healthy food to not only be available, but also readily accessible in order to increase consumption. In a review by Blanchett & Brug, availability and accessibility of fruit and vegetables, along with taste, were the main determinants of fruit and vegetable consumption among children. [54] They advised intervention programs to target availability and accessibility of fruit and vegetables for children in order to improve consumption.

1.7 Measuring Food Availability in the Home

A variety of methods for assessing home food availability have been developed and used in recent years. Assessing the presence of various foods in the home, including both healthful and less healthful, may provide understanding and insight needed in order to assess dietary behavior. [55] Studies have shown that foods found in pantries are in fact indicators of actual food consumption, and there has been little debate that availability influences food intake. [14, 24, 56] The presence of food items in the

home has been measured in previous research using universal product code (UPC) scanners, grocery store receipts, and household food inventories. [6, 7, 14, 17, 19, 24, 36, 50, 51, 55, 57-80] They are all similar in that they measure the presence of certain foods items in the home; however, frequency of observations, the types of food being measured, and method of the data collection vary by study.

Universal product codes were originally created in order to help grocery stores track their products and accelerate the check-out process, and are found on most products purchased in food stores. [81] Weinstein and colleagues tested the feasibility of using UPC scanners as a method of measuring food availability in the home. [58] In this study, researchers scanned all home food items that contained a universal product code in 32 different households. Although the UPC scanner proved to be a 31.8% time saver when compared to other household food inventories, there were some disadvantages associated with this method. Foods in the home that did not have a universal product code (homemade foods, unknown foods, mixed dishes) were not captured, and due to data transfer error all of the food items were not documented. In addition, the UPC scanner only held 160 foods at a time; therefore households with large amounts of food may not have been thoroughly evaluated. The researchers noted that 7600 food items were not analyzed due the inability of holding these foods in the memory of the UPC scanner. Also, UPC scanners were unable to account for the amount of foods in the home, which can be an important component of the home food environment. While UPC scanners may provide a quick method of measuring food

items, other methods may be more efficient and accurate in capturing the amount and types of all foods present in the home.

A second method of measuring food availability is by using food store receipts to identify the types of foods commonly purchased. Researchers hypothesized that foods purchased by consumers are indicators of the types of foods found in the home. [60] Collecting food store receipts has been identified as a non-intrusive method of measuring food acquisition patterns. [62] Dewalt and colleagues used itemized grocery receipts to identify common foods purchased by 50 families in a rural Kentucky county. Mothers of the family were advised to collect receipts and log all foods eaten away from home, gifts of food, and foods prepared in the home. [62] This study examined purchases over a two week period of time, and categorized items according to food group in order to determine the amount spent on different types of foods. Researchers concluded that itemized receipts were a convenient method of capturing the amount of specific food items purchased by families. However, they suggested further research be conducted in order to determine the link between food purchases and food consumption in the home. Cullen and colleagues examined the total amount spent on specific food items over the course of 6 weeks in order to identify foods present in the home. [59] Participants from a diverse socioeconomic group were instructed to save receipts from grocery stores, small stores, and gas stations. The size of the family and ethnicity played a direct role in the amount spent on food items. Researchers concluded that receipts offer a unique and accurate method of measuring food purchases by eliminating self reported error. However, there was no verification of whether participants mailed in all

of their receipts over the 6 week time period. Additional studies have used receipts as a method of measuring foods purchased; [60, 61] however, it is not known if this method is an accurate reflection of the types of foods available in the home. Although receipt collection may offer a convenient method of data collection, it may be burdensome for the consumers. Remembering to ask for or save receipts may be difficult for subjects, and may affect the accuracy of the data. Methods where researchers play a direct role in data collection may prove to be a more reliable way of capturing the home food environment.

Household food inventories, which assess the presence of a wide range of food items in the home, may be an appropriate method for documenting the home food environment. [63] Open inventories and predefined inventories are two of the most common methodologies used to measure household food availability. [82] Open inventories are conducted by trained researchers who travel to a subject's home and record all foods present in the home. Turrini and colleagues conducted an extensive open inventory in a group of 1,147 households. [69] Registered dietitians recorded and weighed all foods located in the cupboards of each household. In addition, subjects were asked to record all foods purchased and all waste over the course of 7 days. Dietitians conducted the inventory 2 times over the course of one week. While this study provided an extensive measure of all foods in the home, weighing all food items in the home, and requiring subjects to record waste and purchases may not be feasible. For example, in a study by Sanjur and colleagues, researchers recorded the weight, volume, price, brand name, and type (fresh, frozen, canned) of every food or beverage item present in the

homes of 576 families. [65] Although the researchers only went into each household on one occasion, they noted a high burden of recording all of these observations in the homes of 576 families. Coates and colleagues conducted a study to examine the relationship between foods present in the home with body weights of individuals living in the home. [66] The researchers did not weigh the foods, but simply used an open inventory and documented all foods present in various locations including pantries, refrigerator, and freezers. In all three of these open inventory studies the food environment was thoroughly examined. However, feasibility is of concern when weighing all foods in the home.

Predefined household inventories have focused on a particular food category such as fruits and vegetables, fats, soft drinks, or cancer preventing foods. [6, 14, 17, 50, 51, 63, 64, 70-73, 75, 78-80] Typically, predefined inventories were used to capture a specific aspect of the home. Predefined inventories are different than open inventories in that they generally use a predefined checklist of selected foods to be identified as present or absent in the home. The quantity of these foods is often not addressed. These inventories may be conducted by researchers or by the subjects living in the home. Some inventories are mailed to the subjects to be completed and returned to the researchers. [6, 63, 68] Satia and colleagues mailed a household predefined inventory of high and low fat foods to 658 households. [6] The household food inventory consisted of 14 foods, to be identified as present or absent in the home. The researchers suggested that the mailed household food inventory may be a valid method of measuring the availability of certain food items in the home. However, since the participants

conduct the inventory, the data are subject to self reported error [50] and social desirability bias. For this reason, some studies validated household food inventories by requiring both trained researchers (considered the “gold standard”) and subjects to conduct the same household food inventory. [63, 68, 79, 83] For example, Jayne and colleagues administered a household food inventory requiring researchers and subjects to take inventory of 13 major food groups in the home. [83] The trained researchers and the subjects conducted the inventory at the same time. The researchers determined that self administered household food inventory was a valid method of measuring food availability, because the data collected from the researchers and subjects were not significantly different. However, the subjects may have done a better job of collecting the data since the researchers were in their homes conducting the same inventory at the same time. Therefore, important considerations must be made when using a predefined inventory. Researcher-conducted inventories may offer a more reliable method of measuring the home food environment.

The results of studies using open and predefined inventories are also influenced by the location in which they are administered. For example, subjects have been interviewed over the telephone, in their homes, and/or outside of their homes on the types of foods they have available in the home. Researchers use an inventory to ask questions about certain food items. Cullen and colleagues noted the variation associated with telephone verses in-person interviewing in a study examining home availability of fruit, juice, and vegetables. [50] Researchers went to the subject’s homes and asked questions about the availability of certain food items and also about their parenting

practices. Due to cancellations, 33 of the 109 interviews had to be conducted over the telephone. Interestingly, subjects interviewed over the telephone were more likely to report negative parenting practices than those that were interviewed in person. This suggests that subjects may alter their responses based on social desirability, depending on whether they are asked questions face-to-face or over the telephone. Regardless, researchers concluded, “self-reported data are subject to possible attention, comprehension, memory, and recording errors.” Self-reported error is especially of concern in studies conducted outside of the home. Numerous studies ask subjects to recall the types of food items present in their homes when they are in a location other than their homes. [14, 17, 19, 24, 70, 72, 73, 77] Kratt and colleagues conducted a study to measure the number of fruits and vegetables in the homes of 1196 fourth graders in Atlanta, Georgia. [14] A questionnaire was given to parents and children with questions on whether generic fruits and vegetables were available in their homes over the past week. The researchers did not go into the homes, but like many other studies, relied only on the responses of the subjects. By relying only on self reports the validity of the data decreases. [50] Direct observation decreases questions regarding the accuracy of self reported data.[79]

Interestingly, in all three of the open-inventory studies the data were not collected over a broad frame of time. The last two studies [65, 66] reflect a single point of data collection, and in the study by Turrini [69], two inventories were taken over the course of 7 days. The number of times an inventory should be conducted in order to describe usual availability has yet to be determined. However, most studies capture only

a single point of data collection by conducting one household food inventory. [6, 14, 19, 24, 50, 51, 64, 65, 71, 74, 77, 83, 84] With a single point of data collection there is no consideration given to the influence of intra-monthly variability due to income cycles, grocery store trips, family events, and other factors. These influences change over the course of the month. Therefore, one measurement may not represent an accurate measure of the foods usually available in the home. Research studies that capture home food availability over a wide range of time may be a more reliable method of measuring what is actually in the home. Much like a single dietary recall would not capture variations in dietary habits; a single food inventory does not capture variation in home food availability.

The number of inventories administered in each home is a common concern of most household food inventory studies. By only capturing a “snapshot” of what is available on one occasion, the accuracy of the data is questioned. [85] To date, there are a limited number of household food inventory studies that visit the home on more than one occasion. [58, 67, 69, 75, 76] Baranowski and colleagues measured the availability of fruits, juice, and vegetables on three different occasions over the course of one year. [75] In this study the data were collected over a more extensive period of time in order to capture the effectiveness of a school nutrition education program. Kendall and colleagues collected household food inventory data two times with a three-week interval between visits. [76] Similarly, Weinstein and colleagues collected food inventory data with the UPC scanner three times over four weeks (no more than one time per week). [58] These studies are unique; they capture more than a single data collection point.

However, these methods do not give rationale for conducting multiple inventories. It is not known how many times or the frequency multiple observations should be conducted in order to obtain a more accurate representation of what is usually in the home.

Little is known about intra-month availability of food items within the home, and even less is understood about overall household food availability. Because most studies use a single point of data collection to determine the types of foods in the home, [6, 7, 24, 36, 51, 55, 63-66, 71, 73, 74, 77, 79, 80] , which can miss the change in availability when resources are not available, the primary objective of this study was to determine the extent to which the weekly availability of household food items changed over one month by 1) modifying an existing household food inventory instrument; 2) determining the feasibility of recruiting and retaining a sample of household into a study that involved five in-home assessments over one month; and 3) examining the weekly change in food availability in each of the participant households.

2. METHODS

The primary objective of the Household Food Inventory (HFI) Study was to determine the extent to which the weekly availability of household food items changed over the course of one month. Eligibility for inclusion in the HFI was limited to women with at least one child under the age of eighteen living in the same household.

2.1 Participants

The sample was composed of HFI participants who completed a baseline home visit (self-report questionnaires, an observational survey of appliances, an observational inventory of food items, and photographs of food storage) and four follow-up home visits (self-reported questionnaire of food activities since prior visit and an observational inventory of food items) which were conducted approximately seven days after a prior home visit. Participants received a cash incentive for participation in the study. Informed consent was obtained from all participants, and the study was approved by the Institutional Review Board at Texas A&M University. Participants were recruited from a Bryan (TX) area local child care center, supermarket, university, and community action agency. Women were targeted in this study, because they are typically the best informants about household food supply. Prospective participants were identified through flyers that described the project or through direct contact (supermarket shoppers) by research team members. The study was completed in July-August, 2008.

Out of the thirteen prospective participants, two did not answer after they were called on four different occasions, and one would not be able to participate in the study.

First appointments were scheduled with the remaining eleven participants; these participants were called one day prior to their appointment as a reminder of their appointment time. Of the ten subjects who agreed to participate, one was not home when the research team arrived for the first home visit. This participant was excluded from the study after multiple attempts. The remaining nine households participated in all five visits of the project.

2.2 Baseline Questionnaire

The self-reported questionnaire was administered during the first home visit and included the following sections: 1) individual characteristics, 2) food accessibility, 3) food availability and affordability, and 4) food security. Individual characteristics included age, completed education, race/ethnicity, marital status, number of people residing in the households (adults and children), ages of children, household income in 2007 (9 categories from <\$10,000/yr to >\$50,000), frequency of income payments, employment status, automobile ownership, other sources of transportation, nutrition program participation (e.g., Supplemental Nutrition Assistance Program [SNAP], Women, Infants, and Children Nutrition Program [WIC], free breakfast, free or reduced school lunch), length of time receiving SNAP benefits, and health conditions among household members (e.g., diabetes, obesity, and heart problems).

Food accessibility included questions concerning the store where most of household's groceries are purchased: the one way distance and time to travel; typical method of transportation; starting point for grocery trips (e.g., home, work, both, or other); frequency of shopping at this store (weekly, bi-weekly, monthly, or less than

once a month); person who does the shopping; amount spent on groceries (categories that included <\$50/wk, \$50-\$99/wk, \$100-\$199/wk, \$250/month, \$350/month, and other). In addition, questions asked about other places where food items are purchased: name of place, frequency, and type of items (main food items or replacement items); and the last time groceries were purchased and the amount spent.

Food availability and affordability questions asked participants to rate food resources in their neighborhood and the store where they buy most of their groceries. Thinking about neighborhood food resources, participants were asked to strongly agree, agree, neither agree nor disagree, disagree, or strongly disagree with three statements: 1) a large selection of fresh fruit and vegetables is available in my neighborhood; 2) the fresh fruits and vegetables in my neighborhood are of high quality; and 3) a large selection of low-fat products is available in my neighborhood. Participants were asked to similarly respond to five statements about the store where they buy most of their groceries: 1) a large selection of fresh fruits and vegetables are available; 2) the fresh fruits and vegetables in this store are of high quality; 3) a large selection of low-fat products are available; 4) the fruits and vegetables are affordable for me; and 5) the low-fat food items are affordable for me. Participants were also asked to identify the number of times a week they go out to eat at a fast food or full-service restaurant; buy fast food and bring it home to eat; and buy food that is already prepared to eat and bring it home to eat. In addition, participants were asked to identify reasons for purchasing food that is already prepared to eat: cheaper, buy more with less money, saves time, everyone in the

family can eat what foods appeal to them, do not enjoy cooking, do not enjoy grocery shopping, and place for kids to play.

Food security was measured using the U.S. Household Food Security Survey Module: Six-Item Short Form [42] During the 12 months prior to the first home visit, food security status was operationalized from the following food security risk situations: purchased food did not last and money was not available to get more; could not afford to eat balanced meals; adults in the household cut the size of meals or skipped meals because there wasn't enough money for food; adults eat less than should eat because there wasn't enough money for food; and were hungry and did not eat because couldn't afford enough food. The first three questions also asked the frequency the situation occurred (often, sometimes, or never). If the participant answered often or sometimes, they were then asked whether or not this happened every month, 1-2 months, or some months. Scores were calculated to classify households as food secure, marginal food security, low food security, and very low food security.

2.3 Household Food Inventory

The instrument used to measure household food inventory (HFI) included 251 items and was modified from a 171-item shelf inventory survey used in low-income families. [36] A team of two trained researchers, using direct observation, documented the amount, quantity, and types of foods in the home. The HFI consisted of the following categories: fresh vegetables; fresh fruit; cereals, breads, and tortillas; dairy (milk, yogurt, and cheese); meat, poultry, seafood (fresh or frozen) and other protein; frozen desserts (e.g., ice cream and popsicles); chips, crackers, and other snacks;

legumes; canned vegetables; canned fruit, canned meat/ poultry/ fish; broth and soups; beverages; pantry items; frozen vegetables; frozen fruit; mayonnaise, sauce, and salad dressing; oils and other fats; and frozen foods (e.g., pizza, tacos or burritos, entrees, breakfast items, and French fries).

A kitchen appliance inventory was used to evaluate the presence or absence of a stove top, oven, refrigerator, freezer, microwave, electric pan, hot plate/griddle, toaster, electric can opener, frying pan, mixer, cookware, and utensils. Each of these appliances was noted as present or absent, and the participant was asked if the condition of the appliance could be classified as good or poor.

2.4 Follow-up Questionnaire

A follow-up questionnaire was administered during home visits 2, 3, 4, and 5 to identify food-related activities that occurred since the prior home visit. The following questions were included: 1) did you purchase groceries (where, how much was spent, type of purchase, and method of transportation); 2) did you eat at a fast food restaurant (and frequency); 3) did you eat a restaurant (and frequency); and 4) did you purchase food prepared elsewhere to eat at home (and frequency). Frequency responses included once, 2-3 times, 4-5 times, > 5 times, or does not apply.

2.5 Data Collection

Data were collected during five home visits, which were scheduled to occur over thirty days; each home visit was scheduled to occur approximately 6-7 days after the prior home visit. The study was conducted during the months of July, August, and early September. During the first visit to each household, the baseline questionnaire and

survey of kitchen appliances were administered to each participant. Photographs were taken of the appliances and all of the places where food was stored in the home. The researchers wore latex gloves for data collection. The researchers developed a “call out” method where one would call out the amount of each food item present while the other researcher recorded the information.

During home visits 2-5, a follow-up questionnaire was administered; a complete household food inventory was assessed; and photographs were taken of food supplies. During the fifth (last) home visit, the participant was interviewed, using a semi-structured interview guide. Topics included typical foods and family meals, food planning and preparation, major and minor food shopping, and perceptions of healthy or nutritious meals. This interview was audio recorded.

2.6 Statistical Analysis

Data were analyzed with STATA statistical software release 9 (Stata Corporation, 2007). Simple frequencies (count and ranges) were calculated for each participant.

3. RESULTS

All of the appointments were conducted according to the schedule with only a few minor cancellations. One subject did not show up for two of her scheduled appointments, but the appointments were immediately rescheduled before seven days elapsed between visits. Another subject had a sick child, so two weeks elapsed between her second and third appointments. All other appointments were conducted with 5-7 days in between visits, and all 9 women completed all five in-home assessments.

Sociodemographic characteristics of the participants including race, age, education, marital status, household composition, income, employment, transportation, and supplemental program participation can be found in Table 1. The majority of the participants (n=6) reported a household income of <\$25,000 a year; all households were composed of at least three adults and children (range of 3 to 8); and many participated in a nutrition program such as SNAP, WIC, free school breakfast, or reduced/free school lunch.

Tables 2-3 depict the answers to food accessibility and availability questions from the baseline questionnaire. All of the participants lived within 9 miles from a grocery store, and 77.8% (n=7) shopped for groceries on a weekly basis. A total of 6 participants spent <\$400 a month on groceries. Table 3 focuses on the availability of local food outlets and the amount of quality fresh fruits, fresh vegetables, and low-fat food items found in the store where the participant purchases most groceries. Almost one-third of the sample found limited sources for fresh fruits and vegetables or low-fat

products in their neighborhood. A total of 22.2% ($n=2$) participants admitted to eating fast food at least twice a week and 44.4% ($n=4$) of the participants claimed to buy prepared food and bring it home more than once a week. Eight of the nine participants (88.9%) bought prepared food away from home because it saved time or everyone in the family could eat the foods that appeal to them (data not shown). Food security is a problem among these participants (see Table 4). Although one-third ($n = 3$) were considered food secure, 44.4% ($n = 4$) were classified as having very low food security.

Food-related activities occurring between in-home assessments are noted in Table 5. This includes the amount of days between each visit, amount spent on groceries, where the participant shopped, and whether or not their shopping trip could be characterized as a major purchase for them. The number of times each participant ate fast food, at a restaurant, or bought prepared food away from home is also listed in the table. The amount each participant spent on groceries and number of times the participants ate fast food varied widely from week to week. With the exception of two households, participants frequently depended on fast food restaurants.

Tables 6-9 represent the presence/absence and amount of fresh fruits and vegetables directly observed in each home. Note from Tables 6 and 8 that the number of participants who didn't have any fresh fruits or vegetables during the in-home assessment ranged from 0 to 3. Tables 7 and 9 depict the amount of fruits and vegetables in the home. Among the participants containing fruits and vegetables, the amount of produce they had varied among assessments. For example, participant 2 had 5 different types of fresh fruit on visit 1, and 11 different types on visit 4. In addition,

this participant had 3 apples on visit 2, and 11 apples on visit 4. Participant 2 did not have any bananas on visit 3, but had 10 bananas one week prior (during visit 2). In another example, participant 1 had 1 type of fresh vegetable on visit 2 and 8 types on visit 5. The variation in all fresh fruits and vegetables occurred during each in-home assessment.

Household availability and amounts of canned fruit and vegetables can be found in Tables 10-13. The majority of the participants did not have much canned fruit. However, certain canned vegetables like green beans, corn, green peas, and tomatoes were found in most homes. Like fresh fruit and vegetables, the amount of these canned vegetables varied with each assessment. This was especially true for green beans and tomatoes.

Household availability and amounts of dairy products can be found in Table 14. Dairy products were grouped according to whole/regular and reduced/low fat. Three (33.3%) of the households had milk present during at least four of the assessments (data not shown). The amount of milk and cheese varied upon each visit. For example, participant 3 did not have any milk on visits 1-4; however, on visit 5 this household had 96 ounces of whole milk. The types of milk each household contained varied across in-home visits. Participant 2 had 192 ounces of low fat milk on visit 1, but did not have any low fat milk during visits 3-5. Participant 2 did not have whole milk on visit 2, but had 256 ounces on visit 4 and 32 ounces on visit 5. Most of the households did not have low fat cheese present on any of the in-home assessments. Participants 8 and 9 were the only households with low fat cheese. The amounts of cheese varied in each home from

week to week. Participant 2 contained 160 ounces of cheese on visit 1 and one week later only had 37 ounces. None of the households had the same amount of milk or cheese during any of the multiple in-home assessments.

Table 15 depicts the availability of meats, poultry, seafood, and other protein in each household for all five assessments. Chicken and fish were grouped by breaded, whole/pieces, canned, or breast. In addition, peanut butter was classified as regular or reduced fat.

The availability of cereals, breads, and tortillas can be found in Table 16. Flour tortillas, white bread, and sweetened cereals were found in most homes. All of the homes had sweetened cereal on at least 4 of the 5 visits. In addition, all but one household had white bread on at least 3 visits.

The availability of ice cream and popsicles can be found in Table 17. The presence of ice cream varied. Most of the homes did not buy low-fat ice cream, and in the two households that did buy low-fat ice cream, regular present as well. Popsicles were found in most of the homes.

The availability of beverages can be found in Table 18. All sugar sweetened beverages that were not 100% juice were grouped as fruit drinks. The sodas and drink concentrate were grouped by regular/diet and regular/low sugar. Most of the homes did not buy diet soda, and none of the households bought only diet soda. Regular soda was found in all households on at least 1 of the 5 assessments.

Tables 19-20 depict the availability of microwavable, frozen, and snack foods. Chips, crackers, and cookies are divided into baked/regular, regular/low fat, and

regular/reduced fat. The majority of the homes did not have baked chips, low fat crackers, and none of the homes had reduced fat cookies. As with the most of the foods assessed, these food items varied from assessment to assessment.

4. DISCUSSION

Socioeconomic status, cultural background, the community and neighborhood food environment, and the availability of foods in the home often influence the decisions individuals make with regard to food choice. Among the factors that may influence household food availability are household composition, access to food outlets, and household income (see Figure 1). Nutritional health is connected to these influences, as the type of food individuals consume affects their overall health and well being. [13] With 66 percent of the U.S. population overweight and obese [2], intervention programs need to be implemented with affective methods of improving the nation's health. Therefore, understanding more about the home food environment is critical for the prevention and management of nutrition-related health conditions. This study examined the availability of food items in the home, paying particular attention to the changes in availability that occur throughout the month. This is apparently the first study to directly observe and document the weekly presence of the type and amount of foods over the course of one month. This study contributes to research on home food availability by identifying the importance of multiple measures, presence of certain foods in the home, and the feasibility of comprehensive in-home assessments.

Although researchers recognize the importance of documenting the availability of food items in the home, primarily through a single household food inventory (HFI) [6, 14, 19, 24, 50, 51, 64, 65, 71, 74, 77, 83, 84], little has been reported about the intra-monthly changes in household food supplies, which may be due to income cycles,

grocery store trips, competing demands for resources, and family events. This variability is ignored when only one assessment is conducted. This may result in an inaccurate description of food items available for consumption. This study extends our understanding of household food availability and is apparently the first study, to our knowledge, that describes the change in household food supplies using five comprehensive direct observation assessments for the types and amounts of food that are present in the household over a 30-day period. The primary objective of this study was to determine the extent to which the availability of household food items changed over one month by 1) modifying an existing household food inventory instrument; 2) determining the feasibility of recruiting and retaining a sample of households into a study that involved five in-home assessments over one month; 3) and examining weekly changes in food availability in each of the participant households.

Using direct observation methodology, which is considered more accurate than self-reported data, [50] this study verified the inadequacy of a single assessment. It was evident that certain food categories changed weekly. For example, dairy products and canned vegetables varied the most from week to week, implying these may be consumed more frequently than other foods. Weekly variation in canned vegetables was highest among green beans and tomatoes. Foods like canned fruits remain the same from week to week, and may be more of a staple item for households. Some households did not have any fresh fruits and vegetables at all during the 5 assessments. However, in households that did contain fresh produce, there was a wide variation from week to week. By simply going into the home on one occasion, we would not have captured

“usual” availability. To date, there are a limited number of household food inventory studies that visit the home on more than one occasion. The weekly variation in all food products confirms the importance of conducting multiple in-home assessments in order to get an accurate representation of home food availability.

Not only did the amount of food vary from week to week, but the types of foods present in the home varied as well. For example, one household had 3 different types of fresh fruits on one particular visit. Two weeks later there were 10 different types of fruits in the same household with different amounts of the 3 that were present two weeks before. This reinforces the importance of not only identifying the types of food present in the home, but also identifying quantity.

Previous household food inventory studies have focused on a limited number of food categories [6, 14, 17, 50, 51, 63, 64, 70-73, 75, 78-80], assessing only a limited amount of food items. These studies used predefined inventories, and did not record the amount of food items present in the home. On the contrary, open inventories record and sometimes weigh all foods present in the home. [65, 66, 69] However, these studies also introduce quite a burden in recording and weighing all foods present. The present study used a predefined inventory that assessed a broad range of food groups to capture variation in all foods.

HFI's received criticism in the past for only capturing a “snapshot” of what is usually in the home, and not taking into consideration away-from-home foods. In response to that criticism, this study administered a short questionnaire at each in-home assessment to determine the number and type of places where food was purchased since

the previous assessment. This provided insight into away-from-home food purchases and the weekly amount spent on grocery purchases. The frequency of grocery store trips varied with each individual. Participants who did not purchase groceries on a regular basis had less food at certain times of the month. Interestingly, the 4 households that did not purchase groceries on a weekly basis all purchased fast food at least once every two weeks. One particular household did not purchase groceries every week, but consumed fast food 2-3 times each week. In addition, the questionnaire addressed underlying issues that may have affected food purchase decisions such as poverty, number of people living in the home, and availability of food outlets. All of these factors contribute to the availability of foods in the home, and therefore, food choice.

While this study proved to be a feasible method of measuring food inventory, there were several limitations. This study was tedious in households where the pantry was unorganized. In homes that did not contain a lot of food items, the inventory was completed in under 30 minutes, but in homes that contained a lot of food items, the inventory took up to 1 hour to complete each time. In addition, most of the measurements of quantity were estimates, because the exact measurements of certain food items could not be obtained. Furthermore, the results may not represent the general population because of the small sample size (n=9).

Although there were several limitations to this study, there were also a number of strengths. A notable success was the ability to recruit and retain all participants throughout all parts of the project. The results of this study emphasize the importance of multiple home assessments, using direct observation. It is evident that a single point of

data collection does not provide an accurate representation of usual foods present in the home. In addition, most homes were not visited on the same day of the week, which provided a better understanding of usual availability. Income cycles were described with the collection of the demographic information. Since 50% of the subjects received income every 2 weeks, this variation was captured throughout the 30 days of data collection. The number of home observations that should be conducted over the month has yet to be determined. It is evident a single measurement does not suffice, but more research should be done in order to determine the number of times household food inventory should be conducted, and the frequency.

5. CONCLUSION

The availability and accessibility of certain foods within the home has been strongly associated with food choice. [12] This study examined food availability by conducting multiple in-home assessments over the course of one month. Weekly availability of household food items was captured by modifying an existing household food inventory instrument, and recruiting and retaining a sample of nine households. The findings from this study add to the body of research on food availability by providing detailed information on monthly variability.

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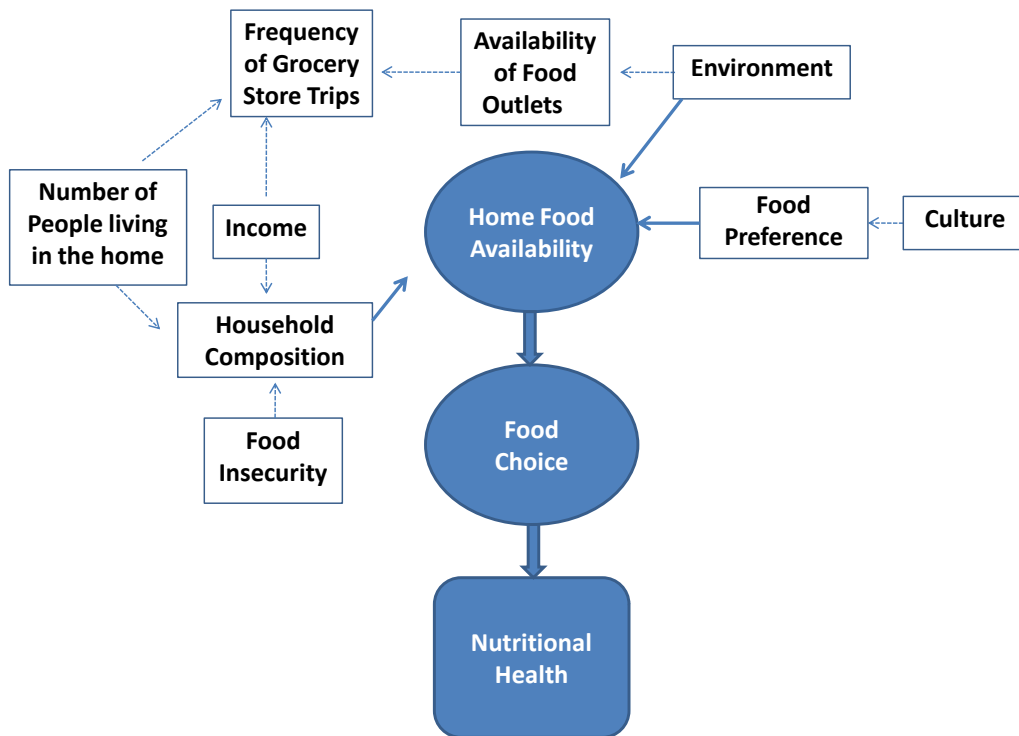
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APPENDIX A

FIGURES

Figure 1. Conceptual Model



APPENDIX B

TABLES

Table 1. Sociodemographic Characteristics from Baseline Questionnaire for All Participants ($n = 9$)

	Mean \pm SD (range)	% (n)
Age	32.8 \pm 6.0 (23-41)	
Education, y	13.4 \pm 3.9 (8-20)	
Race/ethnicity		
Minority		44.4 (4)
Marital status		
Married		33.3 (3)
Household composition		
Adults	2.1 \pm 0.9 (1-4)	
Children	2.2 \pm 1.6 (1-6)	
Total adults and children	4.3 \pm 1.6 (3-8)	
Household income (in thousands)/y		
<\$10		11.1 (1)
\$10-\$15		11.1 (1)
\$16-\$19.9		22.2 (2)

Table 1. Continued

Household income (in thousands)/y	
\$20-\$25	22.2 (2)
\$30-\$35	11.1 (1)
>\$50	22.2 (2)
Frequency of income	
Weekly	22.2 (2)
Bi-weekly	44.4 (4)
Monthly	33.3 (3)
Household adults employed	
None	11.1 (1)
1	44.4 (4)
2	44.4 (4)
Car ownership	77.8 (7)
Nutrition program participation	
Supplemental Nutrition Assistance Program (SNAP)	44.4 (4)
Women, Infants, and Children (WIC) Program	22.2 (2)
Free school breakfast	22.2(2)
Free or reduced school lunch	55.6 (5)

Table 2. Food Accessibility from Baseline Questionnaire for All Participants (n = 9)

	Mean \pm SD (range)	% (n)
Distance to store for most of groceries (in miles)	5.2 \pm 2.3 (1-9)	
Starting point on trip to food store		
Home		66.7 (6)
Work and home		33.3 (3)
Frequency of shopping for food		
Weekly		77.8 (7)
Bi-weekly		11.1 (1)
Monthly		11.1 (1)
Amount spent on groceries		
<\$400/mo		66.7 (6)
\geq \$400/mo		33.3 (3)
Days since last food shopping	3.8 \pm 3.1 (1-10)	
Amount spent during last food shopping	88.7 \pm 50.2 (35-160)	

Table 3. Food Availability from Baseline Questionnaire for All Participants (n = 9)

	% responding yes (n)
Think about the food resources in your neighborhood.	
a. A large selection of fresh fruits and vegetables is available.	66.7 (6)
b. The fresh fruits and vegetables are of high quality.	77.8 (7)
c. A large selection of low-fat products is available.	55.6 (5)
Think about the store where you buy most of your groceries.	
a. A large selection of fresh fruits and vegetables is available.	88.9 (8)
b. The fresh fruits and vegetables are of high quality.	66.7 (6)
c. A large selection of low-fat products is available.	66.7 (6)
d. The fruits and vegetables are affordable for me.	77.8 (7)
e. The low-fat food items are affordable	77.8 (7)
Think about the times you may purchase prepared foods.	
a. Eat fast food ≥ 2 times/wk	22.2 (2)
b. Buy fast food and bring home to eat ≥ 2 times/wk	33.3 (3)
c. Buy prepared food and bring home to eat ≥ 1 time/wk	44.4 (4)
Reasons for purchasing prepared food	
a. Cheaper	33.3 (3)
b. Buy more food with less money	33.3 (3)
c. Saves time	66.7 (6)
d. Everyone can eat the foods that appeal to them	66.7 (6)
e. Do not enjoy cooking	33.3 (3)
f. Place for kids to play	11.1 (1)

Table 4. Food Security Using the Six-Item Short Form of the Food Security Survey Module for All Participants ($n = 9$)

	% (n)
In the past 12 months	
Food that was purchased did not last and didn't have money to get more	66.7 (6)
Frequency ($n = 6$)	
Almost every month	33.3 (2)
Could not afford to eat balanced meals	44.4 (4)
Frequency ($n = 4$)	
Almost every month	25 (1)
Cut the size or skipped meals because there wasn't enough money for food	44.4 (4)
Frequency ($n = 4$)	
Almost every month	75 (3)
Eat less than you felt you should because there wasn't enough money for food	44.4 (4)
Hungry but didn't eat because you couldn't afford enough food.	44.4 (4)
Overall food security status	
Very low food security	44.4 (4)
Low food security	11.1 (1)
Marginal food security	11.1 (1)
Food secure	33.3 (3)

Table 5. Food-Related Activities That Occurred Between In-Home Assessments, by Household

	<i>Participants</i>																			
	1				2				3				4				5			
	T2	T3	T4	T5	T2	T3	T4	T5	T2	T3	T4	T5	T2	T3	T4	T5	T2	T3	T4	T5
Days ^a	7	7	8	6	5	7	7	7	6	7	7	7	7	7	7	6	5	7	7	6
Purchase ^b	√	√	√	√	0	0	√	0	√	√	√	√	0	√	√	√	√	0	√	√
Store type	S	S	S	S	0	0	S	0	0	S	S	S	0	S	S	S	SC	0	SC	SC
Amount (\$)	50	25	45	160	0	0	264	0	14	40	100	75	0	93	15	59	100	0	104	65
Major ^c	0	0	0	√	0	0	√	0	√	0	√	0	0	√	0	0	0	0	√	0
Fast food ^d	0	0	√	0	0	√	√	√	√	√	0	√	√	√	√	√	√	√	√	√
Times	0	0	1	0	0	1	1	2-3	2-3	1	0	2-3	2-3	1	2-3	4-5	2-3	2-3	2-3	2-3
Restaurant ^e	0	√	0	0	0	0	√	√	0	√	√	√	0	0	√	0	0	√	0	0
Times	0	1	0	0	0	0	1	1	0	1	2-3	2-3	0	0	1	0	0	1	0	0
Prepared food ^f	0	0	0	√	0	0	0	0	0	0	0	0	0	0	0	√	0	0	√	0
Times	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2-3	0	0	1	0
					6				7				8				9			
Days ^a					T2	T3	T4	T5	T2	T3	T4	T5	T2	T3	T4	T5	T2	T3	T4	T5
Purchase ^b					√	√	√	√	√	√	0	√	√	√	√	√	√	√	√	√
Store type					S	S	S	S	S	S	0	S	S	S	S	SC	SC	SC	S	S
Amount (\$)					22	50	18	43	130	25	0	60	180	150	230	160	80	55	90	60
Major ^c					0	0	0	0	√	0	0	0	√	√	√	√	0	0	√	0
Fast food ^d					√	√	√	0	0	0	√	0	√	√	0	√	√	√	√	√
Times					2-3	2-3	1	0	0	0	1	0	2-3	2-3	0	1	1	1	2-3	1
Restaurant ^e					0	0	0	0	0	√	√	0	0	√	√	√	0	√	0	√
Times					0	0	0	0	0	2-3	2-3	0	0	1	1	1	0	1	0	1
Prepared food ^f					0	0	0	0	0	0	0	0	0	√	0	0	√	√	0	√
Times					0	0	0	0	0	0	0	0	0	1	0	0	2-3	2-3	0	1

^a Days since prior in-home assessment ^b Purchase groceries since prior in-home assessment ^c Major grocery purchase

^d Eat at fast food outlet since prior in-home assessment ^e Eat a restaurant since prior in-home assessment ^f Since prior in-home assessment, purchased food prepared elsewhere to eat at home

√ = yes S = Supermarket SC = Supercenter

Table 6. Household Availability of Fresh Fruit Collected During Five In-Home Assessments, by Household

<i>Fresh fruit</i>	<i>Participants</i>																			
	1					2					3					4				
	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5
Apples	√	0	0	0	0	√	√	√	√	√	0	0	0	0	0	0	0	0	0	√
Bananas	0	√	0	√	0	√	√	0	√	0	0	√	0	0	0	√	0	0	√	√
Grapes	0	0	0	0	0	0	0	0	√	√	0	0	0	0	0	√	√	√	√	√
Guava	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mangos	0	0	0	0	0	0	√	√	√	0	0	0	0	0	0	0	0	0	0	0
Oranges	0	0	0	0	0	√	√	√	√	0	0	0	0	0	0	0	0	0	0	√
Papaya	0	0	0	0	0	0	0	0	√	√	0	0	0	0	0	0	0	0	0	0
Peaches	0	0	0	0	0	0	0	0	√	√	√	0	√	√	√	0	√	√	0	√
Pears	0	0	0	0	0	0	0	0	√	√	0	0	√	√	√	0	0	0	0	0
Pineapple	0	0	0	0	0	0	0	0	√	√	0	0	0	0	0	0	0	0	0	0
Plums	0	0	0	0	0	0	0	0	√	√	√	0	√	0	0	0	√	√	0	0
Sapote	0	0	0	0	0	0	0	0	0	√	0	0	0	0	0	0	0	0	0	0
Strawberries	√	√	0	0	0	√	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Watermelon	√	√	0	√	0	√	√	√	√	√	0	0	0	0	0	0	0	√	0	0
Variety^a	3	3	0	2	0	5	5	4	11	9	2	1	3	2	2	2	3	4	2	5

^aVariety = total number of different types of fruit

√ = present in household

Table 6. Continued

	5					6					7					8					9				
	T 1	T 2	T 3	T 4	T 5	T 1	T 2	T 3	T 4	T 5	T 1	T 2	T 3	T 4	T 5	T 1	T 2	T 3	T 4	T 5	T 1	T 2	T 3	T 4	T 5
Apples	0	0	0	√	√	0	0	0	0	0	0	0	0	0	0	√	√	√	√	√	0	0	√	√	√
Bananas	0	√	√	0	0	0	0	√	0	0	0	0	0	0	0	0	√	√	√	0	√	√	√	√	√
Grapes	0	0	0	0	0	0	0	0	0	0	0	√	0	0	0	√	√	√	√	√	√	0	√	√	√
Guava	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mangos	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Oranges	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	√	√	√	√	√	√	√	√	√	√
Papaya	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peaches	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	√	√	0	0	0	√	√	√	0
Pears	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	√	√	√	√	√	0	0	0	0	0
Pineapple	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	√	0	0	0	0	0	0	0	0	0
Plums	0	0	0	0	0	0	0	0	0	0	0	√	0	0	0	0	0	0	0	0	0	0	0	0	0
Sapote	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Strawberries	0	√	√	0	0	0	0	0	0	0	0	0	0	0	0	√	√	√	√	√	√	√	√	√	√
Watermelon	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	√	√	√	0	0	0	0	0	√	0
Variety^a	0	2	2	1	1	0	0	1	0	0	0	2	0	0	0	7	8	8	6	5	4	4	6	7	5

^aVariety = total number of different types of fruit
 √ = present in household

Table 7. Household Availability of Amount of Fresh Fruit Collected During Five In-Home Assessments, by Household

<i>Fresh fruit</i>	<i>Participants</i>																			
	T1	T2	1			2					3					4				
	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5
Apples	1	0	0	0	0	1	3	1	10	4	0	0	0	0	0	0	0	0	0	2
Bananas	0	3	0	4	0	5	10	0	8	0	0	4	0	0	0	2	0	0	2	1
Grapes	0	0	0	0	0	0	0	0	8 ^b	32 ^a	0	0	0	0	0	8 ^a	2 ^b	2 ^b	2 ^b	1 ^b
Guava	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mangos	0	0	0	0	0	0	1	1	6	0	0	0	0	0	0	0	0	0	0	0
Oranges	0	0	0	0	0	3	8	7	12	0	0	0	0	0	0	0	0	0	0	v
Papaya	0	0	0	0	0	0	0	0	1	20	0	0	0	0	0	0	0	0	0	0
Peaches	0	0	0	0	0	0	0	0	19	4	4	0	4	2	1	0	3	3	0	2
Pears	0	0	0	0	0	0	0	0	9	4	0	0	1	1	1	0	0	0	0	0
Pineapple	0	0	0	0	0	0	0	0	1	8 ^a	0	0	0	0	0	0	0	0	0	0
Plums	0	0	0	0	0	0	0	0	14	6	4	0	1	0	0	0	2	1	0	0
Sapote	0	0	0	0	0	0	0	0	0	25	0	0	0	0	0	0	0	0	0	0

Numbers indicate the number of pieces of fruit, with the exception of ^a in ounces ^b in pounds

Table 7. Continued

	5					6					7					8					9				
	T 1	T 2	T 3	T 4	T 5	T 1	T 2	T 3	T 4	T 5	T 1	T 2	T 3	T 4	T 5	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5
Apples	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	3	3	3	4	0	0	0	6	14	14
Bananas	0	8	7	0	0	0	0	4	0	0	0	0	0	0	0	0	3	1	1	0	1	3	3	2	2
Grapes	0	0	0	0	0	0	0	0	0	0	0	8 ^a	0	0	0	3 ^b	12 ^a	2 ^b	10 ^a	20 ^a	24 ^a	0	13 ^a	3 ^b	16 ^a
Guava	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mangos	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Oranges	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	4	6	3	2	24	19	9	9	3
Papaya	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peaches	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	5	1	4	0
Pears	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1	1	1	3	0	0	0	0	0
Pineapple	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15 ^a	0	0	0	0	0	0	0	0	0
Plums	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Sapote	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Numbers indicate the number of pieces of fruit, with the exception of ^a in ounces ^b in pounds

Table 8. Household Availability of Fresh Vegetables Collected During Five In-Home Assessments, by Household

<i>Fresh vegetables</i>	<i>Participants</i>																			
	1					2					3					4				
	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5
Asparagus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Broccoli	√	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Carrots	0	0	0	0	√	0	0	0	√	√	0	0	0	0	0	√	√	√	√	√
Celery	0	0	0	0	0	√	√	√	√	√	0	0	0	0	0	0	0	0	0	0
Corn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	√	√	√	√	√	0
Cucumber	0	0	0	√	√	0	0	0	0	0	0	√	√	√	√	0	0	0	0	0
Greens	√	√	0	0	√	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lettuce	0	0	0	√	0	√	√	0	√	0	0	√	√	√	√	0	0	√	√	√
Okra	√	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Onion	0	0	0	√	√	√	√	√	√	√	√	√	√	√	√	0	0	0	0	√
Mushrooms	0	0	0	0	√	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peppers	√	0	0	0	0	√	√	√	0	√	0	0	0	0	0	0	0	0	0	√
Potatoes	0	0	0	√	√	√	√	0	√	√	0	0	0	0	0	√	√	0	0	0
Squash	√	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tomato	√	0	0	0	√	√	√	√	√	√	0	√	√	√	√	√	√	0	√	√
Yams	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Variety^a	6	1	0	4	7	6	6	4	6	6	1	4	4	4	5	4	4	3	4	5

^a Variety = total number of different types of fresh vegetables √ = present in the household

Table 8. Continued

	5					6					7					8					9				
	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Asparagus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	√	0	0	√	0	0	0	0	0	0
Broccoli	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	√	0	√	√	0	0	0	0	0
Carrots	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	√	√	√	0	0	√	0	√	0	√
Celery	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Corn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cucumber	√	√	0	√	√	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Greens	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	√	0	0	0	√	0	0	0	0	0
Lettuce	0	0	0	0	0	0	0	0	0	√	0	0	0	√	√	√	√	√	√	√	0	√	√	0	√
Okra	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Onion	0	0	0	0	0	0	0	0	0	0	0	√	√	√	0	√	√	√	√	0	0	0	0	0	0
Mushrooms	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	√	0	√	√	0	0	0	0	0	0
Peppers	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	√	√	√	√	0	0	0	0	0	0
Potatoes	√	√	0	0	0	0	0	0	0	0	√	√	√	√	0	√	0	√	√	√	0	0	0	0	0
Squash	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	√	0	0	0	0	0	0	0
Tomato	0	0	0	0	0	0	0	0	0	√	0	0	0	√	√	√	0	√	√	√	√	√	√	0	√
Yams	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	√	√	0	0	√	0	0
Variety^a	2	2	0	1	1	0	0	0	0	2	1	2	2	4	2	9	5	8	9	6	2	2	4	0	3

^a Variety = total number of different types of fresh vegetables

√ = present in the household

Table 9. Household Availability of Amount of Fresh Vegetables Collected During Five In-Home Assessments, by Household

<i>Vegetables</i>	<i>Participants</i>																			
	1					2					3					4				
	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5
Asparagus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Broccoli	8 ^a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Carrots	0	0	0	0	12 ^a	0	0	0	1 ^b	10 ^a	0	0	0	0	0	2	2	4	1 ^b	22 ^a
Celery	0	0	0	0	0	1	1	1	1 ^b	8 ^a	0	0	0	0	0	0	0	0	0	0
Corn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	30 ^a	5	4	2	2	0
Cucumber	0	0	0	2	1	0	0	0	0	0	0	3	3	1	1	0	0	0	0	0
Greens	6 ^a	4 ^a	0	0	2 ^a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lettuce	0	0	0	15 ^a	0	2	1	0	1	0	0	2	2	1	1	0	0	1	1	1
Okra	40 ^a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Onion	0	0	0	1	1 ^a	2	4	1	9	6	1	2	2	2	1	0	0	0	0	1
Mushrooms	0	0	0	0	5 ^a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peppers	1 ^b	0	0	0	0	4	1	8 ^a	0	3	0	0	0	0	0	0	0	0	0	3
Potatoes	0	0	0	2	1	5 ^b	1 ^b	0	10 ^b	5 ^b	0	0	0	0	0	5 ^b	4 ^b	0	0	0
Squash	8 ^a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tomato	8 ^a	0	0	0	1 ^a	4 ^b	4 ^b	2 ^b	3 ^b	5	0	2 ^b	3	1	1	3	3	0	1	3
Yams	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Numbers indicate the number of pieces of vegetables, with the exception of ^a in ounces ^b in pounds

Table 9. Continued

	5					6					7					8					9				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Asparagus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2 ^a	0	0	1 ^b	0	0	0	0	0	0
Broccoli	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1 ^b	1 ^b	0	0	0	0	0
Carrots	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5 ^a	8 ^a	1 ^b	0	0	20 _a	0	8 ^a	0	5 ^b
Celery	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Corn	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cucumber	2	2	0	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Greens	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6 ^a	0	0	0	1 ^b	0	0	0	0	0
Lettuce	0	0	0	0	0	0	0	0	0	8 ^a	0	0	0	1	2	20 ^a	13 ^a	16 ^a	2 ^b	6 ^a	0	1 ^b	3 ^b	0	2 ^b
Okra	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Onion	0	0	0	0	0	0	0	0	0	0	0	4	3	3	0	1	1	1	10 _a	0	0	0	0	0	0
Mushrooms	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3 ^a	0	8 ^a	5 ^a	0	0	0	0	0	0
Peppers	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	28 ^a	3	23 ^a	8 ^a	0	0	0	0	0	0
Potatoes	4	4	0	0	0	0	0	0	0	0	1 ^b	5 ^b	3 ^b	3 ^b	0	1 ^b	0	3	3	2	0	0	0	0	0
Squash	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
Tomato	0	0	0	0	0	0	0	0	0	8 ^a	0	0	0	½	1	20 ^a	0	12 ^a	2	32 _a	2 ^b	1 ^b	8 ^a	0	2 ^b
Yams	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	0	0	3	0	0

Numbers indicate the number of pieces of vegetables, with the exception of ^a in ounces ^b in pounds

Table 10. Household Availability of Canned Fruit Collected During Five In-Home Assessments, by Household

<i>Can Fruit</i>	<i>Participants</i>																			
	1					2					3					4				
	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5
Apples	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	√	√	√	√	√
Heavy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	√	√	√	√	√
Light	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pears	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Heavy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Light	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Oranges	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Heavy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Light	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pineapple	0	0	0	0	0	√	√	√	√	√	0	0	0	0	0	0	0	0	0	0
Heavy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Light	0	0	0	0	0	√	√	√	√	√	0	0	0	0	0	0	0	0	0	0
Peaches	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Heavy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Light	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mixed fruit	0	0	0	0	0	0	0	0	0	0	0	√	√	√	√	0	0	0	0	0
Heavy	0	0	0	0	0	0	0	0	0	0	0	√	√	√	√	0	0	0	0	0
Light	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Variety^a	0	0	0	0	0	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1

^aVariety = number of different types of canned fruit

√ = present in household

Table 10. Continued

<i>Can Fruit</i>	5					6					7				
	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5
Apples	0	0	0	0	0	√	√	0	0	0	0	0	0	0	0
Heavy	0	0	0	0	0	√	√	0	0	0	0	0	0	0	0
Light	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pears	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Heavy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Light	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Oranges	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Heavy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Light	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pineapple	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Heavy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Light	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peaches	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Heavy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Light	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mixed fruit	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Heavy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Light	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Variety^a</i>	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0

^aVariety = number of different types of canned fruit

√ = present in household

Table 10. Continued

Can Fruit	8					9				
	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5
Apples	0	√	√	√	√	√	√	√	√	√
Heavy	0	0	0	√	√	0	0	0	0	0
Light	0	√	√	0	0	√	√	√	√	√
Pears	0	0	0	0	0	√	√	√	√	√
Heavy	0	0	0	0	0	0	0	0	0	0
Light	0	0	0	0	0	√	√	√	√	√
Oranges	0	0	0	0	0	√	√	√	√	√
Heavy	0	0	0	0	0	0	0	0	0	0
Light	0	0	0	0	0	√	√	√	√	√
Pineapple	0	√	√	√	√	√	√	√	√	√
Heavy	0	0	0	0	0	0	0	0	0	0
Light	0	√	√	√	√	√	√	√	√	√
Peaches	0	√	√	√	√	√	0	√	√	√
Heavy	0	0	0	0	0	0	0	0	0	0
Light	0	√	√	√	√	√	0	√	√	√
Mixed fruit	√	√	√	√	√	√	√	0	√	√
Heavy	0	0	0	0	0	0	0	0	0	0
Light	√	√	√	√	√	√	√	0	√	√
Variety	1	4	4	4	4	6	5	5	6	6

^aVariety = number of different types of canned fruit

√ = present in household

Table 11. Household Availability of Amount^a of Canned Fruit Collected During Five In-Home Assessments, by Household

<i>Can Fruit</i>	<i>Participants</i>																			
	1					2					3					4				
	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5
Apples																				
Heavy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	45	30	30	30	30
Light	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pears																				
Heavy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Light	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Oranges																				
Heavy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Light	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pineapple																				
Heavy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Light	0	0	0	0	0	80	80	80	112	80	0	0	0	0	0	0	0	0	0	0
Peaches																				
Heavy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Light	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mixed fruit																				
Heavy	0	0	0	0	0	0	0	0	0	0	0	60	15	15	15	0	0	0	0	0
Light	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

^a Amount in ounces

Heavy = fruit in heavy syrup; Light = fruit in light syrup

Table 11. Continued

	5					6					7					8					9									
Apples																														
Heavy	0	0	0	0	0	10	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Light	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20	40	60	86	100	65	50	55	50					
Pears																														
Heavy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Light	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	30	30	30	30	30					
Oranges																														
Heavy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Light	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	67	120	120	67	120					
Pineapple																														
Heavy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Light	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20	20	100	20	120	120	100	100	100					
Peaches																														
Heavy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Light	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	15	19	15	40	0	68	36	84					
Mixed fruit																														
Heavy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Light	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	61	45	64	77	61	40	72	0	32	80					

^a Amount in ounces

Heavy = fruit in heavy syrup; Light = fruit in light syrup

Table 12. Household Availability of Canned Vegetables Collected During Five In-Home Assessments, by Household

<i>Participants</i>																									
	1					2					3					4									
	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5					
Carrots	0	√	√	√	0	0	0	0	0	0	√	√	√	√	√	√	√	√	√	√	√				
Corn	0	√	√	√	√	0	0	0	√	√	√	√	√	√	√	0	0	√	√	√	√				
Greens	0	0	0	0	0	0	0	0	0	0	0	0	0	√	√	0	√	√	0	√	√				
Green	√	√	√	√	√	0	0	0	0	0	√	√	√	√	√	√	√	√	√	√	√				
peas																									
Green	√	√	√	√	0	√	0	0	0	0	√	√	√	√	√	√	√	√	0	0	0				
beans																									
Mixed	0	0	0	0	0	√	0	0	√	√	√	√	√	√	0	√	√	√	√	√	√				
Potatoes	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Tomatoes	0	√	√	√	√	√	0	0	√	√	√	√	√	√	√	√	√	√	√	√	√				
Variety	2	5	5	5	3	3	0	0	3	3	6	6	6	7	7	3	5	7	5	6	6				
	5					6					7					8					9				
	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5
Carrots	0	0	0	0	0	0	0	0	√	0	√	√	√	√	0	√	√	√	√	√	0	0	0	0	0
Corn	√	√	√	√	√	√	√	√	√	√	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Greens	0	0	0	0	0	0	0	0	0	0	0	√	√	0	0	√	√	√	√	√	√	√	√	√	
Green	0	0	√	0	0	0	0	0	√	√	√	0	0	0	0	0	0	0	0	0	√	0	0	0	0
peas																									
Green	√	√	0	0	0	√	√	√	√	√	0	0	0	0	0	0	0	0	0	0	√	√	√	√	√
beans																									
Mixed	0	0	0	0	0	√	√	√	√	√	0	0	0	0	0	0	0	0	0	0	√	√	√	√	√
Potatoes	0	0	0	0	0	√	√	√	0	√	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tomatoes	0	√	0	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Variety	2	3	2	2	2	5	5	5	6	6	3	3	3	2	1	3	4	3	3	3	5	4	4	3	4

^aVariety = total number of different types of canned vegetables

√ = present in household

Table 13. Household Availability of Amount^a of Canned Vegetables Collected During Five In-Home Assessments, by Household

Visit	Participants																			
	1					2					3					4				
Vegetable	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Carrots	0	15	15	15	0	0	0	0	0	0	15	15	15	15	15	15	15	15	15	15
Corn	0	15	15	15	15	0	0	0	30	30	45	45	45	45	45	0	0	60	30	30
Greens	0	0	0	0	0	0	0	0	0	0	0	0	0	101	101	0	13	13	0	15
Green peas	30	45	45	45	30	0	0	0	0	0	45	45	45	45	45	45	45	60	53	68
Green beans	15	30	45	30	0	14	0	0	0	0	140	120	90	90	75	132	15	45	0	0
Mixed	0	0	0	0	0	24	0	0	8	8	75	45	45	45	45	0	15	15	15	15
Potatoes	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tomatoes	0	34	55	21	33	16	0	0	66	52	140	163	161	195	182	68	68	136	168	158

Visit	Participants																								
	5					6					7					8					9				
Vegetable	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Carrots	0	0	0	0	0	0	0	0	29	0	3	15	15	15	0	45	28	28	30	28	0	0	0	0	0
Corn	29	29	29	29	29	135	135	145	120	180	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Greens	0	0	0	0	0	0	0	0	0	0	0	15	14	0	0	70	65	45	75	56	13	15	36	13	15
Green peas	0	0	28	0	0	0	0	0	15	15	6	0	0	0	0	0	0	0	0	0	10	0	0	0	0
Green beans	28	28	0	0	0	225	255	255	283	255	0	0	0	0	0	0	0	0	0	0	20	12	56	56	45
Mixed	0	0	0	0	0	30	30	30	90	15	0	0	0	0	0	0	0	0	0	0	12	10	15	15	15
Potatoes	0	0	0	0	0	30	30	30	0	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tomatoes	0	10	0	10	10	226	210	210	346	204	8	64	48	40	8	45	75	83	64	70	44	46	46	56	46

^a Amount in ounces

Table 14. Household Availability of Amount^a of Dairy Collected During Five In-Home Assessments, by Household

	<i>Participants</i>																			
	1					2					3					4				
	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5
Milk																				
Whole	0	0	0	0	0	192	64	0	0	0	0	0	0	0	96	192	64	128	32	96
Low fat	64	64	64	0	64	28	0	0	256	32	4	64	0	192	0	0	0	0	0	0
Cottage																				
Regular	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Low fat	0	10	36	18	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Yogurt																				
Regular	0	0	0	0	0	18	0	0	10	0	0	0	0	0	0	0	0	0	0	0
Low fat	28	12	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cheese ^b	1	10	10	2	0	0	0	32	0	0	0	7	0	12	0	32	32	16	16	16
Cheese ^c																				
Regular	12	44	34	18	2	160	37	54	42	25	2	26	12	30	16	8	0	16	16	12
Low fat	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

^a Amount in ounces ^b Cheese spread ^c Hard cheese

Table 14. Continued

	5					6					7				
	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5
Milk															
Whole	64	0	64	64	64	16	198	128	0	0	0	0	0	0	0
Low fat	0	128	64	0	0	0	0	0	64	128	128	64	64	16	0
Cottage															
Regular	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Low fat	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Yogurt															
Regular	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0
Low fat	24	24	18	0	0	0	0	0	0	0	0	0	0	0	0
Cheese^a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cheese^b															
Regular	48	60	26	56	56	160	220	104	135	114	12	8	3	10	7
Low fat	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			8					9							
Milk	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5					
Whole	32	0	0	0	0	32	192	64	224	128					
Low fat	128	64	224	224	192	32	128	0	0	0					
Cottage															
Regular	0	24	0	0	16	0	0	0	9	0					
Low fat	0	8	24	28	0	0	0	0	0	0					
Yogurt															
Regular	0	0	0	12	0	0	21	31	20	76					
Low fat	80	16	12	54	0	75	15	0	18	28					
Cheese^a	0	0	0	0	0	0	98	0	0	0					
Cheese^b															
Regular	31	0	0	7	0	0	98	92	80	56					
Low fat	14	57	40	53	48	15	0	12	0	0					

^a Amount in ounces ^b Cheese spread ^c Hard cheese

Table 15. Household Availability of Meats/Poultry/Seafood and Other Protein Collected During Five In-Home Assessments, by Household

		<i>Participants</i>																			
		1					2					3					4				
		T1	T2	T3	T4	T5	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5
Beef – regular		0	√	√	0	√	√	√	0	√	0	√	√	0	√	√	√	√	√	√	√
Pork	Regular	0	√	0	0	√	√	0	0	√	√	0	0	√	√	√	√	0	√	0	0
Pork	Sausage	√	0	0	0	0	√	√	√	√	√	0	√	0	√	0	√	0	0	0	0
Pork	Bacon	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	0	0	0	0	√
Hotdogs	Beef/pork	0	0	0	0	√	√	0	0	√	√	√	√	√	√	0	√	√	√	√	√
Hotdogs	Turkey/chicken	0	0	0	0	0	0	0	0	0	0	0	0	0	√	0	0	0	0	0	0
Lunchmeat	Ham/ bologna	√	0	0	0	√	√	√	0	√	√	0	√	0	√	√	√	0	√	√	√
Lunchmeat	Salami	0	0	0	0	0	0	0	0	0	0	0	√	0	√	0	0	0	√	0	0
Lunchmeat	Miscellaneous	0	0	0	0	0	0	0	0	0	0	0	0	0	0	√	0	0	0	0	0
Chicken	Breast	√	0	0	0	0	√	√	√	0	0	√	√	0	√	√	√	0	√	√	√
Chicken	Whole/pieces	0	0	0	0	√	√	√	0	0	0	0	√	√	0	0	0	0	0	0	√
Chicken	Breaded	0	0	0	0	0	√	√	0	0	0	0	0	0	0	0	0	0	0	0	√
Chicken	Canned	√	√	√	√	√	0	0	√	0	0	√	√	0	√	√	0	√	0	√	0
Turkey		√	0	0	√	0	√	√	√	√	√	√	0	√	0	0	0	0	0	0	0
Fish	Not breaded	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	√	0	0	√
Fish	Breaded	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Canned fish ^a		√	√	√	√	√	0	0	√	√	√	√	√	√	√	√	√	√	√	√	√
Eggs		√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Peanut butter-Regular		0	0	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Peanut butter- Reduced fat		√	√	0	√	√	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

^a Tuna, salmon, and sardines √ =present in the household

Table 15. Continued

Visit	5					6					7					8					9				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Beef – regular	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	0	0	0	0	0
Pork Regular	0	0	0	√	√	√	√	√	√	√	0	√	√	0	√	0	0	0	0	0	0	0	0	0	0
Pork Sausage	0	√	0	√	0	0	0	0	√	√	√	√	0	0	0	0	0	0	0	0	0	0	0	0	0
Pork Bacon	0	0	√	√	√	√	√	√	√	√	√	√	√	√	√	0	0	0	√	√	0	0	0	0	0
Hotdogs Beef/pork	0	0	0	0	0	√	√	√	√	√	√	0	0	0	0	0	√	0	0	0	0	0	0	0	0
Hotdogs Turkey/chicken	0	0	0	0	0	√	√	0	√	0	0	0	0	0	0	0	√	√	0	√	√	√	√	0	√
Lunchmeat Ham/ bologna	0	√	√	√	√	√	0	√	√	√	√	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lunchmeat Salami	0	√	0	0	0	0	0	0	0	0	√	√	0	√	0	0	0	0	0	0	0	0	0	0	0
Lunchmeat Miscellaneous	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	√	0	0	√	√	√	0	0	0	0
Chicken Breast	√	√	√	√	√	√	√	√	√	√	0	0	0	0	0	√	√	√	√	√	√	0	0	0	√
Chicken Whole/pieces	√	√	√	0	√	√	0	0	√	√	0	√	√	0	0	0	√	√	√	√	√	0	√	√	0
Chicken Breaded	√	√	0	√	0	0	0	√	0	√	0	0	√	0	0	√	√	√	√	√	0	√	√	√	√
Chicken Canned	0	√	√	√	√	√	0	0	√	√	0	√	√	0	0	0	√	√	√	√	√	0	√	√	0
Turkey	0	0	0	0	0	√	√	√	√	√	0	0	0	0	0	√	√	√	√	√	√	√	√	0	0
Fish Not breaded	0	0	0	0	0	0	0	√	0	0	√	0	√	√	0	√	√	√	√	√	√	√	√	0	√
Fish Breaded	0	0	0	0	0	0	0	0	√	0	√	√	0	0	√	0	0	0	0	0	0	0	0	0	0
Canned fish ^a	0	√	0	√	√	√	√	√	√	√	0	√	0	√	√	0	0	0	√	√	√	√	√	√	√
Eggs	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	0	0	0	0	√	√	√	√	√
Peanut butter																									
Regular	√	0	0	0	√	√	√	√	√	√	√	√	√	√	√	√	√	0	√	√	√	√	√	√	√
Reduced fat	0	√	0	√	0	0	0	0	0	0	0	0	0	0	0	0	0	√	0	0	0	0	0	0	0

√ = present in the household ^a includes sardines

Table 16. Household Availability of Cereals, Breads, and Tortillas Collected During Five In-Home Assessments, by Household

	<i>Participants</i>																			
	1					2					3					4				
	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5
RTE cereal																				
Unsweetened	√	√	√	0	0	0	0	0	0	0	0	0	0	0	0	√	√	√	√	√
Sweetened	√	√	√	√	√	√	√	√	√	√	0	√	√	√	√	√	√	√	√	√
Oatmeal	√	√	√	√	√	√	√	√	√	√	0	0	0	0	0	√	√	√	√	√
Bread																				
White	√	√	√	0	0	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
Whole wheat	√	√	0	√	√	0	0	0	0	0	√	√	√	√	√	0	0	0	0	0
Tortillas																				
Corn	0	0	0	√	√	√	√	√	√	√	0	0	0	0	0	√	0	0	0	0
Flour	0	0	0	√	√	√	√	0	0	√	0	0	√	√	√	√	√	√	√	√

	5					6					7					8					9				
	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5
	RTE cereal																								
Unsweetened	√	0	0	0	0	0	0	√	0	0	√	0	0	√	0	√	√	√	√	√	√	√	√	√	√
Sweetened	√	√	√	√	√	√	√	√	√	√	√	√	√	0	√	√	√	√	√	√	√	√	√	√	√
Oatmeal	√	√	√	√	√	√	√	√	√	√	0	0	0	0	0	√	√	√	0	√	√	√	√	√	√
Bread																									
White	0	√	√	√	√	√	√	√	√	√	√	0	0	√	√	√	√	√	√	√	0	0	0	0	0
Whole wheat	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	√	√	√	√	√	√	√	√	√	√
Tortillas																									
Corn	√	√	√	√	√	0	0	0	0	√	0	0	0	√	0	√	0	0	√	0	0	0	0	0	0
Flour	√	0	0	0	0	0	0	0	0	0	0	0	0	0	0	√	√	√	√	√	0	0	0	0	0

RTE = Ready-to-eat, dry breakfast cereal
 √ = present in household

Table 17. Household Availability of Frozen Desserts Collected During Five In-Home Assessments, by Household

		<i>Participants</i>																								
		1					2					3					4									
		T1	T2	T3	T4	T5	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5					
Ice cream																										
Regular		√	√	√	√	0	√	√	√	√	√	√	0	0	0	0	√	0	0	0	√					
Low fat		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
Popsicles		√	√	√	√	√	√	√	√	√	√	0	0	√	√	√	√	√	√	√	√					
		5					6					7					8					9				
		T1	T2	T3	T4	T5	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5
Ice cream																										
Regular		0	0	0	0	0	0	0	√	0	0	√	√	0	0	√	√	√	0	√	√	√	√	√	√	√
Low fat		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	√	√	√	0	√	√	√	√	√	√
Popsicles		√	√	√	√	√	√	√	√	√	√	√	0	0	0	√	√	√	√	√	√	√	0	√	√	0

√ = present in household

Table 18. Household Availability of Beverages Collected During Five In-Home Assessments, by Household

	<i>Participants</i>																			
	1					2					3					4				
	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5
Tea																				
Sugar	0	0	0	0	0	√	0	0	√	√	0	0	0	0	0	0	0	0	√	√
Soda																				
Regular (sugar)	0	0	0	√	0	√	0	√	0	0	0	0	0	0	0	0	0	√	0	√
Low sugar	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
100% fruit juice	0	√	√	0	√	√	0	0	0	0	0	0	0	0	0	√	√	√	√	√
Fruit drinks	0	0	0	0	0	√	√	0	√	0	0	√	0	0	0	√	√	√	0	√
Drink concentrate																				
Regular sugar	0	0	0	0	0	√	0	√	0	0	0	0	√	√	√	√	√	√	√	√
Low sugar	√	√	√	0	√	0	0	0	0	0	0	0	0	0	0	0	√	0	0	√
√ = present in household																				

Table 18. Continued

	5					6					7					8					9									
	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5					
Tea																														
Sugar sweet	0	√	√	√	0	0	0	√	√	√	√	√	0	√	0	0	0	0	0	√	0	0	0	0	0	0	0			
Soda																														
Regular (sugar)	0	√	0	0	√	√	√	0	0	0	√	√	√	0	√	√	√	√	√	√	√	√	√	√	√	√	√			
Diet	0	0	0	0	√	0	0	0	0	0	0	0	0	0	√	√	√	√	√	√	√	√	√	√	√	√	√			
100% fruit juice	0	0	0	0	0	√	0	0	0	0	0	0	0	0	√	√	√	√	√	√	√	√	√	√	√	√	√			
Fruit drinks	0	0	0	√	√	0	0	√	0	0	0	0	0	0	√	√	√	√	√	√	√	0	0	0	0	0	0			
Drink Concentrate																														
Regular sugar	0	0	0	0	0	√	√	√	0	√	0	0	0	0	√	0	0	0	√	√	√	0	0	0	0	0	0			
Low sugar	√	√	√	√	√	0	0	0	0	0	0	0	0	0	√	√	√	√	√	√	0	√	√	√	√	√	√			

Table 19. Household Availability Microwavable or Quick-Cook Frozen Foods During Five In-Home Assessments, by Household

	<i>Participants</i>																								
	1					2					3					4									
	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5					
Pizza	√	0	0	0	√	√	√	√	√	√	0	0	0	0	0	0	0	√	√	0					
Taco or Burritos	√	√	√	0	0	0	√	√	√	√	0	0	0	0	0	0	0	0	√	√					
Entrees	√	√	√	√	√	0	0	0	0	0	0	0	0	√	√	0	0	0	0	0					
French fries	0	0	0	0	0	0	0	0	0	0	√	0	0	√	√	0	0	0	0	0					
Ramen Noodles	√	√	√	0	√	√	√	0	0	0	√	√	√	√	√	√	√	0	√	0					
	5					6					7					8					9				
	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5
Pizza	√	0	0	0	0	√	√	√	0	0	0	0	0	0	0	√	√	√	√	√	0	0	0	0	0
Tacos or Burritos	0	0	0	0	0	√	√	√	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Entrees	0	0	0	√	0	√	√	0	0	0	0	0	0	0	0	√	√	√	0	0	√	√	0	√	√
French fries	√	√	√	√	√	0	0	0	0	√	√	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ramen noodles	0	0	0	0	0	√	0	√	√	√	√	0	√	0	0	0	0	0	0	0	0	0	0	0	0

Table 20. Household Availability of Chips, Crackers, and Other Snacks Collected During Five In-Home Assessments, by Household

	<i>Participants</i>																			
	1					2					3					4				
	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5
Chips																				
Regular	√	√	√	√	√	0	√	√	√	√	0	√	√	√	√	√	√	√	√	√
Baked	√	√	√	√	0	0	0	0	0	0	0	√	0	0	0	0	0	0	0	0
Crackers																				
Regular	√	0	√	√	√	√	√	√	0	√	√	√	√	0	0	√	√	√	√	√
Low fat	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cookies																				
Regular	0	√	0	0	0	0	√	√	√	√	0	√	√	0	0	0	0	0	0	√
Reduced fat	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Donuts	0	0	0	0	0	0	0	0	0	0	0	√	0	0	√	0	0	0	0	0
Nuts ^a	√	√	√	√	√	√	0	0	0	0	0	0	0	0	0	√	√	0	0	0
Candy	√	√	√	0	√	0	0	0	0	√	0	0	0	0	√	√	0	0	0	√
Granola bars	0	√	0	√	√	0	0	0	0	0	0	0	0	0	0	√	√	√	0	√
Pop tarts	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	√	√	√

√ = present in household ^a Nuts of any kind

Table 20. Continued

	5					6					7					8					9				
	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5	T1	T2	T3	T4	T5
Chips																									
Regular	√	√	√	√	√	√	√	√	√	√	√	0	√	√	√	√	√	√	√	√	0	√	√	√	√
Baked	0	√	√	√	√	0	0	0	0	0	0	0	0	0	0	√	√	√	√	√	√	√	√	√	√
Crackers																									
Regular	√	√	√	√	√	√	√	√	√	√	√	√	√	0	0	√	0	√	√	√	√	√	√	√	√
Low fat	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	√	√	0	√	√	√	0	0	0	0
Cookies																									
Regular	√	√	√	√	0	0	√	√	√	√	0	0	0	0	0	0	0	0	0	√	√	√	√	√	√
Reduced fat	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Donuts	0	√	√	√	√	√	√	√	√	√	√	0	√	√	0	0	0	√	0	√	0	0	0	0	0
Nuts ^a	√	0	0	√	√	√	√	√	√	0	√	0	0	0	0	√	√	0	0	0	√	√	√	√	√
Candy	0	0	0	√	√	√	√	0	√	√	0	0	0	0	0	√	√	√	√	√	√	√	√	√	√
Granola bars	√	√	√	√	√	√	√	√	√	√	0	0	0	0	0	0	√	√	√	√	√	0	0	0	0
Pop tarts	√	√	√	0	0	√	√	√	√	√	√	0	0	0	0	√	√	√	√	√	0	0	0	0	0

√ = present in household ^a Nuts of any kind

VITA

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