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# Factors Influencing Shopping, Cooking, and Eating Behaviors Among Low-Income Families During a One-Month Period of Time

Janice Darko

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Factors Influencing Shopping and Eating Behaviors Among Low-Income  
Families During a One-month Period of Time.

Janice Darko

A thesis submitted to the faculty of  
Brigham Young University  
in partial fulfillment of the requirements for the degree of  
Master of Science

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April 2010

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## ABSTRACT

### Factors Influencing Shopping and Eating Behaviors Among Low-Income Families During a One-month Period of Time.

Janice Darko

Department of Nutrition, Dietetics, and Food Science

Master of Science

**Objective:** To evaluate changes in shopping behaviors among low-income families over a one-month period of time in Utah County, Utah.

**Design:** Two researchers conducted thirteen 90-minute focus groups.

**Setting:** Two community organizations serving low-income populations and a university campus.

**Participants:** Seventy-two low-income adults who were the primary household food shoppers and who had at least one child less than 18 years in their household.

**Main Outcome Measures:** Shopping behavior changes during one month period of time.

**Analysis:** Focus groups were recorded and transcribed, and then coded independently by two researchers with any differences reconciled. Paired t-tests were used to test differences of food expenditures by food group between the beginning and end-of-the-month shopping behaviors.

**Results:** Shopping habits among low-income families changed throughout the month and were impacted by use of food assistance programs, food prices, and shopping logistics. Participants reported purchasing more varied foods at the beginning of the month versus more starch-based and canned foods at the end-of-the-month. To overcome economic barriers, participants used numerous strategies including weekly or monthly menu planning, price matching, and bulk buying.

**Conclusions and Implications:** Low-income families make strategic decisions based on economic circumstances and other factors, including participation in food assistance programs, or the timing of the month, in order to stretch food expenditures. Our results suggest limited economics throughout the month may hinder families' ability to consume a varied, nutrient-rich diet, which may impact future health status.

Keywords: low-income families, shopping behaviors, food assistance programs, food prices, food expenditures

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Brigham Young University

**SIGNATURE PAGE**

of a thesis submitted by

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The thesis of Janice Darko is acceptable in its final form including (1) its format, citations, and bibliographical style are consistent and acceptable and fulfill university and department style requirements; (2) its illustrative materials including figures, tables, and charts are in place; and (3) the final manuscript is satisfactory and ready for submission.

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## INTRODUCTION

According to the World Health Organization (WHO), about 65 million people in the world today live in nations where overweight- and obesity- related diseases kill more people than underweight related diseases.<sup>1</sup> In 2005, overweight and obesity was responsible for an estimated one in ten deaths in the United States.<sup>2</sup> According to the Surgeon General<sup>3</sup>, in 2001, obesity was most prevalent among members of low-income families, consistent with Drewnowski<sup>4</sup> who hypothesized that obesity in America to a large extent is an economic issue. The finding that high energy-dense foods are less expensive compared to low energy-dense foods by Drewnowski<sup>5</sup> has helped to explain why the highest rates of obesity continue to be observed among groups of limited economic means. Thus, this suggests that low socioeconomic status may pose a barrier to the adoption of healthier diets due to the high costs of low-energy-density foods.

Recently, Tarasuk et al.<sup>6</sup> evaluated dietary adequacy among low-income Canadian mothers over a 30-day period, with results indicating significantly decreased energy, carbohydrate, vitamin B6, and milk and vegetable food group intakes among those classified as severely food insecure. However, this study failed to document actual household food expenditures throughout the month as well as the impact of food assistance programs on household eating and shopping patterns.

Shopping behaviors among low-income individuals are influenced by many factors, including food costs, food access and availability, food quality, and use of coupons or in-store sales.<sup>7,8,9</sup> Turrell et al.<sup>10</sup> identified income as the most significant predictor of food purchasing behaviors, with those of a lower socioeconomic status less likely to meet dietary fruit and vegetable recommendations than those of a higher socioeconomic status and education level.

Research has also indicated that approximately 75% of households using food stamps generally cannot meet dietary needs by the end of the month, thus increasing household food insecurity risk.<sup>11,12</sup> Wilde and Ranney<sup>13</sup> found that food expenditures reach their highest level approximately 3 days after receipt of food stamps and remain lower throughout the remainder of the month. Analyses of two studies about food shopping practices among low-income populations by Hersey et al.<sup>11</sup> found that certain shopping practices among food stamp recipients, such as using a shopping list, can enhance dietary intake of several nutrients, including vitamins A, C, and B6, folate, iron, and zinc. However, only approximately half of their sample population reported using this type of food shopping strategy and the majority had insufficient funds to cover food costs throughout the entire month.

There has been inadequate research evaluating the types of foods low-income households obtain throughout the month, how they use them in the home, and how their shopping behaviors might change over a one-month period of time. Thus, the purpose of this study was to evaluate factors that impact shopping habits and to measure changes in food acquisition behaviors among low-income households during one month period of time.

## **METHODS**

### **STUDY POPULATION AND SETTING**

Low-income parents (defined as household income  $\leq$  185% of the poverty level) with at least one child < 18 years of age who were identified as the primary food shopper in the household were recruited from Utah County, Utah (n=72). Participants who received benefits from any government food assistance program (e.g., Supplemental Nutrition Assistance Program (SNAP), formerly known as the Food Stamp Program, and the Special Supplementary Program for Women, Infants, and Children (WIC)) automatically qualified for the study. Exclusion criteria

included pregnant women and people who were not fluent in English. Participants were recruited via flyers posted at local food assistance program offices and food pantries, and on college campus information boards.

**Focus Group Sessions.** Thirteen focus groups were conducted by two researchers trained in focus group facilitation, methodology, and evaluation.<sup>14</sup> Sessions were 90 minutes in length, were audio-taped, and transcribed verbatim. Participants were asked about eating patterns and shopping habits and how that varied over a one-month period of time (Table 1). In addition, participants' heights and weights were measured to the nearest 0.1 cm and 0.1 kg, respectively. Participants also completed sociodemographic sheet.

**Quantitative Survey.** Participants from focus groups were given envelopes to collect any food store receipts during a one-month time period. Each participant was also given a "Household Food Increase Tracking Sheet" each week during the month to record any foods not obtained through receipts (i.e. food bank, friends, and family). Participants were asked to record the types and sizes of foods obtained, where foods were obtained, and how the foods were obtained. Researchers met with the participants once each week throughout the one-month period to collect their completed tracking sheets and any store receipts, to take weight measurements, and to conduct a 24-hour recall. At the end-of-the-month, participants were asked to complete the United States Department of Agriculture (USDA)'s Food Security Scale for the past 30 days and past year. The final follow-up sample size was 44 (28 dropped out during this phase of the study).

**Data Analysis.** Transcripts were evaluated independently by the two researchers, with subsequent comparison and reconciliation of discrepancies. The pile-and-sort method was used

to determine the themes and subthemes that emerged.<sup>14</sup> Descriptive statistics, including means and frequencies, were used for sociodemographic variables. Body mass index (BMI) was calculated using the formula  $\text{kg/m}^2$ . During the focus groups, it became apparent from participants that food expenditures were influenced by the timing of the month that they received economic increases, either through employment wages or from food assistance program allotments. Hence, for the quantitative analysis, “beginning-of-the-month” (BOM) shopping habits were defined as follows: 1) for those on SNAP/WIC, the week they received SNAP/WIC (week 1) and the week following SNAP allotments/WIC vouchers (week 2); 2) for non-SNAP/WIC participants who receive a monthly paycheck, the week they got paid (week 1) and the week thereafter (week 2); and 3) for non-SNAP/WIC participants who were paid bi-weekly, the weeks they were paid (week 1 and week 2). “End-of-the-month” (EOM) shopping habits were counted as the remaining two weeks of the month that were not used in the BOM calculation for each category (1-4) explained previously. Paired t-tests compared differences of food expenditures at the BOM and the EOM. Mean differences of absolute dollars spent per USDA’s MyPyramid Food Groups between the BOM and EOM were evaluated, as well as mean proportional differences (percent of each food group from the dollar total amount spent). To account for multiple comparisons bias, the significance level was set at  $p < 0.01$ . All statistical analyses were performed in SAS v. 9.2 (SAS Institute Inc. Cary, NC, USA, 2007). This study was approved by the Institutional Review Board for Human Subjects at Brigham Young University.

## RESULTS

### PARTICIPANTS CHARACTERISTICS

Sixty-two females and 10 males, with more than 80% of them between the ages of 20 to 39 years participated in the study (Table 2). Most had completed high school or attained further education from a college, technical or vocational school. About 31% of participants used SNAP and 51% used WIC. About 53% of the participants had a BMI  $\geq 25$  and only 18% were employed. Most participants (49%) shopped at supermarkets and about 54% of the participants shopped 1-2 times a week (Table 3).

Food expenditures for all the food groups, except grains, were higher at the BOM compared to the EOM, with the most significant change in expenditures from the Meat and Beans Food Group (EOM-BOM:  $-\$13.4 \pm 4.3$ ,  $p < 0.01$ ), (Table 5). However, the evaluation of the mean proportional change in food group expenditures throughout the month indicated a significant difference in only the Discretionary Calories Food Group (EOM-BOM:  $-\$6.8 \pm 2.1$ ,  $p < 0.01$ ) with more expenditures spent in this food group at the BOM ( $\$12.6 \pm 1.9$ ,  $p < 0.01$ ) compared to the EOM ( $\$5.8 \pm 0.9$ ,  $p < 0.01$ ).

Two dominant themes emerged after evaluation of focus groups: 1) the impact of economics on shopping habits during the month; and 2) shopping strategies to overcome economic barriers during the month. Each theme above had unique subthemes that were identified, which included, under the first theme: beginning vs. ending of month, food costs, and food preference/quality. Subthemes under the second theme included: food assistance programs, sales/price matching, planning, and food storage/bulk food purchasing.

## **IMPACT OF ECONOMICS ON SHOPPING HABITS DURING THE MONTH**

**Beginning vs. ending of month.** Most participants agreed that economics played a substantial role on shopping habits throughout the month, and more importantly, this was often impacted by the timing they received employment wages or SNAP/WIC benefits. In general, most SNAP participants received their allotments within the first two weeks of the month. For most participants, employment wages came every other week.

Throughout a one-month period, many participants stated that their shopping and eating habits changed because they bought more protein foods and fresh fruits and vegetables when funds were available (generally BOM); however, towards the EOM or when economic resources were running low, they relied more carbohydrate-rich, canned, and packaged foods. As one female participant stated: “At the BOM you have all the fun foods, you got the meat and the fresh vegetables and stuff and by the EOM, you’re eating the breads and the pastas and the canned stuff.” Another participant reported making healthier food choices when economic resources were plentiful: “...the difference is more right when we’ve got paid versus right before the next pay check when there is nothing left in your budget. I think I probably make healthier choice[s] once we got paid because it’s like, ‘oh, we can get fruit juice, vegetables, stock-up on things.’ And then at the EOM...well I have a dollar so I’m going to waste it at the dollar store on junk. You think you can’t afford...you just go more to your food storage which...is more canned and packaged...” Many other participants agreed that they shopped for cheaper foods and more canned foods at the EOM. One female stated: “I just buy cheaper foods, like I do grilled tortillas, or do...soups...or you know macaroni and cheese or that rice stuff.” Another woman agreed: “...I always spend like half of what I have just at the BOM and usually but at the EOM I usually run out and just make spaghetti all the time or something, ‘cause it’s cheaper.”

**Food Costs.** Most participants agreed that food prices affected their shopping habits and that they relied on shopping at discount grocery stores or shopped at stores with the lowest prices. One woman stated: "...I'll just get everything that I really need at *Walmart* which I think has the lower prices...they *Walmart* actually matches [other stores food prices]." Another agreed with the assessment of the same discount grocery store: "...I don't like to spend a lot of brain power on shopping for groceries. So like I get coupons but I don't look at the ads generally. I just go to the place that 90% has the cheapest price – which is *Walmart*."

Some mentioned the impact of the recent economic crisis on food expenditures. As one woman described: "...it's gotten ridiculous, I mean it all. Even in a week you'll notice it will have gone up ten, twelve cents on different items, and so...we're eating more pastas and buying more in bulk...the meats have gone up...snack foods, like cookies and chips, and things like that, that's really gone up." Similarly, another participant said: "...I think the fruits and vegetables have gone up...you just can't get as much ...like it's easier, it's cheaper to buy like maybe frozen pizza than to go buy the supplies to make the pizza."

A couple of participants had various health conditions, like celiac disease and diabetes, which required them to have specific food items that were more expensive and altered eating patterns. One participant with celiac disease stated: "...if I were to just go out and buy what I...alone can eat, I would be spending close to \$500 a month...[right now I spend] probably about \$20, which means I don't eat anything. You know, I eat...well, I cheat on chips a lot and...now and again I'll buy me some bread [gluten-free] and I'll have sandwiches, but I have to be careful what kind of spread I use because a lot of them have wheat in them...I can't eat a lot of lunch meat because they all have [wheat in them]...so, I just make do with cottage cheese and...I will have...apples are always a staple...apples and oranges and [sigh] butter. Bread and



butter's good." This participant did not qualify for food stamps, because she had \$30 too much disability income, thus her food budget was reduced from \$300 a month serving a family of 5 to \$30, thus relied on the local food pantry, which did not often provide the foods she needed. As she stated: "...I'm not asking for exotic things because it would be nice to eat fancier...I'm asking for life sustaining food." Another participant commented about her inability to treat her diabetes because of inadequate food stamp dollars to cover specialty dietary needs: "...it's really hard to eat packaged foods and stuff...I've actually let my diabetes go because of having to eat like on food stamps and...I mean it's really expensive to eat like a diabetic should 'cause we have to have a lot of protein...we have to have less carbs, lots of vegetables...and then vegetables are expensive and sugar-free...my sugar that I am allowed to have is eight bucks for a little thing...and that's ridiculous, so I don't eat like a diabetic because my sugar's sky-rocketed because I can't afford to eat like I should..."

**Food Preference/Quality.** Some participants stated that although economics was a factor influencing shopping habits, in some cases, foods perceived as better quality or their preference for healthier foods overcame cost concerns. For example, one woman stated: "Like sometimes you pay attention, like maybe you're going to save like twenty, thirty or even fifty cents on this specific item. But if you look at the brand, to the quality brand, sometimes it offers more ounces...and it's a better quality." Another woman had a similar experience: "There are some things that are...that I will buy generic if they're enough of a price difference...[but] there's a lot of things even for a big price difference that I won't...just kind of depends on the ingredient and past experience with it... like chocolate chips...certain breads...cottage cheese...soups...that like generic has just in my experience we haven't had good results where other things can't even tell the difference so just kind-of have to go by trial and error and see." Another similar

comment was given by a participant: “For me price isn’t always like the driving factor. I’m really big on quality too. So on certain things like produce and meat, I’m willing to pay a little bit more for better quality but for like boxed and canned things, the cheaper the better.”

Perceived health concerns became the driving force for some in purchasing food, as this example illustrates: “I really like Walmart. Like I think by far it’s the cheapest for your whole cart versus just a few items. Like a lot of times...MSG makes me really sick or just the different Yellow Number 5 makes me sick. And preservatives and they don’t always have the best choices for like...chicken stock like I look through the whole store. There was nothing that doesn’t have MSG like [nothing]. So it’s like paying to go elsewhere, but that influences me like where I’m gonna shop...” Similarly, another woman commented: “...I also try not to have a lot of sugar there because of the high fructose corn syrup thing...so that’s really reduced though the amount I spend on food because I do see what’s got high fructose corn syrup or MSG and that eliminates you know 80% of the food that’s available and so it [food budget] evens out as long as I make the bread [homemade whole-wheat instead of buying it].”

One woman justified buying healthier, more expensive food products because of her concern about her children’s health: “...the hard thing for us is I don’t buy anything with trans fat, I don’t buy anything with...high fructose corn syrup...no cereal, no granola bars, nothing that has those in it so that leaves us with choices that are very expensive. It would be cheaper for us to buy pre-packaged food. It would be cheaper for us to buy microwave meals but I’m not going to so...for the sake of our health...I don’t want to turn my kids into diabetics or having...health problems or obesity problems and then they will continue this cycle....so even though it’s more difficult now, we’re taking the proactive...approach to do that. So that leaves us with products that are a lot more expensive. The cereals, the breads and the fresh fruits and

produce and the meats and things that are... complying with the standards I want my family to eat are a lot more expensive and we don't get enough [SNAP] money to buy those kinds of foods...so we have to be really strict. It's maybe...go \$100 over at the most...going on a credit card.”

## **STRATEGIES TO OVERCOME ECONOMIC BARRIERS DURING THE MONTH**

Participants used different strategies to overcome economic barriers throughout the entire month and to stretch their food budget such as seeking federal or emergency food assistance programs, sales/price matching techniques to compare food items and food stores, planning menus, making shopping lists, relying on household food storage and bulk buying. Some of these strategies, including food storage and seeking emergency food assistance programs, became particularly useful at the EOM when they had limited economic resources or food assistance benefits to purchase foods.

**Federal Food Assistance Programs.** Many participants used some form of a food assistance program (i.e. SNAP, WIC, and food banks) to help offset food costs. For example, one female remarked: “I think it’s a lot harder for me to go grocery shopping when I don’t have my food stamps, like when my husband was just giving me money.” In regards to economic benefits of WIC one woman commented: “...I’ve done WIC ever since my first kid...the food they help you with isn’t necessarily the most expensive foods that you would buy, but just having that and not having to worry about buying it...and having, you know you could make eggs and cheese and rice and stuff. Staples of your meals...and so then you’ve got this base of food that you don’t have to pay for which is awesome...” Another woman similarly reported: “...it [WIC] just saves so much money, sometimes it saves up like twenty bucks a week.”

However, a major concern that some voiced about SNAP was its inequity between households, as allotments or vouchers for some were more than they needed while others were barely able to provide food for their household with a small amount that they got. One participant felt the excess SNAP money negatively affect eating patterns and subsequent health: “It’s [monthly food stamp allotments] like \$650 and I have...little kids who don’t eat anything, so it’s an extreme amount...of money that we get, we just went and bought like name brand, granola bars, and crazy things that we would never have bought and wasted a lot of it. Now we are all fat, because you know you go in there and you haven’t had like *Twinkies* in the last six years, so you eat things that you wouldn’t necessarily have chosen before, just because you are like a kid in a candy store...”

In comparison, participants’ concerns about receiving too little SNAP money was reflected in this woman’s comment: “...usually by the end of the month there’s some that we...purchase on our own when we run out...[we receive] about \$400 a month and so that will get us close at least...it’s usually the last week that it’s not even always the entire bill for the last week...so it usually lasts through most of the way...but we still...watch our food budget...” Another woman, who was experiencing homelessness at the time, described the insufficiencies of her SNAP allotments: “...I can go out when I get my food stamps on the eleventh I can go out and do my whole shopping in one day and get TV dinners, lunch meat, cheese. The basics that I can have in a motel and it lasts me maybe two weeks and then that’s it then after that...[soup kitchen], food bank...and that’s the way I am I have to use the [soup kitchen] to be able to make my food stamps stretch even to the end of the month and that’s if I buy my groceries all at the first of the month, you know and I’m still putting cash from my disability checks into compensating ... and it’s hard when you pay, well I don’t pay rent now, but when I was living in

my condo, I paid seven fifty a month, my disability was six fifty seven, I mean, by the time I got my share of the rent paid it left me maybe fifty bucks for groceries and it was hard because you had nobody else compensating.” In response to the perceived inequity of SNAP allotments by participants, one female SNAP recipient, who gave excess purchased foods during the month to family and friends, stated: “...the system it’s so messed up that we would get so much extra and then there’s some people that get nothing.”

Some participants who received their food assistance from SNAP complained of being unable to stretch their SNAP dollar amount for the entire month, which affected the foods that they shopped for. One woman expressed: “I’m on food stamps and I get them right around the fifteenth of the month and also that first part of the month I can eat and have like meats and stuff and then the second half of the month that’s when I mainly have to go with my canned foods.” This they explained meant that they had to buy cheaper foods, so that these foods could last majority of the month, thus could not eat healthy. This is what two participants had to say when asked if the SNAP they received was able to last the whole month: “No, not for the three of us, well I need to do smarter shopping...” and “...one thing about food stamps is right now is to tell everyone to write your legislatures cause we have... [many] people in Utah starving to death like me and my kids. I only get like \$50.”

A few participants commented on their inability to obtain food stamps because of their current economic status. A woman who was denied SNAP participation had this experience to share: “Yeah, they figure my income is \$2500 a month. And I keep telling them, ‘hello if I made \$2,500 a month, I wouldn’t be here asking for your help.’ You know, and if you look at it, my rent is \$1000 a month. You know, you got to have heat. I live in a really old house, I have electric heaters, an older boiler system, so my electric bill is \$200 a month, my gas bill is \$200 a

month. You know that's just...necessities to keep you warm, and have a roof over your head.

'Oh, I'm sorry you qualify for \$91 for food stamps' and that's it, for four kids and myself. I don't get that anymore...and I have tried to reapply, reapply, reapply, they keep denying me. 'No you make too much money.' I thought, what have I got be? Homeless, poor, half dead on the street?"

Most participants on WIC expressed appreciation for the assistance that WIC offered in helping them offset food costs, by providing them with foods such as milk, cheese, eggs, tuna, and baby formula. Positive comments made by the participants included: "I loved the WIC program, I thought it was wonderful because without it a lot of the small children will go without ...the cereals, formulas, and the milk,"; "Formula is expensive and I only nursed my baby for a short period of time, so WIC was really good, I don't want to complain because it's free. I love it..."; and "...we're on WIC and they help a lot with that. They give me her formula and stuff. I'm not nursing anymore but when I was they would give me milk and cheese, tuna, some of the same things, beans, stuff like that. It helped a lot."

Although most reported the WIC program as beneficial, many complained of getting too much milk or juice. Participants used various strategies to address this concern, including distributing extra food products to family and friends or choosing not to redeem all the WIC foods on their vouchers. For example, one woman said: "We use everything on the WIC voucher except for we get too much milk and we aren't supposed to give it away or anything but otherwise, we tried freezing the milk for a while but it started not working for some reason. We were just like forget this we just don't take all of the milk." Another woman commented: "...they [WIC] give us more milk than he drinks, like a lot more. I mean, like when I was pregnant and I was using it, it was about right for me, I think it was about six gallons a month...for him, he is getting about that, and he drinks like a gallon a month...I just get what he

needs...I have way too much juice in the freezer, and it kind-of gets annoying when I go to the store and they are like...‘how come you didn’t get all the milk you could have gotten?’ I...don’t need more, but they don’t understand that because most people will give it away or whatever, even though you signed to not give it away...” One woman translated this excess juice as a negative impact on healthy eating patterns for her children: “...sometimes I get a little bit frustrated because...we don’t get any fresh anything and that’s like yeah...I can get juice but I can’t get like a thing of apples that’s cheaper which is more healthy for my kids. Like, our paediatrician recommends your kid not eating juice because it’s just empty calories and...but WIC like gives it to you...”

One woman’s comment about sharing excess quantity of foods was shared by many: “We live in my mom’s house and we usually like put two gallons upstairs and the upstairs fridge is hers and all the kids who come over throughout the week. So like, my husband is the youngest of eight and he has like 3 or 4 brothers and sisters that still live around, and they come over probably once or twice a week and eat...like 2 gallons of the milk is kind of not used by us mostly so that’s how we get rid of this....I guess it’s funny..the milk is technically supposed to be used by you and the kids...not by your husband or anything...”

A few WIC participants knew that their foods should only be given to those household members entitled to receive WIC, but felt it was unrealistic to believe that they would not share their foods with the entire household. One woman felt this defeated the economic incentive of the WIC program: “...how do you have food in the fridge and like not for dad? ... so then you gotta buy it anyway. You’ve got to buy a separate thing of peanut butter. I mean how does that save you money? If you’ve got to buy another thing of carrots on top of another thing of peanut

butter or like you aren't going to get him a mini-peanut butter because that's twice as expensive as getting a big [one]..."

Other concerns about the WIC program that were voiced by some participants included perceptions of receiving inadequate amounts of infant formula to last the entire month, having inadequate storage space to store WIC foods at home, and difficulty in figuring out which brand item were supposed to be purchased for the different WIC foods. In relation to inadequate infant formula, participants discussed that they had to buy additional formula from their own budget, which were expensive, or they had to rely on alternative strategies to meet their baby's dietary needs. As one woman described: "I come across that problem because I get formula and then they don't even give you enough formula....I still have about \$30 worth of formula a month and I have to buy because my baby's on sensitive RS which only comes in the already made liquids...they [WIC] have signs up that they're like just suppose to supplement – they're not the full month's worth but it really makes it hard because we have the same problem every month. We get to where we either have to borrow money from people or just don't know what to do cause...we've always had you know through either the church or something we've had help but you know they say the infant formula is number one shoplifted item in the United States and I can see why because I normally wouldn't steal but if it came down to my baby was gonna starve or I was gonna steal, I'd do it." Another woman tried altering her preparation techniques in order to stretch the formula: "So what I was trying to do is I would try to give him four ounces at a time and then if he was hungry again I would give him another four ounces that way I didn't have to waste it and throw it away, and if he didn't eat all of that I'd put it in the refrigerator...the WIC program does not give me enough formula for the month, I have to buy it.



I get eight cans –that probably lasts maybe two and a half, three weeks of the month, so for the last week, I have to scrounge up some money and go buy it or go to the food bank.”

With the discussion of the new WIC vouchers that would soon be implemented, most participants agreed that the increased access to fresh fruits and vegetables and baby solid foods through the proposed WIC policy would be a positive change in the program. A few participants even felt this would be an incentive for them to enroll in the WIC program.

**Emergency Food Assistance Programs.** Many participants discussed using the local food bank to offset food costs and stretch their household’s food supply, especially at the end of the month when other resources to obtain food were limited. For example, one woman stated: “I never have enough [food]. I always end up running out at the EOM and having to buy more. So it’s like my stock pile is whatever I get from here [food bank].” However, many voiced concerns about the food quality and limited variety of food products available. Many participants said that they had had expired foods from the food bank, so they either ate it, threw it away, or donated it to other food assistance places. As one woman shared: “One of the major concerns about getting food from here is the expired dates on the canned foods. My sister had gotten food poisoning from a can of tuna fish that she got here once, and since then I check everything. And I end up throwing over half of what I get here [away].” Another participant said: “I think every time I, you go, you’re bound get something probably that [is] outdated.”

Some participants expressed that there was limited food choice at the food bank, but the most felt they should not complain because it did provide their household with food. One comment, which was made by a participant who frequented the food bank, was that “[food bank] keeps me from starving -- as poor as we are, who cares [about the foods available].” Another

woman said: “It’s really helpful, because we don’t spend as much like we used to if we go to the store, only the things that we needed for like food...milk because we don’t get milk from here.” One woman felt the food bank helped her save money on food expenditures: “...before when my husband was working in the construction company with his brother, we spent like maybe somewhere around \$100 for food because we have a daughter to take care of...but then it was one day I was walking in the street down this way and [friend] was driving by and I just happened to talk to her. I said, ‘[Friend’s name], do you know like where I can get like food helps?’ Stuff like that because I know it’s a lot better to save a little bit on food, then she told me about this place. Well, when I came here we got a lot of good stuff. Like there’s a lot of canned vegetables that’s not even expired until 2011. We got a lot of meats from here, too, from our first visit. That’s when we saved a lot on. The things we have at home – the vegetables, the tuna, the meat, we have from here. When I look at it, there’s a lot of savings from those things so we only buy what we really need.”

For the participants who were homeless, they often could not afford to buy food and had no place to prepare the foods even if they bought them, thus depended solely on food assistance from a local soup kitchen. Some of the participants complained that the soup kitchen foods were sometimes unappetizing, but that the breakfast was better because they served themselves and could eat as much as they wanted. However, during the weekend breakfast was not served at the soup kitchen, thus they either skipped breakfast, slept in, bought snacks, or sometimes stole food. At the EOM some of the strategies used by these participants included depending on friends for food, panhandling, lying to restaurants about poor customer service in order to get free food, pawning their belongings, or obtaining other sources of money by working at the local church-affiliated thrift store.

**Sales/Price Matching.** In-stores sales, newspaper advertisements, coupon clipping, and price matching between products and stores were common shopping strategies used by participants and were frequently described as the driving factor for foods that were purchased and used within the home. These are some comments that participants had to say about sales: “We wouldn’t usually buy strawberries no matter how they cost but when they’re on sale you have to buy them;” “I enjoy and I try to get a lot of fresh fruits and vegetables. But, what kinds....depends on what’s on sale...;” and “I only buy things that are on sale.”

Many participants stated that even if a food item was not on their shopping list or they were unaware of a particular sale until they entered the grocery store, they would buy it anyway, especially when it was a commonly consumed food in their household and it was more economical than what was originally planned. As one woman described: “...we try to get fresh too, a lot of the fresh stuff I’ll get...whatever’s on sale that week and usually lettuce is cheap. And usually if bell peppers are too expensive I just don’t get bell peppers that week, or you know if there’s a sale on apples, I’ll buy apples, I’ll just try to get what’s on sale and usually...the sales go up and down, so eventually I’ll get my rounding of fruits and vegetables based on what’s on sale...” To compensate for the additional unplanned expense, some would adjust the remainder of their budget. For example, one participant said: “...I will find a way to get it. I’ll just go through my budget and like we’ll get SNAP next week and I’ll buy this...adjusting the budget... maybe on non-food that gets cut because food is important to me.”

Other participants said they watched out for newspaper advertisements in order to save money. As one woman described: “I keep an eye out because I know the ads come out every Wednesday...my husband kind of gauges the prices are at one store versus another and so, I just keep an eye out for the really good sales on things I use frequently.” Similarly, another

participant stated: “I’ll read the papers and then I’ll go to one store and then I’ll find myself in a good location where I can go from store to store.” Many talked about strategizing in regard to the actual day of shopping because it provided a better economic incentive: “price is a huge factor, and I always go shopping on double coupon day so your dollar turns into two dollars.” Other participants also used coupons that they clipped from phonebooks, or got from the mail, or the internet as a strategy in reducing food costs. However, a few participants felt this strategy took too much time or did not save money in the end. As one woman stated: “I don’t do coupons out of the ads because it takes too much effort and planning. I do write a list and I stick to it but it’s a pretty generic list like fruits and vegetables, so I get whatever fruits and vegetables are on sale and then we only buy meat if it’s less than a two dollars a pound then we’ll get that fruit that [is] less than a dollar a pound...”

Most participants used price matching to help them cut food costs. For example, one participant commented: “Wal-Mart they let you undercut stuff, like whatever the price is somewhere else they let you get it for the same price.” Similarly, another participant commented: “If you prove it...say it’s for this cost then they’ll give it to you at that price, they’ll match the cost of any other store.”

**Planning.** The majority of participants said that to prevent them from overspending on food while shopping, they would make a list based on the menu they planned for the week. As one woman commented, “I usually have found that if I write a menu for a week and I make a list based upon that menu, then I save money because I just stick to the list.” Another woman similarly stated: “We started making a list of like meals we’re going to eat for the week, before we go shopping, and it has made it a lot less expensive...just having a plan...” Other participants agreed that without making a list, they always spent more money even if there was a sale. This is

the comment that one participant made: "...I always make a list. Because I think that no matter what if you go there without a list you spend more money and have less stuff." One participant said she attended a church program that taught food budgeting skills through menu planning: "We plan out our meals and I was actually surprised at church about a year ago, they had a lesson on how to save money on groceries and one of the things they said was plan your meals and just get what you need. And it was amazing to me how many women in the room like way older than me with grown up kids been doing this for years that was a novel concept to them."

A couple of participants said they planned ahead by growing a garden or raised livestock to help offset food costs. One participant stated: "We also have a little bit of property in [city] and so we raised a pig and you know we had our own pork, so I don't have to spend money."

**Food Storage/Bulk Buying.** Many participants discussed having food storage as a means to provide food for the household when economic resources were low or when they were unable to get to the grocery store to buy food. For example, one woman described using food storage at the end of the month, when food resources were low: "...I dive more into our food storage. The huge thing is getting, we bought Sam's club a few months ago, and now I'm using a lot more of the rice and the spaghetti meals, and especially rice where it's a really bad month. We'll...buy usually a big bag of rice a couple of times a year and we'll start using that..." One described that food insecurity issues were not a concern to her household because of food storage: "...we always have food in our house and we always have a little bit of stock pile. We could probably eat for two or three weeks on just what we have at home. It wouldn't be very exciting meals but it would be a lot of canned soup every night..." Some participants planned ahead by saving money for buying foods for their food storage when items were on sale. This is what a participant had to say: "We do bulk buying when the case lot sales are on. We watch for different

case lot sales and we try to put money aside...” Another participant stated: “I have three months food storage that I keep replenished. So, sometimes if we go into it I wait for the sales and then I replenish it.”

Even though buying in bulk was economical for many participants, other participants said that they rarely did that since they did not have enough money or SNAP/WIC resources to do so. One participant said that “buying in bulk is a good thing, but when you’ve got limited amount of SNAP money, you cannot buy in bulk...” Similarly, another woman commented: “...cause by the time you get done buying a few of the bulk [food] items that you want, they’re gone anyway and you can’t [get] the other stuff you want for the month...” Some participants said that when they did not have enough food at home instead of going for shopping by themselves they split the ingredients or shopping cost with their friends. “One thing I did with one of my friends that was my neighbour is she would supply the vegetables for one meal and fruits and I’d supply the meat and it worked.” Another participant described: “When there was eight guys living in one house, we were able to do that and save quite a bit of money, because we’d all agree on what we wanted for dinner and we’d get the bulk size and just split it up, but it still saved us a lot of money.”

## **DISCUSSION**

Economics played a key role in the foods that participants from our study were able to obtain throughout a one-month period of time. This resulted in the use of different coping strategies to overcome economic barriers to shopping habits throughout the month when there were insufficient funds or food assistance program money. Both the qualitative and quantitative analysis indicated that participants in our study spent more of their food budget on healthier foods like fruits, vegetables, meat, and beans at the BOM compared to the EOM. A qualitative

study conducted by Seefeldt and Castelli<sup>15</sup> indicated that food stamp participants ate cheaper and less nutritious foods like “only ramen noodles” toward the EOM when money ran short. However, this phenomenon was only reported by three of the study participants. Hence, our study offers further evidence of changes in food expenditures throughout the month among low-income households because of changing economic resources.

Towards the EOM, the total amount of food dollars spent on all food groups, except grains, decreased significantly according to our quantitative assessment; however, the proportions of dollars spent on food only varied for discretionary calories, in that a higher mean proportion of dollars were spent at the BOM compared to the EOM. Similarly, a study by Cone et al.<sup>16</sup> about food purchasing choices among SNAP participants showed that the majority of the food items (about 25% of their SNAP benefits) purchased at Bi-Lo® in Greenville County, South Carolina were discretionary calories. It is plausible that participants from our study bought more discretionary calories, that were high in fats and sweets, at the BOM because they were cheaper and offered more value for their money.<sup>17</sup> It is also possible that they bought more non-perishable food items at the BOM when economic resources were plentiful, so that they could be stored to last the entire month and used when household food resources were low. A study by Wilde and Ranney<sup>13</sup> observed that the mean expenditure of foods was at its peak within 3 days after receiving allotments among SNAP participants because foods like grains and canned vegetables were purchased to be stored and consumed throughout the month. Based on the qualitative findings in our study, participants reported that they relied more on high-carbohydrate and pre-packaged/canned foods at the EOM to stretch their food supply and felt that greater purchasing behaviors at the BOM increased the variety and quantity of foods available compared to the EOM. Furthermore, although the quantitative assessment in our study indicated no

proportional change in food expenditures in any of the food groups, it still suggests less food may be available in the household at the EOM because, overall, less food dollars were spent. A study conducted by Kaufman and Leibtag<sup>18</sup> showed that low-income households bought less expensive meat, poultry, fruits and vegetables, thus spending less, overall, on these healthy food items.

Participants from our study used numerous strategies to overcome economic barriers to shopping, including federal and emergency food assistance programs, sales/price matching, menu planning, and household food storage. Although most participants in our study viewed food assistance programs positively in supplementing their household's food supply, many felt deficiencies were evident in the programs. They reported either having too much or inadequate amounts of SNAP allotments or foods from their WIC vouchers, which affected the types and quantity of foods purchased. Studies by Abusabha et al.<sup>19</sup> and Hayes<sup>20</sup> confirmed this displeasure among WIC and SNAP participants, respectively, in that 13% of about 3000 WIC participants complained of getting too many eggs, cereal, and beans, while SNAP participants complained of receiving inadequate benefit amounts. Our study found similar results in that there was a disparity between food allotments given for SNAP recipients and WIC participants complained of receiving too much food, including excess amounts of eggs, milk and juice, while others received too little of certain food items, like formula.

For those who received too much they shared with friends and family, or did not redeem their entire voucher because they would not use it or they had no place to store it. For those who received too little formula they had to economize what they had, by giving their babies a little at a time to make it stretch, relying on emergency food assistance or church-affiliated programs, borrowing money to buy it, or paying out-of-pocket, which strained their food budget.



Interestingly, when participants were asked how much milk they received, it was apparent that the amount given was appropriate in meeting the daily recommendations set forth by the USDA's *MyPyramid*. This suggests the need for better nutrition education efforts in WIC clinics about how much milk should be consumed per day per recipient or better encouragement of obtaining alternative dairy sources, such as cheese, in order to meet recommended levels from the milk group. Furthermore, perhaps additional efforts are needed to teach low-income families how to make a better food budget, so that the money or food stamp allotments can be used gradually throughout the month. An environmental intervention could also be introduced to space SNAP allotments throughout the month, as well as WIC participants could be allowed to split their foods on the vouchers up more systematically throughout the month so they don't have to get so much food all at once.

Because of high food costs and inadequate supplementary food sources to offset dietary needs, a couple of participants were unable to treat their medical condition. For example, in the case of the participant who had celiac disease, she felt compelled to starve most the time since it was expensive to buy gluten-free foods and also feed her family at the same time; this resulted in not eating much and rather relying on what foods she could get from emergency food assistance programs. Lee et al.<sup>21</sup> explained the economic burden of trying to eat like a celiac patient in which the cost of gluten free product was more expensive than wheat based products in every respect. This may pose a financial strain on low-income participants with various chronic diseases because of their dependence on federal or private food assistance programs for food. The inability to cover such food costs or being ineligible for such programs, could lead to food insecurity, poor eating habits, and poor health. A study by Nelson et al.<sup>22</sup> showed that one-third of their diabetic study sample who had reported reduced or eliminated food stamp allotments within

the past year attributed their hypoglycemic reactions to insufficient funds to cover food costs. Similarly, a participant in our study diagnosed with diabetes felt unable to manage her diabetes as she needed through dietary needs because of limited food dollars. This suggests a need for policy makers to re-evaluate allotments for SNAP participants with various health conditions by giving them additional SNAP money to cover certain foods that they would need and by providing them with nutrition education, including recipes and cooking lessons on how to prepare these foods.

Menu planning was perceived by many participants in our study to be an effective strategy in making grocery lists, which ultimately saved them money during the month. Abbot et al.<sup>23</sup> identified meal planning as a more efficient way of grocery shopping, a money saver, and taking trips to buy forgotten items less frequently. In order to stretch food dollars, the USDA recommends households make food shopping lists and plan menus in advance; use unit pricing; buy store brands; and take time to compare fresh, frozen, and canned foods, choosing whichever item is the cheapest.<sup>24</sup> Other shopping strategies reported in our study were using coupons and store ads. Leibtag and Lynch<sup>25</sup> showed that low-income households were less likely to use coupons but rather used other cost saving methods, like buying more private label products, which were cheaper than products that required coupon usage. In our study, the only barrier to coupon use by some of the participants was the effort and time involved in coupon clipping and use of ads, and a few explained that the amount of money spent in coupon clipping and buying newspapers was almost equal to the cost of newspapers for the whole year, so they saw no benefit at the end of the year after going through “this hassle” of trying to save money. The USDA on the other hand advises people to use coupons for foods they need to purchase.<sup>24</sup> This suggests that further nutrition education could be given to low-income households, especially

those on SNAP, on how to effectively use these strategies in order to maximize their monthly food budget.

Many participants in our study resorted to emergency food assistance programs, including the local food bank, soup kitchens, or they relied on home food storage when they ran out of money at the end-of-the-month. Thompson and colleagues<sup>26</sup> found that soup kitchen attendance increased dramatically at the end of each month, because many public assistance benefits were given at the beginning-of-the-month. Richards & Smith<sup>9</sup> observed a similar pattern of food stamp participants using soup kitchens to stretch their food supply. Ohls et al.<sup>27</sup> also found that about 60% of low-income households used both federal and emergency food assistance programs when they ran out of federal assistance allotments.

Participants in our study also relied on home food storage to stretch food, especially at the end-of-the-month when the food supply was low. They stored non-perishable food items, like canned foods, and meat that they usually bought in bulk, when they were on sale. This suggests that food storage could be a good practice for low-income households so that in times of need they could depend on their food storage; however, some participants in our study who were on federal food assistance programs felt their benefit amounts prevented them from buying bulk items, and thus, limited their ability to have home food storage. Perhaps federal food assistance programs, like SNAP, could provide an additional allotment amount once or twice a year for participants to use in purchasing foods that could be stored in case of emergency.

The only concern about emergency food assistance programs from our study was that some of the food offered by the emergency food assistance organizations was perceived as being of poor quality and of limited variety. A study by Greger et al.<sup>28</sup> showed that two food pantries of

Dane county (Wisconsin) provided less than optimal amount of calcium and 70% of their clients would have preferred more meat, milk and cheese. A pilot study conducted by Campbell et al.<sup>29</sup> suggested that emergency food recipients preferred nutritious foods, like more fruits and vegetables, and less candy and soda. This suggests a need for emergency food assistance programs to find other sources to obtain greater variety, perhaps by collaborating with local dairy and/or meat farmers to obtain these types of foods. Furthermore, perhaps such entities could receive tax incentives for providing such services to organizations serving low-income populations.

**Study limitations.** Because the study was conducted over a one-month period of time it cannot be used in generalizing about shopping habits among low-income households for more than one month. Also, because most participants in this study had completed some college or higher education, the results of this study may not represent other towns of different educational statistics. Also, the sample size of follow-up participants was small; thus, a larger sample size may have given a better indication of the quantitative results. Lastly, since the study was largely Caucasian, English-speaking participants it may not be generalized to other communities with more diverse racial/ethnic composition which may have differing eating and shopping patterns.

## **CONCLUSION**

The main factor that influenced low-income households shopping behavior in our study was economics. However, low-income families from our study strategically made decisions based on their economic circumstances and other factors, including participation in food assistance programs, planning, and using food storage, in order to stretch food expenditures. Our results

suggest limited economics throughout the month may hinder families' ability to consume a varied, nutrient-rich diet, which may ultimately impact future health status.

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**Table 1. Focus group questions related to shopping and eating patterns and selected prompts (n=72).**

Focus group question	Selected Prompts
<p><b>Describe your typical food shopping behaviors throughout the month.</b></p>	<ul style="list-style-type: none"> <li>• How do these change from the beginning to the middle to the end of the month?</li> <li>• Who usually does the shopping for food in your house?</li> <li>• How frequently do you go shopping for food? (prompt: once a month, weekly, etc)? How much time does it take you to go shopping for food?</li> </ul>
<p><b>Where do you shop for food? How far do you travel to do your food shopping?</b></p>	<ul style="list-style-type: none"> <li>• How do you get there (prompt: walk, ride bus, drive, etc)?</li> </ul>
<p><b>How do you decide what foods you buy in the store?</b></p>	<ul style="list-style-type: none"> <li>• Do you go with a list, do you plan menus, buy things on sale/use coupons, look for in-store specials, compare prices between products, spend a certain \$ amount, children/spouse influence)? If yes, please describe.</li> <li>• How do TV ads influence shopping behavior?</li> <li>• What about store displays or actual products (e.g., new packaging)?</li> <li>• Describe how you navigate around the store (prompt: shop up and down the aisles, go to specific sections, etc)?</li> <li>• Do you end up buying foods you had not planned on? If yes, please describe.</li> </ul>
<p><b>How do you pay for the food you buy?</b></p>	<ul style="list-style-type: none"> <li>• What do you think about the costs of foods where you shop?</li> <li>• How does this impact what you buy at the beginning of the month? What about at the end?</li> <li>• What other resources do you use throughout the month to obtain food (prompt: garden, food pantry, church resources, family/friends, etc)?</li> </ul>
<p><b>What are your perceptions of food assistance programs in stretching food throughout the month?</b></p>	<ul style="list-style-type: none"> <li>• Are you able to have foods from all food groups throughout the month?</li> <li>• Are there foods you would like to be able to buy or obtain that you cannot?</li> <li>• How have recent increases in food prices affected your family and the food buying choices you make?</li> </ul>

**Table 2. Demographics of focus group participants (n=72).**

<b>Characteristics</b>	<b>No. (%)</b>
<b>Total</b>	72 (100.0)
<b>Gender</b>	
Male	10 (13.9)
Female	62 (86.1)
<b>Age, y<sup>a</sup></b>	
20-29	39 (54.2)
30-39	19 (26.4)
40-49	10 (13.8)
50-59	2 (2.8)
60-69	2 (2.8)
<b>Race</b>	
African American (Black)	1 (1.4)
American Indian	1 (1.4)
Asian	4 (5.6)
Caucasian (White)	53 (74.7)
Hispanic	7 (9.9)
Other	5 (7.0)
Missing data on race	1 (1.4)
<b>Education</b>	
<High school graduate	6 (8.3)
Completed high school, GED <sup>b</sup>	11 (15.3)
Some college/technical/ vocational school	28 (38.9)
Completed college/technical/ vocational school	23 (31.9)
Completed graduate/ professional school	4 (5.6)
<b>Annual household income, \$</b>	
< \$5000	15 (20.8)
\$5,000-\$9,999	12 (16.7)
\$10,000-\$19,999	28 (38.9)
\$20,000-\$39,999	16 (22.2)
> \$40,000	1 (1.4)
<b>Employment Status</b>	
Yes	18 (25.0)
No	54 (75.0)

<sup>a</sup>Years; <sup>b</sup>General education diploma

**Table 2: Demographics of focus group participants (n=72) continued.**

<b>Housing Status</b>	
Own house	12 (16.7)
Rent	54 (75.0)
None	5 (6.9)
Missing data on housing status	1 (1.4)
<b>Currently using SNAP</b>	
Yes	22 (30.6)
No	50 (69.4)
<b>Currently using WIC</b>	
Yes	37 (51.4)
No	35 (48.6)
<b>Body Mass Index (BMI)</b>	
Underweight (< 18.5)	1 (1.4)
Normal weight (18.5-24.9)	31 (43.1)
Overweight/obese (> 25)	38 (52.8)
Missing data on BMI	2 (2.8)
<b>Food Security Status for past 30 days (n=43)</b>	
Food secure	27 (62.8)
Food insecure	16 (37.2)
<b>Food Security Status for past 12 months (n=28)</b>	
Food secure	16 (57.1)
Food insecure	12 (42.9)
<b>Household size, mean (SD<sup>d</sup>)</b>	3.6 (1.3)
<b>No. of children per household, mean (SD<sup>d</sup>)</b>	1.9 (1.0)
<sup>d</sup> Standard deviation	

**Table 3. Shopping habits of focus group participants (n=72).**

<b>Characteristic</b>	<b>No. (%)</b>
<b>Shopping frequency</b>	
1-2 times a week	39 (54.2)
3-4 times a week	6 (8.3)
5-6 times a week	1 (1.4)
Everyday of the week	1 (1.4)
1-2 times a month	23 (31.9)
Other	2 (2.8)
<b>Shopping Location</b>	
Supermarkets	35 (48.6)
Supercenters	20 (27.8)
Wholesale	1 (1.4)
Other specialty	1 (1.4)
Combination	11 (15.3)
Fast food	1 (1.4)
None	2 (2.8)
<b>Transportation</b>	
Drive own car	58 (80.6)
Ride with a friend/ family	4 (5.6)
Take the bus/ride with friend/walk	9 (12.5)
Walk	1 (1.4)

**Table 4.** Food items purchased by focus group participants at beginning-of-the-month (BOM) versus end-of-the-month (EOM), self reported (n=72).

Food items	BOM		EOM		EOM - BOM	
	n	%	n	%	n	%
Eggs	63	87.5	48	66.7	15	-20.8
Meat	59	81.9	44	61.1	15	-20.8
Grain products	59	81.9	45	62.5	14	-19.4
Yogurt/milk	65	90.3	54	75.0	11	-15.3
Can soup	35	48.6	26	36.1	9	-12.5
Fresh fruits & vegetables	56	77.8	48	66.7	8	-11.1
Packaged meals	28	38.9	21	29.2	7	-9.7
Can/ frozen fruits & vegetables	57	79.2	51	70.8	6	-8.4
Bottled water	13	18.1	9	12.5	4	-5.6
Snacks	39	54.2	36	50.0	3	-4.2
Oil/ butter/margarine	38	52.8	35	48.6	3	-4.2
Soda	13	18.1	12	16.7	1	-1.4
Fast food	10	13.9	9	12.5	1	-1.4
Alcohol	2	2.8	1	1.4	1	-1.4

**Table 5.** Mean household shopping receipt expenditures and proportion of expenditures spent on food at beginning-of- month (BOM) versus end-of-month (EOM) (n=44).<sup>§</sup>

	Mean $\pm$ SE <sup>a</sup> , BOM, \$	Mean $\pm$ SE <sup>a</sup> , EOM, \$	Mean absolute $\pm$ SE <sup>a</sup> difference (EOM – BOM), \$	p-value	Mean proportional $\pm$ SE <sup>a</sup> BOM, \$	Mean proportional $\pm$ SE <sup>a</sup> EOM, \$	Mean proportional $\pm$ SE <sup>a</sup> difference (EOM – BOM), \$	p-value
Total	165.4 $\pm$ 18.1	103.4 $\pm$ 13.1	-62.0 $\pm$ 19.3	0.0025*	-----	-----	-----	-----
Grains	27.9 $\pm$ 4.1	21.2 $\pm$ 4.8	-6.7 $\pm$ 5.4	0.2197	16.7 $\pm$ 1.8	18.3 $\pm$ 3.1	1.5 $\pm$ 3.5	0.6574
Vegetables	18.1 $\pm$ 3.0	9.2 $\pm$ 1.3	-8.9 $\pm$ 3.1	0.0067*	12.6 $\pm$ 1.7	8.1 $\pm$ 1.1	-4.5 $\pm$ 2.1	0.0398
Fruit	21.1 $\pm$ 3.3	11.9 $\pm$ 2.2	-9.2 $\pm$ 3.0	0.0041*	12.8 $\pm$ 1.6	11.0 $\pm$ 2.0	-1.9 $\pm$ 2.2	0.3953
Milk	22.3 $\pm$ 2.4	12.3 $\pm$ 1.7	-10.0 $\pm$ 2.5	0.0002*	15.3 $\pm$ 1.4	12.7 $\pm$ 2.6	-2.7 $\pm$ 2.5	0.2967
Meat & Beans	30.2 $\pm$ 4.5	16.8 $\pm$ 2.6	-13.4 $\pm$ 4.3	0.0032*	18.6 $\pm$ 3.4	13.8 $\pm$ 2.2	-4.8 $\pm$ 4.0	0.2293
Oils	2.5 $\pm$ 0.5	1.8 $\pm$ 0.5	-0.7 $\pm$ 0.8	0.3642	1.5 $\pm$ 0.3	1.4 $\pm$ 0.4	-0.0 $\pm$ 0.5	0.9713
Discretionary <sup>b</sup>	18.3 $\pm$ 2.5	12.4 $\pm$ 1.5	-9.9 $\pm$ 2.7	0.0006*	12.6 $\pm$ 1.9	5.8 $\pm$ 0.9	-6.8 $\pm$ 2.1	0.0025*
Combination <sup>c</sup>	17.6 $\pm$ 3.6	12.4 $\pm$ 2.5	-5.3 $\pm$ 3.0	0.0897	10.5 $\pm$ 1.6	9.2 $\pm$ 1.7	-1.3 $\pm$ 1.5	0.3809

<sup>a</sup>Standard error; <sup>b</sup> Defined on MyPyramid as solid fats added sugars and alcohol; <sup>c</sup>Combination of two or more food groups.

<sup>§</sup>Based on MyPyramid food groups using Myfood-a-pedia.

\*P<0.01(to account for multiple comparisons)

## **APPENDICES**

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## Appendix A

### LITERATURE REVIEW

According to the World Health Organization (WHO)<sup>1</sup>, 1 out of every 6 adults older than 15 years of age (1.6 billion adults) in the world today are considered overweight with a Body Mass Index (BMI) of 25 – 29.9 kg/m<sup>2</sup> and 1 in 4 are considered obese with BMI  $\geq$  30 kg/m<sup>2</sup>. Overweight and obesity have been associated with chronic diseases such as breast and colon cancer, cardiovascular disease, diabetes, and osteoarthritis.<sup>1-3</sup> In the United States (US), 2 out of every 3 adults are overweight and 1 in every 3 is obese.<sup>4</sup> Obesity-related deaths due to poor diets and physical inactivity account for about 1 in every 5 deaths per year in the US, making it the number two preventable killer.<sup>5</sup> Furthermore, it has been estimated that the US spends about \$147 billion on weight-related health care costs alone.<sup>6</sup>

According to the Surgeon General<sup>7</sup>, obesity was most prevalent among members of low-income families, agreeable with Drewnowski<sup>8</sup> who hypothesized that obesity in America to a large extent is an economic issue. The finding that high energy-dense foods are less expensive compared to low energy-dense foods by Drewnowski<sup>9</sup> has helped to explain why the highest rates of obesity continue to be observed among groups of limited economic means. Thus, this suggests that low socioeconomic status poses a barrier to the adoption of healthier diets due to the high costs of low-energy-density foods.

Limited access and distance to food stores can significantly impact food availability, choice, and dietary intake. Prior studies have indicated that greater distance to food stores and transportation issues limit access of low-income households to an adequate and healthy food supply, including fruits and vegetables.<sup>10-12</sup> Recently, Tarasuk et al.<sup>13</sup> evaluated dietary adequacy among low-income Canadian mothers over a 30-day period, with results indicating significantly



decreased energy, carbohydrate, vitamin B6, and milk and vegetable food group intakes among those classified as severely food insecure. However, this study did not collect height and weight data, thus was unable to assess the impact of food insecurity on weight status, and failed to document actual food expenditures throughout the month as well as the impact of food assistance programs on dietary intake patterns.

Food insecurity is strongly linked to income; hence households with incomes below the federal poverty line are about four times as likely to be food insecure than those with incomes above that level.<sup>14</sup> However, to help low-income households improve dietary intake, additional factors should be considered, including household shopping behaviors, eating habits, and overall healthy behaviors rather than just increasing household income because even households of higher socioeconomic status do not consume enough fruits and vegetables to meet recommendations.<sup>15</sup>

## **FOOD ASSISTANCE PROGRAMS**

Today, the nation's largest food assistance programs, such as Supplemental Nutrition Assistance Program (SNAP) (formerly called Food Stamp Program, or FSP) and the Special Supplementary Program for Women, Infants, and Children (WIC) have been made available to low-income families to provide an adequate food supply to alleviate food insecurity, create better access to foods, improve nutritional health status, and prevent hunger.<sup>16</sup> It has been documented that about 1 out of every 5 Americans participates in at least one of the nation's nutrition assistance programs each year.<sup>17</sup>

### **SNAP**

The largest federal nutrition assistance program is SNAP, which served over 28 million low-income individuals each month in fiscal year (FY) 2008.<sup>17</sup> In Utah, over 100,000 people use SNAP per month.<sup>18</sup> To be eligible for the income criteria, the household's income needs to be

equal to or fall below 130% of the federal poverty line and must have a limited household countable resource up to \$2,000, or \$3000 if at least one person is 60 years and above or if the person is disabled.<sup>18</sup> In 1939, the first FSP allowed people to receive 50 cents worth of blue stamps for every \$1 of orange stamps purchased.<sup>18</sup> Orange stamps could be used to buy any food and blue stamps could be used to buy foods deemed as “surplus”.<sup>18</sup> Four years after the FSP was established, it was recorded that nearly 20 million people used FSP, but in 1943 it was terminated because “the conditions that brought the program into being—unmarketable food surpluses and widespread unemployment—no longer existed”.<sup>18</sup> However between 1961 and 1964, a pilot FSP was conducted that allowed households to purchase food stamps.<sup>18</sup> In 1964, the FSP was permanently established, and in the four decades since, it has gone through a series of changes through expansion, legislative changes, reform, cutbacks, development of Electronic Benefit Transfer (EBT), and change of name to SNAP in 2008.<sup>18</sup>

The USDA’s Thrifty Food Plan (TFP) is used as a basis to calculate SNAP allotments.<sup>19</sup> The TFP is based on a set of 15 market baskets, adjusted every month based on the prices low-income people paid for many foods. It takes into account age, gender, household size, and several nutritional standards, including the 1997-2005 Recommended Dietary Allowances (RDAs), Adequate Intakes (AIs), and Acceptable Macronutrient Distribution Ranges (AMDRs), the 2005 Dietary Guidelines for Americans, and the 2005 MyPyramid food recommendations. SNAP is meant to supplement low-income household food budget and the maximum allotment level is \$668 per month (based on a household of four people).<sup>20</sup>

Several conflicting and controversial reports have suggested an association between SNAP participation and obesity. For instance Zagorsky and Smith<sup>21</sup> found that BMI among food stamps participants was 1 unit higher than non-food stamp participants. A study by Gibson<sup>22</sup> found that long term participation of food stamps was positively associated with obesity in low-

income women and their daughters. Meanwhile, Lin and colleagues<sup>23</sup> found that there was not much difference between the BMI of the rest of the population and that of food stamp recipients.

## **WIC**

The first WIC program, then called “Commodity Supplemental Food Program”, was established in 1969 in an effort to curb the nation’s growing problem of malnutrition of low-income mothers and children.<sup>24</sup> About 3 years later, the Special Supplemental *Food* Program (SSFP) was established as a 2-year pilot program sponsored by Senator Hubert H. Humphrey, to help meet the dietary needs of pregnant women and infants, since the Food Stamp Program and the Commodity Supplemental Food Program were not meeting these needs.<sup>25,26</sup> The SSFP was implemented as a permanent program in 1974.<sup>27</sup> The reason for the establishment of the SSFP was because of the high number of women, infants, and children who were found to be in poor nutritional health, or health care or both during the pilot program.<sup>27</sup> Several years passed with many changes to the SSFP in order to incorporate the nutrition education and health care referral aspects into the program through legislative acts, and finally, the SSFP was changed to “Special Supplemental *Nutrition* Program for Women, Infants, and Children (WIC) in 1994.<sup>26</sup>

The current eligibility requirements for WIC include pregnant or breastfeeding mothers, and infants up to five years of age, who are considered to be at “nutrition risk”.<sup>28</sup> Nutrition risk is categorized into two groups: (1) medically based risks or (2) dietary risks. Medically based risks include conditions such as history of pregnancy complications, or poor pregnancy outcomes, anemia, underweight, overweight, whereas dietary risks include conditions such as failure to meet the dietary guidelines or inappropriate nutrition practices.<sup>28</sup> To be eligible for the income criteria, the participant’s family income should be equal to or fall below 185% of the US poverty income guidelines.<sup>29</sup> Also, the participant automatically qualifies for WIC if the participant or

other family members participate in other federal assistance programs like SNAP, Medicaid, or Temporal Assistance for Needy Families.<sup>29</sup>

In FY 2008, WIC served about 9 million people each month alone, with about 50% being children, and about 25% being infants and 25% being women.<sup>29</sup> WIC participants are given nutrition education about diet and good health during certification periods and issued food instruments and cash value vouchers based on the nutritional value of the specific supplemental foods per category.<sup>30</sup> WIC food benefits are prescribed for the individual, to help meet the recommended intake of important nutrients or foods and are meant as a supplement.<sup>30</sup> Furthermore participants must reapply at the end of the certification period and be reassessed for program eligibility.<sup>30</sup> In 2009, the WIC food packages were dramatically changed and now include vegetables and fruits, low-fat dairy foods, solid baby foods, and whole grains.<sup>31</sup>

Because the WIC program serves so many low-income families in this nation, researchers have questioned whether the WIC program is a contributing factor to the recent increase in obesity among low-income families.<sup>32,33</sup>

## **EMERGENCY FOOD ASSISTANCE PROGRAMS**

Non-federal or private food assistance programs were established in the 1980's by community groups to provide emergency foods to low-income families through food banks, food pantries, and soup kitchens.<sup>34</sup> The purpose of these private food assistance programs was to help to alleviate the total dependency of people on the federal food assistance program especially SNAP, and also to feed other low-income families who were ineligible for the federal food assistance programs or did not feel like taking part in any federal assistance program.<sup>35</sup> It has been documented that there are “over tens of thousands of emergency food programs in the US today that provide charitable foods to about one tenth of the population during some point in a given

year”.<sup>34</sup> Furthermore, 41% of the households that participate in SNAP also resort to emergency private food assistance when their SNAP allotments ran out.<sup>36</sup> In addition, 80% of private food assistance participants reported that their SNAP benefits did not last the whole month.<sup>37</sup>

Substantial research has questioned the nutritional adequacy of food assistance programs, since more low income households in the United States are obese.<sup>38-42</sup>

## **SHOPPING BEHAVIORS**

Shopping behaviors among low-income individuals are influenced by many factors, including food costs, food access and availability, food quality, and use of coupons or in-store sales.<sup>42-44</sup>

Prior research has also indicated that approximately 75% of households using food stamps generally cannot meet dietary needs by the end of the month, thus increasing household food insecurity risk.<sup>12,45</sup> Overall, prior research evaluating shopping behaviors among low-income households have provided inadequate evidence evaluating the types of foods obtained throughout the month, how they are used in the home, and how these behaviors might change over a one-month period of time.

## **THEORETICAL FRAMEWORK**

Health behavior theories, such as the Social Cognitive Theory (SCT), have been used extensively in the past to provide understanding of human behavior on food choice and to determine predictive factors of dietary intake.<sup>12,46,48-50</sup> According to Kerlinger and Lee<sup>50</sup>, theory is defined as “a set of interrelated concepts, definitions, and propositions that present a systematic view of events or situations by specifying relations among variables in order to explain and predict the events or situations.”

The use of theories has been the basis for understanding and explaining human behaviors especially in health education and promotion. Social cognitive theory (SCT), renamed by

Bandura<sup>51</sup> to replace Social learning theory (SLT), explains that human behavior can be viewed as a triadic, dynamic, and reciprocal interrelationship in which three factors (personal, environment, and behavior) are always interacting with each other. The SCT informs us that individual or group behaviors are observed because of thought processes, such as cognition, affection, and biological events, that have transformed into action (behavior) through concepts (motivation, self efficacy) obtained from the external environment as a result of social modeling. The theory of social learning developed by Miller and Dollard<sup>52</sup> which was later on broadened by Bandura and Walters<sup>53</sup> as SLT, suggested that imitation, reinforcements, and self-control were the essential factors that influenced learning. The limitation of the SLT as to the SCT was that it insufficiently explained human behavior when it came to the emotional aspects, thus it was renamed in 1986 as SCT in order to accommodate the cognitive aspect of observational behavior.<sup>54</sup>

## RESEARCH QUESTIONS

This study incorporated the SCT to evaluate the impact of environmental, behavioral, and personal factors on health behavior. The purpose of his study was to determine how shopping, cooking, and eating behaviors change over a one-month period of time among low-income Utah families, and the impact of food assistance programs on these behaviors.

Specifically, this study addressed the following research questions:

- 1) What factors influence food acquisition behaviors and dietary intake of low income parents at the *beginning of the month*? What factors influence food acquisition behaviors and dietary intake of low income parents at the *end of the month*?
- 2) How do these factors (identified from Research Question #1) change with participation in government food assistance programs (e.g., WIC, SNAP)?

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## **Appendix B**

### **METHODS**

#### **STUDY POPULATION AND SETTING**

Low-income parents (defined as household income  $\leq$  185% of the poverty level) with at least one child  $<$  18 years of age who were identified as the primary food shopper in the household were recruited from Utah County, Utah. Participants who received benefits from any government food assistance program (e.g., WIC, SNAP) automatically qualified for the study. Exclusion criteria included pregnant women and people who were not fluent in English. All study participants were fluent in English, in order to alleviate any bias that might have arisen with the use of translators. Participants were recruited via flyers (Appendix C) posted on information boards at BYU campus, local food assistance program offices, food pantries, and in local newspapers after being telephone screened (Appendix D). This study consisted of two phases: (1) Qualitative focus groups and (2) Quantitative follow-up phase tracking shopping behaviors of focus group participants.

#### **Phase 1: Qualitative**

**Focus Group Sessions.** Thirteen focus groups were conducted by two researchers trained in focus group facilitation, methodology, and evaluation<sup>55</sup>. Sessions were 90 minutes in length, were audio-taped, took place at local food assistance program offices, food pantries, and BYU campus, and were transcribed verbatim. Participants signed an informed consent form (Appendix E), filled out demographic sheet (Appendix F), and were asked about changes in eating patterns, food access, food acquisition behaviors (including shopping habits) over a one-month period of time (Appendix G). In addition, participants were asked to provide a written recall of a

commonly prepared meal at home. Heights and weights were also taken. Participants received \$30 for their time participating in the focus group and resource booklet on community programs.

## **Phase 2: Quantitative**

### **One-month Tracking of Shopping Behaviors, Dietary Intake & Food Security Scale**

Participants from the focus groups were asked to complete a shopping behavior checklist/survey tracking the types and sizes of foods obtained, where foods are obtained, and how foods were obtained over a one-month period of time. Each participant was given a “Household Food Increase Tracking Sheet” (Appendix H) each week during the month to record any foods not obtained through receipts (i.e. food bank, friends, family). Participants were given envelopes to collect any store receipts obtained for food during the one-month time period. Researchers met with the participants once each week throughout the one-month period to collect their completed tracking sheets and any store receipts. Weight measurements and 24-hour recalls were conducted each week during the one-month period. At the end of the month, participants were asked to complete the USDA’s food security scale for the past 30 days and past year (Appendix I). Participants received additional \$60 for the one-month survey (\$15 per week), at the end of the one-month period after all tracking sheets, any store receipts, anthropometric and dietary intake information, and food security scale questions were collected.

## **Phase 1: Qualitative Data Analysis**

Transcripts were evaluated independently by the two researchers, with subsequent comparison and reconciliation of discrepancies. Transcripts were coded using the pile and sort method and subthemes emerged based on the review of the coded transcripts.<sup>1</sup>

## Phase 2: Quantitative Data Analysis

Descriptive statistics, including means and frequencies, were used for sociodemographic variables. Body mass index (BMI) was calculated using the formula  $\text{kg/m}^2$ . During the focus groups, it became apparent from participants that food expenditures were more influenced by the timing of the month that they received economic increases, either through employment wages or from food assistance program allotments. Hence, for the quantitative analysis, “beginning-of-the-month” (BOM) shopping habits were defined as follows: 1) for those on Supplemental Nutrition Assistance Program (SNAP), the week they received SNAP (week 1) and the week following SNAP allotments (week 2); 2) for non-SNAP participants who receive a monthly paycheck, the week they got paid (week 1) and the week thereafter (week 2); and 3) for non-SNAP participants who were paid bi-weekly, the weeks they were paid (week 1 and week 2). “End-of-the-month” (EOM) shopping habits were counted as the remaining two weeks of the month that were not used in the BOM calculation for each category (1-4) explained previously. Paired t-tests compared differences of food expenditures at the BOM and the EOM. To test for the mean differences of absolute dollars spent per USDA’s MyPyramid Food Groups between the BOM and EOM were evaluated, as well as mean proportional differences (percent of each food group from the dollar total amount spent). To account for multiple comparisons bias, the significance level was set at  $p < 0.01$ . All statistical analyses were performed in SAS v. 9.2 (SAS Institute Inc. Cary, NC, USA, 2007). This study was approved by the Institutional Review Board for Human Subjects at Brigham Young University.

**Reference:** 1. Krueger, Richard A. and Mary Anne Casey. 2000. Focus Groups: A Practical Guide for Applied Research, 3rd edition. Thousand Oaks, CA: Sage.



## Appendix C



**Do you have a child less than 18 years old?**

**Would you be willing to talk about the foods you eat?**

**Do you do most of the shopping for food in your family?**

**...then you may qualify for a research study.**

We are having a discussion group with parents to find out the foods they and their families decide to eat, their food shopping habits and the things that influence their shopping and cooking habits during the month. There will also be a one month follow-up survey on parents' food shopping habits during the month. We will also ask parents about the foods they ate during the month and measure their heights and weights.

**\*\*\*Participants will be reimbursed \$30 for their time (1 and 1/2 hours) for taking part in the discussion group and an additional \$60 for participating in the one-month survey.**

**If you are interested please contact Janice Darko at 801-422-2088 or e-mail [janice@byu.net](mailto:janice@byu.net).**



**\*This study is being conducted by Rickelle Richards and Janice Darko from the Department of Food Science & Nutrition at Brigham Young University.**

## Appendix D

### TELEPHONE SCREENING FOR RESEARCH STUDY ELIGIBILITY

Thank you for your interest in our research study. My name is Janice Darko, a graduate student from the Department of Nutrition, Dietetics and Food Science at Brigham Young University and I am working with Dr. Rickelle Richards, a faculty member in our department. I would first like to tell you more about our study and find out your interest in taking part in our study. We are conducting discussion groups with parents to learn more about the foods families decide to eat, food shopping habits, and the things that influence parents shopping and cooking habits during the month.

Before I tell you about the study in more detail, can I ask you a few questions to see if you are eligible for this study? This screening is voluntary and will take about 10-15 minutes. All responses are confidential. May I proceed?

#### Screening Questions

- 1) Are you a parent? Yes No
- 2) Are you a student? Yes No
- 3) Are you currently on any type of food assistance program, like WIC or Food Stamps?  
Yes No
- 4) If no to Question #3, then ask how many people are in your household? \_\_\_\_\_

Household Size	Annual Income (<185% Poverty Level)
1	< \$19,200
2	< \$25,900
3	< \$32,560
4	< \$39,220
5	< \$45,880
6	< \$52,540
7	< \$59,200
8	< \$65,860
For each additional person, add	\$6,600

5) Do you earn less than [depending on number of people in household]? Yes No

6) (For females only) Are you currently pregnant or intend to be pregnant in the next 4 months?

Yes No

7) Do currently live in the Provo-Orem area or Salt Lake area? Provo/Orem Salt Lake

**ELIGIBILITY** - Yes No

*If no, from the information you have given me so far, it looks like you are not eligible for this study, however, there will be other studies conducted in the future that you might be eligible for. Thank you for your time and have a nice day.*

OR

*If yes, from the information you have given me so far, it looks like you might be eligible for this study.*

Let me tell you about the study in a little more detail.

As I mentioned before, we want to learn more about the things that influence the foods you eat, your food shopping habits, and how food is prepared in your home throughout the month. By agreeing to take part in this study, you agree to take part in both a discussion group and a one-month survey.

**Part 1 (Discussion Group):** During the discussion group you will be asked to share your thoughts and experiences about the types of foods available to you and your family, the things that influence what you and your family decide to eat, your food shopping habits and how your family prepares foods eaten at home. The discussion group will last about one and a half hours. Your height and weight will also be measured. You will receive \$30 for your time in the discussion group.

**Part 2 (One-month survey):** You will be given a “Household Food Increase Tracking sheet”, each week during the month to record the foods you obtained and where and how they were obtained. You will also be asked to collect any receipts from stores/places where you got food. You will meet with the researchers once a week to return the filled out “Household Food Increase Tracking sheets” and any store receipts. You will also be asked about the foods you ate the previous day and your height and weight will be measured. At the end of the month, you will be asked to fill out a short survey about the foods that were available to your family during the past month and year. You can receive up to an additional \$60 for participating in the one-month survey (Time 2). You will receive \$15 per week. *All compensation will be given at the end of the one-month period.* If you do not complete all items listed for a certain week, no compensation will be given for that week.

**Risks and Benefits:** There are no benefits to you and your family in taking part in this research study. The risk in taking part in this study are that we will be asking you and about your family personal questions such as where you get your food from during the discussion group and on the one-month survey.

**Confidentiality:** All information collected (from part 1- the discussion group and part 2 – the one-month survey) will be kept private, in a locked file cabinet in Dr. Rickelle Richards office. Only Dr. Rickelle Richards and Janice Darko will have access to the collected information. The information collected may be published. You and your family’s privacy will be protected and will not be identified in anyway. No individual information will be released.

Are there any other questions that I can answer for you? Yes    No

Would you be interested in taking part in both the discussion group and the one month survey?

Yes No

The group discussion would be held on ...../...../2008 at the public library, .....

-----

**Number of screens/invited to participate. Information is being kept anonymous.**

**Name:** \_\_\_\_\_

**Date of Screen:** \_\_\_\_\_

**Phone number/e-mail:** \_\_\_\_\_

**Focus Group Schedule:** \_\_\_\_\_ [date]

**Location:**    **Provo/Orem**                      **Salt Lake**

## Appendix E

### STATEMENT OF INFORMED CONSENT

This research study is being conducted by Dr. Rickelle Richards, PhD, MPH, RD and graduate student Janice Darko from the Department of Nutrition, Dietetics, & Food Science at Brigham Young University.

You have been asked to take part in a group discussion and a one-month survey about the foods you and your family eat. We want to learn more about the things that influence the foods you eat, your food shopping habits, and how food is prepared in your home throughout the month. By agreeing to take part in this study, you agree to take part in both the discussion group and the one-month survey.

**Time 1 (Discussion Group):** During the discussion group you will be asked to share your thoughts and experiences about the types of foods available to you and your family, the things that influence what you and your family decide to eat, your food shopping habits and how your family prepares foods eaten at home. The discussion group will last about one and a half hours. You will also be asked to give information about your gender, educational level, number of children in household, where you shop for food and the types of foods you get during the month. Your height and weight will also be measured.

**Time 2 (One-month survey):** At the beginning, middle, and end of the month you will be asked to keep a record of all the foods your family obtained throughout the month. You will be given a “Household Food Increase Tracking sheet”, each week during the month to record the foods you obtained and where and how they were obtained. You will also be asked to collect any receipts from stores/places where you got food. You will meet with the researchers once a week to return the filled out “Household Food Increase Tracking sheets” and any store receipts. You will also be asked about the foods you ate the previous day and your height and weight will be measured. At the end of the month, you will be asked to fill out a short survey about the foods that were available to your family during the past month.

**Risks and Benefits.** There are no benefits to you and your family in taking part in this research study. The risk in taking part in this study are that we will be asking you and about your family personal questions, such as where you get your food from, during the discussion group and on the one-month survey.

**Compensation.** You will receive \$30 for your time in the discussion group and an additional \$60 for participating in the one-month survey. The \$60 for the one-month survey will be given at the end of the one-month period; after all of part 2 (one month survey) steps are completed.

**Confidentiality.** All information collected (from time 1 - the discussion group and time 2 – the one-month survey) will be kept private, in a locked file cabinet in Dr. Rickelle Richards office. Only Dr. Rickelle Richards and Janice Darko will have access to the collected information. The information collected may be published. You and your family’s privacy will be protected and will not be identified in anyway. No individual information will be released.

**Participation.** Your decision to take part (or not to take part) in this survey will not affect any present or future relations with Brigham Young University or any community public program. If you decide to take part in this survey you are free to withdraw at any time.

**Questions about the Research/Rights as Research Participants**

If you have questions regarding this study as a research participant, you may contact Dr. Rickelle Richards, PhD, MPH, RD at 801-422-6855, [Rickelle\\_richards@byu.edu](mailto:Rickelle_richards@byu.edu) or Janice Darko at 801-422-2088, [Janice@byu.net](mailto:Janice@byu.net) from the Department of Nutrition, Dietetics, & Food Science at Brigham Young University, S-233 ESC, Provo, UT 84602.

If you have questions or concerns about this research study and would like to talk to someone other than the researchers, please contact Dr. Christopher Dromey, Ph.D, Chair of the Institutional Review Board for Human Subjects, 133 TLRB, Brigham Young University, Provo, UT 84602 at (801) 422-6461 or e-mail at [Christopher\\_dromey@byu.edu](mailto:Christopher_dromey@byu.edu).

By signing below, you indicate you understand the process involved in this study. I have read, understood, and received a copy of the above consent and desire of my own free will to participate in both the discussion group and one-month survey.

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Signature of Investigator \_\_\_\_\_ Date: \_\_\_\_\_

## DEMOGRAPHICS SHEET

Please fill in the blank or circle the response that applies to you.

1) Age: \_\_\_\_\_ 2) Gender: \_\_\_\_\_

3) Race (Please circle all that apply): African American (Black) American Indian Asian Caucasian (White)  
Hispanic Other

4) Household Income (yearly): Less than \$5,000 \$10,000-\$19,999 Greater than \$40,000  
\$5,001-\$9,999 \$20,000-\$39,999

5) Education: 8<sup>th</sup> grade or less Some undergraduate/college/technical/vocational school  
Some high School Completed college/technical/vocational school  
High school graduate, GED or equivalent Completed graduate/ professional school

6) Total Number of people in the household: \_\_\_\_\_

7) Number of children in household: \_\_\_\_\_ 8) Age of children in household: \_\_\_\_\_

9) Do you own a home, townhouse, condo, etc? Yes No

10) Do you rent an apartment, townhouse, condo, etc? Yes No

11) Do you currently have a job? Yes No If no, when was your last job? \_\_\_\_\_

12) Are you currently using food stamps? Yes No If yes, how much do you receive each month?  
\$ \_\_\_\_\_

13) Are you currently using WIC? Yes No 14) Are your children in Head Start? Yes No

15) Do your children get free or reduced school lunch? Yes No

16) Are your children on a school breakfast program? Yes No

17) Do you get food assistance from any other source (e.g. church, food pantry, etc)? Please specify.  
\_\_\_\_\_

18) Do you get financial assistance from any other source than from a job? Please specify.  
\_\_\_\_\_

## SHOPPING QUESTIONS

1) Where do you buy food most of the time? \_\_\_\_\_

2) How often do you buy food? 0 times a week 3-4 times a week Everyday of the week  
1-2 times a week 5-6 times in a week Other; please specify: \_\_\_\_\_

3) How do you get to the store to buy food? Drive your own car Walk  
Take the bus Ride with a friend or family  
Ride bicycle Other; please specify: \_\_\_\_\_

4) How much do you spend on food/ week at the beginning of the month? \$ \_\_\_\_\_ End of the month? \$ \_\_\_\_\_

5) How do you usually pay for food at the beginning of the month? Please circle all that apply.  
Cash/Check Credit card EBT card (food stamps) WIC vouchers Other \_\_\_\_\_

6) How do you usually pay for food at the end of the month? Please circle all that apply.  
Cash/Check Credit card EBT card (food stamps) WIC vouchers Other \_\_\_\_\_

7) Which of these foods do you usually shop for/get at the beginning of the month? Please circle all that apply.

- |  |   |
|--|---|
| Canned soups                                   | Yogurt/Milk/Cheese  |
| Canned fruits and vegetables                   | Meat/ Poultry/Fish  |
| Frozen fruits and vegetables                   | Eggs  |
| Grain products (bread, tortillas, cereals etc) | Snack foods (chips, candy, snack crackers, ice cream etc) |
| Soda/Soft drinks                               | Cooking oil/Butter/Margarine                              |
| Fast food (Wendy's, McD's, BK etc)             | Bottled water   |
| Fresh fruits and vegetables                    | Packaged meals (like pizza, pasta-a-roni etc)             |
| Alcohol  | None  |

8) Which of these foods do you usually shop for/get at the end of the month? Please circle all that apply.

- |  |   |
|--|---|
| Canned soups                                   | Yogurt/Milk/Cheese  |
| Canned fruits and vegetables                   | Meat/ Poultry/Fish  |
| Frozen fruits and vegetables                   | Eggs  |
| Grain products (bread, tortillas, cereals etc) | Snack foods (chips, candy, snack crackers, ice cream etc) |
| Soda/Soft drinks                               | Cooking oil/Butter/Margarine                              |
| Fast food (Wendy's, McD's, BK etc)             | Bottled water   |
| Fresh fruits and vegetables                    | Packaged meals (like pizza, pasta-a-roni etc)             |
| Alcohol  | None  |

9) Do you currently smoke? Yes No If yes, how many cigarettes do you smoke each day? \_\_\_\_\_

If yes, how much do you spend on cigarettes every week? \$ \_\_\_\_\_

10) Do you currently drink alcohol? Yes No If yes, how much do you drink each day? \_\_\_\_\_

If yes, how much do you spend on alcohol each week? \$ \_\_\_\_\_

11) Which of these kitchen items do you have at home that are in working function? Please circle all that apply.

- |                      |                   |         |           |
|----------------------|-------------------|---------|-----------|
| Refrigerator/Freezer | Stove-top Burners | Oven    | Microwave |
| Blender              | Mixer             | Toaster | Pots/pans |

12) How often do you get food from restaurants or fast-food places at the beginning of the month?

- |                  |                     |                              |
|------------------|---------------------|------------------------------|
| 0 times a week   | 3-4 times a week    | Everyday of the week         |
| 1-2 times a week | 5-6 times in a week | Other; please specify: _____ |

13) How often do you get food from restaurants or fast-food places at the end of the month?

- |                  |                     |                              |
|------------------|---------------------|------------------------------|
| 0 times a week   | 3-4 times a week    | Everyday of the week         |
| 1-2 times a week | 5-6 times in a week | Other; please specify: _____ |



## Appendix G

### FOCUS GROUP QUESTIONS

*Icebreaker:* To start off, I'd like everyone to introduce themselves (first name only), tell how many children are in your family, their ages and gender, and something you do as a family that makes you smile.

- 1) What kind of foods do you enjoy eating?
- 2) What kinds of foods did you eat last week?
  - a. How do your eating behaviors change from the beginning to the end of the month?
  - b. How about the rest of your family? Do you sacrifice food for other family members (i.e. children)?
- 3) Describe your typical food shopping behaviors throughout the month. How do these change from the beginning to the middle to the end of the month?
  - a. Who usually does the shopping for food in your house?
  - b. How frequently do you go shopping for food (prompt: once a month, weekly, etc)? How much time does it take you to go shopping for food?
  - c. Where do you shop for food? How far do you travel to do your food shopping? How do you get there (prompt: walk, ride bus, drive, etc)?
  - d. How do you decide what foods you buy in the store (e.g., do you go with a list, do you plan menus, buy things on sale/use coupons, look for in-store specials, compare prices between products, spend a certain \$ amount, children/spouse influence)? How do TV ads influence shopping behavior? What about store displays or actual products (e.g., new packaging)?
  - e. Describe how you navigate around the store (prompt: shop up and down the aisles, go to specific sections, etc)? Do you end up buying foods you had not planned on? If yes, please describe.
  - f. How do you pay for the food you buy? What do you think about the costs of foods where you shop? How does this impact what you buy at the beginning of the month? What about at the end?
  - g. How does season (i.e., fall/winter vs. spring/summer) change food shopping behaviors?
- 4) How often do you eat out during the month? Does this change from the beginning to the end of the month?
  - a. At what type of places do you eat?
  - b. How much money do you spend on eating out a month? At the beginning of the month? At the end of the month?
- 5) What other resources do you use throughout the month to obtain food (prompt: garden, food pantry, church resources, family/friends, etc)?

- a. How does this change from the beginning of the month to the end of the month?
  - b. What do you think about the foods they provide your family (prompt: able to provide food preferences and adequately provide foods needed to prevent hunger)?
- 6) Let's say that you got additional \$30.00 a month to spend, what would you spend it on?
- 7) How is food used that is obtained throughout the month?
  - a. How long does it last? Does the type of food matter (i.e., fruits and vegetables vs. boxed, canned foods)?
- 8) What are your perceptions of food assistance programs in stretching food throughout the month?
  - a. Are you able to have foods from all food groups (Carbohydrates, proteins, fats and oils, vitamins, minerals and water) throughout the month?
  - b. Are there foods you would like to be able to buy or obtain that you cannot?
  - c. How have recent increases in food prices affected your family and the food buying choices you make?
- 9) How do you decide what foods to prepare for your family? (e.g., from mind, use cookbook/family recipes or ones from friends) Write down a recipe of a commonly prepared meal for your family during the month (it can include anything from boxed mix, frozen food to from scratch).
  - a. Who usually does the cooking at home?
  - b. What type of equipment do you typically use to prepare meals (i.e. microwave, stove, oven)?
  - c. How do the types of meals prepared for your family change from beginning to the end of the month?
  - d. How do personal preferences influence the foods you prepare?
  - e. How much time does it take for you to prepare a meal? What is the maximum amount of time you would want to take to prepare a meal? What influences how much time is spent on cooking?
  - f. How many times do you cook at home during the month? Does this change from the beginning of the month to the end of the month?
- 10) How did you learn how to cook?
  - a. Who taught you how to cook?
  - b. Are there recipes you would like to know how to prepare that you do not already prepare?
- 11) How would you rate your cooking skills, with 1 being very unskilled to 5 being very skilled?
  - a. How did you decide on your rating?
  - b. What do you think makes a person "skilled" at cooking?
  - c. What do you think it would take for you to become more skilled at cooking?

- 12) Describe family mealtimes. Do these change during the month? If yes, what factors change it?
- a. Do you have special family gatherings with meals? If yes, who is expected to provide the meals?
  - b. What do you do with leftover foods?
- 13) Have you heard the term “food security” before? If yes, how would you define it? (*If not, provide USDA definition: access by all members at all times to enough food for an active, healthy life. At a minimum includes a households’ access to a sufficient amount of nutritionally adequate and safe foods and the ability of a household to obtain acceptable foods in socially acceptable ways.*)
- a. How many of you feel your family has been “food secure” this past month? Do you think this status changes throughout the month (i.e. do they feel more food secure at beginning vs. end)?
  - b. Do government food assistance programs (i.e., Food Stamps, WIC) help you have “food security”?
- 14) How do any health concerns for yourself or other family members influence foods obtained or prepared?
- a. Does participation in food assistance programs help you obtain healthy foods?
  - b. Recently, policy makers have discussed creating food vouchers for buying fruits & vegetables for those on food stamps. What do you think about this idea? How can people using food stamps be encouraged to buy more fruits and vegetables? Is this something important to you or for your family?

*Summary (summarize comments from focus group in 2-3 minutes):* Does this seem to cover all that we’ve talked about today? Have I missed anything?



## Appendix I

### Household Survey – Food Questions about the Last 12 Months

For these statements, please mark whether the statement was often true, sometimes true, or never true for (you/your household) in the last 12 months.

1) In the **last 12 months**, I/we worried whether my/our food would run out before I/we got money to buy more.

- Often true
- Sometimes true
- Never true
- Don't Know

2) In the **last 12 months**, the food that I/we bought just didn't last, and I/we didn't have money to get more.

- Often true
- Sometimes true
- Never true
- Don't know

3) In the **last 12 months**, I/we couldn't afford to eat balanced meals.

- Often true
- Sometimes true
- Never true
- Don't know

4) In the **last 12 months**, did you or other adults in your household ever cut the size of your meals or skip meals because there wasn't enough money for food?

- Yes ----->
- No
- Don't know

<i>If yes, how often did this happen?</i> <input type="checkbox"/> Almost every month <input type="checkbox"/> Some months but not every month <input type="checkbox"/> Only 1 or 2 months
---

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

- Yes
- No
- Don't know

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

- Yes
- No
- Don't know

7) In the **last 12 months**, did you lose weight because there wasn't enough money for food?

- Yes
- No
- Don't know

8) In the **last 12 months**, did you/you or other adults in your household ever not eat for a whole day because there wasn't enough money for food?

- Yes ----->
- No
- Don't know

<i>If yes, how often did this happen?</i> <input type="checkbox"/> Almost every month <input type="checkbox"/> Some months but not every month <input type="checkbox"/> Only 1 or 2 months <input type="checkbox"/> Don't know
--

The next questions are about children living in your household under 18 years old.

9) In the **last 12 months**, I/we relied on only a few kinds of low-cost food to feed my/our child/the children because I was/we were running out of money to buy food.

- Often true
- Sometimes true
- Never true
- Don't know

10) In the **last 12 months**, I/We couldn't feed my/our child/the children a balanced meal, because I/we couldn't afford that.

- Often true
- Sometimes true
- Never true
- Don't know

11) In the **last 12 months**, my/our child was (or the children were) not eating enough because I/we just couldn't afford enough food.

- Often true
- Sometimes true
- Never true
- Don't know

12) In the **last 12 months**, did you ever cut the size of your child's/any of the children's meals because there wasn't enough money for food?

- Yes
- No
- Don't know

13) In the **last 12 months**, did your child/children ever skip meals because there wasn't enough money for food?

- Yes ----->
- No
- Don't know

<i>If yes, how often did this happen?</i> <input type="checkbox"/> Almost every month <input type="checkbox"/> Some months but not every month <input type="checkbox"/> Only 1 or 2 months <input type="checkbox"/> Don't know
--

14) In the **last 12 months**, was your child/were the children ever hungry but you just couldn't afford more food?

- Yes
- No
- Don't know

15) In the **last 12 months**, did your child/any of the children ever not eat for a whole day because there wasn't enough money for food?

- Yes
- No
- Don't know

## Household Survey – Food Questions about the Last 30 Days

For these statements, please mark whether the statement was often true, sometimes true, or never true for (you/your household) in the last 30 days.

1) In the **last 30 days**, I/we worried whether my/our food would run out before I/we got money to buy more.

- Often true
- Sometimes true
- Never true
- Don't Know

2) In the **last 30 days**, the food that I/we bought just didn't last, and I/we didn't have money to get more.

- Often true
- Sometimes true
- Never true
- Don't know

3) In the **last 30 days**, I/we couldn't afford to eat balanced meals.

- Often true
- Sometimes true
- Never true
- Don't know

4) In the **last 30 days**, did you or other adults in your household ever cut the size of your meals or skip meals because there wasn't enough money for food?

- Yes ----->
- No
- Don't know

*If yes, in the last 30 days, how many days did this happen? \_\_\_\_\_*

5) In the **last 30 days**, did you ever eat less than you felt you should because there wasn't enough money for food?

- Yes
- No
- Don't know

6) In the **last 30 days**, were you every hungry but didn't eat because there wasn't enough money for food?

- Yes
- No
- Don't know

7) In the **last 30 days**, did you lose weight because there wasn't enough money for food?

- Yes
- No
- Don't know

8) In the **last 30 days**, did you/you or other adults in your household ever not eat for a whole day because there wasn't enough money for food?

- Yes ----->
- No
- Don't know

*If yes, in the last 30 days, how many days did this happen? \_\_\_\_\_*

The next questions are about children living in your household under 18 years old.

9) In the **last 30 days**, I/we relied on only a few kinds of low-cost food to feed my/our child/the children because I was/we were running out of money to buy food.

- Often true
- Sometimes true
- Never true
- Don't know

10) In the **last 30 days**, I/We couldn't feed my/our child/the children a balanced meal, because I/we couldn't afford that.

- Often true
- Sometimes true
- Never true
- Don't know

11) In the **last 30 days**, my/our child was (or the children were) not eating enough because I/we just couldn't afford enough food.

- Often true
- Sometimes true
- Never true
- Don't know

12) In the **last 30 days**, did you ever cut the size of your child's/any of the children's meals because there wasn't enough money for food?

- Yes
- No
- Don't know

13) In the **last 30 days**, did your child/children ever skip meals because there wasn't enough money for food?

- Yes ----->
- No
- Don't know

*If yes, in the last 30 days, how many days did this happen? \_\_\_\_\_*

14) In the **last 30 days**, was your child/were the children ever hungry but you just couldn't afford more food?

- Yes
- No
- Don't know

15) In the **last 30 days**, did your child/any of the children ever not eat for a whole day because there wasn't enough money for food?

- Yes
- No
- Don't know



**Coding Responses and Assessing Household Food Security Status:**

Responses of “yes,” “often,” “sometimes,” “almost every month,” and “some months but not every month” on the “Last 12 months” survey are coded as affirmative. The sum of affirmative responses to a specified set of items is referred to as the household’s raw score on the scale comprising those items.

- For households with one or more children:
  - Raw score zero—High food security
  - Raw score 1-2—Marginal food security
  - Raw score 3-7—Low food security
  - Raw score 8-18—Very low food security
  
- For households with no child present:
  - Raw score zero—High food security
  - Raw score 1-2—Marginal food security
  - Raw score 3-5—Low food security
  - Raw score 6-10—Very low food security

Households with high or marginal food security are classified as food secure. Those with low or very low food security are classified as food insecure.

**30-Day Reference Period:** The questionnaire items may be modified to a 30-day reference period by changing the “last 12-month” references to “last 30 days.” In this case, items AD1a, AD5a, and CH5a must be changed to read as follows:

AD1a/AD5a/CH5a    [IF YES ABOVE, ASK] In the last 30 days, how many days did this happen?

\_\_\_\_\_ days

[ ] DK

According to Mark Nord (Economic Research Service, USDA), when a participant responds that these events on the “last 30 days” survey occur 3 or more days, this is considered an affirmative response.

Appendix J

# Factors Influencing Shopping Behaviors among Low-income Families during a One-month Period of Time<sup>1,2</sup>

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<sup>1</sup>To be presented in poster form at Experimental Biology April 2010, Anaheim, CA

<sup>2</sup>Prepared for submission to the *J Nutr Educ Behav*

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