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Over the last decade, the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) has been transitioning to electronic benefits (eWIC) in efforts to reduce participation barriers. The North Carolina Appalachian Region was among the last to implement this transition, yet little is known about attitudes, barriers, and perceptions of WIC participation in this region and whether eWIC influenced experiences and barriers to participation in rural areas. The primary aims of this formative study were to 1) explore maternal attitudes, barriers, and perceptions of WIC program participation and shopping experiences in rural Appalachian North Carolina; 2) examine maternal shopping characteristics, perceptions, and experiences among WIC participants using paper benefits (PB) as well as those using eWIC; and 3) examine dietary intake among WIC pregnant women and mothers in this region.

The study utilized both qualitative and quantitative methodologies. For aim 1, WIC participants were recruited for focus groups from WIC offices across three rural counties. Data from four semi-structured focus groups were analyzed using content analysis to identify emerging themes related to perceptions, barriers, and experiences related to WIC participation. For aim 2 and 3, two surveys that included items on perceived barriers and experiences, Dietary Screener Questionnaire (DSQ), and Fruit and Vegetable Screener (FV Screener) were administered to pregnant women and mothers enrolled in the WIC program (n=207). The first survey was completed when the WIC

program was using PB (Phase 1) and the second survey was administered when the program was fully transitioned to eWIC (Phase 2).

WIC participants perceived a lack of variety of WIC-approved foods and social stigma as major barriers to participation and redeeming benefits. No significant differences in maternal shopping characteristics or barriers to full benefit redemption were detected between survey respondents who were using PB versus those using eWIC benefits ($p>0.05$). However, a greater proportion of participants who were using eWIC reported that they perceived using WIC food benefits to be easy and convenient “always/most of the time” compared to those who were using PB ($p<0.05$). Dietary intakes of WIC mothers did not differ based on pregnancy status or age of their child(ren). Mean dietary intakes of total FV, whole grains, dietary fiber, and dairy were all below national recommendations.

This study contributes to a better understanding of the maternal barriers and perceptions related to WIC participation in rural Appalachian North Carolina and identifies specific areas of need that are necessary for informing future interventions and policy development within this region. Further research is needed to fully characterize the experiences (i.e. psychosocial, economic, geographic, cultural) of WIC mothers and pregnant women in rural Appalachia to enhance the utilization of WIC services in this culturally and geographically unique region.

BARRIERS, PERCEPTIONS, AND DIETARY INTAKES OF WOMEN
PARTICIPATING IN A FEDERAL NUTRITION PROGRAM:
THE RURAL APPALACHIAN EXPERIENCE

by

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Approved by

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To my great-grandmother Ora Watson who encouraged me to

“Learn all you can. Education will take you far.”

APPROVAL PAGE

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CHAPTER I

INTRODUCTION

The Appalachian Region (AR) of the U.S., also known as Appalachia, spans 13 states from northern Mississippi to New York's southern tier and is home to more than 25 million people (1), including nearly 6 million children (2). Notably, 42% of the AR is rural (1). Studies show that rural residents are disproportionately impacted by many health inequalities compared to the general population, including a higher incidence of chronic diseases and disabilities; higher mortality rates; and lower life expectancies (3,4). Women, infants, and children living in rural communities are particularly vulnerable to and impacted by these disparities (5). For example, compared to their urban counterparts, women living in rural communities have poorer access to pre- and perinatal care (6-8), while children in rural communities are less likely to have had preventative healthcare or dental visit in the previous 12 months (9). Infant and child mortality rates are also markedly higher in rural compared to urban areas (5). Thus, families with young children living in rural Appalachia represent a segment of the population most vulnerable to the negative consequences of health inequalities.

Improving maternal and child health is a public health priority because the health of women, infants, and children directly reflects the health and wellbeing of the next

generation (10,11). The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) is the third-largest nutrition assistance program nationwide and play a crucial role in improving the health and wellbeing of nearly 7 million low-income pregnant and postpartum women, infants, and children in the U.S. (12). It is widely recognized as one of the nation's most successful and cost-effective nutrition intervention programs, serving primarily (75%) pregnant women and children who live in households below the federal poverty line (13). WIC provides families with a variety of benefits ranging from nutrient-dense foods, nutrition education, breastfeeding support, and referrals to other healthcare providers, including prenatal care (14). There is substantial evidence that WIC participants have greater access to healthcare and nutritious foods (14) as well as improved pre- and post-natal health outcomes for both mothers and infants (14–20). Prenatal WIC participation results in longer pregnancies and fewer preterm births, low birth weight (LBW) infants, and infant deaths (15,16,20).

Despite the well-documented benefits of WIC participation, the program has historically been underutilized. As of 2016, only 55% of eligible families were participating (21), and some benefits are underutilized by geographical location (22,23). WIC-eligible families face a number of barriers to participation including lack of transportation (24–28), social stigma (22,25–27,29,30), and difficult shopping experiences (26,27,29–31). However, the reported barriers to participation are highly diverse across populations and reflect the importance of the geographical, social, and cultural context of WIC participants in the published studies (24,26,27,29–31). More importantly, WIC-eligible families living in rural communities, such as the AR, represent

a segment of the population in great need of federal nutrition assistance and also a group that may face unique barriers and circumstances that are related to participation in such assistance programs.

Despite the well-documented health disparities in rural areas (3) and the positive links between health outcomes and WIC participation for both mothers and children (14–16), attitudes and perceptions related to WIC participation have not been well examined in families with young children in rural Appalachia. Furthermore, dietary patterns of WIC participants in rural Appalachia have not been extensively examined either. Emerging research on the perspectives of healthy eating among Appalachian residents reveals challenges faced in maintaining a healthy diet mirror the socioecological model of health behavior (32). Thus, health behaviors in this unique population are influenced at multiple levels. While participation in WIC as a whole is associated with improved diet quality (33), a better understanding of the dietary patterns of pregnant women and mothers of young children enrolled in the WIC program in this region is warranted to identify nutrition intervention foci and to establish a reference for subsequent work with this population.

In efforts to reduce WIC participation barriers, the program has been transitioning from paper benefits (PB) to using electronic benefits in the form of debit cards called “eWIC” over the last decade. The transition to eWIC has been expected to reduce the stigma of participation and improve full benefit redemption (FBR) (34,35). As of January 2020, eWIC has been rolled out in every state except for three Indian tribal nations and the District of Columbia (36); the full eWIC implementation by all programs is mandated

by October 2020. In the spring of 2018, the AppHealthCare WIC agency in the North Carolina Appalachian Region (AR) was among the last to implement this transition.

To date, only a few studies have examined the associations between the use of eWIC and participants' shopping characteristics, barriers to participation, and perceptions of the WIC experience (22,37). As the WIC program implements eWIC nationwide by the fall of 2020, additional research is needed to comprehensively examine the implications of the eWIC transition on participant shopping characteristics, barriers, perceptions, and dietary intakes. Smaller-scale studies utilizing mixed-methods designs for targeting subsets of the WIC population, such as WIC participants in rural Appalachia, will allow for the identification and development of regionally individualized approaches to address barriers to participation and retention; improve participant shopping experiences, and identify nutrition intervention foci in culturally and geographically unique areas. The current formative study aimed to fill some of these gaps in the current literature.

The primary aims of the current study were to 1) explore maternal attitudes, barriers, and perceptions of WIC program participation and shopping experiences in rural Appalachian North Carolina; 2) examine potential differences in maternal shopping behaviors, perceptions, and experiences among WIC participants by type of benefits used (PB versus eWIC); and 3) examine dietary intake (i.e. fruits and vegetables (FV), whole grains) among pregnant women and mothers enrolled in the program WIC in rural Appalachian North Carolina. Maternal dietary intakes were used as a proxy for child

dietary intakes because maternal intake is one of the strongest predictors of food consumption in young children (38).

CHAPTER II
REVIEW OF THE LITERATURE

Maternal Diet and Child Health

Previous research clearly shows that the quality of maternal healthcare and lifestyle habits during pregnancy may have profound implications on a variety of health outcomes for both the mother and the child (39–42). For example, high maternal intakes of fruit and vegetables (FV) have been shown to protect against gestational diabetes, gestational hypertensive disorders, maternal depression, preterm birth, and LBW (14,39). Previous studies have also linked maternal pre-pregnancy weight status and/or pregnancy weight gain to both short- and long-term physiologic and metabolic outcomes in the offspring, including increased risks for obesity, diabetes, and heart disease later in the child’s life (43–48). Growing evidence indicates that a greater infant weight gain during the first two years of life is associated with increased obesity in adolescence (43,44,49), and childhood overweight and obesity track strongly into adulthood (50). Furthermore, children with at least one overweight or obese parent are twice as likely to be overweight or obese (51), with maternal obesity alone associated with greater childhood obesity risk than paternal obesity alone. As such, both early prevention and intervention strategies starting during the pre- and perinatal, infant, and preschool life stages are recognized by healthcare professionals as fundamental approaches for reducing and delaying the burden of childhood obesity and subsequent comorbid conditions (52–54).

Mothers also influence their children through a variety of social, behavioral, and environmental influences (55–57). Childhood is a time when many long-term health behaviors begin to develop, including dietary and physical activity behaviors (46). Both are key components of achieving and maintaining a healthy weight throughout the lifecycle (44,49,58). Mothers are most often the primary caregivers and so most frequently determine what foods their children are offered, including variety and portion sizes (58–62). The strongest predictors of food consumption of young children are the duration of breastfeeding and maternal food consumption; taste preference for the food; and age and frequency of child exposure to a specific food (38). Although early likes and dislikes are influenced by innate preferences, they are modifiable with repeated exposure in a positive, supportive environment. Research has demonstrated a strong association between maternal dietary intake and child diet, including FV consumption and overall diet quality (40,57,63–69). Evidence that dietary patterns and food habits in infancy track into the preschool and school-age years further underscores the importance of early exposure to and modeling of consumption of healthy foods and maintenance of a healthy weight during early childhood (70–72). These findings highlight the need for pregnant women and mothers to eat a healthy diet to “set the stage” and to model healthy eating to their young children.

Disparities in Rural Populations: Women, Infants, and Children

Studies show rural residents are disproportionately impacted by many health inequalities compared to the general population, including a higher incidence of chronic diseases and disabilities; higher mortality rates; and lower life expectancies (3). Women,

infants, and children living in rural communities are particularly vulnerable to and impacted by these disparities (5), as they represent some of the demographic segments most impacted by social determinants of health (5,10,73,74). For example, compared to their urban counterparts, women living in rural communities have poorer access to pre- and perinatal care (6–8) while children living in rural communities are less likely to have had preventative healthcare or dental visit in the previous 12 months (9). Thus it is unsurprising that infant and child mortality rates are also markedly higher in rural compared to urban areas (5).

Socioeconomic inequalities are also prevalent among women and children (75), with those living in rural communities most impacted (76). Nineteen percent of urban children in the U.S. live in poverty compared to nearly 1 in 4 (24%) rural children, with even higher rates (27%) among children under 6 years of age. Socioeconomic status (SES) has long been recognized as a strong determinant of diet quality among both adults and children (77–81). Families with a lower SES are less likely to consume FV (82–84) and whole grains (85) compared to families with a higher SES (86). In turn, substantial evidence demonstrates lower quality diets are associated with poorer health outcomes among all population groups, including significantly higher risks of all-cause mortality, cardiovascular disease, cancer, and type 2 diabetes (87). Lower SES and rural residences are also associated with higher rates of food insecurity in both adults and children (88). Notably, 84% of high child food insecure counties nationwide are rural (89). Thus, low-income families with young children living in rural communities represent a segment of the population most vulnerable to the negative consequences of health inequalities.

The Appalachian Region

The AR, also known as Appalachia, is one rural region that experiences both significant socioeconomic and health inequalities compared to the rest of the nation (1). The AR encompasses 13 states from northern Mississippi to New York's southern tier and is home to more than 25 million people (1), including nearly 6 million children (2). Notably, 42% of the region is rural (1). The AR has higher mortality rates for seven of the leading causes of death nationwide, including heart disease, stroke, cancer, and diabetes, with all these conditions being related to lifestyle behaviors such as food intake and physical activity. Some of the counties within the AR have the highest rates of obesity and physical inactivity in the nation (4). Furthermore, there is growing evidence that health disparities in Appalachia are widening, with pregnant women, infants, and children being impacted to the greatest degree (90). As of 2013, the incidence of LBW in the AR was 7.4% higher than the nation, with rural counties in the region reporting an incidence of 16% higher than the national average (1). Also, the disparity in infant mortality rates between Appalachia and the rest of the nation widened from 10% to 16% between 1990 to 2013, despite nationwide declines in infant mortality in recent decades (90).

A childhood obesity epidemic is yet another notable nutrition-related disparity in the AR (91). Several studies have shown the prevalence of overweight and obesity is higher among low-income, Appalachian children compared to their non-Appalachian peers, including preschoolers (92) and school-age children (93,94). This is concerning

given that obese children and adolescents are five times more likely to be obese as adults compared to non-obese peers (12).

Diet quality of populations living in rural areas of Appalachia has been a subject of several studies in the past (94–98). For example, investigators found diets of school-aged children (94,96) and adolescents (97,98) in rural Appalachian Kentucky and Ohio were low in FV and high in fatty and sugary foods. Likewise, Short et al. (99) found that Appalachian women were less likely to consume the recommended five servings of FV per day prior to pregnancy. A qualitative study with low-income families in Appalachia revealed that meals were largely centered around meat and white potatoes (100), although FV and lower consumption of energy-dense foods (i.e. soda, white bread, and desserts) were recognized as components of healthy eating in this population (100,101). Because the health of women, infants, and children directly reflects the health and wellbeing of the next generation (10,11), improving dietary choices and preventing obesity is a public health priority for these families. Improvements in maternal and child health within rural communities, such as rural Appalachia, are especially warranted to not only improve immediate health outcomes and quality of life, but to also reduce the physical, social, and economic burden of chronic diseases for future generations. WIC participants in rural Appalachia represent one population with unique cultural, social, and economic dynamics that directly influence access to and acceptance of food assistance as well as dietary choices, but also a population that has been understudied (32,102–104).

The Role of WIC

Along with other federal nutrition assistance programs, WIC plays a crucial role in improving the health and wellbeing of nearly 7 million pregnant and post-partum women, infants, and children in the U.S. each month (12). It is widely known as one of the nation's most successful and cost-effective nutrition intervention programs, with 75% of those served by the program living in households below the federal poverty line (13). WIC provides families with a variety of benefits, ranging from nutrient-dense foods, nutrition education, breastfeeding support, and referrals to other healthcare providers, including prenatal care (14). Studies have indicated that WIC participants have greater access to healthcare and nutritious foods as well as improved pre- and post-natal health outcomes for both mothers and infants (14–20). Prenatal WIC participation results in longer pregnancies, fewer preterm births, LBW infants, and infant deaths (14,17,18). This is largely attributed to the provision of nutritious foods that support fetal development and reduce pregnancy-related risks for both mothers and infants such as gestational diabetes, excessive or inadequate maternal weight gain, hypertension, and iron-deficiency anemia (14). Furthermore, participation in this program has been linked to a decreased prevalence of household food insecurity (105,106) and improved cognitive development and academic achievement (14,107).

Despite many documented benefits associated with WIC participation, historically less than two-thirds of eligible families participate in the program (21), and in some cases, only 12.6% of recipients redeem all of their benefits (22). The participation rates have declined nationwide from 63% of eligible families in 2005 to only 55% in 2016

(108). Furthermore, research suggests that some benefits are underutilized by geographical location, specifically in rural areas (22,23). For instance, a 2018 report from the Food Research and Action Center (109) showed the percentage of income-eligible families with young children is larger in rural versus urban areas (46% vs 42%), but FBR is lower (10% vs. 13.6%) (22). Potential reasons for lower FBR in rural communities include geographic isolation, financial restraints, limited food retailers, and lack of transportation or long commutes to grocery stores (3,102,109–111). In addition, WIC participants face a number of barriers to participation including psychosocial barriers such as lack of social support (24) and social stigma (22,25–27,29,30); difficulty scheduling an appointment or long wait times (26,27,29); lack of transportation, particularly public transportation (24–28); lack of childcare (8,10,14,15); confusion about program eligibility criteria (26,27,29–31); difficult shopping experiences or problems redeeming benefits (26,27,29–31); language barriers for non-English speaking participants (29,30); and negative interactions with program staff (26,27). Many more barriers were identified in a large study by Woelfel et al. (112). Using a sample of 3,167 WIC participants in urban and rural communities in New York, investigators identified 68 potential barriers to receiving services and indicated that participants may experience seven or more barriers simultaneously, with benefit redemptions being inversely associated with the number of barriers that participants experience.

Although similar barriers to participation and retention have been identified in various regions of the nation (24,26,27,29–31), the perceptions and influences of barriers on participation and retention varied relative to cultural, ethnic, economic, and regional

differences. For example, Hispanic children have the highest coverage rates (67%) even though non-Hispanic white children constitute the largest share of WIC-eligible infants and children (38%) (21). Also, WIC participants are more likely to be unmarried, have incomes below the poverty line, and have more children compared to WIC-eligible non-participants (25). Lastly, participants who perceive a greater value of participation (i.e. the value of foods, cost of formula) are more likely to participate than those who feel costs (i.e. time, social stigma) outweigh the benefits (27,30,31,113). Consequently, WIC-eligible families living in rural communities, such as the AR, represent a segment of the population in great need of federal nutrition assistance, but also a group that might be facing unique barriers and circumstances that are related to participation in such federal assistance programs.

Transition to Electronic WIC Benefits (eWIC)

In an effort to combat nationwide barriers to participation and improve benefit redemptions, WIC program has been transitioning from PB to an electronic benefit transfer (EBT) system, also known as eWIC (114). A component of the 2010 Healthy Hunger-Free Kids Act, the transition to eWIC was expected to reduce the stigma of participation, improve FBR, and improve the shopping convenience of the program participants because participants would have more flexibility about when and how often to redeem their benefits (34,35). As of January 2020, eWIC has been rolled out nationwide except for three Indian tribal nations and the District of Columbia (36). Full implementation nationwide is mandated by October 2020; however, there is a paucity of research on how the transition to eWIC influences participant behaviors and experiences

and whether or not it significantly reduced participants' perceived barriers related to WIC participation (22,37). Thus, there is a great need to further expand the literature on how the transition to eWIC influences shopping characteristics, barriers, and perceptions of participation with consideration to cultural, ethnic, and regional differences. WIC participants in rural Appalachia represent one population with such unique cultural, social, and economic dynamics that directly influence access to and acceptance of food assistance (32,102–104) that has been largely understudied.

Existing Research Related to eWIC

To date, only a few studies have assessed the implications of eWIC on the WIC participant's overall experiences and/or behaviors. Phillips and colleagues (22) utilized focus groups to explore the benefits and challenges of eWIC implementation from the perspective of WIC participants, state agencies, and vendors in 3 states across both urban and rural communities. The overall transition to eWIC was perceived positively, with all respondents preferring eWIC over PB, reporting improved shopping experiences, increased flexibility and frequency of monthly shopping trips, and other benefits. Despite the transition to eWIC, participants reported some barriers when redeeming benefits (i.e., poor labeling of WIC-allowable items) (24,26,27,29,30). Though the study design did not allow for comparisons of food benefit redemption patterns before and after the transition to eWIC, this study establishes a reference point for subsequent work that examines the implications of eWIC on transactions and redemptions for multiple stakeholders after eWIC has been fully implemented nationwide.

Hanks et al. (37) assessed the effect of the transition to eWIC on recipient behavior using an event-study approach. Transaction data of benefit redemptions suggested eWIC has a positive influence on WIC benefit redemptions with a notable upward trend observed beginning 2 months post eWIC implementation. However, FBR was not reported, so results cannot be compared to the study by Phillips et al. Investigators found no evidence that eWIC has any significant impact on WIC enrollment 6 months after implementation, with only limited evidence suggesting a marginal, non-significant impact at 3 months and beyond. Only the second study to date to examine the impact of eWIC on benefit redemption patterns, and the first to examine the impact of eWIC on WIC program enrollment, this study further lays the foundation for future work to assess the implications of eWIC on participant experiences and behaviors (37).

Description of Study Location and Population

Spanning 205,00 mi², the AR of the U.S encompasses 13 states that line the Appalachian Mountains from northern Mississippi to New York's southern tier (115). Historically, this region has been viewed as culturally isolated and demographically homogenous, with an economy highly dependent on mining, forestry, agriculture, and heavy industry. The AR is largely conservative and known for valuing individualism and self-reliance, religious fundamentalism, and fatalism (116,117). Widespread distrust of outsiders and government and general reluctance to change are additional core Appalachian values. However, stark poverty has long been one of the region's most defining characteristics (117). The Appalachian Regional Commission, whose primary purpose is to support economic growth and development in the AR, was established by

an act of congress in 1965 in response to significant socioeconomic disparities in Appalachia (115). At the time, more than 30% of families lived in poverty compared to 22% nationwide (118). Since that time, the AR has seen significant economic improvements with the expansion of manufacturing and professional service industries (115). Although Appalachia's poverty rate has been cut in half over the past five and a half decades (118), household poverty rates in the region were still 11% higher than the nation from 2012-2016 (119). Rates of poverty in rural Appalachian households were significantly higher than urban Appalachian households (23% vs. 13.6% as of 2014), suggesting poverty increases as the level of rurality increases within the region (1).

The AR is divided into five sub-regions (Northern, North Central, Central, South Central, and Southern) with relatively similar characteristics, including topography, demographics, and economics, which allows for sub-regional analysis (Figure 1) (120). Appalachian North Carolina is part of the South-Central sub-region and includes 29 counties that trace the entire western border of the state. In light of significant health and economic disparities that are prevalent in rural Appalachia (1,119), increasing redemption of WIC benefits and minimizing program attrition has become a priority for the WIC program in North Carolina in recent years. The transition to eWIC in North Carolina was completed from October 2017 through October 2018, with the AR transitioning from April through August 2018. This formative study was conducted in collaboration with AppHealthCare Health Departments, which includes WIC offices in Alleghany, Ashe, and Watauga counties located in the North-Western AR of North Carolina (Figure 2). The study was completed while WIC offices in the AppHealthCare District were going

through the transition to eWIC. The three counties included in this study have many similarities but also several distinct differences which are detailed below.

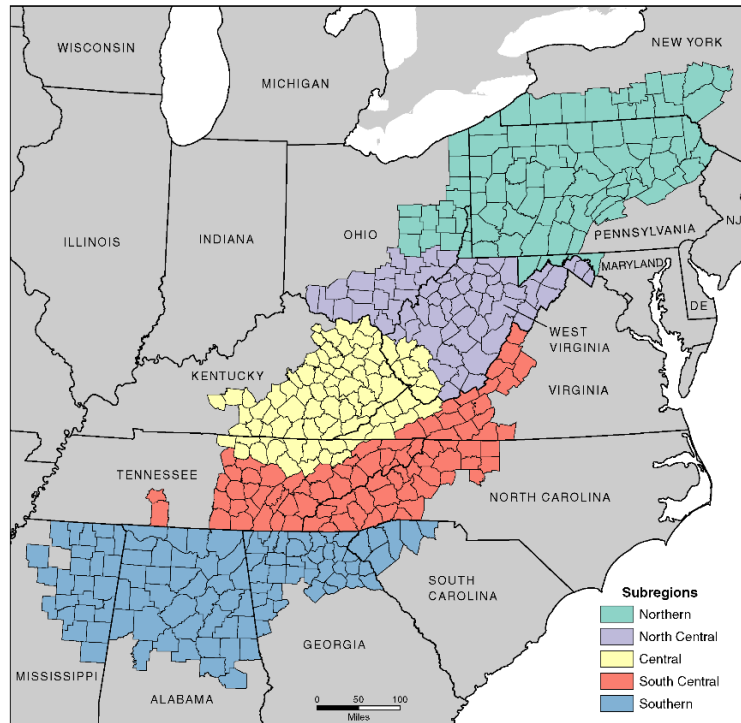


Figure 1. Sub-regions of the Appalachian Region

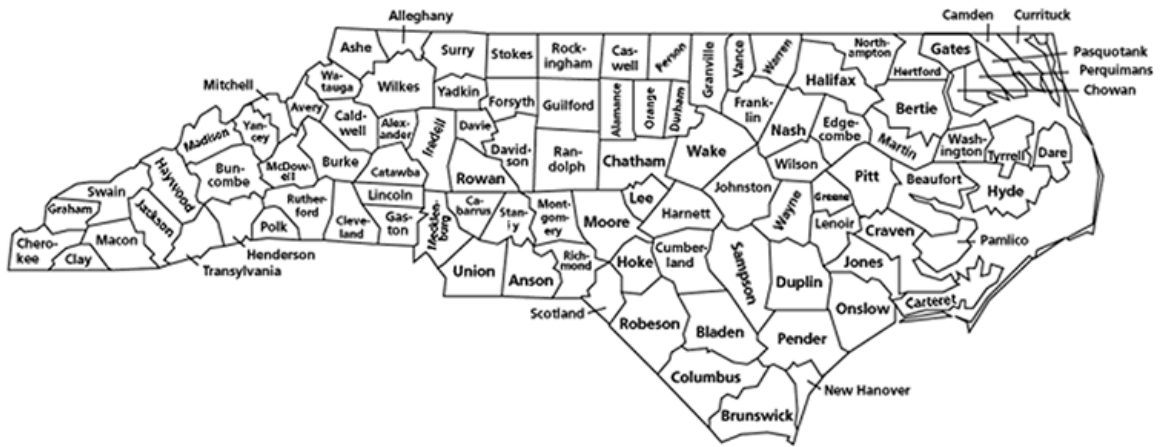


Figure 2. Map of North Carolina

First, all counties included in this study are classified as rural, defined by the North Carolina Department of Commerce as any county with an average population density of 250 people or less per square mile (121). However, the degree of rurality varies between the three counties. Rural-Urban Continuum Codes are assigned to each county in the U.S. by the USDA Economic Research Service to distinguish metropolitan counties by the population size of their metro area and nonmetro counties by their degree of urbanization and adjacency to a metro area. The codes range from one to nine and are subdivided into three urban categories (1 through 3) and six rural categories (4 through 9). Counties assigned a code of one have a population with 1 million or more people while those assigned a nine are completely rural or have an urban population less than 2,500 people with no adjacent urban counties.

Based on land area, Alleghany County is the smallest and most rural of the three counties included in this study, spanning only 235mi², and has a rural-urban continuum code of nine (122,123). In comparison, Ashe and Watauga counties are 1.8x and 1.3x

larger than Alleghany and have rural urban-continuum codes of seven and five, respectively (122,124,125). Although Ashe County spans the largest land area, the estimated population of Watauga County (55,945 persons) was 2x greater than Ashe and 5x greater than Alleghany County as of 2018 (123–125). Sixty-five percent of the population in Watauga County lives in the centrally located town of Boone (Figure 3). In comparison, 45% of residents in Ashe County live in centrally located, neighboring towns Jefferson and West Jefferson (Figure 4) while 40% of residents in Alleghany County live in the Gap Civil Township (Figure 5), also centrally located in that county. WIC offices are also located in these central townships of each county, one WIC office per county.

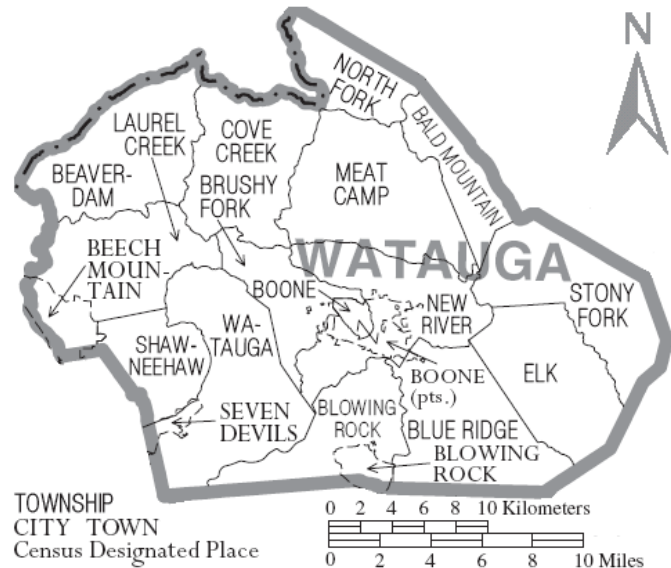


Figure 3. Map of Watauga County, NC. WIC office is in the town of Boone



Figure 4. Map of Ashe County, NC. WIC office is in the town of Jefferson.

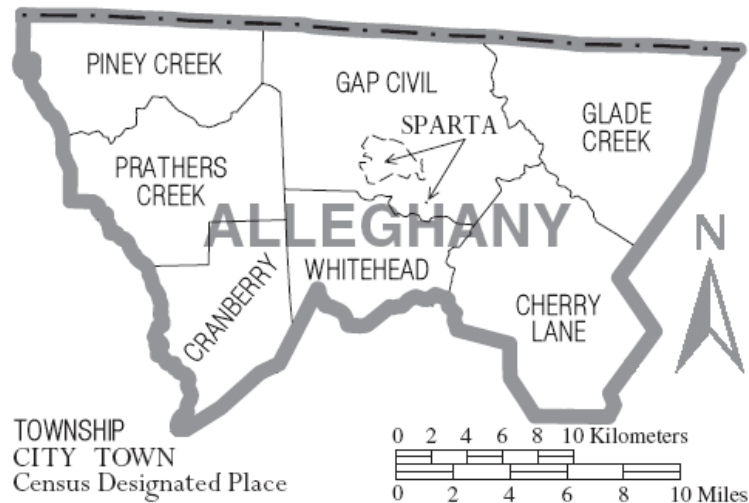


Figure 5. Map of Alleghany County, NC. WIC office is in the town of Sparta

More than 90% of residents in Watauga and Ashe counties and 87% of residents in Alleghany identify as non-Hispanic White (123–125), compared to 61.6% of people across North Carolina and 60% nationally (126). Residents identifying as Hispanic/Latino make up 10% of the population in Alleghany County and only 5.1% and

3.4% of residents in Ashe and Watauga counties, respectively (123–125). Two percent or less of the population in Alleghany and Watauga counties and less than 1% in Ashe identify as African American.

Another characteristic that distinguishes Watauga County from the two less populated counties is the presence of Appalachian State University, which includes a student body of nearly 19,000 students (127). The university is one of the largest employers for Watauga County residents (128). As such, there are other notable sociodemographic and economic differences between Watauga, Ashe, and Alleghany counties. The percent of residents in Watauga County with a Bachelor's degree or higher (41.7%) is more than 2x greater than in Ashe and Alleghany counties. However, as of 2017, the median household income in Watauga County (\$41,541) was still 28% lower than the national average. Likewise, median household incomes in Ashe and Alleghany counties were 30% and 32% lower than the national average, respectively (123,125). As of December 2019, unemployment rates in Watauga and Ashe counties were 22.3% and 17% lower, respectively, than the nation (3.5%) (129–132). On the contrary, unemployment in Alleghany County was 28.6% higher than the nation.

Rates of poverty and food insecurity are also substantially higher in all three counties (89,123–125). Compared to 1 in 9 nationwide (11.8%), more than 1 in 5 persons in Alleghany and Watauga counties (20.9% and 20.5%, respectively) and 1 in 6 (15.9%) in Ashe County live in poverty (123–125). Similarly, more than 1 in 8 households in Alleghany and Ashe counties (13% and 13.5%, respectively) and 1 in 6 (16.8%) in Watauga are food insecure compared to 1 in 9 (11.8%) nationwide (89). Moreover, rates

of food insecurity in children are even higher. Compared to 7% of children nationwide, nearly 1 in 4 (24.6%) children in Alleghany County and more than 1 in 5 in Watauga and Ashe counties (20.5% and 22.4%, respectively) are food insecure.

There are also notable differences in the total number and type/size of grocery stores and the variety of foods available within each county. Watauga County has nine grocery stores, 3x more than Ashe County and 4.5x more than Alleghany County. Watauga and Ashe counties also have two small Hispanic markets while Alleghany has one. Stores in Watauga and Ashe are also larger and offer a greater variety of foods (i.e. FV and whole grains) compared with those in Alleghany, with Watauga offering the greatest variety overall relative to significantly more total grocery stores. Although healthy food access concerns are linked with rural environments and economic deprivation (133), only Ashe County has census tract regions designated as food deserts, defined by USDA as a low-income community where at least one-third of the population or 500 persons live more than one mile for urban areas or more than 10 miles for rural areas from a grocery store (Figure 6) (134). However, USDA standards for food desert designations do not factor in geography, spatial behavior, or drive time to grocery stores, which have been shown to greatly impact access and availability of healthy foods (135,136).

The AR is characterized by winding mountainous terrain with drastic changes in elevation in short distances that contribute to limited or slowed road access and extended travel times in many areas. In a 2012 dissertation, Richards (137) found the current USDA standard for identifying food desert regions underrepresented the access and

availability of healthy and affordable foods in the central and south-central subregions of Appalachian North Carolina, Tennessee, and Kentucky. Using modified guidelines for identifying food desert regions that included drive time to grocery stores more than 20 minutes away, Richards identified more than 3x as many food deserts in these areas than the standard USDA model. These findings highlight the complexity of realized food access in this geographically unique region and a potential barrier to accessing WIC services and/or fully utilizing WIC benefits.

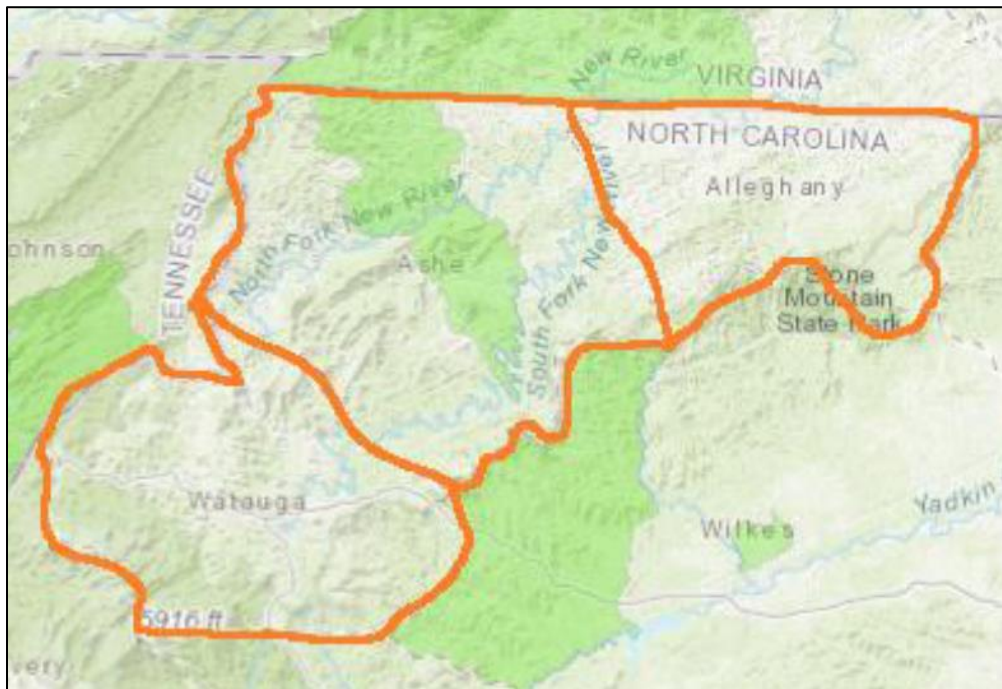


Figure 6. USDA Census Tract Designated Food Deserts in Alleghany, Ashe, and Watauga Counties in North Carolina

CHAPTER III

QUALITATIVE ANALYSIS OF MATERNAL BARRIERS AND PERCEPTIONS TO PARTICIPATION IN A FEDERAL SUPPLEMENTAL NUTRITION PROGRAM IN RURAL APPALACHIA

This chapter is an expanded article draft prepared for submission to the Journal of Appalachian Health.

Abstract

Purpose: To gain a deeper understanding of maternal barriers and perceptions related to participation in the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) in rural Appalachia.

Methods: Pregnant women and mothers were recruited in-person and via flyers from WIC offices in three counties in Appalachian North Carolina. Four semi-structured focus groups were conducted with 15 participants between May to July 2018. Each focus group was approximately 60 minutes long and included a series of nine open-ended questions about the overall WIC experience in rural Appalachia (i.e. office visits, shopping experience). Focus groups were audio-recorded and transcribed verbatim. A content analysis of transcripts was performed independently by two trained researchers. Identified themes were discussed and a consensus was reached by the researchers to generate final themes for each of the four areas of interest: 1) most valued aspects of WIC program; 2) barriers to program participation and benefit redemption; 3) experiences during appointments; and 4) suggestions for improving experiences in the program.

Findings: Financial benefits and support/resources provided by WIC staff were perceived as the most valued aspects of participation. In contrast, the lack of variety of WIC-approved foods and social stigma were perceived as major barriers to participation and redeeming benefits.

Conclusions: This study contributes to a better understanding of the barriers and perceptions related to WIC participation in this geographically and culturally unique area of rural Appalachia. The findings from this study are valuable for informing WIC state agencies and policymakers whose efforts focus on the identification and development of effective recruitment and retention strategies for WIC-eligible families in rural Appalachia.

Introduction

It is well established that health disparities disproportionately impact vulnerable populations (5,138). The negative consequences of health disparities are especially pronounced among pregnant women, infants, and young children because they represent the demographic segments most impacted by social determinants of health (5,10,73,74). Geographic location is one notable determinant of health across all population groups (5). Studies show rural residents are disproportionately impacted by many health inequalities compared to the general population, including a higher incidence of chronic diseases and disabilities; higher mortality rates; and lower life expectancies (3). Women, infants, and children living in rural communities are particularly vulnerable to and impacted by these disparities (5). For example, compared to their urban counterparts, women living in rural communities have poorer access to pre- and perinatal care (39–41) while children living

in rural communities are less likely to have had preventative healthcare or dental visit in the previous 12 months (9). Infant and child mortality rates are also markedly higher in rural compared to urban areas (5).

Socioeconomic inequalities are also prevalent among women and children (75), with those living in rural communities most impacted (76). Nineteen percent of urban children in the U.S. live in poverty compared to nearly 1 in 4 (24%) rural children, with even higher rates (27%) among children under six years of age. Lower socioeconomic status (SES) and rural residence are also associated with higher rates of food insecurity in both adults and children (88), and food insecurity in households with young children is inversely associated with diet quality (139,140). In addition, 62% of high child food insecure counties nationwide are rural (141). Thus, low-income families with young children living in rural communities represent a segment of the population most vulnerable to the negative consequences of health inequalities.

One of the rural regions that experience both significant socioeconomic and health inequalities compared to the rest of the nation is the Appalachian Region (AR), also known as Appalachia (1). The AR encompasses 13 states from northern Mississippi to New York's southern tier and is home to more than 25 million people (1), including nearly six million children (2). Notably, 42% of the region is rural (1). Currently, the region has higher mortality rates for seven of the leading causes of death nationwide, including heart disease, stroke, cancer, and diabetes, with all conditions being related to lifestyle behaviors such as food intake and physical activity. In fact, some of the counties within the AR have the highest rates of obesity and physical inactivity in the nation (4).

There is growing evidence that health disparities in Appalachia are widening, with pregnant women, infants, and children being impacted to the greatest degree (90). As of 2013, the incidence of low birth weight (LBW) in the AR was 7.4% higher than the nation, with rural counties in the region reporting an incidence of 16% higher than the national average (1). Furthermore, the disparity in infant mortality rates between Appalachia and the rest of the nation widened from 10% to 16% between 1990 to 2013, despite nationwide declines in infant mortality in recent decades (90). Childhood obesity epidemic is yet another notable disparity in the AR (91). Several studies have shown the prevalence of overweight and obesity is higher among low-income, Appalachian children compared to their non-Appalachian peers (91–94). In light of evidence that obese children and adolescents are five times more likely to be obese as adults compared to non-obese peers (50), early prevention and intervention strategies beginning during the pre- and perinatal, infant, and preschool life stages are recognized as fundamental approaches for reducing and delaying the burden of childhood obesity and other nutrition-related problems later in life (4,52–54,91).

The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) is one of the federal programs that serve as a safeguard against the harmful effects of food insecurity (105,106,109) for nearly seven million low-income pregnant and postpartum women, infants, and children nationwide (12). It is widely known as one of the nation's most successful and cost-effective nutrition intervention programs, with 75% of those served by the program living in households below the federal poverty line (13). WIC provides families with a variety of benefits, ranging from nutrient-dense foods,

nutrition education, breastfeeding support, and referrals to other healthcare providers, including prenatal care (14). Studies have indicated that WIC participants have greater access to healthcare and nutritious foods (14) as well as improved pre- and post-natal health outcomes for both mothers and infants (14–16,19,20). Prenatal WIC participation results in longer pregnancies, fewer preterm births, LBW infants, and infant deaths (14–20). Furthermore, participation in this program has been linked to a decreased prevalence of household food insecurity (105,106) and improved cognitive development and academic achievement (14,107).

Despite many documented benefits associated with WIC participation, historically less than two-thirds of eligible families participate in the program (21). The participation rates have, in fact, declined nationwide from 63% of eligible families in 2005 to only 55% in 2016 (108). Furthermore, research suggests that some benefits are underutilized by geographical location, specifically in rural areas (22,23). For instance, a 2018 report from the Food Research and Action Center (109) showed the percentage of income-eligible families with young children is larger in rural versus urban areas (46% vs 42%), but FBR is lower (10% vs. 12.6%) (22). Consequently, WIC-eligible families living in rural communities, such as the AR, represent a segment of the population in great need of federal nutrition assistance, but also a group that might be facing unique barriers and circumstances that are related to participation in such assistance programs.

To date, research has identified a number of barriers to WIC participation across the nation, including difficulty scheduling an appointment or long wait times (26,27,29); lack of transportation, particularly public transportation (24–28); confusion about

program eligibility criteria (26,27,29–31); difficult shopping experiences or problems redeeming benefits (26,27,29–31,142); and negative interactions with program staff (26,27,30). As the studies were conducted in various regions of the nation (24,26,27,29–31), it is apparent that perceived barriers to WIC participation vary by culture, ethnicity, marital status, family size, and/or geographical location. For instance, children from low-income Hispanic families have the highest WIC-coverage rates (67%) despite non-Hispanic white children representing the largest share of WIC-eligible children (38%) (21). WIC participants are more likely to be single, have incomes below the poverty line, and have more children compared to WIC-eligible non-participants (25). Lastly, participants who perceive a greater value of participation (i.e. the value of foods, cost of formula) are more likely to participate than those who feel negative aspects of participation (i.e. time) outweigh the benefits (27,30,31,113).

Despite the well-documented health disparities in rural areas and the positive links between health outcomes and WIC participation for both mothers and children, attitudes and perceptions related to WIC participation have not been well examined in families with young children in rural Appalachia. Thus, the primary aim of this study was to explore maternal attitudes, barriers, and perceptions of WIC program participation and shopping experiences in three rural Appalachian counties in North Carolina. This study is part of larger formative research to identify potential intervention foci to develop sustainable programs and initiatives to reduce WIC participation barriers, enhance program retention, and thus improve dietary intakes of low-income families in rural Appalachia.

Methods

Research Design and Participants

Pregnant women and mothers participating in the WIC program via the AppHealthCare Health Departments were recruited in-person and via flyers across three rural counties in the AR. The recruitment sites included three WIC offices in Ashe, Alleghany, and Watauga counties in Western North Carolina. The average caseload of the WIC agency across the counties was 1,473 families, with the largest enrollment in Watauga and Ashe counties (46.5 and 36.4%, respectively). Participants were eligible to participate in a focus group if they met the following inclusion criteria: 1) 18 years or older 2) currently enrolled and/or has a child or children currently enrolled in the WIC program via the AppHealthCare Health Departments; 3) the primary person who redeems the WIC food benefits and attends clinic visits; and 4) speak English. Non-English-speaking participants were excluded from the study due to limitations related to financial and personnel resources at the time of the study. The study protocol and procedures were approved by the University of North Carolina at Greensboro's Institutional Review Board.

Procedures: Focus Group Recruitment

In each county, a researcher was on-site on two separate days for in-person recruitment in April 2018. Since families receive WIC benefits on-site only every 3 months, in-person recruitment took place on different days and times of the week in each county to increase the diversity of potential participants recruited for focus groups. On the days when the researcher was on-site, WIC clerks provided participants with a

recruitment flyer and informed them that the researcher was available to answer any questions. If a participant expressed interest in study participation, the researcher met with them privately in a vacant office, screened for eligibility, and explained the purpose and procedures of the study. If the participant was still interested and met all eligibility criteria, the researcher obtained the participant's name, phone number, and availability and informed them that they would receive a phone call at a later time to schedule a focus group. When the researcher was not available for recruitment on-site, WIC clerks handed out recruitment flyers and interested participants were encouraged to contact the researcher directly via phone or email. Recruitment flyers were also posted in the lobby of each health department, on the back of bathroom doors in lobby and clinic areas, and at check-out windows. To further increase the diversity of participants recruited, WIC staff mailed recruitment flyers and letters along with other regular WIC mail to an additional 55 participants. When a potential participant contacted the researcher directly via phone, the researcher explained the purpose and detailed procedures of the study. If the participant met the inclusion criteria for the study, the researcher obtained the participant's contact information, availability for focus groups, and asked about the need for childcare. A text message reminder was sent to all participants the day before the scheduled focus group to confirm their attendance.

Data Collection

A focus group guide was developed specifically for the current study to explore participants' perceptions and experiences related to their enrollment and participation in the WIC program. The focus group guide followed a semi-structured questionnaire

format, developed based on methods outlined by Krueger and Casey (143), and included questions based on an extensive review of the literature. The question route was centered around the four main constructs of interest: 1) most valued aspects of WIC program; 2) barriers related to participating in the program and redeeming WIC benefits; 3) the quality and nature of experiences during WIC appointments; and 4) suggestions for improving experiences in the WIC program. The guide was reviewed by three nutrition researchers with expertise in nutrition behavior in low-income families with children, one experienced psychology researcher specialized in low-income and minority families with children, and six WIC staff members who have daily experience with the program's participants. The original items were revised using the input and feedback from the reviewers. Sample questions included: "Tell me about your overall experience with the WIC program" and "Now let's discuss barriers or challenges you currently face or have faced in the past while participating in the WIC program."

Focus groups were conducted by a trained researcher at local public libraries in Ashe and Allegheny counties and a local hotel conference room in Watauga County. Days and times of each focus group were determined by participant preference and input from WIC staff. Each focus group lasted approximately 60 minutes and was audio-recorded. When participants arrived for their focus group, they reviewed an IRB approved informed consent form with the researcher and were asked to provide verbal consent before commencing. Participants used only their first names throughout the focus group. Upon focus group completion, participants filled out a brief questionnaire with

demographic information. Participant incentives included a \$20 gift card and light refreshments during the focus group.

The researcher completed field notes immediately following each focus group to document overall impressions, main themes discussed during the focus group, and any other information that could be relevant during data analysis. Audio recordings were transcribed verbatim utilizing Temi speech recognition software (<https://www.temi.com/>) and were reviewed at least three times by the researcher who conducted the focus groups to ensure the accuracy and detail of the data collected. Focus group participant's names were coded (i.e. Speaker101) in the transcripts to protect confidentiality.

Data Analysis

New focus groups were conducted until themes reached congruence (144,145). Data were then analyzed using qualitative content analysis (CA). Following a continuous, three-step process adapted from previous research (146–149), two trained researchers used Atlas.ti, a qualitative data analysis software, to independently analyze and code focus group transcripts and identify common emerging themes. Initial “bracketing” and de-contextualization of the data was completed first (150,151). “Bracketing” is a widely utilized qualitative analysis approach that refers to the identification and suspension of any conjectures or ideas that may influence the interpretation of the data, and it occurs continuously throughout the research process. During this step, researchers used the *highlight* function of Atlas.ti to identify keywords, phrases, and topics relevant to the research questions. These highlighted sections became *quotations* that were used for coding in step two. In step two, researchers independently coded the transcripts using a

constant comparative, emergent coding design (152). Thematic categories from each construct of interest were identified and a preliminary code list was constructed. In the third step of CA, researchers identified related codes and themes that emerged for each question (147). Themes were first summarized independently by researchers then discussed together until consensus was reached. Conceptual diagrams were generated during data analysis to provide context for each thematic category and to complete the exhaustive CA. Decisions were made about the final themes and a final code list was generated (152).

Results

Four focus groups were conducted with a total of 15 mothers and pregnant women across the three counties. Demographic characteristics of the participants are presented in Table 1. The mean age of the focus group participants was 28.7 years. The majority of participants were non-Hispanic White (93%), lived in a household with at least two adults including themselves (87%), and had one or more children currently enrolled in the WIC program (87%). Nearly half of participants had a 4-year college degree or higher and the remainder had at least some college education. Years of experience participating in the WIC program ranged from 4 months to 9 years (data not shown), with the average length of experience 3.3 years across the sample. All non-pregnant participants in the sample had a Body Mass Index (BMI) in the overweight or obese category (i.e. 9 out of 12 were in the obese weight status category). Participants from Ashe County were older, more educated, and had longer experience participating in WIC than participants in the other two counties.

The content analysis of the transcripts revealed several major themes that emerged from the focus groups around the four areas of interest. The themes are described below and selected quotes for each theme are presented in Table 2.

1. Most Valued Aspects of WIC Participation

Financial benefits were one of the most valued aspects of participating in the WIC program (Theme 1A). Participants noted that WIC helps offset the costs of buying groceries for their families and thus allows for the allocation of money to other household expenses. Provision of WIC-approved foods and/or formula and/or breastfeeding supplies (i.e. a breast pump) were highly valued by the participants. All participants with breastfeeding experience reported they would not have been able to afford to purchase a breast pump if they did not participate in WIC.

While financial benefits largely related to food costs and breastfeeding supplies were highly valued, participants felt that WIC provided much more than “just food”. Referrals to other healthcare providers and other sources of food assistance were additional valuable *support/resource benefits* reported (Theme 1B). Prenatal and breastfeeding support and education were other frequently reported and highly valued non-financial benefits.

Table 1. Demographic Characteristics of WIC^a Mothers

Maternal & Household Characteristics	All Participants (n = 15)	Alleghany County (n = 6)	Ashe County (n = 5)	Watauga County (n = 4)
			Mean (SD)	
Maternal Age	28.7 (7.9)	25.8 (5.3)	33.4 (11.8)	27.3 (2.5)
Years Participating in WIC	3.4 (3.2)	3.1 (4.2)	4.2 (3.5)	2.9 (2.7)
			Count (%)	
No. Adults 18+ years				
1 adult	2 (13)	1 (17)	1 (20)	0
2 or more adults	13 (87)	5 (83)	4 (80)	4 (100)
No. Children 5 to 17 years				
None	6 (40)	1 (17)	2 (40)	0
1 child	7 (47)	4 (66)	5 (40)	3 (75)
2 or more children	2 (13)	1 (17)	1 (20)	1 (25)
No. Children < 5 years				
None	2 (13)	2 (33)	0	0
1 child	9 (60)	1 (17)	4 (80)	4 (100)
2 or more children	4 (27)	3 (50)	1 (20)	0
Maternal BMI^b				
Overweight (25.0 – 29.9)	3 (25)	2 (50)	1 (20)	0
Obese (30.0 or greater)	9 (75)	2 (50)	4 (80)	3 (100)
Maternal Education				
Some College	4 (27)	2 (33.3)	1 (20)	1 (25)
2-year College Degree	4 (27)	2 (33.3)	1 (20)	1 (25)
4-year College Degree	5 (33)	2 (33.3)	1 (20)	2 (50)
Greater than 4-year degree	2 (13)	0	2 (40)	0
Maternal Race/Ethnicity				
Non-Hispanic White	14 (93)	6 (100)	5 (100)	3 (75)
Hispanic White	1 (7)	0	0	1 (25)

^aWIC = Special Supplemental Nutrition Program for Women, Infants, and Children^bBMI data for 2 participants in Alleghany County and 1 in Watauga excluded because of pregnancy.

Table 2. Themes and Subthemes Identified Through Focus Groups About WIC^a Mother’s Experiences in Rural Appalachia

Themes and Subthemes	Representative Quotes
1. Most Valued Aspects of WIC Participation	
Theme 1A: <i>Financial Benefits</i>	<p>“I mean just probably \$100 a month worth of savings if not more...then when you, if you supplement or whatever, the formula is also very helpful.”</p> <p>“They gave me the pump which was ecstatic because, those are expensive and I definitely couldn't afford one.”</p>
Theme 1B: <i>Support/Resource Benefits</i>	<p>“... So WIC was very instrumental in ...putting us in ...connection with health related dietitians, and speech pathologist and, just other... people in our community that I had no idea where to turn to.”</p> <p>“[The nutritionist] has really helped me, with the breastfeeding, an' she's answered every question if she didn't know the answer to my question she would find out and she'll call me back.”</p>
2. Experiences During WIC Appointments	
Positive Aspects:	
Theme 2A: <i>Efficiency of Clinic Visits</i>	“I do love how they get you in and get you out [so] quick.”
Theme 2B: <i>Caring and Nurturing Approach</i>	“We love to go to the WIC office...they spoil us, they take care of us, they're very kind... they're good with questions or concerns we have.”
Theme 2C: <i>Nutrition Education Materials</i>	“I like the educational materials that you're provided with, like at each checkpoint. Some of those things have recipes for the, the foods that you receive...and then... I like how, you stay with the child ... control their growth, and all of that, as well.”
Negative Aspects	
Theme 2D: <i>Discrepancy in Nutrition Recommendations from WIC staff and Pediatricians</i>	“[My baby] had a sore butt for like a week... And so the doctor was like, ‘ <i>Well try cutting out dairy.</i> ’ And so I did and her butt cleared up. I told [the nutritionist] that, and she was like, ‘ <i>Oh, the doctors always blame it on the dairy first and you shouldn't listen to what the doctor says.</i> ’”
Theme 2E: <i>High-Pressure Approach</i>	“When you're parenting, you kinda take from like, a little bit from everybody and see what works with your child it seems like, right?...But it just seems like the way that, that sometimes [the nutritionist] approaches [feeding recommendations], it's like, “No! This is like, this is just one way.”

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Themes and Subthemes	Representative Quotes
Theme 2E: <i>High-Pressure Approach</i>	“With all three of my children, I have been made to publicly, breastfeed, in front of someone in the WIC office...I felt like I had to prove that I was breastfeeding.”
Theme 2F: <i>No Separate WIC Waiting Room</i>	“Since we are in what the health department, I think it's harder... if you're trying to make it to a WIC appointment [because] you know you're going to be sitting in a waiting room with sick people.”
3. Barriers Related to Redeeming Benefits	
Theme 3A: <i>Poor Labeling in Stores</i>	“I feel like things aren't like, labeled very well, like I don't know if it's just our grocery store, or not, some like, some weeks it's good, like it'll be all labeled or whatever, but I feel like some weeks, like it's not labeled and, it's complicated to find what I need.”
Theme 3B: <i>Problems Redeeming WIC Approved Items</i>	“Like, like with brands and stuff like that, like [Store 1] will say one thing, [Store 2] will say another. Um, and I don't know if you can get Reese's peanut butter at [Store 2], but you can at [Store 1].”
Theme 3C: <i>Lack of Variety of WIC Approved Foods Locally Available</i>	“...locally the store only stocks one of these five or six breads, so I don't even bother looking at the others.”
Theme 3D: <i>Limited Availability of WIC Approved Packaged Sizes</i>	“The bread was one like you have to specifically get that 16 ounce. Well I looked everywhere and I mean I got one that was in the book, but it wasn't 16 ounce because there was no 16 ounce I mean I searched every bread, and [the cashier was] like ‘Yeah, I can't give you this.’ So that's, kind of aggravating when they don't have it available for you.”
Theme 3E: <i>Limited Number of Grocery Stores</i>	<p>“You have 2 options in this entire town to shop for WIC at [Store 1] or at [Store 2] an' at [Store 2] at only one register.”</p> <p>“I recently went to [a grocery store in a larger county], and I was just amazed at how large their produce and vegetable section was, ours is like an eighth of the size. Like it was just amazing, to walk through. I think that's a big disadvantage just overall is we don't have as big a selection.”</p>
Theme 3F: <i>Untrained/Undertrained Store Employees</i>	“...a lot of [grocery store employees] don't know if you ask 'em a question. They might be able to show you where somethings at, but they don't know information exactly about, anything that's covered or not.”
Theme 3G: <i>Delays at Checkout</i>	“Even goin' to the checkout, like [Speaker 302] said, it's just like, you almost dread it because it was like you do take a long time.”

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Themes and Subthemes	Representative Quotes
Theme 3H. <i>Social Stigma</i>	<p>“Just their body language, lets you know that they're communicating their judgment, towards you. And they don't even have to say a word.”</p> <p>“Even goin' to the checkout, ... it's just like, you almost DREAD it because it was like you do take a long time and people get behind you, you're like <i>"Oh man!"</i> And then like, even the cashiers, like, you know, they just kind of like judge you ... sometimes it was just embarrassing, and like I even had like some cashiers like visually say like, <i>'Oh my God!'</i>”</p>
4. Suggestions for Improving WIC Services	
Theme 4A. <i>Available Food Packages</i>	<p>“We get allotted too much [juice], um, you know, we're encouraged not to give our children, those sort of products, but, at the same time, that's what we're approved for.”</p> <p>“If they could add maybe some of the store brands of the whole wheat pasta. That would be wonderful because then I could, could use that.”</p> <p>“One of the things that we have talked about doing would be making our own baby food, as we, our babies get a little bit bigger, and I know that they do approve, the, the jars. But if we can have our produce increase, we can make our own baby food, an' make a lot more and save a lot more money.”</p>
Theme 4B. <i>Enhanced Nutrition Education Services</i>	<p>“I would like to have more information on postpartum weight loss.”</p> <p>“Maybe um, explaining what your options are. So I've never been, no one ever explained to me, from, the office, that I could switch yogurt for milk or cheese for milk or, stuff like that, or, what you were getting.”</p> <p>“You offer [a] nutrition program and you're not educated really on the best way to use it.”</p>
Theme 4C. <i>Expanded Community Outreach, Knowledge, and Awareness of WIC Program</i>	<p>“My sister lives... [in] a bigger place, an' she told me about [WIC]. I felt like I'm, like I haven't heard about [WIC] around here like nobody really talks about it around here.”</p> <p>“I wasn't even aware of [WIC] as a, um, member of the community an' even as a foster parent until my children came to me as foster children and immediately DSS made me aware of it.”</p> <p>“I started [using WIC] toward the end of my first pregnancy because I didn't know that you could be pregnant and get WIC.”</p>

^aWIC = Supplemental Nutrition Program for Women, Infants, and Children's Program

2. Experiences During WIC Appointments

When asked to share their experiences in the WIC office, participants initially discussed only positive experiences. Participants highly regarded the *efficiency of clinic visits*, noting the convenience and flexibility of scheduling a WIC appointment and short wait time to be seen (Theme 2A). A *caring and nurturing approach* by staff was another positive aspect of the WIC office experience (Theme 2B). Participants reported staff consistently answered their questions, addressed their concerns, and made them feel valued and heard. Finally, *nutrition education materials* provided during appointments were also cited as positive components of the office experience (Theme 2C). When asked specifically if they had ever had a negative experience in the WIC office that they would like to share, several negative aspects also emerged. *Discrepancies in nutrition recommendations* from the nutritionist versus nutrition recommendations from a pediatrician were noted, although this theme was not consistent across all three counties (this theme was not identified in Alleghany County) (Theme 2D). Coupling this discrepancy was the feeling that staff sometimes employs a *high-pressure approach* when providing nutrition and breastfeeding education, which further contributes to a negative office experience (Theme 2E). Notably, participants reported they felt pressured about what, when, and how to feed their children. Participants in all counties also reported feeling pressure from WIC staff to prove their ability to breastfeed and felt this practice could discourage participation in the program. Lastly, participants in the two more rural counties (Ashe and Alleghany) also expressed frustration that there is not a

separate WIC waiting room in their counties, stating they do not like bringing their children to the office for fear of them getting sick (Theme 2F).

3. Barriers Related to Redeeming Food Benefits

Participants reported several barriers related to redeeming their food benefits. *Poor labeling* and inconsistency/variability of WIC-approved items across grocery stores within each county were cited as a major barrier (Theme 3A). Poor labeling included both a general lack of labeling in some stores and labeling with a very small font in other stores, which makes it difficult to identify WIC-approved items. Participants reported *problems redeeming some WIC-approved items* (i.e. cheese, peanut butter, beans, bread) with issues varying by the grocery store (Theme 3B). For this reason, participants had to learn what each store will accept and purchase those items each time they shop to avoid delays in the store due to some items being claimed as non-approved during the checkout. *General lack of variety of WIC-approved foods locally available* to purchase (i.e. FV and whole grains) was another significant barrier related to redeeming benefits (Theme 3C). Participants in the two smaller and more rural counties (Alleghany and Ashe counties) reported the most limited variety and availability in their area. Another common challenge noted in these counties was the *limited availability of WIC-approved package-sizes* of certain food items (i.e. bread and cheese) (Theme 3D). *A limited number of grocery stores* was an additional barrier cited by participants (Theme 3E). *Untrained/undertrained store employees* was also frequently cited as a barrier, with participants noting store employees are rarely able to answer questions about WIC-approved foods (Theme 3F). *Delays at checkout* due to having to separate WIC foods

from non-WIC foods emerged as one of the biggest barriers to benefit redemption (Theme 3G). Several participants noted the checkout experience frequently evokes feelings of anxiety and embarrassment, a direct result of *social stigma*, which emerged as the most frequently reported perceived barrier to WIC benefit redemption (Theme 3H). Participants felt that WIC and other federal and state assistance programs for those in need are generally perceived negatively within their communities. Some participants tearfully shared that overcoming personal feelings of guilt and shame was one of their biggest barriers to participating in WIC. Others shared that they intentionally avoided high volume shopping hours and/or shopped in neighboring counties to avoid being recognized and/or to minimize judgment from others in their hometowns.

4. Suggestions for Improving WIC Program and Its Services

Several suggestions were made by the participants on ways to improve their WIC experiences. These suggestions emerged as three main themes: suggestions for *improving the available food packages* (Theme 4A), suggestions for *enhanced nutrition education services* (Theme 4B), and suggestions for *expanded community outreach, knowledge, and awareness of WIC program* (Theme 4C).

Participants reported receiving too much milk, yogurt, and/or cheese and cereal and thus frequently not fully utilizing these benefits (Theme 4A). General dissatisfaction with the juice benefit was also apparent, with participants stating they would prefer more FV instead of juice. Greater flexibility in whole grains benefits was another suggestion (i.e. trade some cereal benefits for more bread or tortillas). Some participants expressed concern about WIC-approved cereals being “highly processed and full of sugar” and said

they would prefer oatmeal and/or additional FV instead. Participants also suggested trading baby food for additional FV so they can make their own baby foods. Others suggested a greater variety of plant-based, non-dairy protein options such as nuts and seeds would be helpful for mothers who follow a vegetarian or vegan diet. Lastly, aligning portion sizes of WIC-approved foods (i.e. bread) with commercially available sizes in the region was another suggestion for improving food packages.

Enhancing and expanding nutrition education within the program also emerged as a suggestion for improving the WIC program and its services (Theme 4B). Participants expressed interest in post-partum weight loss education, reporting that they felt their needs were overlooked after their babies were born. Additional education on current food packages (i.e. existing flexibility of packages) and availability of various WIC-approved foods at different stores in each respective community was also suggested.

Lastly, *expanded community outreach, knowledge, and awareness* of the WIC program was an additional suggestion for improving the program (Theme 4C).

Participants reported a general lack of awareness of WIC services in the region; many indicated they first heard about WIC by chance via word of mouth from a friend, neighbor, or family member who had personal experience using WIC, or at the local hospital after delivering a child. A few participants were aware of WIC services due to their college courses. Another major barrier to WIC program enrollment was confusion about eligibility criteria. The majority of participants did not know women might be eligible for WIC services starting during pregnancy, thus many of them did not enroll until after their first child was born, despite being aware of the WIC program. Confusion

about income and/or other adjunctive eligibility criteria also emerged as major barriers to seeking enrollment (see Table 2). Many participants disclosed they were surprised when they learned about their eligibility to enroll because they assumed their household income was too high to qualify for the program. Participants felt strongly that additional WIC outreach efforts are needed to expand community awareness of the program.

Discussion and Implications

Participation in the WIC program is one way to combat high rates of food insecurity and improve health outcomes among women, infants, and children (106). Despite the high rates of food insecurity in rural areas and decreasing nation-wide WIC participation in recent years, little is known about maternal attitudes, barriers, and perceptions of the WIC experience in the AR. Findings from mothers participating in WIC in rural Appalachian North Carolina presented here help fill an important gap in the current literature.

Consistent with previous research (26,27,30,31), financial benefits were reported as a strong motivating factor for participating in the program, particularly for mothers receiving breastfeeding and formula benefit packages. Promotion of a better diet for the whole family through increased availability of healthy foods (26,27,29), breastfeeding support (27,29,30,154), and referrals to other healthcare providers (29) have also been previously reported as major strengths of the WIC program and were confirmed by participants in this study as well. Although long wait times and difficulty scheduling appointments have been cited as major barriers to program participation in other areas of the nation (26,27,29), participants in this study noted the efficiency of office visits and

ease/flexibility of scheduling appointments as some of the most positive aspects of their WIC experience, stating they feel this is due to a more intimate, “small town” feel of the AppHealthCare District.

Interactions with program staff were reported to be mostly positive as well with participants citing staff generally has a caring and nurturing approach. However, a few negative aspects of the office experience were also identified. Negative perceptions of interactions with staff (26,27,30) have been documented extensively as a barrier to participation in the WIC program and include perceptions of feeling judged, stereotyped, and belittled by WIC staff. These perceptions were not cited by participants in the current study, but other negative perceptions emerged that have not been previously reported. Most notably is the perception that staff can be “pushy” with providing nutrition education. For example, participants perceived pressure about what, how, and when to feed certain foods to their children (i.e. introducing solids). Concerns about no separate WIC waiting room in the two smaller counties is another unique negative perception of the WIC office experience in this region and sheds light on possible facility issues/lack of resources that may discourage moms from coming into the clinic because they do not want to get their children sick. Further investigation of these unique, negative perceptions of the WIC office experience, with special consideration to regional and cultural nuances, is warranted to better understand the context of these perceptions and illuminate other influences on perceived experiences of the participant. More importantly, a closer examination of WIC staff interpersonal skills and real-time interactions with WIC participants nationwide is needed to design more effective training programs for WIC

staff and thus minimize the adverse effects of negative office interactions on WIC participation and retention.

While some findings on barriers to WIC participation and benefit redemption are consistent with previous larger-scale investigations in various regions of the nation, other themes that emerged in the current study shed light on the unique experiences of pregnant women and mothers participating in WIC in the AR. Poor labeling of (26,27,29–31,142) and problems redeeming WIC-approved foods (26,27,29–31,142) have been reported nationwide and were also extensively reported by participants in this study. In contrast, transportation did not emerge as a major barrier in this study, although it has been identified as a major barrier to program participation in other studies (24–28). In the current study, mothers reported frustration with a lack of variety and availability of WIC-approved items in their local stores, which was also cited by WIC participants in Mississippi (27). Costs of stocking WIC-approved items are greater for smaller vendors than larger vendors (155,156). Also, grocery stores in rural communities, regardless of offering WIC-approved foods or not, tend to be smaller and offer less variety than stores in urban communities (157,158). As such, it is not surprising the greatest lack of variety and availability of WIC-approved foods was cited by participants in the two most rural counties, which also have a limited number of grocery stores. This highlights the need for WIC agencies in small rural regions such as the AR to establish and/or strengthen mutually beneficial partnerships with local WIC-vendors to incentivize stocking a greater variety of WIC-approved foods beyond the minimum inventory required by federal legislation.

Along with untrained/undertrained store employees and long delays at checkouts, some degree of embarrassment and negative attitudes towards WIC participants in the stores have been documented in several previous studies (26,27,29–31,142,159). However, of all barriers to participation and benefit redemption reported in our study, social stigma was most pervasive. The degree to which social stigma and embarrassment/shame were reported is noteworthy. In other larger studies, social stigma has been perceived as having a mild to moderate impact on participation (22,25–27,29,30,142,159) but was cited as a significant barrier to participation in this sample of WIC mothers in rural Appalachian North Carolina. In fact, all participants reported social stigma as a major barrier to participation. While the “small town” feel of this district was cited as a positive aspect of the WIC experience, it also contributed to stronger perceptions of social stigma and embarrassment/shame that were experienced by participants across the region. Strikingly, in response to the opening question “Tell me about your overall WIC experience,” social stigma was either directly mentioned or alluded to by all participants. When asked to discuss their shopping experience and barriers related to participating in the WIC program, participants further elaborated on personal experiences with social stigma, indicating they have experienced both verbal and non-verbal signs of disapproval and judgment by other shoppers and cashiers while redeeming their WIC benefits in the local stores. Several participants shared personal stories of being identified as “one of them” by other shoppers or publicly criticized by store clerks for “wasting the government’s money.” Others expressed feelings of guilt and shame for accepting assistance when they also work a full-time job; some shared that

they hide their WIC shopping guide in their purse when shopping so other shoppers do not know they are using WIC. As such, they suggested the feelings of embarrassment stemming from social stigma while shopping is likely a major deterrent to participation for some families in the region. This is consistent with previous qualitative work by Stuber et al. (160) who found the anticipation of negative treatment by others contributes most to perceptions of social stigma related to participation in means-tested government programs. In fact, some participants in the current study shared they would not participate if they “didn’t have to” referring to their need for the financial benefits. These findings suggest mothers in this sample may perceive the benefits of participation (i.e. food, breast pump) outweigh costs (i.e. social stigma, embarrassment/shame), confirming previous findings of such phenomenon (27,30,31,113).

In this context, it is important to consider the influence of the unique culture of the AR on the perceptions and experiences of social stigma. The AR is largely conservative and known for valuing individualism and self-reliance as well as religious fundamentalism and fatalism (116,117). Widespread distrust of outsiders and government and general reluctance to change are additional core Appalachian values. Interestingly, these cultural norms were alluded to by mothers in this study as contributing factors to their perceptions of social stigma. For example, participants in Ashe County gave the example that monetary “love offerings” from local churches given to needy families is perceived as socially acceptable, and even expected, but participating in social programs such as WIC is perceived negatively. It is apparent Appalachia culture largely contributes to social stigma perceived by mothers who receive WIC benefits in this region, and

personal values may be reflected in their perceptions of stigma and embarrassment/shame.

Notably, since 2010, WIC agencies nationwide have been transitioning to an electronic benefit transfer system, also known as eWIC, with full implementation mandated by October 2020 (161). A component of the 2010 Healthy Hunger-Free Kids Act, the transition to e-WIC is expected to reduce the stigma of participation, improve FBR, and improve the shopping convenience of program participants by allowing greater flexibility in redeeming benefits (51,52). At the time this study was conducted, participants were still using paper benefits, which required participants to separate WIC items at checkout and present paper checks to the cashier to redeem benefits, thus identifying themselves to the clerk and other shoppers as WIC participants. Follow up with participants in this region of rural Appalachia after eWIC is fully implemented is warranted to more clearly understand the WIC experience in the context of the eWIC environment. Additionally, future research should further examine psychosocial barriers to participation in rural Appalachia and explore potential strategies to reduce community-level social stigma associated with participation in WIC and other federal assistance programs.

The confusion about eligibility criteria, a previously identified barrier to WIC participation (26,27,29–31), was largely related to mothers not knowing that pregnant women qualify for WIC benefits. Interestingly, none of the participants reported hearing about WIC from a pediatrician or obstetrician office. This is concerning because healthcare providers are in a great position to serve as a key source of information about

the WIC program and other assistance programs in the communities, especially in rural areas where access to pregnant women and families with young children is more difficult. A better understanding of what healthcare professionals in this region of Appalachia know about the WIC program and how they perceive WIC services is needed to identify more effective ways for pediatricians and obstetricians to make referrals of eligible pregnant women, infants, and children to the WIC program.

The most recent changes to WIC food benefits were made in 2009 and were the first comprehensive revisions to food packages in nearly three decades (162). Notable revisions included the expansion of whole-grain options; a reduction in juice benefits; and the addition of a cash value voucher to purchase FV. In our study, participant's suggestions for improvements in WIC services were centered around changes in the food packages. Interestingly, most wished they were able to receive additional fresh FV in place of the juice benefit; more plant-based, non-dairy protein options in place of some milk; and expanded flexibility of all grains (i.e. trade cereal for more bread). In fact, several mothers reported they have large, unused "stockpiles" of juice and cereal at home and often do not redeem all their milk/dairy benefits because their families cannot or will not use it before it spoils. This is not the first study to report participants would like additional FV in place of juice. Participants in Minnesota (11) also suggested additional FV and less or no juice as ways to improve benefit packages. Since the 2009 revisions to benefit packages, several notable studies have demonstrated significant improvements in both maternal (77) and child diet quality (163–165), including lower consumption of 100% fruit juice (100% FJ) and greater consumption of FV and whole grains. Prior to

2009, research indicated that WIC participants consumed significantly more 100% FJ than income-eligible non-participants (166), and regular 100% FJ consumption at age two was associated with greater risk of being overweight and obese between ages 2 to 4 years (167). Following the 2009 food package revisions, the prevalence of obesity among 2 to 4-year-old WIC participants decreased by nearly 9% from 2010 to 2014 (168). While further research is needed to fully illuminate the implications of the 2009 food package revisions on maternal and child diet and BMI status, evidence to date suggests further reductions to juice benefits, additional FV, and expanded flexibility of grains, as suggested by participants, has the potential for even greater improvements to maternal and child diet quality and overall health status. In the light of this research and the desire of mothers to serve additional fresh FV and whole grains, future policy should take advantage of these healthy intentions and revise food packages further to give families more flexibility in healthy food choices. Although state agencies are largely unable to alter benefit packages, they can report suggestions from participants to federal agencies and potentially influence future benefit package revisions.

This study has several major strengths but also limitations that must be noted. A key strength is that to the authors' knowledge, it is the first study of its kind to explore barriers and perceptions of the WIC experience from the perspective of WIC mothers and pregnant women in rural Appalachia. Further, recruitment of participants from a WIC agency that includes three bordering counties with stratified degrees of rurality allowed for the examination of a broader range of attitudes, barriers, and perceptions surrounding the WIC experience in rural Appalachia, as some experiences varied by county. The in-

depth, qualitative nature of this study also allowed for mothers to share their own experiences in a focus group format, which allows for a deeper understanding of the WIC experience in this region. A few limitations should also be noted. First, because of resource limitations, we were not able to include non-English speakers despite having some Hispanic families enrolled in WIC in the region. Secondly, mothers experiencing transportation barriers may not have signed up to participate. Third, the majority of participants in this study were non-Hispanic white and all participants had at least some college education, which may have influenced their decision to participate. Considering the majority of WIC participants nationwide have a high-school education (169), the perceptions and experiences of focus group participants in this study may not reflect the larger WIC population in this region. Nonetheless, though the sample size was small, major findings were consistent across the 3 counties.

Conclusion

Low-income families with young children in the AR experience a variety of health disparities and federal assistance programs such as WIC can be effective in reducing the nutrition-related inequalities experienced by this unique population. However, the current study shows that these families have unique experiences when participating in WIC and are faced with specific barriers that must be addressed to increase WIC enrollment and reduce program attrition of families in this region.

This study provides insight into the WIC experience in rural Appalachia North Carolina and lays the foundation for further investigation. In light of nationwide declines in WIC participation in recent years, more targeted efforts that take into consideration

regionally inherent structural, cultural, and economic challenges are needed to fully maximize the broader societal benefits of WIC participation. In this region, WIC agencies should focus on creating and/or enhancing existing partnerships and collaborations with local pediatrician and obstetrician offices, religious organizations, food banks, and grocery stores to expand awareness and knowledge of WIC services among community members in an effort increase utilization of WIC services. Additional research is warranted to fully understand the WIC experience from the perspective of various stakeholders in rural Appalachia and to better inform local and state agencies of strategies to enhance participation in the program.

CHAPTER IV

CROSS-SECTIONAL EXAMINATION OF SHOPPING CHARACTERISTICS, PERCEPTIONS, AND DIETARY INTAKES OF WOMEN PARTICIPATING IN A FEDERAL SUPPLEMENTAL NUTRITION PROGRAM IN RURAL APPALACHIA

This chapter is an extended article draft for submission to Health Education and Behavior.

Abstract

Background: Over the last decade, the Supplemental Nutrition Program for Women, Infants, and Children (WIC) has been transitioning to electronic benefits (eWIC). The North Carolina Appalachian Region was among the last to implement this transition, yet little is known about how eWIC influenced experiences in rural areas.

Aims: Examine potential differences in maternal shopping characteristics (MSC), perceptions, barriers, and dietary intakes by type of food-benefits used (paper benefits (PB) versus eWIC) in a sample of pregnant women and/or mothers in three rural counties in Western North Carolina.

Methods: Two surveys were administered by WIC staff, the first while participants were using PB (Phase 1) and the second after the program transitioned to eWIC (Phase 2).

Results: A total of 133 (Phase 1) and 71 (Phase 2) participants completed the study. No significant differences in MSC or barriers to food-benefit redemption were found

between the two time points. Following the transition to eWIC, more women reported that they perceived using WIC food benefits to be easy and convenient “always/most of the time” ($p < 0.05$). Dietary intakes of participants did not differ based on pregnancy status or age of their child(ren). Mean dietary intakes of fruits and vegetables, whole grains, dietary fiber, and dairy were all below national recommendations.

Discussion: Our findings suggest eWIC has a positive impact on MSC and overall satisfaction.

Conclusion: Further research is needed to fully characterize the experiences of WIC participants in rural Appalachia to enhance the utilization of WIC services in this culturally and geographically unique region.

Introduction

The Appalachian Region (AR) of the United States, also known as Appalachia, encompasses 13 states from northern Mississippi to New York’s southern tier (1). Notably, 42% of the region is rural and numerous health disparities have been documented between rural and general populations (3). In recent years, growing evidence suggests health disparities in Appalachia are widening (90). Compared with the nation as a whole, the AR has higher mortality rates for seven of the leading causes of death in the U.S., including heart disease, stroke, cancer, and diabetes, all of which are related to diet and physical activity (1). The prevalence of both adult and childhood obesity is also higher in the AR compared to the rest of the nation, with the highest rates found in rural counties (1,4,91–94). Disparities are also evident in maternal and infant health outcomes;

as of 2013, the incidence of low birth weight (LBW) in the AR was 7.4% higher than the nation, with rural counties in the region reporting an incidence 16% higher than the national average (1). In fact, the disparity in infant mortality rates between Appalachia and the rest of the nation widened from 10% to 16% between 1990 to 2013, despite nationwide declines in infant mortality in recent decades (90).

Socioeconomic inequalities further compound the health inequalities observed in Appalachia. Despite declining nationwide rates of poverty, household poverty rates in the AR are still 11% higher than the nation based on data from 2012-2016 (119).

Socioeconomic status (SES) represents a strong determinant of overall health and dietary intake among both adults and children (58,77,78). Families with a lower SES are less likely to consume fruits and vegetables (FV) (82–84) and whole grains (85) compared to families with a higher SES (86). In turn, lower quality diets are associated with poorer health outcomes among all population groups, including significantly higher risks of all-cause mortality, cardiovascular disease, cancer, and type 2 diabetes (87). Low SES is also closely correlated with high food insecurity, which is very common in rural areas of the nation (88,140,141). Thus, low-income families with young children living in the AR represent a population that is very vulnerable to the negative consequences of health inequalities.

The Supplemental Nutrition Program for Women, Infants, and Children (WIC) program is a federal nutrition assistance program that plays a crucial role in improving the health and wellbeing of nearly 7 million low income pregnant and postpartum women, infants, and children in the U.S. every month, with 75% of those served by the

program living in households below the federal poverty line (12). To date, WIC is one of the nation's most successful and cost-effective nutrition intervention programs (13). WIC provides families with a variety of benefits, ranging from the provision of nutrient-dense foods, nutrition education, breastfeeding support, and referrals to other healthcare providers, including prenatal care (14). Studies have indicated that WIC participants have greater access to healthcare and nutritious foods (14) as well as improved pre- and post-natal health outcomes for both mothers and infants (14–20). Prenatal WIC participation has been associated with longer pregnancies and fewer preterm births, LBW infants, and infant deaths (14,17,18,15,16). Furthermore, participation in this program has been linked to a decreased prevalence of household food insecurity (105,106) and improved cognitive development and academic achievement (14,107).

Despite many documented benefits associated with WIC participation, historically less than two-thirds of eligible families participate in this program (21). In fact, participation rates have declined nationwide from 63% of eligible families in 2005 to only 55% in 2016 (108). Furthermore, research suggests that in some cases, only 12.6% of recipients redeem all of their benefits (22) and some benefits are underutilized by geographical location (22,23). While the percentage of income-eligible families with young children is larger in rural compared to urban areas (46% vs 42%), rural families might redeem fewer benefits (10% vs. 13.6%) (35, 38). Research has shown that WIC participants face a number of barriers to participation including psychosocial barriers such as lack of social support (24) and social stigma (22,25–27,29,30); difficulty scheduling an appointment or long wait times (26,27,29); lack of transportation,

particularly public transportation (24–28); confusion about program eligibility criteria (26,27,29–31); and difficult shopping experiences or problems redeeming benefits (26,27,29–31). However, the reported barriers to participation are highly diverse across study populations and reflect the importance of the geographical, social, and cultural context of WIC participants in the published studies (24,26,27,29–31).

In recent years, the WIC program has been revised in an effort to combat nationwide barriers to participation and to improve benefit redemptions. These changes include a transition from paper benefits (PB) to an electronic benefit transfer (EBT) system, also known as eWIC (114). The transition to eWIC has been expected to reduce the stigma of participation, improve full benefit redemption (FBR), and improve the shopping convenience of program participants (34,35). As of January 2020, eWIC has been rolled out nationwide except for three Indian tribal nations and the District of Columbia (36). The full implementation by all WIC programs is mandated by October 2020. Interestingly, few studies so far have examined the impact of the transition to eWIC on participant shopping characteristics, barriers to participation, or perceptions of the WIC experience (22,37). Phillips and colleagues (22) were the first to assess the influence of the transition to eWIC at any level through the use of focus groups to explore the benefits and challenges of eWIC implementation from the perspective of the program's participants, state agencies, and vendors in Kentucky, Michigan, and Nevada. The overall transition was perceived positively by WIC participants, with respondents reporting an improved shopping experience and preference for eWIC over PB. However, participants reported difficulty utilizing all food benefits persisted after the transition.

Hanks et al. (37) also analyzed the impact the transition to eWIC had on WIC benefit redemptions and enrollment using grocery purchase data from Ohio and data describing eWIC implementation and enrollment in several states, including Kentucky, Ohio, Massachusetts, Virginia, and Wisconsin. In this investigation, eWIC had a positive influence on WIC benefits redemptions with a notable upward trend observed beginning 2 months post eWIC implementation, but no significant impact on WIC enrollment 6 months after implementation. While these two studies have established a reference point for the implications of the transition to eWIC on participant experiences and behaviors, there is great need to further expand the literature on how the transition to eWIC influences shopping characteristics, barriers, and overall perceptions of WIC participants with consideration to cultural, ethnic, and regional differences. WIC participants in the AR represent one population with unique cultural, social, and economic dynamics that directly influence access to and acceptance of food assistance via the WIC program (32,102–104). So far, experiences of WIC participants in the AR have been largely understudied and further research is needed to better serve the needs of low-income families with young children in this region.

Based on the WIC mission, young children and pregnant women represent the target population of WIC services (170). Previous research clearly shows that the quality of maternal healthcare and lifestyle habits during pregnancy may have profound implications on a variety of health-related outcomes for both the mother and the child (39,40). For example, high maternal intakes of FV have been shown to protect against gestational diabetes, gestational hypertensive disorders, maternal depression, preterm

birth, and LBW (14). It is also well established that maternal lifestyle habits during pregnancy, such as eating habits, smoking status, and physical activity level can increase or reduce the risk of preterm birth and/or LBW (41,42). Previous studies have also linked maternal pre-pregnancy weight status and/or pregnancy weight gain to both short- and long-term physiologic and metabolic outcomes in the offspring, including increased risks for obesity, diabetes, and heart disease later in the child's life (43–48).

Mothers also influence their children through a variety of social, behavioral and environmental influences (55–57). Childhood is a time when long-term health behaviors begin to develop, including dietary and physical activity behaviors (46). The strongest predictors of food consumption of young children are maternal food consumption; the duration of breastfeeding, age and the frequency of child exposure to a specific food, and personal taste preferences (38). Mothers are generally the primary caregivers in households and as such, they are the ones who most often determine what foods their children are offered (58–62). To date, numerous studies have demonstrated a strong association between maternal dietary intake and children's food intake, with maternal dietary intakes often being used as a proxy for child dietary intake (57,63–67,69). The strong evidence that dietary patterns and food habits track from infancy to later years (50) further underscores the need for mothers of young children, including those enrolled in the WIC program, to consume balanced diets, maintain a healthy weight, and thus set the best lifestyle behavior trajectory for their offspring during infancy and early childhood (44,47).

In light of significant health and economic disparities that are prevalent in rural Appalachia (1,119), increasing redemption of WIC benefits and minimizing program attrition has become a priority for the WIC program in North Carolina in recent years. To date, WIC services have been associated with a variety of positive maternal and child health outcomes (43–47,171). However, further research is needed to better understand participant shopping characteristics, barriers, and overall perceptions of the WIC experience in the AR of North Carolina, especially as the state recently implemented eWIC. Additionally, little is known about maternal dietary intake of WIC participants in this part of the country. To help fill these gaps in the literature, this study aimed to answer the following research questions: 1) How did the transition to eWIC influence maternal shopping characteristics, barriers, and perceptions related to WIC program participation and did they change through the transition from PB to eWIC in rural Appalachia?; 2) What are the characteristics of dietary intakes of pregnant women and mothers of young children enrolled in WIC in rural Appalachia? A better understanding of participant experiences and dietary patterns of WIC participants in rural Appalachia is warranted to identify the areas of need and to inform future interventions and policy development within the WIC program.

Methods

Research Design and Data Collection

This study was a part of larger formative mixed-method research to identify areas of need and to inform future initiatives aimed at reducing WIC participation barriers and enhancing program retention of low-income families in rural Appalachia. Data presented

in this study were collected from pregnant women and mothers of young children (<5 years of age) who were enrolled in the WIC program via the AppHealthCare Health Departments at the time of the study, in one of three WIC offices (Alleghany, Ashe, and Watauga counties) in rural Western North Carolina. The study was completed with the close collaboration of the AppHealthCare Health Departments and the WIC Director, with data being collected as part of WIC's internal data collection from participants. The study protocol and procedures of the larger study were approved by the University of North Carolina at Greensboro's Institutional Review Board before data collection.

Participants and Study Procedures

Data from all pregnant women and/or mothers of children enrolled in the WIC program (i.e. WIC offices in Alleghany, Ashe, and Watauga counties) at the time of the study were eligible to be included in the analyses. All data analyzed in this study came from surveys that were administered to participants during the study period, except for a few variables that were obtained from official WIC data records (i.e. household income, race, and ethnicity). The average caseload of the WIC agency across the counties was 1,473 families, with the largest enrollment in Watauga and Ashe counties (46.5% and 36.4%, respectively). Data for this study were collected in 2 phases: Phase 1 was completed between April and August of 2018 when the WIC program was still utilizing PB; Phase 2 was completed between November 2018 and April 2019, at the time when all WIC participants in these counties were fully transitioned to eWIC. Both surveys were administered internally by WIC staff as a component of regular WIC data collection and services. During regularly scheduled appointments, pregnant women currently enrolled in

WIC and/or mothers of young children currently enrolled in the program were asked to complete the survey to assist staff with ongoing efforts to improve the WIC experience and to gain a better understanding of eating patterns of WIC mothers in the region. If mothers consented to complete the survey, they had the option to take it via paper or electronically via an iPad provided by staff during the office visit. Survey completion was voluntary and not a mandatory component that would influence the availability of WIC services. The average length of time to complete the survey was 22 minutes. Mothers who completed the survey were entered into a drawing to win one of two \$25 gift cards in each county (12 gift cards total, six cards in Phase 1 and six cards in Phase 2).

Survey Instruments and Measures

The surveys used in this study were comprised of four sections, including 1) Socio-demographic and Anthropometric data; 2) Shopping Experiences, Barriers, and Perceptions; and dietary intake information measured via 3) Dietary Screener Questionnaire (DSQ), and 4) Fruit and Vegetable Screener (FV Screener).

Socio-demographics and Anthropometrics. Self-reported demographic and anthropometric measurements collected via the survey included gender, age, height, weight, education, household size, and which household members were receiving WIC benefits. Height was converted into inches and body mass index (BMI) was computed by dividing weight in pounds by height in inches squared and multiplied by 703. Race, ethnicity, and household income variables were obtained from the survey respondent's medical records by WIC staff members. Two additional variables, type of WIC mother (i.e. pregnant woman; mother of infant 0 to \leq 12 months; mother of child 1 to 5 years)

and household benefit packages received (i.e. 1 food package and 2 or more food packages), were created using maternal responses to the question about which household members receiving WIC benefits.

Shopping Characteristics, Barriers, and Perceptions Related to WIC

Experience. Questions assessing shopping characteristics, barriers, and perceptions of the WIC experience (i.e. shopping frequency; barriers to participation and benefit redemptions; overall satisfaction) were developed by the investigators specifically for this study and were identical in Phase 1 and 2. However, the survey included 12 additional questions in Phase 2 that were designed to capture the transition from PB to eWIC, assess overall satisfaction with the eWIC transition, and to identify potential barriers to participation following the transition to eWIC. All questions were developed based on shopping characteristics, barriers, and perceptions identified from an extensive literature review as well as input from WIC staff that has daily experience with participants. Participants answered questions about shopping experiences, barriers, and perceptions based on their experience over the previous 3 months, with responses interpreted on 5-point Likert scales ranging from “strongly disagree” to “strongly agree” or “never” to “always.” For example, “*Using my WIC food benefits is easy and convenient when shopping at grocery stores that accept WIC food benefits.*” A 3-month time frame was selected because WIC benefits are issued every 3 months. Individual responses were assigned a score of 1 to 5 and each item was expressed as a categorical variable. Questions were reviewed by three nutrition researchers with expertise in nutrition behavior in low-income families with children; one experienced psychology researcher

specialized in low-income and minority families with children; six WIC staff members and a dietetic intern who have daily experience with the program's participants; and four WIC clients. Revisions were made based on the feedback provided from all reviewers and included rephrasing some questions to use more WIC appropriate terminology (i.e. "*WIC benefits*" changed to "*WIC food benefits*").

Dietary Intake. Two previously validated dietary screeners, the 26-item Dietary Screener Questionnaire (DSQ) and the 10-item National Cancer Institute (NCI) FV screener were used to capture dietary intake data.

Dietary Screener Questionnaire. The DSQ measures the frequency of intake of FV, dairy/calcium, added sugars, whole grains/fiber, red meat, and processed meat over the previous month. It was selected for use in this study because FV, dairy, and whole grains are all food items included with WIC benefits (172,173). The DSQ was included in the National Health and Nutrition Examination Survey (NHANES) for people aged 2-65 in 2009-2010 and has been validated and used by other investigators since (172,174–176). Responses are interpreted on a 9-point Likert scale for food items and an 11-point Likert scale for beverages, ranging from never to two or more times per day and never to six or more times per day, respectively. Publicly available scoring procedures were used to convert reported frequencies of intake to estimated quantities of select food groups and nutrients, based on age- and gender-specific 24-hour dietary recall portion size data from NHANES (177). Computed outcome variables used in this study included quantitative estimates of daily intakes for the following variables: 1) whole grains; 2) dietary fiber; 3) dairy; 4) total added sugar; and 5) added sugar from sugar-sweetened beverages (SSB).

Estimated daily intakes of FV were not computed because the NCI FV screener was utilized to assess FV intake.

Fruit and Vegetable Screener. The frequency and quantity of certain FV items over the previous month were assessed using the NCI FV screener (178–180). Although some FV items are included in the DSQ, the FV Screener includes a greater number as well as portion sizes, which enhances the accuracy of FV consumption estimates. Previous work suggests that rural WIC participants may consume fewer FV than urban WIC participants (89); thus, the NCI FV screener was utilized in the current study to obtain a better measure of FV consumption among the participants. To assist participants with estimating portion sizes of FV consumed in the previous 30 days more accurately, a visual aid guide for portion sizes was developed by the investigators to complement the NCI FV screener. Frequency responses for the NCI FV Screener were expressed on a 10-point Likert scale ranging from never to five or more times per day. Portion sizes responses were reported on 4-point Likert scales specific to the food and ranged from ½ cup per day to more than 2 cups per day. Publicly available scoring procedures were used to convert reported frequencies and serving sizes into average daily FV cup equivalents (CE), as defined by the 2005 MyPyramid Dietary Guidelines (182). Computed outcome variables included: 1) total FV with fried potatoes; 2) total FV without fried potatoes; 3) total vegetables with fried potatoes; 4) total vegetables without fried potatoes; 5) total fruit with 100% fruit juice (FJ), and 6) total fruit without 100% FJ.

Survey Translation into Spanish. Because 15% of families enrolled in the AppHealthCare WIC program were Spanish speakers, the surveys and visual aid guide

for portion sizes were translated from English into Spanish by a WIC clerk from the Ashe County WIC office who is a native Spanish speaker from Mexico. A second WIC clerk from the Watauga County WIC office, a native Spanish speaker from Peru, reviewed the translation for accuracy. Minor changes were made to a couple of dietary screener questions to better represent food items being referenced. For example, question 6 of the DSQ was changed from “*During the past month, how often did you drink regular soda or pop that contains sugar? Do not include diet soda. Mark one.*” to “*During the past month, how often did you drink regular soda that contains sugar? Do not include diet soda. Mark one.*” The Spanish surveys were reviewed a third time for grammar and punctuation errors by a native Spanish speaker from Costa Rica who holds Bachelor's degrees in Spanish Philology and Castillian and Literature Teaching. Surveys were revised accordingly and reviewed a final time by both Spanish speaking WIC clerks before dissemination across the three counties.

Data Analysis

Statistical Analysis System (SAS 9.4) software was used to convert 1) reported frequencies of intake from the DSQ into estimated quantities of intake and 2) reported frequencies and portion sizes from the FV screener into average daily FV CE. Data were analyzed using the Statistical Package for Social Sciences (SPSS) software (IBM SPSS Statistics version 26). Descriptive statistics were used to characterize participants in each sample (i.e. Phase 1 and Phase 2) by demographic and anthropometric measures and to also characterize maternal perceptions, barriers, and shopping characteristics at each phase of the study. Chi-square or Fisher's exact tests were used to determine if maternal

shopping characteristics, barriers, and perceptions differed between participants who completed the survey in Phase 1 (when PB were still in effect) and Phase 2 (when eWIC was implemented). Preliminary analyses of dietary intake data revealed no significant differences between any dietary outcome measures among participants in Phase 1 and Phase 2. Thus, dietary intake data from the DSQ and FV Screener from Phase 1 and 2 were pooled to determine participants' characteristics in terms of dietary intakes. Intakes more than three standard deviations above the mean for each nutrient or food group (3% or less) were excluded from analyses. Potential differences in mean intakes per dietary outcome variable were examined by type of WIC participant (i.e. pregnant woman versus mother of a child) using one-way ANOVA, followed by Bonferroni post-hoc test for multiple comparisons. A p-value <0.05 was considered statistically significant for all analyses.

Results

Descriptive Characteristics

A total of 133 (Phase 1) and 74 (Phase 2) mothers completed the study, with a total sample of 207 participants. Three respondents who completed the survey in Phase 2 were males and thus their responses were excluded from the final analyses, leaving a total sample of n=71 for Phase 2. The majority of participants in each sample completed the survey in English (87% Phase 1, 84% Phase 2). Demographic characteristics of the participants are presented in Table 3. There were no significant differences in any of the demographic characteristics of Phase 1 and Phase 2 participants. The mean age of the participants was 29.0 (Phase 1) and 28.6 years (Phase 2), respectively. The majority of

the sample in each phase was comprised of non-Hispanic White participants; English speakers; mothers of children aged 1-5 years old; those who lived in a household with at least two adults; and received only one food benefit package. More than half of the sample in both phases had some college education or higher. The majority of participants in both phases also reported an annual household income of <\$30,000. More than 75% of non-pregnant participants in each phase had a BMI in the overweight or obese category (i.e. 52% of each sample were in the obese weight status category). In Phase 1, 18.5% of non-pregnant participants were classified as morbidly obese (BMI>40.0, data not shown). In Phase 2, 11.4% fell in the morbidly obese category.

Shopping Characteristics, Barriers, and Perceptions Before and After Transition to eWIC

Maternal WIC-related shopping characteristics, barriers, and perceptions of the WIC experience in Phase 1 and Phase 2 are presented in Table 4. Participants were not significantly different from each other in their shopping characteristics at the time of using PB (Phase 1) versus using eWIC (Phase 2). In each sample, the majority of participants reported shopping for WIC food benefits 3-4 times per month and nearly one-third reported they did not fully redeem all food benefits. The most frequently underutilized food benefit in Phase 1 was 100% FJ (10%) while FV was the most frequently reported underutilized food benefit in Phase 2 (when using eWIC) (11%). The percentage of mothers who reported underutilizing FV benefits after the transition to eWIC was not statistically significant; however more than twice as many participants underutilized FV benefits in Phase 2 than in Phase 1 (5% vs. 11%, $p=0.084$). Breakfast

cereal and whole grains were the other most frequently underutilized food benefits in both phases.

In Phase 2, after the transition to eWIC, a greater number of participants reported they perceived using WIC food benefits to be easy and convenient “always/most of the time” compared to participants in Phase 1 ($p < 0.05$). Although statistically non-significant ($p = 0.108$), a larger percentage of participants “strongly agreed/agreed” that their overall experience using WIC food benefits was positive after the transition to eWIC (Table 4).

No significant differences in perceived barriers to FBR were detected between participants who were using PB in Phase 1 or those using eWIC benefits in Phase 2 (Table 4). Participants reported too much time at checkout and embarrassment were barriers experienced less often after the transition to eWIC. In both phases, only a small portion of participants reported they “always/most of the time” underutilized food benefits because they cannot use all the food before it spoils.

Table 3. Demographic Characteristics of WIC^a Participants in Rural Appalachia*

Maternal & Household Characteristics	Phase 1 n=133 ^b	Phase 2 n = 71 ^c
	n (%)	
Maternal Age		
18 to 25 Years	39 (30)	21 (30)
26 to 35 Years	74 (57)	42 (60)
≥ 36 Years	17 (13)	7 (10)
Maternal BMI^d		
Underweight (<18.5)	1 (1)	0 (0)
Normal Weight (18.5 to 24.9)	18 (22)	7 (16)
Overweight (25.0 to 29.9)	20 (25)	14 (32)
Obese (≥ 30.0)	42 (52)	23 (52)
Maternal Education		
Less than High School	2 (2)	1 (1)
Some High School	18 (14)	9 (14)
High School	44 (33)	21 (32)
Some College	28 (21)	22 (33)
2-year College Degree or Greater	40 (30)	13 (20)
Maternal Race		
White	102 (98)	61 (97)
Asian	2 (2)	1 (1.5)
Other	0 (0)	1 (1.5)
Maternal Ethnicity		
Non-Hispanic	84 (81)	49 (78)
Hispanic	20 (19)	14 (22)
Adults Living in Household (18+ years)		
1 Adult	27 (22)	7 (11)
2 Adults	76 (62)	51 (78)
3 or More Adults	20 (16)	7 (11)

Table 3. Demographic Characteristics of WIC^a Participants in Rural Appalachia* (cont.)

Maternal & Household Characteristics	Phase 1 n=133^b	Phase 2 n = 71^c
Children Living in Household (0 to 17 years)	n (%)	
None	6 (5)	1 (1)
1 Child	39 (31)	15 (22)
2 Children	40 (32)	25 (37)
3 or More Children	41 (32)	27 (40)
Type of WIC Client		
Pregnant Woman	25 (19)	13 (19)
Mothers of Infants ^e	41 (31)	22 (31)
Mothers of Child(ren) 1 to 5 years old	65 (50)	35 (50)
Household WIC Benefits Received		
1 WIC Food Package	84 (64)	51 (72)
2 or More WIC Food Packages	47 (36)	20 (28)
Annual Household Income		
<\$12,000	43 (38)	22 (34)
\$12,000 - \$29,999	48 (43)	33 (52)
\$30,000 - \$49,999	20 (18)	7 (11)
≥ \$50,000	1 (1)	2 (3)

^aWIC=Special Supplemental Nutrition Program for Women, Infants, and Children

^bNo demographic data provided for one survey respondent. Some categories do not add up to n=133 due to missing data.

^cSome categories do not add up to n=71 due to missing data.

^dBMI data excluded for pregnant women.

^eIncludes fully and partially breastfeeding women and 100% formula feeding women

*Using Chi-square or Fisher's exact test, there were no significant differences at the p<0.05 significance level

Table 4. Comparison of Maternal Characteristics and Perceptions of the WIC^a Experience in Rural Appalachia Before and After the Transition to eWIC^b			
Characteristic/Perception	Phase 1: Paper n=133^c	Phase 2: eWIC n=71^c	χ^2 or Fishers Exact
1. Shopping Characteristics			
	n (%)		P-value
<i>Frequency of Shopping for WIC Foods</i>			.580
1-2 times per month	29 (23)	21 (30)	
3-4 times per month	76 (61)	37 (53)	
5-6 times per month	16 (13)	9 (13)	
7+ times per month	3 (2)	3 (4)	
<i>All Benefits Fully Redeemed</i>			.626
Yes	92 (72)	49 (69)	
No	35 (28)	22 (31)	
<i>Type and Frequency of Foods Underutilized^d</i>			
Breakfast Cereal	9 (7)	7 (10)	.427
Milk, Yogurt, and Cheese	3 (2)	2 (3)	1.000
Fruits and Vegetables	6 (5)	8 (11)	.084
Whole Grains	8 (6)	5 (7)	.770
Beans and Peanut Butter	6 (5)	3 (4)	1.000
100% Fruit Juice	12 (9)	2 (3)	.145
2. Perception of Satisfaction			
When Shopping for WIC Foods	n (%)		P-value
<i>Easy and Convenient</i>			.048*
Always/Most of the Time	110 (84)	67 (96)	
Sometimes	17 (13)	3 (4)	
Rarely/Never	4 (3)	0 (0)	
<i>Overall Positive Experience When Using WIC Benefits</i>			.108
Strongly Agree/Agree	111 (88)	64 (94)	
Undecided	11 (9)	1 (2)	
Disagree/Strongly Disagree	4 (3)	3 (4)	

Table 4. Comparison of Maternal Characteristics and Perceptions of the WIC^a Experience in Rural Appalachia Before and After the Transition to eWIC^b (cont.)

Characteristic/Perception	Phase 1: Paper n=133 ^c	Phase 2: eWIC n=71 ^c	χ^2 or Fishers Exact
3. Barriers to Full Benefit Redemption			
	n (%)		P-value
<i>Too much time at checkout</i>			
Always/Most of the Time	2 (2)	0 (0)	.409
Sometimes	6 (4)	1 (1)	
Rarely/Never	125 (94)	70 (99)	
<i>Embarrassment</i>			
Strongly Agree/Agree	17 (13)	9 (13)	.390
Undecided	18 (14)	5 (8)	
Disagree/Strongly Disagree	93 (73)	54 (79)	
<i>Food Spoiling Before Used</i>			
Always/Most of the Time	1 (1)	2 (3)	.258
Sometimes	7 (5)	6 (8)	
Rarely/Never	125 (94)	63 (89)	

^aWIC=Special Supplemental Nutrition Program for Women, Infants, and Children

^beWIC=electronic WIC

^cAll categories for each survey do not add up to their respective n due to missing data.

^dFrequency and percent for each food category represent the portion of each sample reporting food category underutilized (i.e. partial or non-redemption).

*Indicates significance at $p < 0.05$

Shopping Characteristics, Barriers, and Perceptions of Using eWIC

In Phase 2, the survey included 12 unique questions that were specific to eWIC utilization over the past 3 months. The summary of participant responses to these items is presented in Table 5. Most participants reported they “rarely/never” had benefits remaining at the end of the month. Nearly a third regularly tried using eWIC at self-checkout. The most frequently reported barriers to FBR/optimal utilization of eWIC were uncertainty about WIC-approved versus not WIC-approved foods and forgetting to reload the benefits card at the WIC office.

Overall perceptions of using eWIC were largely positive, with the majority of the sample reporting they “strongly agreed/agreed” that they felt less embarrassed using eWIC than PB. A large majority also “strongly agreed/agreed” they were more likely to use all food benefits with eWIC than with PB and preferred using eWIC for food benefits. All mothers in the Phase 2 sample “strongly agreed/agreed” that overall, eWIC improved their shopping experience.

Dietary Intakes

Dietary intakes of participants in the sample are presented in Tables 6 and 7. Predicted dietary intakes of the entire sample and each type of WIC mother, measured via the NCI FV Screener, are presented in Table 6. Findings related to the intake of food groups measured via the DSQ are presented in Table 7. There were no significant differences in mean intakes of food groups or FV by type of WIC participant ($p > 0.05$).

The mean intake of total FV including 100% FJ and fried potatoes across the sample was 2.96 ± 2.22 CE/day (Table 6). The average total fruit intake including 100%

FJ was 1.33 ± 1.33 CE/day, with 100% FJ accounting for more than half the intake of total fruit ($.71 \pm .74$ CE/day). All participants in the sample had predicated intakes of whole grains less than 1 oz. equivalent/day and intakes of dietary fiber less than 16 g/day. The mean predicted intake of dairy across the sample was 1.86 ± 0.80 CE/day (Table 7). Though not statistically different compared to others in the sample, pregnant women reported consuming higher amounts of whole grains ($0.94 \pm .44$ oz. equivalents/day), dairy (1.98 ± 0.82 CE), and fiber (16.18 ± 2.81). The predicted intake of total added sugars varied widely, from a low of 10.32 tsp/day to a high of 39.77 tsp/day across the entire sample. Added sugars from SSB accounted for over half of total added sugars (8.59 ± 5.70 tsp/day) consumed among the entire sample (see Table 7).

Table 5. Maternal Perceptions of the WIC^a Experience in Rural Appalachia Using eWIC^b

Characteristic/Perception	Phase 2: eWIC n=71 ^c
1. Shopping Characteristics	
	n (%)
<i>Food Benefits Left Over at End of Month</i>	
Always/Most of the Time	10 (15)
Sometimes	23 (33)
Rarely/Never	36 (52)
<i>Tried Using eWIC at Self-Checkout</i>	
Always/Most of the Time	24 (35)
Sometimes	0 (0)
Rarely/Never	45 (65)
2. Barriers to Full Benefit	
Redemption/Optimal Utilization of eWIC	
	n (%)
<i>Uncertainty About WIC Approved vs. Not Approved Food Items</i>	
Always/Most of the Time	47 (67)
Sometimes	0 (0)
Rarely/Never	23 (33)
<i>Forgot to Reload eWIC Card at WIC Office</i>	
Always/Most of the Time	35 (50)
Sometimes	0 (0)
Rarely/Never	35 (50)
<i>Unable to Use eWIC App</i>	
Always/Most of the Time	8 (12)
Sometimes	0 (0)
Rarely/Never	58 (88)
<i>Difficulty Checking Benefit Balances</i>	
Always/Most of the Time	12 (17)
Sometimes	0 (0)
Rarely/Never	58 (83)
<i>Lost eWIC Card</i>	
Always/Most of the Time	3 (4)
Sometimes	0 (0)
Rarely/Never	67 (96)

Table 5. Maternal Perceptions of the WIC^a Experience in Rural Appalachia Using eWIC^b (cont.)

Characteristic/Perception	Phase 2 n=71 ^c
3. Perceptions of Using eWIC	
	n (%)
<i>Less Embarrassed Using eWIC Than Paper Benefits Checks*</i>	
Strongly Agree/Agree	12 (55)
Undecided	0 (0)
Disagree/Strongly Disagree	10 (45)
<i>More Likely to Use All Food Benefits With eWIC Than With Paper Benefits Checks</i>	
Strongly Agree/Agree	65 (96)
Undecided	0 (0)
Disagree/Strongly Disagree	3 (4)
<i>Prefer Using eWIC for Food Benefits</i>	
Strongly Agree/Agree	68 (99)
Undecided	0 (0)
Disagree/Strongly Disagree	1 (1)
<i>Overall Improved Shopping Experience Using eWIC</i>	
Strongly Agree/Agree	69 (100)
Undecided	0 (0)
Disagree/Strongly Disagree	0 (0)

^aWIC=Special Supplemental Nutrition Program for Women, Infants, and Children

^beWIC=electronic WIC

^cAll categories do not add up to n=71 due to missing data.

*Only 31% of total survey respondents answered this question.

Table 6. Dietary Intakes^a of WIC^b Participants in Rural Appalachian North Carolina by Type of WIC Participant^{cd} (n=204)*

Food Group or Nutrient	All n=204	PW n=38	MI n= 63	MC n=100
	Mean (SD)			
Total Fruit Including 100% Fruit Juice (cup equivalents/day)	1.33 (1.33)	1.46 (1.25)	1.16 (1.24)	1.41 (1.43)
Total Fruit Without 100% Fruit juice (cup equivalents/day)	.71 (.74)	.78 (.89)	.60 (.66)	.76 (.73)
Total Vegetables Including Fried Potatoes (cup equivalents/day)	1.65 (1.44)	1.45 (1.13)	1.58 (1.64)	1.76 (1.39)
Total Vegetables Without Fried Potatoes (cup equivalents/day)	1.56 (1.42)	1.34 (1.13)	1.50 (1.64)	1.67 (1.35)
Total FV Including Fruit Juice and Fried Potatoes (cup equivalents per day)	2.96 (2.22)	2.95 (2.09)	2.69 (2.22)	3.15 (2.28)

^aData collected using the Fruit and Vegetable (FV) Screener

^bWIC=Special Supplemental Nutrition Program for Women, Infants, and Children

^cAll=all participants, PW=pregnant women, MI=mothers of infants 0 to ≤ 12 months (fully and partially breastfeeding and 100% formula feeding), MC=mothers of children 1 to 5 years old

^dUnable to determine type of WIC mother for 3 participants.

*Using one-way ANOVA, there were no significant differences in mean intakes at the p<0.05 significance level

Table 7. Predicted Dietary Intakes^a of WIC^b Mothers in Rural Appalachian North Carolina by Type of WIC Mother^{cd} (n=204)*

Food Group or Nutrient	All n=204	PW n=38	MI n= 63	MC n=100
	Mean (SD)			
Whole Grains (oz. equivalents/day)	.93 (.40)	.94 (.44)	.93 (.44)	.92 (.36)
Dietary Fiber (g/day)	15.74 (2.90)	16.18 (2.81)	15.61 (2.92)	15.68 (2.94)
Dairy (cup equivalents per day)	1.86 (.80)	1.98 (.82)	1.81 (.67)	1.86 (.88)
Total Added Sugars (tsp/day)	16.69 (5.76)	16.55 (5.85)	16.37 (6.58)	17.00 (5.81)
Added Sugars from SSB (tsp/day)	8.59 (5.70)	7.78 (5.07)	5.76 (6.85)	8.93 (5.79)

^aData collected using the Dietary Screener Questionnaire (DSQ)

^bWIC=Special Supplemental Nutrition Program for Women, Infants, and Children

^cAll=all participants, PW=pregnant women, MI=mothers of infants 0 to ≤ 12months (fully and partially breastfeeding and 100% formula feeding), MC=mothers of children 1 to 5 years old

^dUnable to determine type of WIC mother for 3 participants.

*Using one-way ANOVA, there were no significant differences in mean intakes at the p<0.05 significance level

Discussion

The WIC program has been effective in improving a variety of health outcomes by providing nutrition services and food benefits to low-income pregnant and postpartum women, infants, and young children since the 1970s (14,183). However, only 55% of eligible families participate in the program. Thus, over the last decade, WIC has been transitioning to eWIC in efforts to reduce nationwide participation barriers. The AR represents a large geographical area that has disproportionately higher rates of chronic diseases than the nation (1,184) and that is historically underserved in terms of healthcare services as well as research. While many WIC agencies in the AR recently transitioned to eWIC, to date, there is still a paucity of research related to shopping characteristics, barriers to participation, and perceptions of the WIC experience in rural areas. The current formative study aimed to explore these attitudes and behaviors among pregnant women and mothers of young children participating in the WIC program in three rural counties in Appalachian North Carolina.

The nationwide transition to eWIC was anticipated to improve shopping convenience and increase FBR because participants would have more flexibility about when and how often to redeem their benefits (49,50). A 2016 study by Hanks et. al (37) provided evidence in Ohio to support these notions, showing that the total WIC benefit expenditures did in fact increase after the transition to eWIC. Thus, we expected that shopping frequency, and consequently FBR, would be higher in our sample in Phase 2 because those participants were fully transitioned to eWIC at the time of the current study. However, shopping frequency and FBR were similar between our two samples,

regardless of whether they were using PB or eWIC. Thus, our findings indicate that the availability of eWIC alone may not be enough to encourage WIC clients to shop more frequently in this region. Future research is needed to examine additional factors that influence shopping behaviors in this population.

While underutilization of food benefits was generally low in the current study, more than 10% of participants reported not fully redeeming their FV benefits in Phase 2. This is consistent with our qualitative work with this population (under review), which revealed a limited number of grocery stores and general lack of variety and availability of some WIC foods (i.e. fresh FV and whole grains) were major barriers to benefit redemption in the region (185). Participants also voiced a desire for additional fresh FV and less 100% FJ. Though we did not assess utilization of different types of WIC-approved FV (i.e. fresh, frozen, and/or canned) redeemed in the current study, focus groups revealed some participants were unaware they could use their FV benefits to also purchase frozen and/or canned varieties. Others were unsure if fresh FV had to be pre-packaged (i.e. box of mixed greens) or could be purchased unpackaged (i.e. loose head of lettuce). Breakfast cereals were identified as another frequently underutilized WIC food benefit in the current study and this finding is also consistent with our previous qualitative work. Pregnant women and mothers revealed they would prefer other whole-grain options instead of breakfast cereal (i.e. more bread) (185).

In the light of our findings, the redemption of FV and whole-grain benefits in this region is likely influenced by a combination of inadequate and/or inconsistent opportunities to purchase these benefits (185–187); a lack of knowledge about WIC-

approved FV (185); and/or maternal preference for specific kinds of FV and whole-grains (185) rather than the type of WIC benefit redemption methods (PB versus eWIC). Thus, these important issues need to be addressed to optimize benefit redemptions among WIC participants in this region of North Carolina. Over the past decades, some attempts have been made to increase access to and consumption of FV among WIC participants nationwide. Such efforts included the expansion of WIC FV benefits to include farmer's market vouchers (188). However, these expanded benefits are available only to participants in Watauga and Ashe counties of the AppHealthCare WIC District (the two larger counties) and from only June through August each year, during peak season for produce in the area (189). As such, many challenges to increased redemption of WIC FV benefits remain in the AR of North Carolina, as it represents an area with unique cultural, social, and economic characteristics that directly influence access to and acceptance of food assistance (32,102–104). Additional research is needed to better characterize current access and availability of both FV and whole grains in the region to better inform strategies to increase the redemption of these benefits. Our findings highlight the need to establish and/or strengthen mutually beneficial partnerships between local WIC agencies, local farmers, and local vendors to incentivize participation and stocking a greater variety of WIC-approved foods beyond the minimum inventory required by federal regulation. Additional education provided through a variety of outlets (i.e. office visits, marketing campaigns, WIC mobile app, local agency website, social media, peer shopping programs) is also warranted to increase participant knowledge and utilization of WIC-approved FV and whole-grain options.

Perceptions of satisfaction and barriers to FBR when shopping for WIC food benefits have been identified as major determinants of WIC participation (26,27,29–31,142). Several studies have previously reported inconvenience while shopping and during the checkout process is a major barrier to participation and FBR when using PB (41,43,46,101). In the current study, significantly more participants in Phase 2 perceived the shopping experience to be easy and convenient “always/most of the time” than in Phase 1. This finding is consistent with previous qualitative work by Phillips et al. (22), who found eWIC participants in Kentucky, Michigan, and Nevada shared this same sentiment following the transition to eWIC in those states. Though our findings suggest that eWIC appears to have reduced the burden of shopping in the region, perceptions of the WIC shopping experience were already largely positive among participants when using PB in Phase 1.

Previous research has suggested that embarrassment is one of the important factors that could be influencing WIC program enrollment as well as redemption of food benefits among low-income families (22,27,29–31). In our previous qualitative work (185), pregnant women and mothers reported stigma/embarrassment was the most pervasive barrier to WIC program participation in rural Appalachia (185). Focus group participants cited numerous examples of experiencing both verbal and non-verbal signs of disapproval and judgment by other shoppers and cashiers while redeeming their WIC benefits in local grocery stores. They also reported the “small town” nature of their communities and perception that “everybody knows everybody” magnified their feelings of embarrassment. Pregnant women and mothers who participated in our qualitative work

were still using PB. Therefore, we expected that most participants in Phase 1 of the current study would report embarrassment as a frequent barrier to FBR, as they were also still using PB. However, this was not the case. Fewer than 15% of participants in Phase 1 “strongly agreed/agreed” that embarrassment was a barrier to FBR. Although we would expect participants to feel more comfortable reporting embarrassment via an anonymous survey, it is possible that the social support focus groups provide, coupled with an opportunity to discuss a shared social experience, may have encouraged participants to more freely report perceived social stigma/embarrassment in the focus group format. Observed differences between reported social stigma among focus group participants and survey respondents may have also been related to differences in level of education. All focus group participants had some college education or greater compared to only half of survey respondents.

The transition to eWIC was anticipated to reduce social stigma/embarrassment because it is more discrete when shopping. Therefore, we expected that eWIC users (Phase 2) would report 1) embarrassment as a barrier to FBR less frequently than those using PB (Phase 1) and 2) feeling less embarrassed when using eWIC than when using PB. However, our findings were mixed. Though fewer than 15% of eWIC users reported embarrassment was a barrier to FBR, more than half reported they felt less embarrassed using eWIC than when using PB. It is worth noting that the response rate to the question about feeling less embarrassed when using eWIC versus PB was considerably lower than all other barriers and perceptions that we assessed. While the reason for this discrepancy is unclear, it may have been related to the assumption that participants felt embarrassed

when using PB. If Phase 2 participants did not feel embarrassed when they previously used PB, then they may not have answered the question because it was not relevant to them. They may have also simply ignored the question because they already answered a question about embarrassment as a barrier to FBR earlier in the survey.

Overall, our findings suggest other factors may influence FBR among WIC participants in the AR that need to be examined and addressed via future changes in the program and policies related to food packages to optimize benefit utilization. For instance, the influence of the unique culture of the AR should be taken into consideration. The AR is largely conservative and known for valuing individualism and self-reliance as well as religious fundamentalism and fatalism (116,117). Widespread distrust of outsiders and government and general reluctance to change are additional core Appalachian values which may discourage participation in federal assistance programs such as WIC. In our qualitative work, it was apparent Appalachian culture largely contributed to social stigma and perceived embarrassment experienced by WIC mothers and pregnant women (185). Thus, future research should further examine psychosocial barriers to WIC participation in rural Appalachia and explore potential strategies to reduce community-level social stigma and subsequent embarrassment associated with participation in WIC and other federal assistance programs.

Although the use of eWIC has been anticipated to improve the shopping experiences of WIC participants, it does not address systematic changes needed to improve the identification and subsequent redemption of WIC-approved foods. In our qualitative work with this population, uncertainty about which foods were included with

WIC benefits emerged as a major barrier to FBR (185). Thus, it is not surprising that more than two-thirds of participants in Phase 2 of the current study reported they were “always/most of the time” uncertain which foods were WIC-approved. Our qualitative work revealed several factors contributed to participant uncertainty and confusion surrounding WIC-approved foods including lack of knowledge about food packages; poor labeling and/or inconsistent labeling in grocery stores; and inconsistencies in WIC-approved foods identified as such via grocery store point-of-sale systems in the region (185). These findings echo numerous previous investigations that reported the same issues across the nation when participants were still using PB (26,27,29–31,142,191), but also after the transition to eWIC (22,26).

Understandably, ensuring more consistent labeling of WIC-approved foods and recognition of WIC-approved foods via point-of-sale systems in grocery stores is a complex issue because of regional, cultural, and seasonal differences that drive variety and availability of types and brands of foods at individual WIC vendors. As such, it is not likely that eWIC alone will solve these issues. With the completed nationwide transition to eWIC on the horizon, our findings highlight the on-going need to assess and address barriers to participation and FBR that persist and/or emerge in the eWIC environment. Thus, the development of innovative state and regional-level strategies to improve participant experiences as they are redeeming WIC benefits in grocery stores is imperative. One potential strategy to address food package knowledge deficits is through enhanced utilization and functionality of digital tools (i.e. online learning platforms, WIC mobile apps, two-way text messaging services, video calling, agency websites, social

media) (192). Although the AppHealthCare District WIC offices currently utilize some of these digital tools, the capacity to which they are used, how they are used, and their effectiveness are largely unknown.

The most frequent issue that participants using eWIC reported in the current study was forgetting to return to the WIC office to reload their benefits card. This finding was somewhat expected considering we assessed barriers related to the use of eWIC only 6 months after the transition. Therefore, all participants in the region were still learning how to use their eWIC cards. Additionally, approximately 15% of participants reported they “always/most of the time” had difficulty checking their benefit balances, were unable to use the eWIC App, and had benefits remaining at the end of the month. Another notable finding is that 1 in 3 participants reported they regularly tried to use their eWIC card at self-checkout despite North Carolina not allowing the use of eWIC at self-checkout. This is remarkable considering previous qualitative work in both states that allow (22) and do not allow (190) use of eWIC at self-checkout reveals WIC participants may use self-checkout as a strategy to reduce social stigma/embarrassment associated with the checkout process. Thus, shopping difficulty and perceived social stigma/embarrassment could potentially increase and FBR could decrease for participants who try and are unable to use eWIC at self-checkout. Even so, an overwhelming majority of participants in Phase 2 reported they preferred using eWIC over PB, were more likely to use all food benefits with eWIC, and “strongly agreed/agreed” that the transition to eWIC improved their shopping experience. These findings are substantial considering the positive trend was observed only 6 months after the transition to eWIC. Nonetheless, the

findings presented here emphasize the need for additional education on how to use eWIC. The use of innovative strategies and a variety of platforms are warranted to address individual and district-level barriers to fully optimizing food benefit redemption and the eWIC experience.

The secondary aim of this study examined the dietary intakes of major food groups and selected nutrients, such as fiber and added sugars. The 2015-2020 Dietary Guidelines for Americans recommends most adults consume 5 CE of FV per day (193). Yet, only 1 in 10 adults in the U.S. consume enough FV(194) and the lowest intakes are observed in those living below the poverty level (195). Similarly, less than 1% of U.S. adults consume the recommended 3 CE of dairy each day (196). Thus, it is not surprising that women in this sample consumed approximately 60% of the recommended minimum daily intake for both of these food groups. Furthermore, more than half of the total fruit consumed was in the form of 100% FJ, with total whole fruit intake accounting for less than 1 CE per day. Comparatively, 100% FJ comprises less than 45% of the total fruit consumed nationwide (197). There are two possible explanations for this trend in our data. First, it supports previous research which shows WIC participants consume significantly more 100% FJ than non-participants (166,198,199). Second, 100% FJ represents a key item in the food benefits of WIC participants and is quantity-based rather than value-based (173). For example, WIC mothers are allotted between 96 oz (16 CE) to 144 oz (24 CE) of 100% FJ per month depending on whether they are pregnant and breastfeeding. Furthermore, each child participant over 1 year of age receives 128 oz (21 CE) of 100% FJ per month. In contrast, mothers receive \$11 per month to purchase FV

and each child over 1 year of age receives \$8 per month for FV. Lastly, research shows regional variety, availability, and price variations can significantly impact purchasing power and thus nutritional benefits (i.e. fewer CE servings of FV purchased) (110), with rural communities impacted most by food cost disparities and availability (187,200). Thus, the total purchasing power and availability of FV may be reduced in rural communities such as the AR. This is supported by our finding that 100% FJ was the most underutilized benefit during Phase 1, which coincided with the peak availability of FV in North Carolina. Likewise, FV was the most underutilized benefit among eWIC users in our sample, when far fewer fresh FV were in season in the region. These findings further highlight the need to better characterize factors that influence access, availability, and ultimately consumption of FV in the AR of North Carolina to better inform strategies to optimize the diet quality of low-income women in rural areas.

Nationwide, consumption of whole grains is among one of the lowest consumed nutrients with less than 1% of the population consuming the minimum recommended 3 oz equivalent per day. While the whole grain intake in our sample was also well below the minimum dietary guideline recommendation, our findings revealed that women in the current study consumed 55% more whole grains than women 19 to 30 years old nationwide, supporting previous research that showed households enrolled in WIC purchased more whole-grain bread and rice than non-WIC households (201). However, women in our sample consumed less than one-third of the minimum recommendation, indicating there is significant room for improving intakes of whole grains in this population. It is important to note that our previous qualitative work revealed some

participants were unsure how to identify whole grains and therefore had difficulty redeeming whole-grain benefits (185). These findings are consistent with a recent study by Chea and Mobley (202) who conducted focus groups with a sample of low-income adults in the North-Eastern U.S. and found more than half of the sample was unable to correctly identify whole-grain foods. Considering the less than ideal intakes of whole grains among WIC participants in rural Appalachia, future efforts should focus on strategies to help low-income families identify whole-grain foods to optimize consumption.

Given that less than 3 oz of whole grains per day were consumed and the majority of the reported FV consumed were in the form of juice, it is not surprising that the estimated dietary fiber intake was also low in our sample. Consistent with nationwide intakes (203), participants in the current study consumed only 60% of the recommended 25 grams of fiber per day. Likewise, the average intake of total added sugars was nearly 3x the recommended 6 tsp/day for women, with added sugars from SSB accounting for over half of total added sugar consumed by participants in the sample. Our findings indicate there is significant room for improvement in all areas of dietary intake among WIC mothers in this region of Appalachia. It is well-documented that diets low in FV, whole grains, nuts, and seeds and high in energy-dense, nutrient-poor foods are associated with an elevated risk of obesity in both adult and child populations. Obesity represents a distinct chronic condition (204) but is also a contributing factor to many other chronic diseases including type 2 diabetes, heart disease, and cancer, all of which are observed at higher rates in the AR (1,4,91–94).

The examination of BMI status of non-pregnant women in our sample confirms the disparity in obesity rates between rural and urban areas reported in previous research (205). Nationwide, nearly 2 in 3 non-pregnant women are classified as overweight or obese, with more than 1 in 3 classified as obese (206). In contrast, 77% (Phase 1) and 84% (Phase 2) of each sample of non-pregnant women in our study were overweight or obese and more than half of each sample was obese. Most striking is the percentage of women in each sample with morbid obesity. In two recent reviews (76,115), higher maternal pre-pregnancy BMI was identified as one of several risk factors in the first 1000 days of life consistently associated with later childhood obesity. A 2017 systematic examination of the associations between parental and child obesity revealed children with at least one overweight or obese parent are twice as likely to be overweight or obese (51). Further, maternal obesity alone is associated with greater childhood obesity risk than paternal obesity alone.

The WIC program is in a unique position to help mothers achieve and maintain a healthy weight before pregnancy to reduce the risk of childhood obesity in their offspring (208). In the U.S., the average length of time between pregnancies is less than 3 years while WIC benefits extend until a child's fifth birthday. As such, mothers with a child enrolled in WIC are likely to become pregnant again before the enrolled child's benefits end, and thus the post-partum period of one pregnancy is often the pre-pregnancy period of another. For these reasons, WIC is well-positioned to reach the population most at risk, pregnant women and children, given WIC provides services for 15% of all pregnancies in the U.S. each year (13). In particular, WIC agencies in rural communities with elevated

rates of obesity, such as Appalachia (1,3,4), are in a unique position to make a significant impact on both short and long-term health outcomes of mothers and their children. In our previous qualitative work with WIC mothers and pregnant women in rural Appalachia, participants felt their own needs were overlooked after their babies were born and suggested additional post-partum weight loss education as one way to improve WIC services in the region (185). Thus, the examination of current maternal weight management education policies and practices provided by WIC agencies in the AR is warranted to identify and enhance strategic opportunities to reduce the burden of obesity in this region of the nation. Furthermore, with an understanding that the etiology of childhood and adult obesity is complex, additional research with low-income families in this region of rural Appalachia is needed to more comprehensively characterize the associations between maternal and child weight status and other determinants of obesity (i.e. physical activity behaviors and the home food environment). In the context of the extremely high rates of excessive adiposity in our sample and the well-established long-term impacts of obesity on both maternal and child health outcomes, our findings highlight the urgent need to develop effective strategies to address obesity among low-income women in the AR.

This study has several major strengths. First, it is one of few studies to date to describe perceptions, barriers, and behaviors surrounding the eWIC experience. Second, the sample represents low-income women residing in a rural region of North Carolina, with significant health disparities and largely underrepresented in existing nutrition research. Third, the study coincided with the statewide transition to eWIC in North

Carolina and thus captured maternal shopping characteristics, barriers, and perceptions of the WIC experience among both participants using PB and those already transitioned to eWIC. Fourth, it is one of few studies to date to explicitly examine FBR and thus provides insight into WIC benefit utilization in a region of the nation in great need of food assistance. Fifth, to our knowledge, this is the first study to date to explore multiple components of dietary intake among WIC participants in rural Appalachia. As such, our findings establish a precedent to inform local WIC agencies of future work needed to address gaps in current dietary intakes in the region.

The study has also several limitations. Our findings are based on self-reported data by WIC mothers and thus subject to biases that might result in over or underestimation of the behaviors and experiences. As such, we are unable to make direct comparisons to the limited number of previous studies that have examined similar behaviors utilizing food purchase redemption data (36,102). Second, dietary data used in our analyses came from dietary screeners and therefore did not estimate individual-specific nutrients. Rather, the screeners gave us only a snapshot of participant intakes. As such, it is possible intakes were overestimated. Third, we utilized data from two different samples of participants (Phase 1 and 2), assuming the samples were independent. The surveys were administered in both phases via internal WIC program mechanisms and without special incentives to participants; thus, the likelihood of the same participant completing both surveys was minimal. However, we had no way of verifying this information since the survey completion was anonymous. Fourth, Phase 1 of this study was completed during the peak availability of FV in North Carolina whereas Phase 2 was

completed when fewer FV were in season (186). This may have influenced reported FV benefit redemptions as we were unable to collect all data during the same time. Fifth, the analyses were limited to between-group comparisons and the unequal sample sizes in Phase 1 and Phase 2 limited the statistical power to detect differences. Sixth, the survey in Phase 2 was completed only 6 months after the transition to eWIC, so the broader implications of the eWIC transition may not have been fully realized at the time of the study. Lastly, the large majority of the sample was non-Hispanic White, with only a few Hispanic participants who completed the surveys in Spanish. Although the AppHealthCare WIC program does not include a large portion of Hispanic clients, our sample included fewer than ideal. Therefore, our findings may not fully represent the larger WIC population in this region.

Conclusion

The current study contributes to the limited knowledge related to shopping characteristics, barriers, perceptions, and dietary intakes of WIC participants in the AR of North Carolina. While the utilization of eWIC may have contributed to overall greater perceptions of easiness and convenience related to using WIC food benefits, other areas still need improvements to optimize WIC participation and benefits in this unique region. WIC administrators should pay special attention to the fact that many WIC participants do not fully use all their food benefits. FV, whole-grains, and breakfast cereals were the most underutilized food benefits and these trends appear to be unrelated to the type of payment used in grocery stores.

Additional barriers that need to be addressed in this rural region include the lack of participant's knowledge and/or confusion about WIC-approved foods and issues related to the regular reloading of the benefit cards. The high levels of obesity in our sample coupled with inadequate consumption of FV, whole grains, dairy, and dietary fiber point to the urgent need to address maternal diet quality and obesity not only for the sake of maternal health outcomes but also as a public health strategy to increase the positive influences of maternal lifestyle behaviors on the long-term health and nutritional status of their children (57,63,63–67).

Given the unique geographical, social, and cultural characteristics of the AR, our findings additionally highlight the need for local WIC agencies to address and identify individual and district-level barriers to fully optimizing the eWIC experience and food benefits. The current study emphasizes the on-going need to explore state and regional-level strategies to increase availability and variety of WIC-approved foods, to ensure WIC-approved foods are more consistently labeled and recognized by point-of-sale systems, and to develop innovative ways that would reduce social stigma/embarrassment associated with the use of WIC benefits in rural communities. Additional studies with larger samples of WIC participants in the rural AR of North Carolina are needed to assess behaviors, barriers, and perceptions that would represent the entire population and allow for the development of programs that address the biggest challenges in each county, as they might differ.

CHAPTER V

EPILOGUE

Immersion in the WIC Program

My involvement with the WIC Program and AppHealthCare (formerly Appalachian District Health Department) first began in June 2011 when I completed an undergraduate dietetic internship at the Ashe County WIC office. In the summer of 2012, I volunteered for over 200 hours as a WIC nutritionist at the Watauga County WIC office prior to completing the community portion of my graduate dietetic internship at that office from November of 2012 to January 2013. In total, I logged over 500 hours of direct experience with WIC participants in the AppHealthCare WIC offices. Throughout my tenure as a volunteer and intern, I recall that participant recruitment and retention were top priorities of the district, as participation rates had been steadily declining. In fact, I had the opportunity to participate in a few staff-lead initiatives aimed at retaining current WIC participants and recruiting additional WIC-eligible families during both my undergraduate and graduate internships. The former included calling inactive but enrolled participants (i.e. those who had not been in the office to pick up food benefit checks in more than 6 months) to encourage them to make an appointment to renew their benefits. The latter involved active community outreach in which staff visited various local businesses that serve the WIC-eligible population and provided educational materials that could be displayed and/or distributed to clients. Through these early experiences, it was

apparent to me that WIC was underutilized in the AppHealthCare District recruitment of new participants and retention of current participants was an ongoing concern. These combined experiences strongly fueled my interest in completing my dissertation research with AppHealthCare.

Over the next several years, I had maintained my professional contact with several staff members in the AppHealthCare District, including two WIC nutritionists and a WIC clerk. As a result, when I first contacted and met with the AppHealthCare WIC director, Maggi Birdsell, in early January 2018 about collaborating on a research project, she and all staff offered their full support. In our initial discussions about practice needs of the district, the conversation was rapidly directed to the eminent need for formative research to better understand the current WIC client experiences (i.e. most valued aspects, shopping experiences, office visits) and barriers to participation in the region. As WIC offices in the district were on the cusp of transitioning to eWIC, staff also had a vested interest in examining participant's shopping behaviors and experiences following the transition to eWIC to identify areas of need and inform future policies, practices, and interventions. Thus, my dissertation research project was born.

Summary of Findings and Implications

I believe my multi-method formative study contributes to the literature in several key ways. First, it contributes to the limited in-depth knowledge related to maternal attitudes, barriers, and perceptions of the WIC experience in the geographically and culturally unique AR of North Carolina. Furthermore, it is one of few studies to date to examine maternal shopping characteristics, barriers to FBR, and perceptions of the WIC

experience in both the PB and the eWIC environment. Third, it is the first study to characterize multiple components of dietary intake among WIC mothers in rural Appalachia. Given that maternal diet is closely associated with child consumption and food choices, findings from this study are valuable for informing future interventions and policy development within the WIC program in Appalachia.

Results from the qualitative portion of my dissertation suggest WIC families in this region have some unique experiences when participating in the program and are faced with specific barriers that must be addressed to increase WIC enrollment and reduce program attrition. Specifically, lack of variety and availability of WIC-approved foods (i.e. FV and whole grains), a limited number of grocery stores, and social stigma/embarrassment were identified as the greatest barriers to participation and benefit redemption. Lack of knowledge/confusion about food benefit packages, poor labeling of WIC-approved foods, and general lack of awareness of the WIC program in the region were other frequently cited barriers. Mothers also reported they felt that their needs were overlooked after their children were born and their health suffered because they did not get help with returning to a healthy weight after pregnancy. Remarkably, all focus group participants had a BMI that fell into the overweight or obese category (i.e. 75% were obese). These qualitative findings point to a great need to more comprehensively characterize current access and availability of WIC approved foods in the region to better inform strategies to increase benefit redemptions. Efforts to enhance awareness and knowledge of WIC services among community members, particularly other health professionals, is also warranted to increase the utilization of WIC services.

Findings from the second study in my dissertation (quantitative design) directly support and/or supplement the qualitative portion and shed light on maternal experiences and perceptions after the transition to eWIC in Appalachian North Carolina. While the utilization of eWIC may have contributed to overall greater perceptions of easiness and convenience related to using WIC food benefits, other areas still need improvements to optimize WIC participation and benefits in this unique region. For instance, confusion about which foods are WIC-approved persisted in the eWIC environment and many participants reported underutilizing all food benefits. FV were among the most underutilized food benefits among participants using PB and participants using eWIC, despite focus group participants expressing a desire for additional FV. Consistent with the qualitative findings, more than 75% of survey respondents had a BMI in the overweight or obese category. Furthermore, all survey respondents had intakes of FV, whole grains, dairy, and dietary fiber below national recommendations. Together these findings suggest 1) additional education provided through a variety of outlets is warranted to increase participant knowledge and utilization of WIC-approved foods in the region and 2) there is an urgent need to develop effective strategies to address obesity among low-income women in the AR.

Given the unique geographical, social, and cultural characteristics of the AR, it is imperative that local WIC agencies in this region identify and address individual and district-level barriers (i.e. geographical, economic, political, and seasonal) to fully optimizing WIC food benefits and the overall WIC experience. Priority should be given to Alleghany County, as it is the most rural of the three counties in the AppHealthCare

district, has the fewest number of grocery stores, and does not participate in the WIC farmers market program. With many health disparities prevalent within the adult population in rural Appalachia, including higher rates of obesity, type 2 diabetes, heart disease, and cancer, efforts to improve maternal and child health in this region is imperative to impact the health trajectory of both current and future generations.

Challenges Encountered and Lessons Learned

The process of completing my PhD has been undoubtedly the most difficult thing I have ever done in my life. There were many times that I was uncertain that I was going to make. But I made it! Throughout the process, I have learned many things in both practical and personal sense. I learned that I enjoy conducting community-engaged research. More specifically, I found that I love the richness of qualitative research and would like to further develop my skillset in this area. I also learned that patience and persistence are virtues when conducting community research, as things do not always run smoothly or as expected. Such was the case for this project. Nonetheless, all setbacks and challenges experienced proved to be invaluable learning opportunities for me.

One of the most challenging aspects of this project was the limited amount of time to prepare. The timespan from my initial meeting with Maggi until the commencement of focus group recruitment and Phase 1 survey administration was less than 3 months. The driving force behind such a short timeframe was the transition to eWIC, which was planned to begin in the AppHealthCare District in late April 2018. Given that I wanted to explore maternal experiences and perceptions when using PBC and when using eWIC, I had to move very, very quickly. In 3 months, I completed an extensive literature review;

fine-tuned my specific research questions and the research design to answer those questions; developed all project materials; and obtained IRB approval. It is worth noting I had no prior experience conducting focus groups going into this project. As a result, I prepared extensively by reviewing and learning focus group methodology published by Krueger and Casey (144,169). These resources included a written guide to focus group interviewing as well as a training video that demonstrated how to moderate focus groups and practice using the techniques outlined (210). I also reviewed a plethora of other resources to prepare to conduct a content analysis of focus group transcripts. I largely attribute my ability to learn and implement focus group methodology so quickly to my extensive prior experience working with the WIC population as well as my experience leading group nutrition education classes and discussions while working as a registered dietitian. I was able to transfer and adapt my skillset as a registered dietitian to manage and direct the focus group interactions. In hindsight, I would have made initial contact with AppHealthCare much sooner than I did to have substantially more time to finetune my focus group guide and survey instruments and generally prepare for the project.

With so little time to prepare in advance, I also had minimal funding. This project was extremely labor-intensive, and with very little funding, the burden of training WIC staff on recruitment procedures for focus groups and administration of surveys, scheduling and conducting focus groups, and transcribing focus group audio recordings fell solely on me. Having to manage all these tasks alone out of necessity provided many opportunities to significantly improve my time management and problem-solving skills. However, it also gave me a glimpse of how easy it is to experience burnout. For obvious

reasons, it would have been very helpful to have at least one research assistant to share the workload, and in the future, ensuring that I have adequate support staff and research assistants to complete a project will also be one of my top priorities.

Being unfamiliar with qualitative research methodology prior to this project, I also found developing a focus group guide and completing a content analysis to be quite challenging as well. Much of the difficulty stemmed from me not fully understanding the importance of asking the right questions until *after* I conducted the first focus group. To be honest, I was overwhelmed yet equally amazed by the amount and depth of information I was able to collect in just one hour. The process of interpreting and describing what was *meaningful* versus what was just interesting was also very difficult for me because I found nearly everything to be interesting! My mentor Dr. Shriver was instrumental in helping me learn how to make the distinction. Like any new skill, I will certainly welcome opportunities for further experiences to fully master qualitative content analysis.

Another challenge of utilizing qualitative research methodology for this project was recognizing and setting aside my personal, intrinsic bias throughout the process of developing the focus group guide, conducting the focus groups, and then ultimately completing the qualitative content analysis. As a native and lifetime resident of the North Carolina AR, I grew up in a low-income family that embraces many of the fundamental Appalachian values discussed in this dissertation, including religious fundamentalism, political conservatism, familism, and a general distrust of government and outsiders. As such, I am intimately familiar with and immersed in Appalachian culture and social

norms. My firsthand knowledge of the WIC office experience in Watauga and Ashe counties, from my time working as a dietetic intern, also largely shaped and influenced my perspective of the WIC experience before beginning this study. In addition, I had prior direct knowledge of the office experience from attending WIC appointments with my sister and her young children at the Ashe County office. As a result, I had to be constantly aware of my bias and prior personal experience, so I did not lead participants when conducting focus groups or interpret the findings based on my prejudices and experiences. Fortunately, my mentor and co-investigator has a very different cultural and social background with no direct experience working in a WIC office, so she was an excellent counterbalance.

With nearly 1500 families participating in WIC between the three counties at the time this project was completed, the survey was completed by only 133 in phase 1 and 74 in Phase 2. I largely attribute this to the fact that the survey administration was controlled by the WIC staff and was completed as part of regular WIC services. Also, the survey took an average of 22 minutes to complete and respondents were offered a minimal incentive. In the future, one of my top priorities will be to apply for internal or external funding to obtain funding to provide an appropriate incentive for all participants. I was able to obtain \$100 worth of donations in the form of grocery store gift cards to purchase refreshments for the focus groups. The process of obtaining donations was another valuable learning experience that I will be able to utilize for future projects.

Through this dissertation project, I learned the full value of building strong community partnerships and maintaining a wide network of professional relationships.

My close collaboration with my community partner was key to the success of this project, as the study was built on the relationship that I had with every WIC staff member. From the beginning of the project, I emphasized the importance of transparency and clear, frequent communication over the course of nearly 2 years. Very early in the project, I realized that communication via email was not ideal because WIC staff members are very busy people. Instead, I found that those in-person meetings and phone calls were much more helpful. In response, I regularly called and dropped by in-person at each WIC office to see how things were going, asked for suggestions, and helped troubleshoot problems that had arisen. The staff graciously offered their time to meet with me on numerous occasions and provided many valuable suggestions that helped strengthen the research process, including suggestions where to conduct focus groups, how to streamline survey completion, and how to recruit additional participants for focus groups. The in-person meetings and phone calls helped build and foster a strong personal and professional relationship with staff. For these reasons, I feel all staff trusted me and put in the effort on their end to support my work.

In conclusion, I have learned many things about myself throughout the process of completing this project. I have always prided myself on being a planner. I usually plan well in advance when tackling any large task because simply put, I am a control freak. However, there were many aspects of this project that I could not control, including the short timeframe to prepare and the many hurdles along the way. As a result, I learned to be much more flexible and to just “go with it.” While I much prefer to have ample “breathing room” when completing a large task, I also learned that I *can* work quite well

under intense pressure and significant time restraints. Although most of the difficulties encountered in this project were part of the nature of community-based research, it is still the area of research I see myself pursuing in the future. I enjoy using a mixed-methods approach because it can yield a more complete and coadjutant utilization of data than do separate quantitative and qualitative data collection and analyses. Based on the findings from this project, I see potential for much more research that needs to be completed to improve the health and nutrition status of families with young children in the AR. Upon graduation, I hope to secure a faculty position that will allow me to continue my work with this population and also bring research into the classroom to inform students better about nutrition and health in the AR.

REFERENCES

1. Marshall JL, Silberman P, Thomas L, Holding W, Lane NM, Villamil L, G. Mark H, Thomas S, Arcury TA, Lane M, et al. HEALTH DISPARITIES IN APPALACHIA [Internet]. 2017 Aug p. 382. Report No.: 1. Available from: https://www.arc.gov/assets/research_reports/Health_Disparities_in_Appalachia_August_2017.pdf
2. Pollard K, Jacobsen LA. The Appalachian Region: A Data Overview From the 2011-2015 American Community Survey [Internet]. Population Reference Bureau; 2017 Mar p. 107. Available from: <https://www.prb.org/economic-recovery-in-appalachia/>
3. Rural Health Information Hub. Rural Health Disparities [Internet]. Rural Health Information Hub. 2017 [cited 2018 Sep 3]. Available from: <https://www.ruralhealthinfo.org/topics/rural-health-disparities>
4. Beatty K, Hale N, Meit M, Heffernan M, Dougherty M, Rocha L, Ruane K, Kidwell G. Health Disparities Related to Obesity in Appalachia: Practical Strategies and Recommendations for Communities [Internet]. 2019 Apr p. 20. Available from: https://www.arc.gov/assets/research_reports/HealthDisparitiesRelatedtoObesityinAppalachiaApr2019.pdf
5. Singh GK, Daus GP, Allender M, Ramey CT, Martin EK, Perry C, Reyes AADL, Vedamuthu IP. Social Determinants of Health in the United States: Addressing Major Health Inequality Trends for the Nation, 1935-2016. *Int J MCH AIDS*. 2017;6:139–64.
6. Health Disparities in Rural Women. The American College of Obstetricians and Gynecologists, Committee on Health Care for Underserved Women; 2018 Feb p. 5. Report No.: 586.
7. Hung P, Henning-Smith CE, Casey MM, Kozhimannil KB. Access To Obstetric Services In Rural Counties Still Declining, With 9 Percent Losing Services, 2004-14. *Health Aff (Millwood)*. 2017;36:1663–71.
8. Anderson B, Gingery A, McClellan, M, Rose R, Schmitz D, Schou P. NRHA Policy Paper: Access to Rural Maternity Care. 2019 Jan p. 1–9.

9. The Health and Well-Being of Children in Rural Areas: A Portrait of the Nation 2011-2012 [Internet]. U.S. Department of Health and Human Services, Health Resources and Services Administration, Maternal and Child Health Bureau; 2015 Apr p. 61. Available from: <https://mchb.hrsa.gov/nsch/2011-12/rural-health/index.html>
10. Maternal, Infant, and Child Health, [Internet]. HealthyPeople.gov. 2014 [cited 2019 Jun 26]. Available from: <https://www.healthypeople.gov/2020/topics-objectives/topic/maternal-infant-and-child-health>
11. Center TASRHR. Texas A&M Health Science Center [Internet]. Rural Healthy People 2020 Volume 1. [cited 2020 Jan 30]. Available from: <https://srhrc.tamhsc.edu/rhp2020/rhp2020-v1-download.html>
12. USDA FNS. Frequently Asked Questions About WIC [Internet]. USDA Food and Nutrition Service (FNS). 2018 [cited 2018 Aug 31]. Available from: <https://www.fns.usda.gov/wic/frequently-asked-questions-about-wic>
13. Thorne B, Tadler C, Huret N, Ayo E, Trippe C. WIC Participant and Program Characteristics 2014 [Internet]. USDA; 2015 Nov p. 363. Available from: <https://www.fns.usda.gov/wic/wic-participant-and-program-characteristics-2014>
14. Carlson S, Neuberger Z. WIC Works: Addressing the Nutrition and Health Needs of Low-Income Families for 40 Years. Center on Budget and Policy Priorities; 2017 Mar p. 27.
15. Foster EM, Jiang M, Gibson-Davis CM. The Effect of the WIC Program on the Health of Newborns. Health Services Research [Internet]. 2010 [cited 2018 Aug 31];45:1083–104. Available from: <https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1475-6773.2010.01115.x>
16. Sonchak L. The Impact of WIC on Birth Outcomes: New Evidence from South Carolina. *Matern Child Health J.* 2016;20:1518–25.
17. Fox MK, Hamilton WL, Lin B-H. Effects Of Food Assistance And Nutrition Programs On Nutrition And Health: Volume 4, Executive Summary Of The Literature Review [Internet]. United States Department of Agriculture, Economic Research Service; 2004. Report No.: 33871. Available from: <https://ideas.repec.org/p/ags/uersfa/33871.html>
18. Colman S, Nichols-Barrer IP, Redline JE, Devaney BL, Ansell SV. Effects of the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC): A Review of Recent Research. USDA, Food and Nutrition Service; 2012 Jan p. 159. Report No.: WIC-12-WM.

19. Hamad R, Batra A, Karasek D, LeWinn KZ, Bush NR, Davis RL, Tylavsky FA. The Impact of the Revised WIC Food Package on Maternal Nutrition During Pregnancy and Postpartum. *Am J Epidemiol*. 2019;188:1493–502.
20. Kreider B, Pepper J, Roy M. Does the Women, Infants, and Children Program (WIC) Improve Infant Health Outcomes? [Internet]. Department of Economics, Iowa State University; 2018 May. Report No.: 18013. Available from: https://lib.dr.iastate.edu/cgi/viewcontent.cgi?article=1055&context=econ_working_papers
21. National WIC Eligibility and Participation, 2005-2015 [Internet]. Women Infants and Children. 2018 [cited 2018 Sep 1]. Available from: <https://www.fns.usda.gov/wic/wic-2015-eligibility-and-coverage-rates>
22. Phillips D, Bell L, Morgan R, Pooler J. Transition to EBT in WIC: Review of Impact and Examination of Participant Redemption Patterns [Internet]. Altarum Institute; 2014 Sep p. 89. Report No.: 59-5000-1–0032. Available from: https://altarum.org/sites/default/files/uploaded-publication-files/Altarum_Transition%20to%20WIC%20EBT_Final%20Report_071614.pdf
23. Review of WIC Food Packages: Improving Balance and Choice: Final Report [Internet]. Washington, D.C.: National Academies Press; 2017 [cited 2018 Sep 4]. 1062 p. Available from: <https://www.nap.edu/catalog/23655>
24. Liu CH, Liu H. Concerns and Structural Barriers Associated with WIC Participation among WIC-Eligible Women. *Public Health Nurs*. 2016;33:395–402.
25. Smith K. Fewer Than Half of WIC-Eligible Families Receive WIC Benefits. University of New Hampshire, Carsey School of Public Policy; Carsey Research; 2016 p. 8. Report No.: 102.
26. Panzera AD, Bryant CA, Hawkins F, Goff R, Napier A, Schneider T, Kirby RS, Coulter ML, Sappenfield WM, Baldwin J, et al. Mapping a WIC Mother’s Journey: A Preliminary Analysis. *Social Marketing Quarterly*. 2017;23:137–54.
27. West L, Crump G, Jones E, Sims J, Smith CD. Increasing Enrollment, Participation, and Retention of Children in WIC: Summary Report of Mississippi Focus Groups, Observations, and Key Informant Interviews. Mississippi Public Health Institute; 2015 Oct p. 81.
28. Powell L, Amsbary J, Xin H. Stigma as a Communication Barrier for Participation in the Federal Government’s Women, Infants, and Children Program. *Qualitative Research Reports in Communication*. 2015;16:75–85.

29. Huynh D. Women, Infants, and Children (WIC) Awareness, experience, and access [Internet]. Saint Paul, Minnesota: Wilder Research; 2013 May p. 86. Available from: https://www.wilder.org/sites/default/files/imports/MDH_WIC_Study_Report_5-13.pdf
30. Horton K, Hovis A, Loyo J. Arizona Department of Health Services - WIC Attitudes, Barriers, & Beliefs Study: Final Report [Internet]. Limetree Research; 2013 Oct p. 82. Available from: <https://azdhs.gov/documents/prevention/azwic/arizona-wic-program-attitudes-barriers-and-beliefs-study-limetree-2013.pdf>
31. Grodsky D, Violante A, Barrows A, Gosliner W. Using Behavioral Science to Improve the WIC Experience: Lessons for the field from San Jose, California. San Jose, California: Nutrition Policy Institute; 2017 May p. 71.
32. Schoenberg NE, Howell BM, Swanson M, Grosh C, Bardach S. Perspectives on Healthy Eating Among Appalachian Residents. *J Rural Health*. 2013;29:s25–34.
33. Condon E, Drilea S, Lichtenstein C, Mabli J, Madden E, Niland K. Diet Quality of American Young Children by WIC Participation Status: Data from the National Health and Nutrition Examination Survey, 2005–2008 [Internet]. Walter R. McDonald & Associates, Inc. and Mathematica Policy Research for the Food and Nutrition Service; 2015 May p. 279. Available from: <https://fns-prod.azureedge.net/sites/default/files/ops/NHANES-WIC05-08.pdf>
34. Final Rule: WIC Implementation of Electronic Benefit Transfer-Related Provisions [Internet]. 7 CFR Part 246 Mar 1, 2016 p. 10433–51. Available from: <https://www.fns.usda.gov/wic/fr-030116>
35. USDA Office of Communications. USDA Improves the WIC Shopping Experience to Better Serve our Nation’s Low-Income, New and Expecting Mothers and Their Young Children | Food and Nutrition Service [Internet]. 2017 [cited 2018 Dec 7]. Available from: <https://www.fns.usda.gov/pressrelease/2016/005316>
36. WIC EBT Activities [Internet]. 2020 [cited 2020 Jan 28]. Available from: <https://www.fns.usda.gov/wic/wic-ebt-activities>
37. Hanks AS, Gunther C, Lillard D, Scharff RL. From paper to plastic: Understanding the impact of eWIC on WIC recipient behavior. *Food Policy*. 2019;83:83–91.
38. De Cosmi V, Scaglioni S, Agostoni C. Early Taste Experiences and Later Food Choices. *Nutrients*. 2017;9.

39. Chen X, Zhao D, Mao X, Xia Y, Baker PN, Zhang H. Maternal Dietary Patterns and Pregnancy Outcome. *Nutrients*. 2016;8.
40. Fisk CM, Crozier SR, Inskip HM, Godfrey KM, Cooper C, Robinson SM, Group TSWSS. Influences on the quality of young children's diets: the importance of maternal food choices. *British Journal of Nutrition*. 2011;105:287–96.
41. Martin JC, Zhou SJ, Flynn AC, Malek L, Greco R, Moran L. The Assessment of Diet Quality and Its Effects on Health Outcomes Pre-pregnancy and during Pregnancy. *Semin Reprod Med*. 2016;34:83–92.
42. Pacce S, Saure C, Mazza CS, Garcia S, Tomzig RG, Lopez AP, Ribarola L, Krochick GA. Impact of maternal nutritional status before and during pregnancy on neonatal body composition: A cross-sectional study. *Diabetes & Metabolic Syndrome: Clinical Research & Reviews*. 2016;10:S7–12.
43. Mameli C, Mazzantini S, Zuccotti GV. Nutrition in the First 1000 Days: The Origin of Childhood Obesity. *Int J Environ Res Public Health*. 2016;13.
44. Agosti M, Tandoi F, Morlacchi L, Bossi A. Nutritional and metabolic programming during the first thousand days of life. *La Pediatria Medica e Chirurgica*. 2017;39.
45. Gingras V, Hivert M-F, Oken E. Early-Life Exposures and Risk of Diabetes Mellitus and Obesity. *Current Diabetes Reports*. 2018;18.
46. Zalewski BM, Patro B, Veldhorst M, Kouwenhoven S, Escobar PC, Lerma JC, Koletzko B, Goudoever JB van, Szajewska H. Nutrition of infants and young children (one to three years) and its effect on later health: A systematic review of current recommendations (EarlyNutrition project). *Critical Reviews in Food Science and Nutrition*. 2017;57:489–500.
47. Fall CHD. Maternal nutrition: effects on health in the next generation. *The Indian journal of medical research*. 2009;130:593–9.
48. Ohlendorf JM, Robinson K, Garnier-Villarreal M. The impact of maternal BMI, gestational weight gain, and breastfeeding on early childhood weight: Analysis of a statewide WIC dataset. *Preventive Medicine*. 2019;118:210–5.
49. Adair LS. Long-Term Consequences of Nutrition and Growth in Early Childhood and Possible Preventive Interventions. In: Black RE, Singhal A, Uauy R, editors. *Nestlé Nutrition Institute Workshop Series*. Basel: S. KARGER AG; 2014. p. 111–20.

50. Simmonds M, Llewellyn A, Owen CG, Woolacott N. Predicting adult obesity from childhood obesity: a systematic review and meta-analysis. *Obesity Reviews*. 2016;17:95–107.
51. Wang Y, Min J, Khuri J, Li M. A Systematic Examination of the Association between Parental and Child Obesity across Countries. *Advances in Nutrition: An International Review Journal*. 2017;8:436–48.
52. Sahoo K, Sahoo B, Choudhury AK, Sofi NY, Kumar R, Bhadoria AS. Childhood obesity: causes and consequences. *J Family Med Prim Care*. 2015;4:187–92.
53. Haire-Joshu D, Tabak R. Preventing Obesity Across Generations: Evidence for Early Life Intervention. *Annu Rev Public Health*. 2016;37:253–71.
54. Pietrobelli A, Agosti M, MeNu Group. Nutrition in the First 1000 Days: Ten Practices to Minimize Obesity Emerging from Published Science. *Int J Environ Res Public Health*. 2017;14.
55. Villa JKD, Santos TSS, Ribeiro AQ, e Silva AR, da Rocha Sant’Ana LF, Pessoa MC. Dietary patterns of children and socioeconomical, behavioral and maternal determinants. *Revista Paulista de Pediatria (English Edition)*. 2015;33:302–9.
56. Leventakou V, Sarri K, Georgiou V, Chatzea V, Frouzi E, Kastelianou A, Gatzou A, Kogevas M, Chatzi L. Early life determinants of dietary patterns in preschool children: Rhea mother–child cohort, Crete, Greece. *European Journal of Clinical Nutrition*. 2016;70:60–5.
57. Wyse R, Campbell E, Nathan N, Wolfenden L. Associations between characteristics of the home food environment and fruit and vegetable intake in preschool children: A cross-sectional study. *BMC Public Health*. 2011;11:938.
58. Scaglioni S, De Cosmi V, Ciappolino V, Parazzini F, Brambilla P, Agostoni C. Factors Influencing Children’s Eating Behaviours. *Nutrients* [Internet]. 2018 [cited 2018 Sep 20];10:706. Available from: <http://www.mdpi.com/2072-6643/10/6/706>
59. Savage JS, Fisher JO, Birch LL. Parental Influence on Eating Behavior: Conception to Adolescence. *The Journal of Law, Medicine & Ethics*. 2007;35:22–34.
60. Blissett J, Meyer C, Haycraft E. Maternal and paternal controlling feeding practices with male and female children. *Appetite*. 2006;47:212–9.
61. Hannon PA, Bowen DJ, Moinpour CM, McLerran DF. Correlations in perceived food use between the family food preparer and their spouses and children. *Appetite*. 2003;40:77–83.

62. Robinson S. Children's perceptions of who controls their food. *J Hum Nutr Diet*. 2000;13:163–71.
63. Ventura AK, Worobey J. Early Influences on the Development of Food Preferences. *Current Biology*. 2013;23:R401–8.
64. Sylvestre M-P, O'Loughlin J, Gray-Donald K, Hanley J, Paradis G. Association Between Fruit and Vegetable Consumption in Mothers and Children in Low-Income, Urban Neighborhoods. *Health Education & Behavior*. 2007;34:723–34.
65. Gibson EL, Wardle J, Watts CJ. Fruit and Vegetable Consumption, Nutritional Knowledge and Beliefs in Mothers and Children. *Appetite*. 1998;31:205–28.
66. Cooke LJ, Wardle J, Gibson EL, Sapochnik M, Sheiham A, Lawson M. Demographic, familial and trait predictors of fruit and vegetable consumption by pre-school children. *Public Health Nutrition; Cambridge*. 2004;7:295–302.
67. Pearson N, Timperio A, Salmon J, Crawford D, Biddle SJ. Family influences on children's physical activity and fruit and vegetable consumption. *International Journal of Behavioral Nutrition and Physical Activity*. 2009;6:34.
68. Spence AC, Campbell KJ, Crawford DA, McNaughton SA, Hesketh KD. Mediators of improved child diet quality following a health promotion intervention: the Melbourne InFANT Program. *International Journal of Behavioral Nutrition and Physical Activity*. 2014;11:137.
69. Kueppers J, Stein KF, Groth S, Fernandez ID. Maternal and Child Dietary Intake: The Role of Maternal Healthy-Eater Self-Schema. *Appetite*. 2018;125:527–36.
70. EDEN Mother–Child Cohort Study Group, Lioret S, Betoko A, Forhan A, Charles M-A, Heude B, de Lauzon-Guillain B. Dietary Patterns Track from Infancy to Preschool Age: Cross-Sectional and Longitudinal Perspectives. *The Journal of Nutrition*. 2015;145:775–82.
71. Coulthard H, Harris G, Emmett P. Long-term consequences of early fruit and vegetable feeding practices in the United Kingdom. *Public Health Nutr*. 2010;13:2044–51.
72. Rose CM, Birch LL, Savage JS. Dietary patterns in infancy are associated with child diet and weight outcomes at 6 years. *International Journal of Obesity*. 2017;41:783–8.

73. 2018 Health Of Women And Children Report [Internet]. America's Health Rankings. 2018 [cited 2019 Jun 26]. Available from: <https://www.americashealthrankings.org/learn/reports/2018-health-of-women-and-children-report>
74. Walker LO, Chesnut LW. Identifying Health Disparities and Social Inequities Affecting Childbearing Women and Infants. *Journal of Obstetric, Gynecologic, & Neonatal Nursing*. 2010;39:328–38.
75. Semega J, Kollar M, Creamer J, Mohanty A. Income and Poverty in the United States: 2018 [Internet]. U.S. Census Bureau; 2019 Sep p. 80. Available from: <https://www.census.gov/content/dam/Census/library/publications/2019/demo/p60-266.pdf>
76. Growing up in Rural America: US Compliment to the End of Childhood Report 2018. Fairfield, Connecticut: Save the Children; 2018 p. 30. Report No.: ISBN: 1-888393-35-1.
77. Chen E. Why Socioeconomic Status Affects the Health of Children: A Psychosocial Perspective. *Current Directions in Psychological Science*. 2004;13:112–5.
78. Darmon N, Drewnowski A. Does social class predict diet quality? *Am J Clin Nutr*. 2008;87:1107–17.
79. Alkerwi A, Vernier C, Sauvageot N, Crichton GE, Elias MF. Demographic and socioeconomic disparity in nutrition: application of a novel Correlated Component Regression approach. *BMJ Open*. 2015;5:e006814.
80. Alkerwi A, Sauvageot N, Nau A, Lair M-L, Donneau A-F, Albert A, Guillaume M. Population compliance with national dietary recommendations and its determinants: findings from the ORISCAV-LUX study. *Br J Nutr*. 2012;108:2083–92.
81. Dubois L, Girard M. Social position and nutrition: a gradient relationship in Canada and the USA. *Eur J Clin Nutr*. 2001;55:366–73.
82. Drewnowski A, Rehm CD. Socioeconomic gradient in consumption of whole fruit and 100% fruit juice among US children and adults. *Nutrition Journal*. 2015;14:3.
83. Spence AC, Campbell KJ, Lioret S, McNaughton SA. Early Childhood Vegetable, Fruit, and Discretionary Food Intakes Do Not Meet Dietary Guidelines, but Do Show Socioeconomic Differences and Tracking over Time. *Journal of the Academy of Nutrition and Dietetics*. 2018;118:1634-1643.e1.

84. Kontinen H, Sarlio-Lähteenkorva S, Silventoinen K, Männistö S, Haukkala A. Socio-economic disparities in the consumption of vegetables, fruit and energy-dense foods: the role of motive priorities. *Public Health Nutrition*. 2013;16:873–82.
85. Tester JM. Recent Uptrend in Whole-Grain Intake Is Absent for Low-Income Adolescents, National Health and Nutrition Examination Survey, 2005–2012. *Prev Chronic Dis*. 2017;14.
86. James WP, Nelson M, Ralph A, Leather S. Socioeconomic determinants of health. The contribution of nutrition to inequalities in health. *BMJ*. 1997;314:1545–9.
87. Schwingshackl L, Bogensberger B, Hoffmann G. Diet Quality as Assessed by the Healthy Eating Index, Alternate Healthy Eating Index, Dietary Approaches to Stop Hypertension Score, and Health Outcomes: An Updated Systematic Review and Meta-Analysis of Cohort Studies. *J Acad Nutr Diet*. 2018;118:74-100.e11.
88. Food Insecurity in the U.S. [Internet]. USDA Economic Research Service. 2018 [cited 2018 Sep 20]. Available from: <https://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-us/key-statistics-graphics.aspx#householdtype>
89. Map the Meal Gap 2019: Overall and Child Food Insecurity by County in 2017 [Internet]. Feeding America Research. 2019 [cited 2020 Jan 2]. Available from: https://public.tableau.com/profile/feeding.america.research#!/vizhome/2017StateWorkbook-Public_15568266651950/CountyDetailDataPublic
90. Singh GK, Kogan MD, Slifkin RT. Widening Disparities In Infant Mortality And Life Expectancy Between Appalachia And The Rest Of The United States, 1990–2013. *Health Affairs*. 2017;36:1423–32.
91. Ickes MJ, Slagle KM. Targeting Obesity in Rural and Appalachian Children and Families: A Systematic Review of Prevention and Treatment Interventions. 2013;14.
92. Berlin KS, Hamel-Lambert J, DeLamatre C. Obesity and Overweight Status Health Disparities Among Low-Income Rural Appalachian Preschool Children. *Children’s Health Care*. 2013;42:15–26.
93. Montgomery-Reagan K, Bianco J, Heh V, Rettos J, Huston R. Prevalence and correlates of high body mass index in rural Appalachian children aged 6-11 years. 2009;11.

94. Crooks DL. Food consumption, activity, and overweight among elementary school children in an Appalachian Kentucky community. *Am J Phys Anthropol.* 2000;112:159–70.
95. Visocky SH. APPALACHIAN FOODWAYS FROM THEN TO NOW: USING TRADITIONAL FOODS TO ENHANCE DIETETIC PRACTICE. Appalachian State University; 2016.
96. Hovland JA, McLeod SM, Duffrin MW, Johanson G, Berryman DE. School-based screening of the dietary intakes of third graders in rural Appalachian Ohio. *J Sch Health.* 2010;80:536–43.
97. Wait C. The Relationships between Food Security Status, Dietary Patterns and Overweight in Appalachian Adolescents [Thesis]. The Ohio State University; 2008.
98. Skinner JD, Salvetti NN, Ezell JM, Penfield MP, Costello CA. Appalachian adolescents' eating patterns and nutrient intakes. *J Am Diet Assoc.* 1985;85:1093–9.
99. Short VL, Oza-Frank R, Conrey EJ. Preconception Health Indicators: A Comparison Between Non-Appalachian and Appalachian Women. *Matern Child Health J.* 2012;16:238–49.
100. Wenrich TR, Brown JL, Miller-Day M, Kelley KJ, Lengerich EJ. Family Members' Influence on Family Meal Vegetable Choices. *Journal of Nutrition Education and Behavior.* 2010;42:225–34.
101. Swanson M, Schoenberg NE, Davis R, Wright S, Dollarhide K. Perceptions of Healthy Eating and Influences on the Food Choices of Appalachian Youth. *J Nutr Educ Behav.* 2013;45:147–53.
102. Thatcher E, Johnson C, Zenk SN, Kulbok P. Retail Food Store Access in Rural Appalachia: A Mixed Methods Study. *Public Health Nursing.* 2017;34:245–55.
103. Hege A, Ball L, Christiana RW, Wallace C, Hubbard C, Truesdale D, Hege J, Fleming H. Social Determinants of Health and the Effects on Quality of Life and Well-being in 2 Rural Appalachia Communities: The Community Members' Perspective and Implications for Health Disparities. *Family & Community Health.* 2018;41:244–54.
104. Denham SA. Does a Culture of Appalachia Truly Exist? *Journal of Transcultural Nursing.* 2016;27:94–102.

105. Kreider B, Pepper JV, Roy M. Identifying the Effects of WIC on Food Insecurity Among Infants and Children. *Southern Economic Journal*. 2016;82:1106–22.
106. Metallinos-Katsaras E, Gorman KS, Wilde P, Kallio J. A Longitudinal Study of WIC Participation on Household Food Insecurity. *Maternal and Child Health Journal*. 2011;15:627–33.
107. Jackson MI. Early Childhood WIC Participation, Cognitive Development and Academic Achievement. *Soc Sci Med* [Internet]. 2015 [cited 2018 Sep 3];126:145–53. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4703081/>
108. WIC 2016 Eligibility and Coverage Rates [Internet]. USDA Food and Nutrition Service, U.S. Department of Agriculture. 2019 [cited 2019 Jul 16]. Available from: <https://www.fns.usda.gov/wic/wic-2016-eligibility-and-coverage-rates>
109. Rural Hunger in America: Special Supplemental Nutrition Program for Women, Infants, and Children [Internet]. Food Research & Action Center. [cited 2018 Sep 1]. Available from: <http://www.frac.org/research/resource-library/rural-hunger-america-special-supplemental-nutrition-program-women-infants-children>
110. Rural Hunger and Access to Healthy Food [Internet]. Rural Health Information Hub. 2018 [cited 2018 Sep 3]. Available from: <https://www.ruralhealthinfo.org/topics/food-and-hunger>
111. Zenk SN, Powell LM, Rimkus L, Isgor Z, Barker DC, Ohri-Vachaspati P, Chaloupka F. Relative and Absolute Availability of Healthier Food and Beverage Alternatives Across Communities in the United States. *Am J Public Health*. 2014;104:2170–8.
112. Woelfel ML, Abusabha R, Pruzek R, Stratton H, Chen SG, Edmunds LS. Barriers to the use of WIC services. *J Am Diet Assoc*. 2004;104:736–43.
113. Manchester CF, Mumford KJ. Welfare Stigma due to Public Disapproval. 2010.
114. Food and Nutrition Service, USDA U. Special Supplemental Nutrition Program for Women, Infants and Children (WIC): Implementation of Electronic Benefit Transfer-Related Provisions [Internet]. *Federal Register*. 2016 [cited 2018 May 21]. Available from: <https://www.federalregister.gov/documents/2016/03/01/2016-04261/special-supplemental-nutrition-program-for-women-infants-and-children-wic-implementation-of>
115. Appalachian Regional Commission. The Appalachian Region [Internet]. Appalachian Regional Commission. 2018 [cited 2018 Jan 17]. Available from: https://www.arc.gov/appalachian_region/TheAppalachianRegion.asp

116. Elam C. Culture, Poverty and Education in Appalachian Kentucky. *Education and Culture*. 2002;18:4.
117. Billings D. Culture and Poverty in Appalachia: A Theoretical Discussion and Empirical Analysis. 1974;53:315–23.
118. Appalachia Then and Now: Examining Changes to the Appalachian Region since 1965 - Appalachian Regional Commission [Internet]. 2015 Feb p. 24. Available from:
https://www.arc.gov/assets/research_reports/AppalachiaThenAndNowCompiledReports.pdf
119. Poverty Rates, 2012–2016 [Internet]. Appalachian Regional Commission. [cited 2019 Jun 18]. Available from:
https://www.arc.gov/reports/custom_report.asp?REPORT_ID=73
120. Subregions in Appalachia - Appalachian Regional Commission [Internet]. [cited 2019 Nov 23]. Available from:
https://www.arc.gov/research/MapsofAppalachia.asp?MAP_ID=31
121. About Us [Internet]. NC Rural Center. [cited 2019 Nov 23]. Available from:
<https://www.ncruralcenter.org/about-us/>
122. USDA ERS - Rural-Urban Continuum Codes [Internet]. [cited 2019 Aug 7]. Available from: <https://www.ers.usda.gov/data-products/rural-urban-continuum-codes/>
123. U.S. Census Bureau QuickFacts: Alleghany County, North Carolina; United States [Internet]. 2018 [cited 2019 Nov 24]. Available from:
<https://www.census.gov/quickfacts/fact/table/alleghanycountynorthcarolina,US/PST045218>
124. U.S. Census Bureau. U.S. Census Bureau QuickFacts: Watauga County, North Carolina [Internet]. QuickFacts Watauga County, North Carolina. 2016 [cited 2018 Jan 17]. Available from:
<https://www.census.gov/quickfacts/fact/table/wataugacountynorthcarolina/PST045216>
125. U.S. Census Bureau QuickFacts: Ashe County, North Carolina; United States [Internet]. 2018 [cited 2019 Nov 24]. Available from:
<https://www.census.gov/quickfacts/fact/table/ashecountynorthcarolina,US/PST045218>
126. U.S. Census Bureau QuickFacts: United States [Internet]. 2018 [cited 2019 Nov 24]. Available from: <https://www.census.gov/quickfacts/fact/table/US/PST045218>

127. University AS. Appalachian State University / About [Internet]. [cited 2019 Nov 23]. Available from: <https://www.appstate.edu/about/>
128. Watauga County Community Health Report 2017 [Internet]. Appalachian District Health Department; 2018 Mar p. 66. Available from: <file:///C:/Users/T%20&%20D/Downloads/Watauga-County-Community-Health-Report-2017.pdf>
129. Unemployment Rate in Watauga County, NC [Internet]. FRED, Federal Reserve Bank of St. Louis. FRED, Federal Reserve Bank of St. Louis; 1990 [cited 2020 Mar 4]. Available from: <https://fred.stlouisfed.org/series/NCWATA9URN>
130. Unemployment Rate in Ashe County, NC [Internet]. FRED, Federal Reserve Bank of St. Louis. FRED, Federal Reserve Bank of St. Louis; 1990 [cited 2020 Mar 4]. Available from: <https://fred.stlouisfed.org/series/NCASHE9URN>
131. Unemployment Rate in Alleghany County, NC [Internet]. FRED, Federal Reserve Bank of St. Louis. FRED, Federal Reserve Bank of St. Louis; 1990 [cited 2020 Mar 4]. Available from: <https://fred.stlouisfed.org/series/NCALLE5URN>
132. Labor Force Statistics from the Current Population Survey [Internet]. U.S. Bureau of Labor Statistics. [cited 2020 Mar 4]. Available from: <https://data.bls.gov/timeseries/LNS14000000>
133. Walker RE, Keane CR, Burke JG. Disparities and access to healthy food in the United States: A review of food deserts literature. *Health & Place*. 2010;16:876–84.
134. USDA ERS - Go to the Atlas [Internet]. [cited 2019 Nov 23]. Available from: <https://www.ers.usda.gov/data-products/food-environment-atlas/go-to-the-atlas/>
135. Wright Morton L, Blanchard TC. Starved for Access: Life in Rural America's Food Deserts. *Rural Sociological Society*; 2007 p. 10. Report No.: Volume 1, Issue 4.
136. Sharkey JR. Measuring Potential Access to Food Stores and Food-Service Places in Rural Areas in the U.S. *American Journal of Preventive Medicine*. 2009;36:S151–5.
137. Richards K. *As the Crow Flies: An Underrepresentation of Food Deserts in the Rural Appalachian Mountains*. [Johnson City, Tennessee]: East Tennessee State University; 2012.
138. 2016 National Healthcare Quality and Disparities Report. Agency for Healthcare Research and Quality; 2017 Oct p. 72. Report No.: 17–0001.

139. Laraia BA, Leak TM, Tester JM, Leung CW. Biobehavioral Factors That Shape Nutrition in Low-Income Populations. *American Journal of Preventive Medicine*. 2017;52:S118–26.
140. Hanson KL, Connor LM. Food insecurity and dietary quality in US adults and children: a systematic review. *The American Journal of Clinical Nutrition*. 2014;100:684–92.
141. Map the Meal Gap 2015 [Internet]. Chicago, Illinois: Feeding America; 2015 p. 1–42. Available from: <https://www.feedingamerica.org/sites/default/files/research/map-the-meal-gap/2013/map-the-meal-gap-2013-exec-summ.pdf>
142. Chauvenet C, De Marco M, Barnes C, Ammerman AS. WIC Recipients in the Retail Environment: A Qualitative Study Assessing Customer Experience and Satisfaction. *Journal of the Academy of Nutrition and Dietetics*. 2019;119:416-424.e2.
143. Krueger RA, Casey MA. Focus Group Interviewing Research Methods [Internet]. 2015 [cited 2018 Oct 5]. Available from: <https://richardakrueger.com/focus-group-interviewing/>
144. Fusch PI, Ness LR. Are We There Yet? Data Saturation in Qualitative Research. 2015;9.
145. Guest G, Bunce A, Johnson L. How Many Interviews Are Enough?: An Experiment with Data Saturation and Variability. *Field Methods*. 2006;18:59–82.
146. Bengtsson M. How to plan and perform a qualitative study using content analysis. *NursingPlus Open*. 2016;2:8–14.
147. Elo S, Kyngäs H. The qualitative content analysis process. *Journal of Advanced Nursing*. 2008;62:107–15.
148. Erlingsson C, Brysiewicz P. A hands-on guide to doing content analysis. *African Journal of Emergency Medicine*. 2017;7:93–9.
149. Stemler S. An overview of Content Analysis. *PARE*. 2001;7:1–6.
150. Fischer CT. Bracketing in qualitative research: Conceptual and practical matters. *Psychotherapy Research* [Internet]. 2009 [cited 2018 Oct 19];19:583–90. Available from: <https://www.tandfonline.com/doi/full/10.1080/10503300902798375>
151. Gearing RE. Bracketing in Research: A Typology. *Qualitative Health Research*. 2004;14:1429–52.

152. Hewitt-Taylor J. Use of constant comparative analysis in qualitative research. *Nursing Standard*. 2001;15:39–42.
153. Panzera AD, Bryant CA, Hawkins F, Goff R, Napier A, Schneider T, Kirby RS, Coulter ML, Sappenfield WM, Baldwin J, et al. Mapping a WIC Mother's Journey: A Preliminary Analysis. *Social Marketing Quarterly*. 2017;23:137–54.
154. Making WIC Work in Illinois: Opportunities & Recommendations for Program Improvement [Internet]. Chicago, Illinois; 2019 Mar p. 34. Available from: <http://www.frac.org/wp-content/uploads/Making-WIC-Work-Better-Full-Report.pdf>
155. McLaughlin PW, Gleason S, Wilkin M. Price Variability Across Food Product and Vendor Type in WIC Food Benefit Redemptions. U.S. Department of Agriculture, Economic Research Service; 2018 Jul p. 51. Report No.: ERR=253.
156. Saitone T, Sexton RJ, Volpe R. Cost Containment in the WIC Program: Vendor Peer Groups and Reimbursement Rates. *SSRN Electronic Journal*. 2014;
157. Kaufman PR. Rural Poor Have Less Access to Supermarkets, Large Grocery Stores. *Rural Development Perspectives* [Internet]. 1998 [cited 2019 Aug 7];13. Available from: <https://ageconsearch.umn.edu/record/289786>
158. Cho C, Volpe R. Independent Grocery Stores in the Changing Landscape of the U.S. Food Retail Industry. Economic Research Service, USDA; 2017 Nov p. 2.
159. Powell L, Amsbary J, Xin H. Stigma as a Communication Barrier for Participation in the Federal Government's Women, Infants, and Children Program. *Qualitative Research Reports in Communication*. 2015;16:75–85.
160. Stuber J, Schlesinger M. Sources of stigma for means-tested government programs. *Social Science & Medicine*. 2006;63:933–45.
161. Special Supplemental Nutrition Program for Women, Infants and Children (WIC): Implementation of Electronic Benefit Transfer-Related Provisions [Internet]. 81 FR 10433 May 2, 2016 p. 10433–51. Available from: <https://www.federalregister.gov/documents/2016/03/01/2016-04261/special-supplemental-nutrition-program-for-women-infants-and-children-wic-implementation-of>

162. Food and Nutrition Service, USDA U. Special Supplemental Nutrition Program for Women, Infants and Children (WIC): Revisions in the WIC Food Packages [Internet]. Federal Register. 2014 [cited 2018 Aug 31]. Available from: <https://www.federalregister.gov/documents/2014/03/04/2014-04105/special-supplemental-nutrition-program-for-women-infants-and-children-wic-revisions-in-the-wic-food>
163. Tester JM, Leung CW, Crawford PB. Revised WIC Food Package and Children's Diet Quality. *Pediatrics*. 2016;137:e20153557.
164. Chiasson MA, Findley SE, Sekhobo JP, Scheinmann R, Edmunds LS, Faly AS, McLeod NJ. Changing WIC changes what children eat. *Obesity (Silver Spring)*. 2013;21:1423–9.
165. Odoms-Young AM, Kong A, Schiffer LA, Porter SJ, Blumstein L, Bess S, Berbaum ML, Fitzgibbon ML. Evaluating the initial impact of the revised Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) food packages on dietary intake and home food availability in African-American and Hispanic families. *Public Health Nutr*. 2014;17:83–93.
166. Vercammen KA, Moran AJ, Zatz LY, Rimm EB. 100% Juice, Fruit, and Vegetable Intake Among Children in the Special Supplemental Nutrition Program for Women, Infants, and Children and Nonparticipants. *Am J Prev Med*. 2018;55:e11–8.
167. Shefferly A, Scharf RJ, DeBoer MD. Longitudinal evaluation of 100% fruit juice consumption on BMI status in 2-5-year-old children. *Pediatr Obes*. 2016;11:221–7.
168. Pan L. Trends in Obesity Among Participants Aged 2–4 Years in the Special Supplemental Nutrition Program for Women, Infants, and Children — United States, 2000–2014. *MMWR Morb Mortal Wkly Rep* [Internet]. 2016 [cited 2019 Aug 9];65. Available from: <https://www.cdc.gov/mmwr/volumes/65/wr/mm6545a2.htm>
169. Thorne B, Kline N, Tadler C, Wilcox-Cook E, Michaels J, Mendelson M, Patlan K, Tran V. WIC Participant and Program Characteristics 2016 Appendices. USDA, Food and Nutrition Service, Office of Policy Support; 2018 Apr p. 205.
170. Special Supplemental Nutrition Program for Women, Infants, and Children [Internet]. USDA FNS. [cited 2020 Jan 17]. Available from: <https://www.fns.usda.gov/wic>
171. Ojha S, Fainberg HP, Sebert S, Budge H, Symonds ME. Maternal health and eating habits: metabolic consequences and impact on child health. *Trends in Molecular Medicine*. 2015;21:126–33.

172. DSQ in the NHANES 2009-10 [Internet]. National Cancer Institute Division of Cancer Control & Population Sciences. 2018 [cited 2018 Oct 4]. Available from: <https://epi.grants.cancer.gov/nhanes/dietscreen/>
173. WIC Food Packages [Internet]. USDA Food and Nutrition Service (FNS). 2016 [cited 2018 Oct 26]. Available from: <https://www.fns.usda.gov/wic/wic-food-packages-maximum-monthly-allowances>
174. Thompson FE, Midthune D, Kahle L, Dodd KW. Development and Evaluation of the National Cancer Institute's Dietary Screener Questionnaire Scoring Algorithms. *J Nutr*. 2017;147:1226–33.
175. Ritchie LD, Wakimoto P, Woodward-Lopez G, Thompson FE, Loria CM, Wilson DK, Kao J, Crawford PB, Webb KL. The Healthy Communities Study Nutrition Assessments. *American Journal of Preventive Medicine*. 2015;49:647–52.
176. Chu DM, Antony KM, Ma J, Prince AL, Showalter L, Moller M, Aagaard KM. The early infant gut microbiome varies in association with a maternal high-fat diet. *Genome Medicine*. 2016;8:77.
177. DSQ in the NHANES 2009-10: Data Processing & Scoring Procedures [Internet]. 2018 [cited 2019 Nov 14]. Available from: <https://epi.grants.cancer.gov/nhanes/dietscreen/scoring/>
178. Thompson FE, Subar AF, Smith AF, Midthune D, Radimer KL, Kahle LL, Kipnis V. Fruit and Vegetable Assessment: Performance of 2 New Short Instruments and a Food Frequency Questionnaire. *Journal of the American Dietetic Association*. 2002;102:1764–72.
179. Thompson FE, Kipnis V, Subar AF, Krebs-Smith SM, Kahle LL, Midthune D, Potischman N, Schatzkin A. Evaluation of 2 brief instruments and a food-frequency questionnaire to estimate daily number of servings of fruit and vegetables. *The American Journal of Clinical Nutrition* [Internet]. 2000 [cited 2018 Oct 5];71:1503–10. Available from: <https://academic.oup.com/ajcn/article/71/6/1503/4729469>
180. Yaroch AL, Tooze J, Thompson FE, Blanck HM, Thompson OM, Colón-Ramos U, Shaikh A, McNutt S, Nebeling LC. Evaluation of three short dietary instruments to assess fruit and vegetable intake: The National Cancer Institute's Food Attitudes and Behaviors (FAB) Survey. *J Acad Nutr Diet*. 2012;112:1570–7.
181. Ettienne-Gittens R, McKyer ELJ, Odum M, Diep CS, Li Y, Girimaji A, Murano PS. Rural versus Urban Texas WIC Participants' Fruit and Vegetable Consumption. *American Journal of Health Behavior*. 2013;37:130–41.

182. Scoring the All-Day Screener [Internet]. Fruit & Vegetable Intake Screeners in the Eating at America's Table Study (EATS). 2018 [cited 2019 Dec 10]. Available from: <https://epi.grants.cancer.gov/diet/screeners/fruitveg/scoring/allday.html>
183. Oliveira V, Frazao E. The WIC Program: Background, Trends, and Economic Issues, 2015 Edition. SSRN Electronic Journal. 2015;EIB 134:I-III,1-81.
184. About the RUHRC [Internet]. The Rural and Underserved Health Research Center. [cited 2019 Dec 14]. Available from: <https://ruhrc.uky.edu/>
185. Isaacs SE, Shriver LH. Qualitative Analysis of Maternal Barriers and Perceptions to Participation in a Federal Supplemental Nutrition Program in Rural Appalachia. University of North Carolina at Greensboro; 2019.
186. What's in Season? North Carolina Produce Calendar [Infographic] [Internet]. [cited 2020 Jan 19]. Available from: <https://www.ncfieldfamily.org/food/whats-season-north-carolina-produce-calendar/>
187. Miller V, Yusuf S, Chow CK, Dehghan M, Corsi DJ, Lock K, Popkin B, Rangarajan S, Khatib R, Lear SA, et al. Availability, affordability, and consumption of fruits and vegetables in 18 countries across income levels: findings from the Prospective Urban Rural Epidemiology (PURE) study. *The Lancet Global Health*. 2016;4:e695–703.
188. Farmers Market Nutrition Program [Internet]. [cited 2020 Jan 24]. Available from: <https://www.fns.usda.gov/fmnp/wic-farmers-market-nutrition-program>
189. N.C. DHHS: DPH: Nutrition Services Branch: WIC: Farmers' Market Nutrition Program (FMNP) [Internet]. [cited 2020 Jan 27]. Available from: <https://www.nutritionnc.com/wic/fmarket.htm>
190. Chauvenet C, De Marco M, Barnes C, Ammerman AS. WIC Recipients in the Retail Environment: A Qualitative Study Assessing Customer Experience and Satisfaction. *Journal of the Academy of Nutrition and Dietetics*. 2019;119:416-424.e2.
191. Now You've Done It! What Next? Survey Highlights [Internet]. WIC Research, Policy and Practice Hub. 2019 [cited 2020 Jan 26]. Available from: <https://thewichub.org/now-youve-done-it-what-next-survey-highlights/>
192. Launching New Digital Tools for WIC Participants: A Guide for WIC Agencies [Internet]. WIC Research, Policy and Practice Hub. [cited 2020 Jan 26]. Available from: <https://thewichub.org/launching-new-digital-tools-for-wic-participants-a-guide-for-wic-agencies/>

193. 2015-2020 Dietary Guidelines | health.gov [Internet]. [cited 2020 Jan 27]. Available from: <https://health.gov/dietaryguidelines/2015/guidelines/>
194. 2018 State Indicator Report on Fruits and Vegetables [Internet]. Atlanta, GA: Centers for Disease Control and Prevention; 2018 Jun p. 18. Available from: <https://www.cdc.gov/nutrition/data-statistics/index.html>
195. Dong D, Lin B-H. Fruit and Vegetable Consumption by Low-Income Americans: Would a Price Reduction Make a Difference? [Internet]. [cited 2020 Feb 13]. Available from: <http://www.ers.usda.gov/publications/pub-details/?pubid=46131>
196. Quann EE, Fulgoni VL, Auestad N. Consuming the daily recommended amounts of dairy products would reduce the prevalence of inadequate micronutrient intakes in the United States: diet modeling study based on NHANES 2007-2010. *Nutr J*. 2015;14:90.
197. USUAL DIETARY INTAKES: U.S. POPULATION, 2007–2010 [Internet]. National Cancer Institute; 2014 Mar p. 85. Available from: <https://epi.grants.cancer.gov/diet/usualintakes/national-data-usual-dietary-intakes-2007-to-2010.pdf>
198. Guthrie JF, Catellier DJ, Jacquier EF, Eldridge AL, Johnson WL, Lutes AC, Anater AS, Quann EE. WIC and non-WIC Infants and Children Differ in Usage of Some WIC-Provided Foods. *J Nutr*. 2018;148:1547S-1556S.
199. Watowicz RP, Taylor CA. A Comparison of Beverage Intakes in US Children Based on WIC Participation and Eligibility. *Journal of Nutrition Education and Behavior*. 2014;46:S59–64.
200. Hardin-Fanning F, Rayens MK. Food Cost Disparities in Rural Communities. *Health Promot Pract*. 2015;16:383–91.
201. Andreyeva T, Luedicke J. Federal Food Package Revisions- Effects on Purchases of Whole-Grain Products. *American Journal of Preventive Medicine*. 2013;45:422–9.
202. Chea M, Mobley AR. Factors Associated with Identification and Consumption of Whole-Grain Foods in a Low-Income Population. *Curr Dev Nutr*. 2019;3.
203. Dietary Fiber Intake of the U.S. Population. FSRG Dietary Data Brief [Internet]. 2014;6. Available from: https://www.ars.usda.gov/ARSEUserFiles/80400530/pdf/DBrief/12_fiber_intake_0910.pdf

204. Kyle TK, Dhurandhar EJ, Allison DB. Regarding Obesity as a Disease: Evolving Policies and Their Implications. *Endocrinol Metab Clin North Am.* 2016;45:511–20.
205. Lundeen EA. Obesity Prevalence Among Adults Living in Metropolitan and Nonmetropolitan Counties — United States, 2016. *MMWR Morb Mortal Wkly Rep.* 2018;67.
206. Flegal KM, Carroll MD, Kit BK, Ogden CL. Prevalence of obesity and trends in the distribution of body mass index among US adults, 1999-2010. *JAMA.* 2012;307:491–7.
207. Woo Baidal JA, Locks LM, Cheng ER, Blake-Lamb TL, Perkins ME, Taveras EM. Risk Factors for Childhood Obesity in the First 1,000 Days: A Systematic Review. *American Journal of Preventive Medicine.* 2016;50:761–79.
208. Gilmore LA, Augustyn M, Gross SM, Vallo PM, Paige DM, Redman LM. Periconception weight management in the Women, Infants, and Children program. *Obes Sci Pract.* 2019;5:95–102.
209. Gleason S, Pooler J. The Effects of Changes in WIC Food Packages on Redemptions [Internet]. Altarum Institute; 2011 Dec p. 68. Report No.: 69. Available from: https://altarum.org/sites/default/files/uploaded-publication-files/Effects%20of%20Changes%20to%20the%20WIC%20Food%20Package_December%202011final.pdf
210. Richard Krueger. Moderating Focus Groups [Internet]. [cited 2018 Oct 8]. Available from: https://www.youtube.com/watch?v=xjHZsEcSqwo&feature=em-upload_owner

APPENDIX A

INFORMED CONSENT FORM

UNIVERSITY OF NORTH CAROLINA AT GREENSBORO

CONSENT TO ACT AS A HUMAN PARTICIPANT

Project Title: Barriers and Facilitator of WIC Participation, the Overall WIC Shopping Experience, and Program Retention in Rural Appalachia (Phase I)

Principal Investigator: Sydeena Isaacs, MS, RD, LDN

Faculty Advisor: Dr. Lenka Shriver

What is this all about?

I am asking you to participate in this research study to learn more about the barriers or challenges of WIC program participation and the overall WIC shopping experience in rural Appalachia. You will be asked to participate in a 1 to 1½ hour focus group, along with other WIC moms, during which you will be asked questions about your participation in the WIC program and your overall WIC shopping experience in rural Appalachia. The questions will be asked out loud in a discussion group format, and you will be asked to respond out loud to the group. Further group discussion beyond the questions asked is encouraged. At the end of the focus group, you will be asked to complete a one-page questionnaire that will help the research team better understand the background and experience of focus group participants. There will be no identifying information on the questionnaire. The focus group will be audio recorded, and a moderator will take notes about your responses. However, you will not be identified by your real name in the recordings. Your responses are important because they will help nutrition educators know more about the barriers and challenges of WIC program participation and the overall WIC shopping experience in rural Appalachia, as well as factors that improve or enhance WIC program participation and the overall WIC shopping experience. The information will be used to learn more about families who participate in the WIC program to plan future nutrition education programs. We will ensure that the focus group is scheduled at a day, place, and time that is convenient for you and your family (e.g., Blue Bird Exchange, the Ashe Civic Center, a local church or school, etc.). Childcare services for your child may be provided while you are taking part in the meeting, if needed. Your participation in this research project is voluntary.

How will this negatively affect me?

Other than the time you spend on this project, there are no known or foreseeable risks involved with this study.

What do I get out of this research project?

There are no direct benefits to you. However, findings of this study may help nutrition researchers better understand common barriers to WIC program participation and the WIC shopping experience in rural Appalachia. It may also help researchers better understand common factors that improve WIC program participation and the WIC shopping experience.

Will I get paid for participating?

If you decide to participate in this research project, you will be given a \$20 grocery store card. This incentive will be offered to you after you reviewed this document and provided verbal informed consent, and after you participated in a focus group. The incentive will be given to you by one of the research investigators.

What about my confidentiality?

We will do everything possible to make sure that your information is kept confidential. If you would like to participate, you will be asked to provide verbal consent that you have read this consent form and agree to participate. The focus group will be audio recorded, but you may use any first name you would like throughout the focus group. Because your voice will be potentially identifiable by anyone who hears the recording, your confidentiality for things you say on the recording cannot be guaranteed, although the researcher will try to limit access to the recording. The focus group recording will be transcribed verbatim and coded immediately following the interview and stored in a secure, password protected, online data management system called BOX that is maintained by UNCG. The audio recordings will also be stored electronically in BOX. Nobody outside the study personnel will have access to the electronic files with de-identified data. All information obtained in this study is strictly confidential unless disclosure is required by law. The results of this study will be shared with the WIC staff, but your name will not be disclosed, so you cannot be linked with any of the results.

What if I do not want to be in this research study?

You have the right to refuse to participate or to withdraw at any time, without penalty. If you do not participate or withdraw, it will not affect your relationship with the WIC program or UNCG. If you choose to withdraw, you may request that any of your data which has been collected be destroyed unless it is in a de-identifiable state. As long as you complete the focus groups, whether you allow us to use your data or not, you will receive the incentive for your participation. The investigators also have the right to stop your participation at any time. This could be because you have had an unexpected

reaction, or have failed to follow instructions, or because the entire study has been stopped.

What if I have questions?

If you have questions, want more information or have suggestions, please contact Sydeena Isaacs who may be reached at (828) 964-0565 or seisaacs@ungc.edu or Lenka Shriver who may be reached at (405) 762-9746.

If you have any concerns about your rights, how you are being treated, concerns or complaints about this project or benefits or risks associated with being in this study, please contact the Office of Research Integrity Director at UNCG toll-free at (855)-251-2351.

APPENDIX B

QUALITATIVE STUDY RECRUITMENT FLYER AND LETTER

Join us and share your experiences with your participation in the WIC program and your WIC shopping experience!

You can participate in this research study if you are 18 years or older; you and/or your child is/are currently enrolled in the WIC program; you are the primary person who shops for WIC foods and attends clinic visits; and you speak English.



You will receive a \$20 gift card for participation in a 1 to 1½ hour focus group.
Your WIC services will not change if you choose to participate or not participate in the study.

**Please call Sydeena Isaacs at (828) 964-0565
or email at seisaacs@uncg.edu**

to find out more details and how you can sign up for the study!
Or talk to a WIC staff member to find out more about this opportunity!

Thank you for your consideration!

Sydeena Isaacs, MS, RD, LDN & Lenka Shriver, PhD
Department of Nutrition at University of North Carolina Greensboro

Email: seisaacs@uncg.edu





Sydeena Isaacs, MS, RD, LDN
Doctoral Student, Department of Nutrition
University of North Carolina at Greensboro
seisaacs@uncg.edu
828-964-0565

Dear WIC Participant:

My name is Sydeena Isaacs, and I am a nutrition researcher from the University of North Carolina at Greensboro. I have recently collaborated with your WIC office and would like to invite you to be part of a nutrition research project that will tell us more about the barriers or challenges of participating in the WIC program and the overall WIC shopping experience in rural Appalachia. This research project will also tell us more about what improves or enhances WIC program participation and the overall WIC shopping experience in rural Appalachia. Your participation is voluntary, and whether you choose to participate or not will not affect your WIC food benefits or your relationship with the WIC office.

Please find attached a flyer about this project. If you would like to learn more, please contact Sydeena Isaacs by phone/text at 828-964-0565 or by email at seisaacs@uncg.edu. You may also contact your WIC office and talk with a staff member to learn more!

Sincerely,

Sydeena Isaacs

APPENDIX C

ORAL SCRIPT FOR RECRUITMENT

Barriers, Facilitators, and Dietary Intakes of WIC Program Participants: The Experiences in Rural Appalachia

Ms. Sydeena Isaacs and Dr. Lenka Shriver

If UNCG Researcher:

Hello, my name is [name] and I am from UNCG. Would you be interested in sharing your experiences with your participation in the WIC program and your WIC shopping experience? If so, I would like to tell you about our research study. Right now, we are recruiting WIC moms to participate in a 1 to 1½ -hour long focus group with a researcher and other WIC moms. You will be asked to discuss your experience with participation in the WIC program, including your WIC shopping experience.

If WIC staff member:

Would you be interested in sharing your experiences with your participation in the WIC program and your WIC shopping experience? If so, I would like to tell you about the research study. We have recently partnered with a researcher from the University of NC at Greensboro and we are recruiting WIC moms to participate in a 1 to 1½ -hour long focus group with a researcher and other WIC moms. You will be asked to discuss your experience with participation in the WIC program, including your WIC shopping experience.

Both UNCG Researcher and WIC staff member:

You can participate if you meet the following conditions: 1) you are 18 years or older; 2) you and/or your child is/are currently enrolled in the WIC program; 3) you are the primary person who shops for WIC foods and attends clinic visits; and 4) you speak English. Participating WIC moms will receive a \$20 grocery store gift card for their participation in the focus group. The information collected from you will be completely confidential.

Would you like to hear more about the project?

[If yes, provide the flyer to the interested parent and review the informed consent form with them. Share information about the tentative schedule and when the focus groups will take place. Ask potential participant about preferred places to complete their focus

group, and obtain their usual availability and preferred contact information to communicate about the date, place, and time of the focus group.]

[If no, thank the parent for listening. Tell them they can always ask a WIC staff member if they decide to participate later. Ask the WIC mom to mention the study to other WIC moms for potential participation].

APPENDIX D

FOCUS GROUP GUIDE

1. Tell me about your overall experience with the WIC program.

Probing Prompts/Questions:

- *How long have you been participating?*
- *What do you like about WIC and what do you not like? Both positive and negative comments are welcomed and encouraged.*

2. Now let's talk more your experience in the WIC office.

Probing Questions:

- *Think back to a positive experience you have had in the WIC office. What made that experience positive for you?*
- *Now think about a negative experience. What made that experience negative for you? What makes the experience more difficult for you?*
- *What do you like about WIC office visits?*
- *What do you not like about WIC office visits?*

3. Tell me about what motivates you to participate in the WIC program.

Probing Questions:

- *Why do you participant in the WIC program?*
- *What makes it easier for you to participate?*

4. Now let's discuss barriers or challenges you currently face or have faced in the past while participating in the WIC program.

Probing Questions/Comments:

- *What makes it challenging for you to participate?*
- *How have you overcome these challenges? If you haven't overcome these challenges, what do you think would enable you to do so?*

5. If you could do one thing to improve your experience in the WIC office, what would you do?

6. We would like to learn more about your WIC shopping experience as well. Tell me about the best WIC shopping experience you have ever had.

Probing Question:

- *What made that experience the best for you? How did it make you feel?*

7. Now think about the worst WIC shopping experience you've ever had.

Probing Question:

- *What made that experience the worst? How did it make you feel?*

8. If you could change one thing about the WIC shopping experience, what would you change?

9. Considering all that we have discussed today, what other suggestions or feedback do you have to improve your overall WIC program experience?

APPENDIX E

FOCUS GROUP QUESTIONNAIRE

Thank you for participating in the focus group. Please take a few minutes to answer the following questions. Your answers will help the research team better understand the background and experience of focus group participants.

1. How old are you? _____

2. Which of the following best describes you?

- 1 Non-Hispanic White
 2 Non-Hispanic Black
 3 Hispanic White
 4 Hispanic Black
 5 Other:

 (please specify)

3. Including yourself, how many adults 18 years or older currently live in your home? _____ please write

4. How many children ages 5 to 17 years old live in your home? _____ please write

5. How many children younger than 5 years old live in your home? _____ please write

6. Who in your household receives WIC food benefits? Please select all that apply.

- 1 Pregnant mom
 2 Breastfeeding only mom
 3 Breast feeding and formula feeding mom
 4 Fully formula feeding mom
 5 One or more children 1-2 years old
 6 One or more children 3-5 years old
 7 Other

If other, please specify _____

7. What were your most recent height and weight measurements?

Height (in feet and inches) _____ please type Weight (in pounds) _____ please type

8. What is the highest level of education that you have completed?

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	6 <input type="checkbox"/>
Less than high school	Some high school	High school diploma or equivalent	Some college	2-year college degree	4-year college degree	Greater than 4-year degree

9. How long have you been participating in the WIC program? Please include all experience with previous pregnancies and children enrolled in the WIC program.

_____ please write

10. Have you ever participated in WIC in a county other than Allegany, Ashe, or Watauga?

- 1 Yes
 2 No
 If yes, which county and when? _____

11. Have you used e-WIC before?

- 1 Yes
 2 No

APPENDIX F

WIC PROJECT PHASE 1- TRANSCRIPTION PROTOCOL

WIC Project Phase 1- Transcription Protocol

Adapted from Natalie Cooke (2014)

Generating the Rough Draft Transcript from Temi:

1. Go to <https://www.temi.com/> and upload the audio file into the software, following the prompts provided on the screen.
2. Enter your email address and wait 5-10 minutes until your transcript is emailed to you. You will first receive a welcome email from Temi that provides an overview of the editing tools, followed by an email titled “Your Temi Order is Ready.”
3. Select “view transcript” in the yellow box and follow the link to the editing tool.
4. Put on your headphone
5. In the upper right-hand corner of the screen, Right click >> 1x Speed and slide the playback speed bar to the left to slow down the audio file. Somewhere between 0.5 and 0.7 is ideal. Make sure you can understand both the interviewer and the interviewee

Transcript Editing Technique:

1. Play the file at slower speed (between 0.5 and 0.7), following along with the blue highlighted text of the transcript.
2. The speakers in the file will be identified by default as “speaker 1”, “speaker 2”, “speaker 3” etc. You can click on the speaker names on the far left to change the name of the speaker. For example, use “moderator” to indicate with the moderator speaks.
3. As you follow along with the text audio, stop the recording to change the name of the speakers or to edit the text.
4. **Do not rewind if you did not understand what was said.** If you need to pause to catch up, simply press the pause button on the media player and resume playing when you are ready
5. Once you are done, listen to the file again at full speed, or at an increased speed, and fill in parts you missed. You will need to pause to make sure you get everything
6. Re-read the transcript to look for typos while listening to the recording one last time

7. Save the transcript as “WIC Project Phase 1 (County) Focus Group (MMDDYY) Transcript.doc” where county is the county the focus group was conducted in and MMDDYY is the focus group date)

Common Questions about Transcripts:

Q1: How do I identify who is speaking in the transcript?

A1: Each time a new person starts talking, you should start transcribing on a new line. If the transcript only contains two people, you can denote between the moderator (moderator) and the subject (Speaker1). If the interview involves multiple interviewers and subjects and you can distinguish their voices, you can use moderator 1, moderator2, moderator3, etc... (if you cannot distinguish voices, just use a generic “moderator” to indicate interviewer and “S” to indicate subject. For example:

Moderator: Tell me about your overall experience with the WIC program.

Speaker1: It has been really good. Everybody's been, nice, and, willing to help me, find anything, or, work around my schedule like, schedule appointments. They've always answered any questions I've had.

Q2: What do I do when the interviewer says “mmhmm” multiple times while the subject is talking?

A2: Do not transcribe “mmhmm”s when they interrupt the flow of the subjects’ answer. Also, if the “mmhmm” is said before the interview asks an additional question, you should not transcribe it. The same goes for any other generic verbal indication that the interviewer is listening.

Q3: What do I do when the interviewer or subject uses a “stalling phrase”?

A3: Do not transcribe stalling phrases when they interrupt the flow of the subjects’ answer. Also, if the stalling phrase is said before the interviewer asks a question or before the interviewee answers the question, you should not transcribe it.

Speaker3 (example with stalling phrases included): When I was a child, my favorite food was – um – pizza, and – uh – it was only my favorite food – um – because – like - my friends liked to eat it – you know – all the time.

Without the stalling phrases the person analyzing the data can more easily read the interviewer’s questions or interviewee’s statement.

Speaker3 (example without stalling phrases): When I was a child, my favorite food was pizza, and it was only my favorite food because my friends liked to eat it all the time.

Q4: What do I do when the interviewer interrupts the subject or the subject interrupts the interviewer?

A4: You denote an interruption by a dash mark “-“. For example:

Moderator: So what you’re saying is that you went –

Speaker1: I went to the beach.

Moderator: - to the beach on Saturday?

The interrupting statement is not denoted by a dash mark, only the interrupted statement.

Q5: What happens if I cannot understand what is said?

A5: Denote this in parentheses with the phrase “inaudible”. For example:

Speaker2: My grandmother taught me to cook when I was 7 years old. Or maybe it was when... (inaudible). Anyway, I was really young when I first learned how to cook.

Only use this if you’ve listened to the file 5 or 6 times and can still not understand what was said.

In the case of a focus group where there are multiple people, there may be times where the group responds simultaneously to a prompt and this initial response is not audible.

Distinguish a collective group response as “INAUDIBLE GROUP REPLY” to capture the fact that multiple people collectively replied (any distinguishable phrases may be captured in parentheses after this statement).

Q6: How do I transcribe laughter?

A6: You can denote this as (Laughter) when it is real laughter and (Laughs) when it is polite laughter. This helps the analyzer know the context better than if the transcript merely said “Haha.” You may also use (Nervous laughter) in some situations where you can tell the subject is laughing to divert the interviewer’s attention from a politically incorrect statement.

APPENDIX G

SURVEYS

SECTION 1A

My WIC family ID number is: _____.

1. I am:

- 1 Male
- 2 Female

2. How old are you? _____ please type

3. Including yourself, how many adults 18 years or older currently live in your home? _____ please type

4. How many children ages 5 to 17 years old live in your home? _____ please type

5. How many children younger than 5 years old live in your home? _____ please type

6. Who in your household receives WIC food benefits? Please select all that apply.

- 0 Pregnant mom
- 1 Breastfeeding only mom
- 2 Breast feeding and formula feeding mom
- 3 Fully formula feeding mom
- 4 One or more children 1-2 years old
- 5 One or more children 3-5 years old
- 6 Other

If other, please specify _____

7. What were your most recent height and weight measurements?

Height (in feet and inches) _____ please type Weight (in pounds) _____ please type

8. What is the highest level of education that you have completed?

- 0 Less than high school
- 1 Some high school
- 2 High school diploma or equivalent
- 3 Some college
- 4 2-year college degree
- 5 4-year college degree
- 6 Greater than 4-year degree

Section 2A:

These questions are about food you ate or drank during the past month, that is, the past 30 days. When answering, please include meals and snacks at home, at work or school, in restaurants, and anyplace else.

1. During the past month, how often did you eat hot or cold cereals? Mark one

- 0 Never →
 - 1 1 time
 - 2 2-3 times
 - 3 1 time
 - 4 2 times
 - 5 3-4 times
 - 6 5-6 times
 - 7 1 time
 - 8 2 or more times
- Go to **last month** **last month** **per week** **per week** **per week** **per week** **per day** **times per day**

2. During the past month, what type of cereal did you usually eat?

_____ (please type name of cereal)

3. If there was another kind of cereal that you usually ate during the past month, what kind was it?

_____ (please type, if none leave blank)

4. During the past month, how often did you have any milk (either to drink or on cereal)? Include regular milks, chocolate or other flavored milks, lactose-free milk, and buttermilk. Please do not include soy or small amounts of milk in coffee or tea. Mark one.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8	<input type="checkbox"/> 9	<input type="checkbox"/> 10
Never →	1 time	2-3	1 time	2 times	3-4 times	5-6	1 time	2-3	4-5	6 or more
Go to question 6	last month	times last month	per week	per week	per week	times per week	per day	times per day	times per day	times per day

5. During the past month, what kind of milk did you usually drink? Please select one.

<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6
Whole or regular milk	2% fat or reduced fat milk	1%, ½ %, or low-fat milk	Fat-free, skim, or nonfat milk	Soy milk	Other kind of milk

6. During the past month, how often did you drink regular soda or pop that contains sugar? Do not include diet soda. Mark one.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8	<input type="checkbox"/> 9	<input type="checkbox"/> 10
Never	1 time	2-3	1 time	2 times	3-4 times	5-6	1 time	2-3	4-5	6 or more
	last month	times last month	per week	per week	per week	times per week	per day	times per day	times per day	times per day

7. During the past month, how often did you drink 100% pure fruit juice such as orange, mango, apple, grape, and pineapple juices? Do not include fruit-flavored drinks with added sugar or fruit juice you made at home and added sugar to. Mark one.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8	<input type="checkbox"/> 9	<input type="checkbox"/> 10
Never	1 time	2-3	1 time	2 times	3-4 times	5-6	1 time	2-3	4-5	6 or more
	last month	times last month	per week	per week	per week	times per week	per day	times per day	times per day	times per day

8. During the past month, how often did you drink coffee or tea that had sugar or honey added to it? Include coffee and tea you sweetened yourself and presweetened tea and coffee drinks such as Arizona Iced Tea and Frappuccino. Do not include artificially sweetened coffee or diet tea.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8	<input type="checkbox"/> 9	<input type="checkbox"/> 10
Never	1 time	2-3	1 time	2 times	3-4 times	5-6	1 time	2-3	4-5	6 or more
	last month	times last month	per week	per week	per week	times per week	per day	times per day	times per day	times per day

9. During the past month, how often did you drink sweetened fruit drinks, sports or energy drinks, such as Kool-Aid, lemonade, Hi-C, cranberry drink, Gatorade, Red Bull or Vitamin Water? Include fruit juices you made at home and added sugar to. Do not include diet drinks or artificially sweetened drinks.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8	<input type="checkbox"/> 9	<input type="checkbox"/> 10
Never	1 time	2-3	1 time	2 times	3-4 times	5-6	1 time	2-3	4-5	6 or more
	last	times	per	per	per week	times	per	times	times	times
	month	last	week	week		per	day	per	per	per day
		month				week		day	day	

10. During the past month, how often did you eat fruit? Include fresh, frozen, or canned fruit. Do not include juices.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	6 <input type="checkbox"/>	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Never	1 time	2-3 times	1 time	2 times	3-4 times	5-6 times	1 time	2 or more
	last	last	per week	per week	per week	per week	per	times
	month	month					day	per day

11. During the past month, how often did you eat a green leafy or lettuce salad, with or without other vegetables?

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	6 <input type="checkbox"/>	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Never	1 time	2-3 times	1 time	2 times	3-4 times	5-6 times	1 time	2 or more
	last	last	per week	per week	per week	per week	per	times
	month	month					day	per day

12. During the past month, how often did you eat any kind of fried potatoes, including French fries, home fries, or hash brown potatoes?

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	6 <input type="checkbox"/>	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Never	1 time	2-3 times	1 time	2 times	3-4 times	5-6 times	1 time	2 or more
	last	last	per week	per week	per week	per week	per	times
	month	month					day	per day

13. During the past month, how often did you eat any other kind of potatoes, such as baked, boiled, mashed potatoes, sweet potatoes, or potato salad?

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	6 <input type="checkbox"/>	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Never	1 time	2-3 times	1 time	2 times	3-4 times	5-6 times	1 time	2 or more
	last	last	per week	per week	per week	per week	per	times
	month	month					day	per day

14. During the past month, how often did you eat refried beans, baked beans, beans in soup, pork and beans or any other type of cooked beans? Do not include green beans.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	6 <input type="checkbox"/>	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Never	1 time	2-3 times	1 time	2 times	3-4 times	5-6 times	1 time	2 or more
	last	last	per week	per week	per week	per week	per	times
	month	month					day	per day

15. During the past month, how often did you eat brown rice or other cooked whole grains such as bulgar, cracked wheat, or millet? Do not include white rice.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	6 <input type="checkbox"/>	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Never	1 time	2-3 times	1 time	2 times	3-4 times	5-6 times	1 time	2 or more
	last	last	per week	per week	per week	per week	per	times
	month	month					day	per day

16. During the past month, not including what you just told me about (green salad, potatoes, cooked dried beans), how often did you eat other vegetables ?

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	6 <input type="checkbox"/>	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Never	1 time	2-3 times	1 time	2 times	3-4 times	5-6 times	1 time	2 or more times
	last month	last month	per week	per week	per week	per week	per day	per day

17. During the past month, how often did you have Mexican-type salsa made with tomato?

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	6 <input type="checkbox"/>	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Never	1 time	2-3 times	1 time	2 times	3-4 times	5-6 times	1 time	2 or more times
	last month	last month	per week	per week	per week	per week	per day	per day

18. During the past month, how often did you eat pizza? Include frozen pizza, fast food pizza, and homemade pizza.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	6 <input type="checkbox"/>	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Never	1 time	2-3 times	1 time	2 times	3-4 times	5-6 times	1 time	2 or more times
	last month	last month	per week	per week	per week	per week	per day	per day

19. During the past month, how often did you have tomato sauces such as spaghetti or noodles or mixed into foods such as lasagna? Do not include tomato sauce on pizza.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	6 <input type="checkbox"/>	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Never	1 time	2-3 times	1 time	2 times	3-4 times	5-6 times	1 time	2 or more times
	last month	last month	per week	per week	per week	per week	per day	per day

20. During the past month, how often did you eat any kind of cheese? Include cheese as a snack, cheese on cheese burgers, sandwiches, and cheese in foods such as lasagna, quesadillas, or casseroles. Do not include cheese on pizza.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	6 <input type="checkbox"/>	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Never	1 time	2-3 times	1 time	2 times	3-4 times	5-6 times	1 time	2 or more times
	last month	last month	per week	per week	per week	per week	per day	per day

21. During the past month, how often did you eat red meat, such as beef, pork, ham, or sausage? Include red meat you had in sandwiches, lasagna, stew, and other mixtures. Red meats may also include veal, lamb, and any lunch meats made with these meats.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	6 <input type="checkbox"/>	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Never	1 time	2-3 times	1 time	2 times	3-4 times	5-6 times	1 time	2 or more times
	last month	last month	per week	per week	per week	per week	per day	per day

22. During the past month, how often did you eat any processed meat such as bacon, lunch meats, or hot dogs? Include processed meats you had in sandwiches, soups, pizza, casseroles, and other mixtures. Processed meats are those preserved by smoking, curing, or salting, or by the addition of preservatives. Examples are ham, bacon, pastrami, salami, sausages, bratwursts, Frankfurters, hot dogs, and spam.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	6 <input type="checkbox"/>	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Never	1 time	2-3 times	1 time	2 times	3-4 times	5-6 times	1 time	2 or more times
	last month	last month	per week	per week	per week	per week	per day	per day

23. During the past month, how often did you eat whole grain bread including toast, rolls, and in sandwiches? Whole grain breads include whole wheat, rye, oatmeal, and pumpernickel. Do not include white bread.

- | | | | | | | | | |
|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| <input type="checkbox"/> 0 | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 | 6 <input type="checkbox"/> | <input type="checkbox"/> 7 | <input type="checkbox"/> 8 |
| Never | 1 time | 2-3 times | 1 time | 2 times | 3-4 times | 5-6 times | 1 time | 2 or more times |
| | last month | last month | per week | per week | per week | per week | per day | per day |

24. During the past month, how often did you eat chocolate or any other types of candy? Do not include sugar free candy.

- | | | | | | | | | |
|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| <input type="checkbox"/> 0 | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 | 6 <input type="checkbox"/> | <input type="checkbox"/> 7 | <input type="checkbox"/> 8 |
| Never | 1 time | 2-3 times | 1 time | 2 times | 3-4 times | 5-6 times | 1 time | 2 or more times |
| | last month | last month | per week | per week | per week | per week | per day | per day |

25. During the past month, how often did you eat doughnuts, sweet rolls, Danish, muffins, pan dulce, or pop-tarts? Do not include sugar-free items.

- | | | | | | | | | |
|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| <input type="checkbox"/> 0 | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 | 6 <input type="checkbox"/> | <input type="checkbox"/> 7 | <input type="checkbox"/> 8 |
| Never | 1 time | 2-3 times | 1 time | 2 times | 3-4 times | 5-6 times | 1 time | 2 or more times |
| | last month | last month | per week | per week | per week | per week | per day | per day |

26. During the past month, how often did you eat cookies, cake, pie, or brownies? Do not include sugar-free kinds.

- | | | | | | | | | |
|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| <input type="checkbox"/> 0 | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 | 6 <input type="checkbox"/> | <input type="checkbox"/> 7 | <input type="checkbox"/> 8 |
| Never | 1 time | 2-3 times | 1 time | 2 times | 3-4 times | 5-6 times | 1 time | 2 or more times |
| | last month | last month | per week | per week | per week | per week | per day | per day |

27. During the past month, how often did you eat ice cream or other frozen desserts? Do not include sugar-free kinds.

- | | | | | | | | | |
|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| <input type="checkbox"/> 0 | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 | 6 <input type="checkbox"/> | <input type="checkbox"/> 7 | <input type="checkbox"/> 8 |
| Never | 1 time | 2-3 times | 1 time | 2 times | 3-4 times | 5-6 times | 1 time | 2 or more times |
| | last month | last month | per week | per week | per week | per week | per day | per day |

28. During the past month, how often did you eat popcorn?

- | | | | | | | | | |
|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| <input type="checkbox"/> 0 | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 | 6 <input type="checkbox"/> | <input type="checkbox"/> 7 | <input type="checkbox"/> 8 |
| Never | 1 time | 2-3 times | 1 time | 2 times | 3-4 times | 5-6 times | 1 time | 2 or more times |
| | last month | last month | per week | per week | per week | per week | per day | per day |

6a. If you answered yes to question 6, in the previous 3 months, how often have you used only some of your WIC food benefits because your family cannot eat all the food before it spoils?

- 1 2 3 4 5
 Never Rarely Sometimes Most of the time Always

7. I often feel embarrassed when using my WIC food benefits grocery stores that accept WIC food benefits.

- 1 2 3 4 5
 Strongly Disagree Disagree Undecided Agree Strongly Agree

8. In a typical month, how many times do you shop to use your WIC food benefits?

- 1 2 3 4 5
 1-2 times 3-4 times 5 times 6 times 7+ times

9. My overall shopping experience using WIC food benefits is positive.

- 1 2 3 4 5
 Strongly Disagree Disagree Undecided Agree Strongly Agree

SECTION 4A

INSTRUCTIONS

- Think about what you usually ate last month.
- Please think about **all** the fruits and vegetables that you ate **last month**. Include those that were:
 - raw and cooked,
 - eaten as snacks and at meals,
 - eaten at home and away from home (restaurants, friends, take-out), and
 - eaten alone and mixed with other foods.
- Report how many times per month, week, or day you ate each food, and if you ate it, how much you usually had.
- If you mark "Never" for a question, follow the "Go to" instruction.
- Choose the best answer for each question. Mark only one response for each question.

1. Over the last month, how many times per month, week, or day did you drink 100% juice such as orange, apple, grape, or grapefruit juice? Do not count fruit drinks like Kool-Aid, lemonade, Hi-C, cranberry juice drink, Tang, and Twister. Include juice you drank at all mealtimes and between meals.

- 0 1 2 3 4 5 6 7 8 9
 Never → 1-3 1-2 times 3-4 times 5-6 times 1 time 2 times 3 times 4 times 5 or more
Go to times **per week** **per week** **per week** **per** **per day** **per day** **per** times
question **last** **day** **per day** **day** **per day** **per day**
2 **month**

1a. Each time you drank 100% juice, how much did you usually drink?

- 1 2 3 4
 Less than ¾ cup ¾ to 1 ¼ cup 1 ¼ to 2 cups More than 2 cups
 (less than 6 ounces) (6 to 10 ounces) (10-16 ounces) (more than 16 ounces)

2. Over the last month, how many times per month, week, or day did you eat fruit? Count any kind of fruit- fresh, canned, and frozen. Do not count juices. Include fruit you ate at all mealtimes and for snacks.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	6 <input type="checkbox"/>	<input type="checkbox"/> 7	<input type="checkbox"/> 8	<input type="checkbox"/> 9
Never →	1-3	1-2 times	3-4 times	5-6 times	1 time	2 times	3 times	4 times	5 or more
Go to	times	per week	per week	per week	per day	per day	per day	per day	times
question	last								per day
3	month								

2a. Each time you ate fruit, how much did you usually eat?

<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
Less than 1 medium fruit	1 medium fruit	2 medium fruits	More than 2 medium fruits

OR

<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
Less than ½ cup	About a ½ cup	About 1 cup	More than 1 cup

3. Over the last month, how often did you eat lettuce salad (with or without other vegetables)?

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	6 <input type="checkbox"/>	<input type="checkbox"/> 7	<input type="checkbox"/> 8	<input type="checkbox"/> 9
Never →	1-3	1-2 times	3-4 times	5-6 times	1 time	2 times	3 times	4 times	5 or more
Go to	times	per week	per week	per week	per day	per day	per day	per day	times
question	last								per day
4	month								

3a. Each time you ate lettuce salad, how much did you usually eat?

<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
About ½ cup	About 1 cup	About 2 cups	More than 2 cups

4. Over the last month, how often did you eat French Fries or fried potatoes?

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	6 <input type="checkbox"/>	<input type="checkbox"/> 7	<input type="checkbox"/> 8	<input type="checkbox"/> 9
Never →	1-3	1-2 times	3-4 times	5-6 times	1 time	2 times	3 times	4 times	5 or more
Go to	times	per week	per week	per week	per day	per day	per day	per day	times
question	last								per day
5	month								

4a. Each time you ate French fries or fried potatoes, how much did you usually eat?

<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
Small order or less (About 1 cup or less)	Medium order (About 1 ½ cups)	Large order (About 2 cups)	Super-size order or more (About 3 cups or more)

5. Over the last month, how often did you eat other white potatoes? Count baked, boiled, and mashed potatoes, potato salad, and white potatoes that were not fried.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	6 <input type="checkbox"/>	<input type="checkbox"/> 7	<input type="checkbox"/> 8	<input type="checkbox"/> 9
Never →	1-3	1-2 times	3-4 times	5-6 times	1 time	2 times	3 times	4 times	5 or more
Go to	times	per week	per week	per week	per day	per day	per day	per day	times
question	last								per day
6	month								

5a. Each time you ate these potatoes, how much did you usually eat?

- | | | | |
|---|-------------------------------------|-----------------------------------|---|
| <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 |
| 1 small potato or less
(½ cup or less) | 1 medium potato
(½ cup to 1 cup) | 1 large potato
(1 to 1 ½ cups) | 2 medium potatoes or more
(1 ½ cups or more) |

6. Over the past month, how often did you eat cooked, dried beans? Count baked beans, bean soup, refried beans, pork and beans, and other bean dishes.

- | | | | | | | | | | |
|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| <input type="checkbox"/> 0 | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 | 6 <input type="checkbox"/> | <input type="checkbox"/> 7 | <input type="checkbox"/> 8 | <input type="checkbox"/> 9 |
| Never → | 1-3 | 1-2 times | 3-4 times | 5-6 times | 1 time | 2 times | 3 times | 4 times | 5 or more |
| Go to | times | per week | per week | per week | per day | per day | per day | per day | times |
| question | last | | | | | | | | per day |
| 7 | month | | | | | | | | |

6a. Each time you ate these beans, how much did you usually eat?

- | | | | |
|----------------------------|----------------------------|----------------------------|----------------------------|
| <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 |
| Less than ½ cup | ½ cup to 1 cup | 1 to 1 ½ cups | More than 1 ½ cups |

7. Over the last month, how often did you eat other vegetables?

DO NOT COUNT:

- Lettuce salads
- White potatoes
- Cooked dried beans
- Rice
- Vegetables in mixtures, such as in sandwiches, omelets, casseroles, Mexican dishes, stews, stir-fry, soups, etc.

COUNT:

- All other vegetables- raw, cooked, canned, or frozen

- | | | | | | | | | | |
|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| <input type="checkbox"/> 0 | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 | 6 <input type="checkbox"/> | <input type="checkbox"/> 7 | <input type="checkbox"/> 8 | <input type="checkbox"/> 9 |
| Never → | 1-3 | 1-2 times | 3-4 times | 5-6 times | 1 time | 2 times | 3 times | 4 times | 5 or more |
| Go to | times | per week | per week | per week | per day | per day | per day | per day | times |
| question | last | | | | | | | | per day |
| 8 | month | | | | | | | | |

7a. Each of these times you ate other vegetables, how much did you usually eat?

- | | | | |
|----------------------------|----------------------------|----------------------------|----------------------------|
| <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 |
| Less than ½ cup | ½ cup to 1 cup | 1 to 2 cups | More than 2 cups |

8. Over the last month, how often did you eat tomato sauce? Include tomato sauce on pasta or macaroni, rice, pizza, and other dishes.

- | | | | | | | | | | |
|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| <input type="checkbox"/> 0 | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 | 6 <input type="checkbox"/> | <input type="checkbox"/> 7 | <input type="checkbox"/> 8 | <input type="checkbox"/> 9 |
| Never → | 1-3 | 1-2 times | 3-4 times | 5-6 times | 1 time | 2 times | 3 times | 4 times | 5 or more |
| Go to | times | per week | per week | per week | per day | per day | per day | per day | times |
| question | last | | | | | | | | per day |
| 9 | month | | | | | | | | |

8a. Each time you ate tomato sauce, how much did you usually eat?

- | | | | |
|----------------------------|----------------------------|----------------------------|----------------------------|
| <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 |
| About ¼ cups | About ½ cup | About 1 cup | More than 1 cup |

9. Over the last month, how often did you eat vegetable soups? Include tomato soup, gazpacho, beef with vegetable soup, minestrone soup, and other soups made with vegetables.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	6 <input type="checkbox"/>	<input type="checkbox"/> 7	<input type="checkbox"/> 8	<input type="checkbox"/> 9
Never →	1-3	1-2 times	3-4 times	5-6 times	1 time	2 times	3 times	4 times	5 or more
Go to	times	per week	per week	per week	per day	per day	per day	per day	times
question	last								per day
10	month								

10. Over the last month, how often did you eat mixtures that included vegetables? Count such foods as sandwiches, casseroles, stews, stir-fry, omelets, and tacos.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	6 <input type="checkbox"/>	<input type="checkbox"/> 7	<input type="checkbox"/> 8	<input type="checkbox"/> 9
Never →	1-3	1-2 times	3-4 times	5-6 times	1 time	2 times	3 times	4 times	5 or more
	times	per week	per week	per week	per day	per day	per day	per day	times
	last								per day
	month								

11. Have you ever used eWIC before?

<input type="checkbox"/> 0	<input type="checkbox"/> 1
No	Yes

SECCIÓN 1A

Mi número de identificación familiar de WIC es _____

1. Yo soy:

- 1 2
Hombre Mujer

2. ¿Cuántos años tiene? _____ *por favor escriba*

3. Incluyéndose a usted mismo, ¿cuántos adultos de 18 o más años viven actualmente en su hogar?

por favor escriba

4. ¿Cuántos niños de 5 a 17 años viven en su hogar? _____ *por favor escriba*

5. ¿Cuántos niños menores de 5 años viven en su hogar? _____ *por favor escriba*

6. ¿Quién en su hogar recibe los beneficios de comida de WIC? Por favor seleccione todas las respuestas que correspondan.

- | | | | | | | |
|----------------------------|----------------------------|-----------------------------|----------------------------|-----------------------------|-----------------------------|----------------------------|
| <input type="checkbox"/> 0 | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 | 6 <input type="checkbox"/> |
| Mujer embarazada | Mamá que sólo da pecho | Mamá que da pecho y fórmula | Mamá que sólo usa fórmula | Uno o más niños de 1-2 años | Uno o más niños de 3-5 años | Otro |

En otro caso, por favor especifique _____

7. ¿Cuáles son sus medidas de su peso y estatura más recientes?

Altura (en pies y pulgadas) _____ *por favor escriba* Peso (en libras) _____ *por favor escriba*

8. ¿Cuál es el nivel de educación más alto que usted completó?

- | | | | | | | |
|-----------------------------|----------------------------|-------------------------------------|----------------------------|--------------------------------|--------------------------------|---------------------------------------|
| <input type="checkbox"/> 0 | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 | 6 <input type="checkbox"/> |
| Menos de escuela secundaria | Algo de escuela secundaria | Diploma de secundaria o equivalente | Algo de universidad | Título universitario de 2-años | Título universitario de 4-años | Título universitario de más de 4-años |

SECCIÓN 2A

Estas preguntas son sobre los alimentos que comió o bebió durante el mes pasado, es decir, durante los últimos 30 días. Cuando conteste, por favor incluya las comidas y meriendas (antojitos) que haya consumido en la casa, el trabajo, la escuela, en restaurantes, y en cualquier otro lugar.

1. Durante el mes pasado, ¿qué tan seguido comió cereales calientes o fríos? Marque sólo una opción.

- | | | | | | | | | |
|----------------------------|-----------------------------|---------------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| <input type="checkbox"/> 0 | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 | 6 <input type="checkbox"/> | <input type="checkbox"/> 7 | <input type="checkbox"/> 8 |
| NuncaVaya a la pregunta 4 | 1 vez durante el mes pasado | 2-3 veces durante el mes pasado | 1 vez por semana | 2 veces por semana | 3-4 veces por semana | 5-6 veces por semana | 2 veces por día | 2 o más veces al día |

2. Durante el mes pasado, ¿qué tipo de cereal comió usualmente?

_____ (por favor escriba el nombre del cereal)

3. Si hay otro tipo de cereal que usted comió durante el mes pasado usualmente, ¿cuál fue?

_____ (por favor escriba, si no deje en blanco)

4. Durante el mes pasado, ¿con qué frecuencia tomó leche (ya sea para beber o en el cereal)? Incluya la leche regular, leche lactosa sin grasa, suero de leche, de chocolate o de cualquier otro tipo de sabor. Por favor no incluya soya o pequeñas cantidades de leche en el café o en el té. Marque sólo una opción.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8	<input type="checkbox"/> 9	<input type="checkbox"/> 10
Nunca →	1 vez	2-3	1 vez	2 veces	3-4	5-6	1 vez	2-3	4-5	6 o más
Vaya a la	durante	veces	por	por	veces	veces	por día	Veces	veces	veces
pregunta	el mes	durante	semana	semana	por	por		por día	por día	por día
6	pasado	el mes			semana	semana				
		pasado								

5. Durante el mes pasado, ¿qué tipo de leche bebió usualmente? Por favor marque sólo una opción.

<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6
Leche entera o regular	Leche con 2 % de grasa o leche reducida en grasa	Leche con 1 %, de grasa ½ %, o leche baja en grasa	Libre de grasa, descremada, o sin grasa	Leche de soya	Otro tipo de leche

6. Durante el mes pasado, ¿con qué frecuencia bebió gaseosas (soda o bebida carbonatada) que contienen azúcar? Por favor no incluya refrescos de dieta. Marque una opción.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8	<input type="checkbox"/> 9	<input type="checkbox"/> 10
Nunca	1 vez	2-3 veces	1 vez	2 veces	3-4	5-6	1 vez	2-3	4-5	6 o mas
	durante	durante el	por	por	veces	veces	por día	Veces	veces	veces
	el mes	mes	semana	semana	por	por		por día	por día	por día
	pasado	pasado			semana	semana				

7. Durante el mes pasado, ¿con qué frecuencia bebió jugo 100% de fruta, como de naranja, mango, manzana, uva y jugo de piña? No incluya bebidas con sabor a frutas que contienen azúcar agregada o jugo de fruta que usted haya hecho en su casa y le agrega azúcar. Marque sólo una opción.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8	<input type="checkbox"/> 9	<input type="checkbox"/> 10
Nunca	1 vez	2-3 veces	1 vez	2 veces	3-4	5-6	1 vez	2-3	4-5	6 o mas
	durante	durante el	por	por	veces	veces	por día	Veces	veces	veces
	el mes	mes	semana	semana	por	por		por día	por día	por día
	pasado	pasado			semana	semana				

8. Durante el mes pasado, ¿con qué frecuencia bebió café o té que ya tenía azúcar o miel añadidos? Incluya el café o té que usted mismo haya endulzado, y té o café pre-endulzado como Arizona Ice Tea y Frappuccino. Incluya té, café, o té de dieta endulzado artificialmente.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8	<input type="checkbox"/> 9	<input type="checkbox"/> 10
Nunca	1 vez	2-3 veces	1 vez	2 veces	3-4	5-6	1 vez	2-3	4-5	6 o mas
	durante	durante el	por	por	veces	veces	por día	Veces	veces	veces
	el mes	mes	semana	semana	por	por		por día	por día	por día
	pasado	pasado			semana	semana				

9. Durante el mes pasado, ¿con qué frecuencia bebió bebidas de frutas endulzadas, refrescos de deportes o bebidas energéticas, tales como Kool-Aid, limonada, HI-C, arándano, Gatorade, Red Bull o agua vitaminada? Incluya jugos de frutas que usted hace en casa y a los que les añade azúcar. No incluya bebidas dietéticas o bebidas con endulzantes artificiales.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8	<input type="checkbox"/> 9	<input type="checkbox"/> 10
Nunca	1 vez	2-3 veces	1 vez	2 veces	3-4	5-6	1 vez	2-3	4-5	6 o mas
	durante	durante el	por	por	veces	veces	por día	Veces	veces	veces
	el mes	mes	semana	semana	por	por		por día	por día	por día
	pasado	pasado			semana	semana				

10. Durante el mes pasado, ¿con qué frecuencia comió frutas? Incluya las frutas frescas, congeladas o enlatadas. No incluya los jugos.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Nunca	1 vez	2-3 veces	1 vez	2 veces	3-4 veces	5-6 veces	2 veces	2 o más
	durante el	durante el	por	por	por	por	por día	veces al
	mes	mes	semana	semana	semana	semana		día
	pasado	pasado						

11. Durante el mes pasado, ¿con qué frecuencia comió verduras de hojas verdes o ensalada de lechuga, con o sin otro vegetal?

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Nunca	1 vez	2-3 veces	1 vez	2 veces	3-4 veces	5-6 veces	2 veces	2 o más
	durante el	durante el	por	por	por	por	por día	veces al
	mes	mes	semana	semana	semana	semana		día
	pasado	pasado						

12. Durante el mes pasado, ¿con qué frecuencia comió cualquier clase de papas fritas, incluya las papas fritas de restaurante o hechas en casa, o tortas de papas?

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Nunca	1 vez	2-3 veces	1 vez	2 veces	3-4 veces	5-6 veces	2 veces	2 o más
	durante el	durante el	por	por	por	por	por día	veces al
	mes	mes	semana	semana	semana	semana		día
	pasado	pasado						

13. Durante el mes pasado, ¿con qué frecuencia comió cualquier otra clase de papas, tales como al horno, hervidas, puré de papas, camote o ensalada de papas?

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Nunca	1 vez	2-3 veces	1 vez	2 veces	3-4 veces	5-6 veces	2 veces	2 o más
	durante el	durante el	por	por	por	por	por día	veces al
	mes	mes	semana	semana	semana	semana		día
	pasado	pasado						

14. Durante el mes pasado, ¿con qué frecuencia comió frijoles fritos, al horno, frijol en sopa, frijol con puerco, y frijol u cualquier otro tipo de frijoles cocidos? No incluya las legumbres (judías) verdes.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Nunca	1 vez	2-3 veces	1 vez	2 veces	3-4 veces	5-6 veces	2 veces	2 o más
	durante el	durante el	por	por	por	por	por día	veces al
	mes	mes	semana	semana	semana	semana		día
	pasado	pasado						

15. Durante el mes pasado, ¿con qué frecuencia comió arroz integral o cualquier otro tipo de grano entero cocido tal como trigo bulgar, trigo quebrado o trigo millet? No incluya el arroz blanco.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	6 <input type="checkbox"/>	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Nunca	1 vez	2-3 veces	1 vez	2 veces	3-4 veces	5-6 veces	2 veces	2 o más
	durante el	durante el	por	por	por	por	por día	veces al
	mes	mes	semana	semana	semana	semana		día
	pasado	pasado						

16. Durante el mes pasado, no incluya lo que usted me acaba de decir sobre (la ensalada verde, papas, frijoles cosidos), ¿con qué frecuencia usted comió otro tipo de vegetales?

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	6 <input type="checkbox"/>	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Nunca	1 vez	2-3 veces	1 vez	2 veces	3-4 veces	5-6 veces	2 veces	2 o más
	durante el	durante el	por	por	por	por	por día	veces al
	mes	mes	semana	semana	semana	semana		día
	pasado	pasado						

17. Durante el mes pasado, ¿con qué frecuencia usted comió salsa tipo mexicana que usted hizo con jitomate (tomate)?

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	6 <input type="checkbox"/>	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Nunca	1 vez	2-3 veces	1 vez	2 veces	3-4 veces	5-6 veces	2 veces	2 o más
	durante el	durante el	por	por	por	por	por día	veces al
	mes	mes	semana	semana	semana	semana		día
	pasado	pasado						

18. Durante el mes pasado, ¿con qué frecuencia usted comió pizza? Incluya la pizza congelada, pizza de restaurante y pizza hecha en casa.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	6 <input type="checkbox"/>	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Nunca	1 vez	2-3 veces	1 vez	2 veces	3-4 veces	5-6 veces	2 veces	2 o más
	durante el	durante el	por	por	por	por	por día	veces al
	mes	mes	semana	semana	semana	semana		día
	pasado	pasado						

19. Durante el mes pasado, ¿con qué frecuencia comió purés hechos de jitomate (tomates) tal como los que se utilizan en el espagueti, en la pasta o en los alimentos mezclados tales como de la lasaña? No incluya salsa de jitomate para la pizza.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	6 <input type="checkbox"/>	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Nunca	1 vez	2-3 veces	1 vez	2 veces	3-4 veces	5-6 veces	2 veces	2 o más
	durante el	durante el	por	por	por	por	por día	veces al
	mes	mes	semana	semana	semana	semana		día
	pasado	pasado						

20. Durante el mes pasado, ¿con qué frecuencia comió cualquier tipo de queso? Incluya el queso que comió como bocadillo, queso en hamburguesas, sándwiches, y queso que añadió en comidas como de lasaña, quesadillas, o cacerolas. No incluya el queso de la pizza.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	6 <input type="checkbox"/>	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Nunca	1 vez	2-3 veces	1 vez	2 veces	3-4 veces	5-6 veces	2 veces	2 o más
	durante el	durante el	por	por	por	por	por día	veces al
	mes	mes	semana	semana	semana	semana		día
	pasado	pasado						

21. Durante el mes pasado, ¿con qué frecuencia comió carnes rojas, como carne de res, puerco, jamón, o salchicha? Incluya carnes rojas que añadió en el sándwich, lasaña, caldos y otras combinaciones. Las carnes rojas también puede ser la carne de cordero y cualquier almuerzo hecho con estas carnes.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Nunca	1 vez	2-3 veces	1 vez	2 veces	3-4 veces	5-6 veces	2 veces	2 o más
	durante el	durante el	por	por	por	por	por día	veces al
	mes	mes	semana	semana	semana	semana		día
	pasado	pasado						

22. Durante el mes pasado, ¿con qué frecuencia comió carnes procesadas, tales como tocino, almuerzo de carnes, o perros calientes? Incluya carnes procesadas que añadió a su sándwich, sopas, pizza, cacerolas, y otras combinaciones. Las carnes procesadas son aquellas que se conservan al ahumar, curar o salar, o mediante la adición de conservantes. Los ejemplos son jamón, tocino, pastrami, salami, salchichas, salchichas, Frankfruters, perros calientes y spam.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Nunca	1 vez	2-3 veces	1 vez	2 veces	3-4 veces	5-6 veces	2 veces	2 o más
	durante el	durante el	por	por	por	por	por día	veces al
	mes pasado	mes pasado	semana	semana	semana	semana		día

23. Durante el mes pasado, ¿con qué frecuencia comió pan integral incluyendo el tostado, bollos y en sándwiches? El pan integral o de grano entero incluye el pan de trigo, rye, avena y de centeno. No incluya el pan blanco.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Nunca	1 vez	2-3 veces	1 vez	2 veces	3-4 veces	5-6 veces	2 veces	2 o más
	durante el	durante el	por	por	por	por	por día	veces al
	mes pasado	mes pasado	semana	semana	semana	semana		día

24. Durante el mes pasado, ¿con qué frecuencia usted comió chocolate o cualquier otro tipo de dulces? No incluya dulces sin azúcar.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Nunca	1 vez	2-3 veces	1 vez	2 veces	3-4 veces	5-6 veces	2 veces	2 o más
	durante el	durante el	por	por	por	por	por día	veces al
	mes pasado	mes pasado	semana	semana	semana	semana		día

25. Durante el mes pasado, ¿con qué frecuencia usted comió donas, bollos dulces, daneses, panecillos, pan dulce, o panecillos de paquete? No incluya el pan sin de azúcar.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Nunca	1 vez	2-3 veces	1 vez	2 veces	3-4 veces	5-6 veces	2 veces	2 o más
	durante el	durante el	por	por	por	por	por día	veces al
	mes pasado	mes pasado	semana	semana	semana	semana		día

26. Durante el mes pasado, ¿con qué frecuencia usted comió galletas, pasteles, queques, o bizcochos (brownies)? No incluya productos libres de azúcar.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Nunca	1 vez	2-3 veces	1 vez	2 veces	3-4 veces	5-6 veces	2 veces	2 o más
	durante el	durante el	por	por	por	por	por día	veces al
	mes pasado	mes pasado	semana	semana	semana	semana		día

27. Durante el mes pasado, ¿con qué frecuencia comió helado o postres congelados? No incluya alimentos libres de azúcar.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	6 <input type="checkbox"/>	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Nunca	1 vez	2-3 veces	1 vez	2 veces	3-4 veces	5-6 veces	2 veces	2 o más
	durante el	durante el	por	por	por	por	por día	veces al
	mes pasado	mes pasado	semana	semana	semana	semana		día

28. Durante el mes pasado, ¿con qué frecuencia comió palomitas?

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	6 <input type="checkbox"/>	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Nunca	1 vez	2-3 veces	1 vez	2 veces	3-4 veces	5-6 veces	2 veces	2 o más
	durante el	durante el	por	por	por	por	por día	veces al
	mes pasado	mes pasado	semana	semana	semana	semana		día

SECCIÓN 3A

Por favor califique cada una de las siguientes preguntas usando la escala proporcionada.

1. Usar mis beneficios de comida del WIC es fácil y conveniente al ir de compras a las tiendas que aceptan la los beneficios de comida del WIC.

<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Nunca	Raramente	A veces	La mayoría de las veces	Siempre

2. En los últimos 3 meses, yo he decidido utilizar todos los beneficios de la comida del WIC.

<input type="checkbox"/> 1	<input type="checkbox"/> 2
Sí	No

3. En promedio, en los últimos 3 meses, ¿cuáles de los beneficios de comida del WIC ha utilizado? Incluya todos los beneficios de comida que usted y/o sus hijos reciban. Por favor seleccione todo lo que aplique. En caso de que haya utilizado todos los beneficios de comida, vaya a la pregunta 7.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	6 <input type="checkbox"/>	<input type="checkbox"/> 7	<input type="checkbox"/> 8	<input type="checkbox"/> 9
Yo usé	Cereal de	Leche,	Frutas y	Pan integral y	Frijoles,	Jugo	Fórmula	Comida	Carne
todos los	desayuno	yogur,	verduras	otro tipo de	legumbres, o	de	infantil	infantil de	de
beneficios		o queso		harina integral	mantequilla	frutas		frutas y	comida
					de cacahuete.			verduras	infantil

4. En un promedio, en los últimos 3 meses, ¿cuáles beneficios de comida del WIC usted NO utilizó? Incluya todos los beneficios de comida que usted y sus hijos reciban. Por favor seleccione todo lo que aplique.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	6 <input type="checkbox"/>	<input type="checkbox"/> 7	<input type="checkbox"/> 8	<input type="checkbox"/> 9
Yo use	Cereal de	Leche,	Frutas y	Pan integral y	Frijoles,	Jugo	Formula	Comida	Carne
todos los	desayuno	yogur,	verduras	otro tipo de	legumbres, o	de	infantil	infantil de	de
beneficios		o queso		harina integral	mantequilla de	frutas		frutas y	comida
					cacahuete o maní.			verduras	para
									bebés

5. En los últimos 3 meses, Yo he decidido utilizar solo algos de los beneficios de comida del WIC, debido a que me toma demasiado tiempo pagar en la registradora.

<input type="checkbox"/> 1	<input type="checkbox"/> 2
Sí	No

5a. Si respondió afirmativamente a la pregunta 5, en los últimos 3 meses, ¿con qué frecuencia ha utilizado solo algunos de los beneficios de comida del WIC, debido a que le toma demasiado tiempo pagar en la registradora?

- 1 2 3 4 5
Nunca Raramente A veces La mayoría de las veces Siempre

6. En los últimos 3 meses, Yo he decidido utilizar solo algunos de los beneficios de comida del WIC porque mi familia no puede comer toda la comida que me dan sin que se eche a perder.

- 1 2
Sí No

6a. Si respondió afirmativamente a la pregunta 6, en los últimos 3 meses, ¿con qué frecuencia ha utilizado solo algunos de los beneficios de comida del WIC, debido a que su familia no puede comer toda la comida antes de que se eche a perder?

- 1 2 3 4 5
Nunca Raramente A veces La mayoría de las veces Siempre

7. Constantemente siento vergüenza al usar mis beneficios de comida del WIC en las tiendas que aceptan WIC.

- 1 2 3 4 5
muy en desacuerdo En desacuerdo indeciso de acuerdo totalmente de acuerdo

8. En un mes típicamente, ¿cuántas veces usted va a compra la comida de beneficios del WIC?

- 1 2 3 4 5
1-2 veces 3-4 veces 5 veces 6 veces 7+ veces

9. Mi experiencia en general ha sido positiva al realizar compras utilizando mis beneficios del WIC.

- 1 2 3 4 5
muy en desacuerdo En desacuerdo indeciso de acuerdo totalmente de acuerdo

SECCIÓN 4A

INSTRUCCIONES

- Piense acerca de lo que comió durante el mes pasado normalmente.
- Por favor piense acerca de todas las frutas y verduras que usted comió el mes pasado. Incluya aquellos que estaban:
 - crudos y cocidos,
 - comió como merienda o antojito y en las comidas principales,
 - comió en la casa y fuera de la casa (restaurante, amigos, comida para llevar), y
 - comió sola y combinada con otros alimentos.
- Reporte cuántas veces per mes, semana, o cada día usted comió cada comida, y si usted la comió, cuál fue la cantidad que consumió normalmente.
- Si usted marcó “Nunca” en alguna pregunta, diríjase a “vaya a” en las instrucciones.
- Elija la mejor respuesta para cada pregunta que se le haga. Marque solamente una respuesta en cada pregunta.

1. Sobre el mes pasado, ¿cuántas veces por mes, semana o día usted tomó jugo 100% de fruta, tales como el jugo de naranja, manzana, o jugo de toronja? No incluya los jugos tales como: Kool-Aid, limonada, HI-C, arándano, Tang, y Twister. Incluya todas las bebidas de jugos que tomó durante las comida y entre comidas también.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8	<input type="checkbox"/> 9
→	1-3	1-2 veces	3-4 veces	5-6 veces	1 vez	2 veces	3 veces	4 veces	5 o más
Nunca vaya a la pregunta 2	Veces por el mes pasado	por semana	por semana	por semana	por día	por día	por día	por día	veces por día

1a. Cada vez que usted bebió jugo 100% de fruta, ¿cuántas veces lo tomó usualmente?

<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
Menos de ¾ taza (menos de 6 onzas)	¾ a 1¼ taza (6 a 10 onzas)	1¼ a 2 tazas (10-16 onzas)	Más de 2 tazas (más de 16 onzas)

2. Durante el mes pasado ¿cuántas veces al mes, semana o día comió frutas? Incluya cualquier tipo de fruta fresca, de lata, y congelada. No cuente los jugos. Incluya frutas que usted comió todo el tiempo y también los antojitos o meriendas.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8	<input type="checkbox"/> 9
→	1-3	1-2 veces	3-4 veces	5-6 veces	1 vez	2 veces	3 veces	4 veces	5 o más
Nunca vaya a la pregunta 3	Veces por el mes pasado	por semana	por semana	por semana	por día	por día	por día	por día	veces por día

2a. Cada vez que usted come frutas, ¿cuánta come generalmente?

<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
Menos de 1 fruta mediana	1 fruta mediana	2 frutas medianas	Más de 2 frutas medianas
O			
<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
Menos de ½ taza	Como un ½ taza	Como 1 taza	Más de una 1 taza

3. Durante el mes pasado, ¿cuántas veces comió ensalada de lechuga (con o sin otra verdura)?

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8	<input type="checkbox"/> 9
→	1-3	1-2 veces	3-4 veces	5-6 veces	1 vez	2 veces	3 veces	4 veces	5 o más
Nunca vaya a la pregunta 4	Veces por el mes pasado	por semana	por semana	por semana	por día	por día	por día	por día	veces por día

3a. Cada vez que usted come ensalada de lechuga, ¿cuánta come generalmente?

<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
Como ½ taza	Come 1 taza	Come 2 tazas	Mas de 2 tazas

4. Durante el mes pasado, ¿cuántas veces comió papas a la francesa o papas fritas?

- | | | | | | | | | | |
|---|-------------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| <input type="checkbox"/> 0 | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 | 6 <input type="checkbox"/> | <input type="checkbox"/> 7 | <input type="checkbox"/> 8 | <input type="checkbox"/> 9 |
| → | 1-3 | 1-2 | 3-4 veces | 5-6 veces | 1 vez | 2 veces | 3 | 4 | 5 o más |
| Nunca
vaya a la
pregunta 5 | Veces por
el mes
pasado | veces
por
semana | por
semana | por
semana | por día | por día | veces
por día | veces
por día | veces por
día |

4a. Cada vez que usted come papas a la francesa o papas fritas, ¿cuántas come generalmente?

- | | | | |
|--|--|--|--|
| <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 |
| Ordenes pequeñas o menos
(como de 1 taza o menos) | Ordenes medianas
(como de 1 ½ taza) | Ordenes grandes o menos
(como de 2 tazas) | Ordenes súper grandes o
menos (como de 3 tazas o más) |

5. Durante el mes pasado, ¿con qué frecuencia comió papas blancas? Incluya papas horneadas, hervidas, y puré de papas, ensalada de papas, y papas blancas que no estaban fritas.

- | | | | | | | | | | |
|---|-------------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| <input type="checkbox"/> 0 | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 | 6 <input type="checkbox"/> | <input type="checkbox"/> 7 | <input type="checkbox"/> 8 | <input type="checkbox"/> 9 |
| → | 1-3 | 1-2 | 3-4 veces | 5-6 veces | 1 vez | 2 veces | 3 | 4 | 5 o más |
| Nunca
vaya a la
pregunta 6 | Veces por
el mes
pasado | veces
por
semana | por
semana | por
semana | por día | por día | veces
por día | veces
por día | veces por
día |

5a. Cada vez que usted comió esas papas, ¿cuántas comió generalmente?

- | | | | |
|---|-------------------------------------|---------------------------------|--|
| <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 |
| 1 papa pequeña o menos
de (½ taza o menos) | 1 papa mediano
(½ taza a 1 taza) | 1 papa grande
(1 a 1½ tazas) | 1 papa medianos o más
(1½ taza o más) |

6. Durante el mes pasado, ¿con qué frecuencia comió frijoles secos o cosidos? Incluya los frijoles preparados al horno, frijoles en sopa, frijoles refritos, con puerco, y frijol y otros platos de frijoles.

- | | | | | | | | | | |
|---|-------------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| <input type="checkbox"/> 0 | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 | 6 <input type="checkbox"/> | <input type="checkbox"/> 7 | <input type="checkbox"/> 8 | <input type="checkbox"/> 9 |
| → | 1-3 | 1-2 | 3-4 veces | 5-6 veces | 1 vez | 2 veces | 3 | 4 | 5 o más |
| Nunca
vaya a la
pregunta 7 | Veces por
el mes
pasado | veces
por
semana | por
semana | por
semana | por día | por día | veces
por día | veces
por día | veces por
día |

6a. Cada vez que usted comió esos frijoles, ¿cuánto comió generalmente?

- | | | | |
|----------------------------|----------------------------|----------------------------|----------------------------|
| <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 |
| Menos de un ½ taza | De un ½ de taza a 1 taza | 1 a 1 ½ taza | Más de 1 ½ taza |

7. Durante el mes pasado ¿con qué frecuencia comió otras verduras?

NO INCLUYA:

- Ensalada de lechuga
- Papas blancas
- Verduras en combinación con otros alimentos, tal como en sándwiches, tortas de huevo, cacerolas, platillos mexicanos, caldos, guisados fritos, sopa, etcétera.

INCLUYA

- Todas las verduras- crudas, cocidas, en lata, o congeladas.

- | | | | | | | | | | |
|---|-------------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| <input type="checkbox"/> 0 | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 | 6 <input type="checkbox"/> | <input type="checkbox"/> 7 | <input type="checkbox"/> 8 | <input type="checkbox"/> 9 |
| → | 1-3 | 1-2 | 3-4 veces | 5-6 veces | 1 vez | 2 veces | 3 | 4 | 5 o más |
| Nunca
vaya a la
pregunta 8 | Veces por
el mes
pasado | veces
por
semana | por
semana | por
semana | por día | por día | veces
por día | veces
por día | veces por
día |

7a. Cada vez que usted comió esas verduras, ¿qué cantidad comió generalmente?

- 1 2 3 4
Menos de ½ taza ½ taza a 1 taza 1 a 2 tazas Más de 2 tazas

8. Durante el mes pasado, ¿con qué frecuencia comió salsa de jitomate o tomate? Incluya salsas de jitomate que haya comido en la pasta o macaroni, arroz, pizza y otros platillos.

- 0 1 2 3 4 5 6 7 8 9
Nunca 1-3 vez 1 -2 vez 3-4 veces 5-6 veces 1 vez 2 veces 3 veces 4 veces 5 o más
→ del mes por por por por día por día por día por día veces por
Vaya a la pasado semana semana semana día día día día día
pregunta
9

8a. Cada vez que usted comió salsa de jitomate, ¿cuánta comió generalmente?

- 1 2 3 4
Menos de ¼ taza Como ½ taza Como 1 tazas Más de 1 tazas

9. Durante el mes pasado, ¿con qué frecuencia comió sopa de verduras? Incluya sopas de jitomate, gazpacho, de carne de res con verduras, sopa de minestrone, y otros tipos de sopas con verduras.

- 0 1 2 3 4 5 6 7 8 9
Nunca 1-3 vez 1 -2 vez 3-4 veces 5-6 veces 1 vez 2 veces 3 veces 4 veces 5 o más
→ del mes por por por por día por día por día por día veces por
Vaya a la pasado semana semana semana día día día día día
pregunta
10

10. Durante el mes pasado, ¿con qué frecuencia comió mezclas de alimentos que incluyeran verduras? Incluya comidas tales como los sándwiches, cacerolas, caldos, comida fritas, torta de huevo, y tacos.

- 0 1 2 3 4 5 6 7 8 9
Nunca 1-3 vez 1 -2 vez 3-4 veces 5-6 veces 1 vez 2 veces 3 veces 4 veces 5 o más
del mes por por por por día por día por día por día veces por
pasado semana semana semana día día día día día

11. ¿Ha utilizado alguna vez antes una tarjeta de eWIC?

- 0 1
No Sí

SECTION 1B

My name OR WIC family ID number is: _____.

1. I am:

1 2
Male Female

2. How old are you? _____ please write

3. Including yourself, how many adults 18 years or older currently live in your home? _____ please write

4. How many children ages 5 to 17 years old live in your home? _____ please write

5. How many children younger than 5 years old live in your home? _____ please write

6. Who in your household receives WIC food benefits? Please select all that apply.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6
Pregnant mom	Breastfeeding only mom	Breast feeding and formula feeding mom	Fully formula feeding mom	One or more children 1-2 years old	One or more children 3-5 years old	Other

If other, please specify _____

7. What were your most recent height and weight measurements?

Height (in feet and inches) _____ please write Weight (in pounds) _____ please write

8. What is the highest level of education that you have completed?

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6
Less than high school	Some high school	High school diploma or equivalent	Some college	2-year college degree	4-year college degree	Greater than 4-year degree

Section 2B:

These questions are about food you ate or drank during the past month, that is, the past 30 days. When answering, please include meals and snacks at home, at work or school, in restaurants, and anyplace else.

1. During the past month, how often did you eat hot or cold cereals? Mark one

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Never →	1 time	2-3 times	1 time	2 times	3-4 times	5-6 times	1 time	2 or more
Go to question 4	last month	last month	per week	per week	per week	per week	per day	times per day

2. During the past month, what type of cereal did you usually eat?

_____ (please type name of cereal)

3. If there was another kind of cereal that you usually ate during the past month, what kind was it?

_____ (please type, if none leave blank)

4. During the past month, how often did you have any milk (either to drink or on cereal)? Include regular milks, chocolate or other flavored milks, lactose-free milk, and buttermilk. Please do not include soy or small amounts of milk in coffee or tea. Mark one.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8	<input type="checkbox"/> 9	<input type="checkbox"/> 10
Never →	1 time	2-3	1 time	2 times	3-4 times	5-6	1 time	2-3	4-5	6 or
Go to	last	times	per	per	per week	times	per	times	times	more
question	month	last	week	week		per	day	per	per	times
6		month				week		day	day	per day

5. During the past month, what kind of milk did you usually drink? Please select one.

<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6
Whole or regular milk	2% fat or reduced fat milk	1%, ½ %, or low-fat milk	Fat-free, skim, or nonfat milk	Soy milk	Other kind of milk

6. During the past month, how often did you drink regular soda or pop that contains sugar? Do not include diet soda. Mark one.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8	<input type="checkbox"/> 9	<input type="checkbox"/> 10
Never	1 time	2-3	1 time	2 times	3-4 times	5-6	1 time	2-3	4-5	6 or
	last	times	per	per	per week	times	per	times	times	more
	month	last	week	week		per	day	per	per	times
		month				week		day	day	per day

7. During the past month, how often did you drink 100% pure fruit juice such as orange, mango, apple, grape, and pineapple juices? Do not include fruit-flavored drinks with added sugar or fruit juice you made at home and added sugar to. Mark one.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8	<input type="checkbox"/> 9	<input type="checkbox"/> 10
Never	1 time	2-3	1 time	2 times	3-4 times	5-6	1 time	2-3	4-5	6 or
	last	times	per	per	per week	times	per	times	times	more
	month	last	week	week		per	day	per	per	times
		month				week		day	day	per day

8. During the past month, how often did you drink coffee or tea that had sugar or honey added to it? Include coffee and tea you sweetened yourself and presweetened tea and coffee drinks such as Arizona Iced Tea and Frappuccino. Do not include artificially sweetened coffee or diet tea.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8	<input type="checkbox"/> 9	<input type="checkbox"/> 10
Never	1 time	2-3	1 time	2 times	3-4 times	5-6	1 time	2-3	4-5	6 or
	last	times	per	per	per week	times	per	times	times	more
	month	last	week	week		per	day	per	per	times
		month				week		day	day	per day

9. During the past month, how often did you drink sweetened fruit drinks, sports or energy drinks, such as Kool-Aid, lemonade, Hi-C, cranberry drink, Gatorade, Red Bull or Vitamin Water? Include fruit juices you made at home and added sugar to. Do not include diet drinks or artificially sweetened drinks.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8	<input type="checkbox"/> 9	<input type="checkbox"/> 10
Never	1 time	2-3	1 time	2 times	3-4 times	5-6	1 time	2-3	4-5	6 or more
	last	times	per	per	per week	times	per	times	times	times
	month	last	week	week		per	day	per	per	per day
		month				week		day	day	

10. During the past month, how often did you eat fruit? Include fresh, frozen, or canned fruit. Do not include juices.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	6 <input type="checkbox"/>	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Never	1 time	2-3 times	1 time	2 times	3-4 times	5-6 times	1 time	2 or more
	last	last	per week	per week	per week	per week	per	times
	month	month					day	per day

11. During the past month, how often did you eat a green leafy or lettuce salad, with or without other vegetables?

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	6 <input type="checkbox"/>	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Never	1 time	2-3 times	1 time	2 times	3-4 times	5-6 times	1 time	2 or more
	last	last	per week	per week	per week	per week	per	times
	month	month					day	per day

12. During the past month, how often did you eat any kind of fried potatoes, including French fries, home fries, or hash brown potatoes?

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	6 <input type="checkbox"/>	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Never	1 time	2-3 times	1 time	2 times	3-4 times	5-6 times	1 time	2 or more
	last	last	per week	per week	per week	per week	per	times
	month	month					day	per day

13. During the past month, how often did you eat any other kind of potatoes, such as baked, boiled, mashed potatoes, sweet potatoes, or potato salad?

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	6 <input type="checkbox"/>	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Never	1 time	2-3 times	1 time	2 times	3-4 times	5-6 times	1 time	2 or more
	last	last	per week	per week	per week	per week	per	times
	month	month					day	per day

14. During the past month, how often did you eat refried beans, baked beans, beans in soup, pork and beans or any other type of cooked beans? Do not include green beans.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	6 <input type="checkbox"/>	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Never	1 time	2-3 times	1 time	2 times	3-4 times	5-6 times	1 time	2 or more
	last	last	per week	per week	per week	per week	per	times
	month	month					day	per day

15. During the past month, how often did you eat brown rice or other cooked whole grains such as bulgar, cracked wheat, or millet? Do not include white rice.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	6 <input type="checkbox"/>	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Never	1 time	2-3 times	1 time	2 times	3-4 times	5-6 times	1 time	2 or more
	last	last	per week	per week	per week	per week	per	times
	month	month					day	per day

16. During the past month, not including what you just told me about (green salad, potatoes, cooked dried beans), how often did you eat other vegetables ?

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	6 <input type="checkbox"/>	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Never	1 time	2-3 times	1 time	2 times	3-4 times	5-6 times	1 time	2 or more
	last month	last month	per week	per week	per week	per week	per day	times per day

17. During the past month, how often did you have Mexican-type salsa made with tomato?

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	6 <input type="checkbox"/>	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Never	1 time	2-3 times	1 time	2 times	3-4 times	5-6 times	1 time	2 or more
	last month	last month	per week	per week	per week	per week	per day	times per day

18. During the past month, how often did you eat pizza? Include frozen pizza, fast food pizza, and homemade pizza.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	6 <input type="checkbox"/>	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Never	1 time	2-3 times	1 time	2 times	3-4 times	5-6 times	1 time	2 or more
	last month	last month	per week	per week	per week	per week	per day	times per day

19. During the past month, how often did you have tomato sauces such as spaghetti or noodles or mixed into foods such as lasagna? Do not include tomato sauce on pizza.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	6 <input type="checkbox"/>	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Never	1 time	2-3 times	1 time	2 times	3-4 times	5-6 times	1 time	2 or more
	last month	last month	per week	per week	per week	per week	per day	times per day

20. During the past month, how often did you eat any kind of cheese? Include cheese as a snack, cheese on cheese burgers, sandwiches, and cheese in foods such as lasagna, quesadillas, or casseroles. Do not include cheese on pizza.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	6 <input type="checkbox"/>	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Never	1 time	2-3 times	1 time	2 times	3-4 times	5-6 times	1 time	2 or more
	last month	last month	per week	per week	per week	per week	per day	times per day

21. During the past month, how often did you eat red meat, such as beef, pork, ham, or sausage? Include red meat you had in sandwiches, lasagna, stew, and other mixtures. Red meats may also include veal, lamb, and any lunch meats made with these meats.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	6 <input type="checkbox"/>	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Never	1 time	2-3 times	1 time	2 times	3-4 times	5-6 times	1 time	2 or more
	last month	last month	per week	per week	per week	per week	per day	times per day

22. During the past month, how often did you eat any processed meat such as bacon, lunch meats, or hot dogs? Include processed meats you had in sandwiches, soups, pizza, casseroles, and other mixtures. Processed meats are those preserved by smoking, curing, or salting, or by the addition of preservatives. Examples are ham, bacon, pastrami, salami, sausages, bratwursts, Frankfurters, hot dogs, and spam.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	6 <input type="checkbox"/>	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Never	1 time	2-3 times	1 time	2 times	3-4 times	5-6 times	1 time	2 or more
	last month	last month	per week	per week	per week	per week	per day	times per day

23. During the past month, how often did you eat whole grain bread including toast, rolls, and in sandwiches? Whole grain breads include whole wheat, rye, oatmeal, and pumpernickel. Do not include white bread.

- | | | | | | | | | |
|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| <input type="checkbox"/> 0 | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 | 6 <input type="checkbox"/> | <input type="checkbox"/> 7 | <input type="checkbox"/> 8 |
| Never | 1 time | 2-3 times | 1 time | 2 times | 3-4 times | 5-6 times | 1 time | 2 or more times |
| | last month | last month | per week | per week | per week | per week | per day | per day |

24. During the past month, how often did you eat chocolate or any other types of candy? Do not include sugar free candy.

- | | | | | | | | | |
|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| <input type="checkbox"/> 0 | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 | 6 <input type="checkbox"/> | <input type="checkbox"/> 7 | <input type="checkbox"/> 8 |
| Never | 1 time | 2-3 times | 1 time | 2 times | 3-4 times | 5-6 times | 1 time | 2 or more times |
| | last month | last month | per week | per week | per week | per week | per day | per day |

25. During the past month, how often did you eat doughnuts, sweet rolls, Danish, muffins, pan dulce, or pop-tarts? Do not include sugar-free items.

- | | | | | | | | | |
|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| <input type="checkbox"/> 0 | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 | 6 <input type="checkbox"/> | <input type="checkbox"/> 7 | <input type="checkbox"/> 8 |
| Never | 1 time | 2-3 times | 1 time | 2 times | 3-4 times | 5-6 times | 1 time | 2 or more times |
| | last month | last month | per week | per week | per week | per week | per day | per day |

26. During the past month, how often did you eat cookies, cake, pie, or brownies? Do not include sugar-free kinds.

- | | | | | | | | | |
|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| <input type="checkbox"/> 0 | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 | 6 <input type="checkbox"/> | <input type="checkbox"/> 7 | <input type="checkbox"/> 8 |
| Never | 1 time | 2-3 times | 1 time | 2 times | 3-4 times | 5-6 times | 1 time | 2 or more times |
| | last month | last month | per week | per week | per week | per week | per day | per day |

27. During the past month, how often did you eat ice cream or other frozen desserts? Do not include sugar-free kinds.

- | | | | | | | | | |
|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| <input type="checkbox"/> 0 | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 | 6 <input type="checkbox"/> | <input type="checkbox"/> 7 | <input type="checkbox"/> 8 |
| Never | 1 time | 2-3 times | 1 time | 2 times | 3-4 times | 5-6 times | 1 time | 2 or more times |
| | last month | last month | per week | per week | per week | per week | per day | per day |

28. During the past month, how often did you eat popcorn?

- | | | | | | | | | |
|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| <input type="checkbox"/> 0 | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 | 6 <input type="checkbox"/> | <input type="checkbox"/> 7 | <input type="checkbox"/> 8 |
| Never | 1 time | 2-3 times | 1 time | 2 times | 3-4 times | 5-6 times | 1 time | 2 or more times |
| | last month | last month | per week | per week | per week | per week | per day | per day |

SECTION 3B

Please rate each of the following questions using the scale provided.

1. Using my WIC food benefits is easy and convenient when shopping at grocery stores that accept WIC food benefits.

- | | | | | |
|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 |
| Never | Rarely | Sometimes | Most of the time | Always |

2. In the previous 3 months, I have chosen to use all of my WIC food benefits.

- | | |
|----------------------------|----------------------------|
| <input type="checkbox"/> 1 | <input type="checkbox"/> 2 |
| Yes | No |

3. On average, in the previous 3 months, which WIC food benefits have you used? Include all food benefits you and/or your child or children receive. *Please select all that apply.* If you have used all of your food benefits, go to question 7.

- | | | | | | | | | | |
|-----------------------------|----------------------------|----------------------------|----------------------------|--|----------------------------------|----------------------------|----------------------------|---------------------------------|----------------------------|
| <input type="checkbox"/> 0 | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 | <input type="checkbox"/> 6 | <input type="checkbox"/> 7 | <input type="checkbox"/> 8 | <input type="checkbox"/> 9 |
| I have used all my benefits | Breakfast Cereal | Milk, Yogurt, or Cheese | Fruits and Vegetables | Whole Wheat Bread and Other Whole Grains | Beans, legumes, or peanut butter | Fruit Juice | Infant formula | Baby food fruits and vegetables | Baby food meat |

4. On average, in the previous 3 months, which WIC food benefits have you NOT used? Include all food benefits you and/or your child or children receive. *Please select all that apply.*

- | | | | | | | | | | |
|-----------------------------|----------------------------|----------------------------|----------------------------|--|----------------------------------|----------------------------|----------------------------|---------------------------------|----------------------------|
| <input type="checkbox"/> 0 | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 | <input type="checkbox"/> 6 | <input type="checkbox"/> 7 | <input type="checkbox"/> 8 | <input type="checkbox"/> 9 |
| I have used all my benefits | Breakfast Cereal | Milk, Yogurt, or Cheese | Fruits and Vegetables | Whole Wheat Bread and Other Whole Grains | Beans, legumes, or peanut butter | Fruit Juice | Infant formula | Baby food fruits and vegetables | Baby food meat |

5. In the previous 3 months, I have chosen to use only some of my WIC food benefits because it takes too long to check out at the register. If no, go to question 6.

- | | |
|----------------------------|----------------------------|
| <input type="checkbox"/> 1 | <input type="checkbox"/> 2 |
| Yes | No |

5a. If you answered yes to question 5, in the previous 3 months, how often have you used only some of your WIC food benefits because it takes too long to check out at the register?

- | | | | | |
|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 |
| Never | Rarely | Sometimes | Most of the time | Always |

6. In the previous 3 months, I have chosen to use only some of my WIC food benefits because my family cannot eat all of the food before it spoils. If no, go to question 7.

- | | |
|----------------------------|----------------------------|
| <input type="checkbox"/> 1 | <input type="checkbox"/> 2 |
| Yes | No |

6a. If you answered yes to question 6, in the previous 3 months, how often have you used only some of your WIC food benefits because your family cannot eat all the food before it spoils?

- | | | | | |
|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 |
| Never | Rarely | Sometimes | Most of the time | Always |

7. I often feel embarrassed when using my WIC food benefits at grocery stores that accept WIC food benefits.

- | | | | | |
|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 |
| Strongly Disagree | Disagree | Undecided | Agree | Strongly Agree |

8. In a typical month, how many times do you shop to use your WIC food benefits?

- | | | | | |
|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 |
| 1-2 times | 3-4 times | 5 times | 6 times | 7+ times |

9. My overall shopping experience using WIC food benefits is positive.

- | | | | | |
|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 |
| Strongly Disagree | Disagree | Undecided | Agree | Strongly Agree |

We would like to get your feedback about your experience using your eWIC card so we can continue to improve your WIC experience. When reading the following statements, please think about your WIC shopping experience since you received your eWIC card.

10. I have had food benefits left over on my eWIC card at the end of the month.

- | | | | | |
|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 |
| Never | Rarely | Sometimes | Most of the time | Always |

11. I have lost my eWIC card and had to get it replaced.

- | | | | | |
|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 |
| Never | Rarely | Sometimes | Most of the time | Always |

12. I have tried to use my eWIC card at self-checkout but was unable to.

- | | | | | |
|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 |
| Never | Rarely | Sometimes | Most of the time | Always |

13. I have been unsure which foods are WIC approved and which ones are not WIC approved.

- | | | | | |
|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 |
| Never | Rarely | Sometimes | Most of the time | Always |

14. I have forgotten to go back to the WIC office to reload my eWIC card

- | | | | | |
|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 |
| Never | Rarely | Sometimes | Most of the time | Always |

15. I have been unable to use the eWIC app on my phone.

- | | | | | |
|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 |
| Never | Rarely | Sometimes | Most of the time | Always |

16. I have had difficulty checking my benefit balances on my eWIC card.

- | | | | | |
|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 |
| Never | Rarely | Sometimes | Most of the time | Always |

17. I have been unable to use multiple eWIC cards during one transaction.

1 2 3 4 5 6
 Never Rarely Sometimes Most of the time Always Not Applicable

18. I feel less embarrassed using my eWIC card than I did using paper WIC checks.

1 2 3 4 5 6
 Strongly Disagree Disagree Undecided Agree Strongly Agree Not Applicable

19. I am more likely to use all of my WIC food benefits with my eWIC card than with paper WIC checks

1 2 3 4 5
 Strongly Disagree Disagree Undecided Agree Strongly Agree

20. I prefer using my eWIC card for my WIC food benefits rather than paper WIC checks.

1 2 3 4 5
 Strongly Disagree Disagree Undecided Agree Strongly Agree

21. Overall, eWIC has improved my shopping experience.

1 2 3 4 5
 Strongly Disagree Disagree Undecided Agree Strongly Agree

SECTION 4B

INSTRUCTIONS

- Think about what you usually ate last month.
- Please think about all the fruits and vegetables that you ate last month. Include those that were:
 - raw and cooked,
 - eaten as snacks and at meals,
 - eaten at home and away from home (restaurants, friends, take-out), and
 - eaten alone and mixed with other foods.
- Report how many times per month, week, or day you ate each food, and if you ate it, how much you usually had.
- If you mark "Never" for a question, follow the "Go to" instruction.
- Choose the best answer for each question. Mark only one response for each question.

1. Over the last month, how many times per month, week, or day did you drink 100% juice such as orange, apple, grape, or grapefruit juice? Do not count fruit drinks like Kool-Aid, lemonade, Hi-C, cranberry juice drink, Tang, and Twister. Include juice you drank at all mealtimes and between meals.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8	<input type="checkbox"/> 9
Never →	1-3	1-2 times	3-4 times	5-6 times	1 time	2 times	3 times	4 times	5 or more
Go to	times	per week	per week	per week	per day	per day	per day	per day	times
question	last								per day
2	month								

1a. Each time you drank 100% juice, how much did you usually drink?

- | | | | |
|---|---|--|---|
| <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 |
| Less than $\frac{3}{4}$ cup
(less than 6 ounces) | $\frac{3}{4}$ to $1\frac{1}{4}$ cup
(6 to 10 ounces) | $1\frac{1}{4}$ to 2 cups
(10-16 ounces) | More than 2 cups
(more than 16 ounces) |

2. Over the last month, how many times per month, week, or day did you eat fruit? Count any kind of fruit- fresh, canned, and frozen. Do not count juices. Include fruit you ate at all mealtimes and for snacks.

- | | | | | | | | | | |
|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| <input type="checkbox"/> 0 | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 | <input type="checkbox"/> 6 | <input type="checkbox"/> 7 | <input type="checkbox"/> 8 | <input type="checkbox"/> 9 |
| Never → | 1-3 | 1-2 times | 3-4 times | 5-6 times | 1 time | 2 times | 3 times | 4 times | 5 or more |
| Go to | times | per week | per week | per week | per day | per day | per day | per day | times |
| question | last | | | | | | | | per day |
| 3 | month | | | | | | | | |

2a. Each time you ate fruit, how much did you usually eat?

- | | | | |
|----------------------------|----------------------------|----------------------------|----------------------------|
| <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 |
| Less than 1 medium fruit | 1 medium fruit | 2 medium fruits | More than 2 medium fruits |
- OR**
- | | | | |
|-----------------------------|----------------------------|----------------------------|----------------------------|
| <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 |
| Less than $\frac{1}{2}$ cup | About a $\frac{1}{2}$ cup | About 1 cup | More than 1 cup |

3. Over the last month, how often did you eat lettuce salad (with or without other vegetables)?

- | | | | | | | | | | |
|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| <input type="checkbox"/> 0 | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 | <input type="checkbox"/> 6 | <input type="checkbox"/> 7 | <input type="checkbox"/> 8 | <input type="checkbox"/> 9 |
| Never → | 1-3 | 1-2 times | 3-4 times | 5-6 times | 1 time | 2 times | 3 times | 4 times | 5 or more |
| Go to | times | per week | per week | per week | per day | per day | per day | per day | times |
| question | last | | | | | | | | per day |
| 4 | month | | | | | | | | |

3a. Each time you ate lettuce salad, how much did you usually eat?

- | | | | |
|----------------------------|----------------------------|----------------------------|----------------------------|
| <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 |
| About $\frac{1}{2}$ cup | About 1 cup | About 2 cups | More than 2 cups |

4. Over the last month, how often did you eat French Fries or fried potatoes?

- | | | | | | | | | | |
|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| <input type="checkbox"/> 0 | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 | <input type="checkbox"/> 6 | <input type="checkbox"/> 7 | <input type="checkbox"/> 8 | <input type="checkbox"/> 9 |
| Never → | 1-3 | 1-2 times | 3-4 times | 5-6 times | 1 time | 2 times | 3 times | 4 times | 5 or more |
| Go to | times | per week | per week | per week | per day | per day | per day | per day | times |
| question | last | | | | | | | | per day |
| 5 | month | | | | | | | | |

4a. Each time you ate French fries or fried potatoes, how much did you usually eat?

- | | | | |
|--|---|-------------------------------|--|
| <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 |
| Small order or less
(About 1 cup or less) | Medium order
(About $1\frac{1}{2}$ cups) | Large order
(About 2 cups) | Super-size order or more
(About 3 cups or more) |

5. Over the last month, how often did you eat other white potatoes? Count baked, boiled, and mashed potatoes, potato salad, and white potatoes that were not fried.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	6 <input type="checkbox"/>	<input type="checkbox"/> 7	<input type="checkbox"/> 8	<input type="checkbox"/> 9
Never →	1-3	1-2 times	3-4 times	5-6 times	1 time	2 times	3 times	4 times	5 or more
Go to	times	per week	per week	per week	per	per day	per day	per day	times
question	last				day				per day
6	month								

5a. Each time you ate these potatoes, how much did you usually eat?

<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
1 small potato or less (½ cup or less)	1 medium potato (½ cup to 1 cup)	1 large potato (1 to 1 ½ cups)	2 medium potatoes or more (1 ½ cups or more)

6. Over the past month, how often did you eat cooked, dried beans? Count baked beans, bean soup, refried beans, pork and beans, and other bean dishes.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	6 <input type="checkbox"/>	<input type="checkbox"/> 7	<input type="checkbox"/> 8	<input type="checkbox"/> 9
Never →	1-3	1-2 times	3-4 times	5-6 times	1 time	2 times	3 times	4 times	5 or more
Go to	times	per week	per week	per week	per	per day	per day	per day	times
question	last				day				per day
7	month								

6a. Each time you ate these beans, how much did you usually eat?

<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
Less than ½ cup	½ cup to 1 cup	1 to 1 ½ cups	More than 1 ½ cups

7. Over the last month, how often did you eat other vegetables?

DO NOT COUNT:

- Lettuce salads
- White potatoes
- Vegetables in mixtures, such as in sandwiches, omelets, casseroles, Mexican dishes, stews, stir-fry, soups, etc.

COUNT:

- Cooked dried beans
- Rice
- All other vegetables- raw, cooked, canned, or frozen

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	6 <input type="checkbox"/>	<input type="checkbox"/> 7	<input type="checkbox"/> 8	<input type="checkbox"/> 9
Never →	1-3	1-2 times	3-4 times	5-6 times	1 time	2 times	3 times	4 times	5 or more
Go to	times	per week	per week	per week	per	per day	per day	per day	times
question	last				day				per day
8	month								

7a. Each of these times you ate other vegetables, how much did you usually eat?

<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
Less than ½ cup	½ cup to 1 cup	1 to 2 cups	More than 2 cups

8. Over the last month, how often did you eat tomato sauce? Include tomato sauce on pasta or macaroni, rice, pizza, and other dishes.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	6 <input type="checkbox"/>	<input type="checkbox"/> 7	<input type="checkbox"/> 8	<input type="checkbox"/> 9
Never →	1-3	1-2 times	3-4 times	5-6 times	1 time	2 times	3 times	4 times	5 or more
Go to	times	per week	per week	per week	per	per day	per day	per day	times
question	last				day				per day
9	month								

8a. Each time you ate tomato sauce, how much did you usually eat?

- 1 2 3 4
About ¼ cups About ½ cup About 1 cup More than 1 cup

9. Over the last month, how often did you eat vegetable soups? Include tomato soup, gazpacho, beef with vegetable soup, minestrone soup, and other soups made with vegetables.

- 0 1 2 3 4 5 6 7 8 9
Never → 1-3 1-2 times 3-4 times 5-6 times 1 time 2 times 3 times 4 times 5 or more
Go to times **per week** **per week** **per week** **per** **per day** **per** **per** times
question **last** **day** **day** **day** **per day**
10 **month**

9a. Each time you ate vegetable soup, how much did you usually eat?

- 1 2 3 4
Less than 1 cup 1 to 2 cups 2 to 3 cups More than 3 cups

10. Over the last month, how often did you eat mixtures that included vegetables? Count such foods as sandwiches, casseroles, stews, stir-fry, omelets, and tacos.

- 0 1 2 3 4 5 6 7 8 9
Never → 1-3 1-2 times 3-4 times 5-6 times 1 time 2 times 3 times 4 times 5 or more
times **per week** **per week** **per week** **per** **per day** **per** **per** times
last **day** **day** **day** **per day**
month

11. Have you ever used eWIC before?

- 0 1
No Yes

END OF SURVEY

SECCIÓN 1B

Mi número de identificación familiar de WIC es _____

1. Yo soy:

- 1 2
Hombre Mujer

2. ¿Cuántos años tiene? _____ *por favor escriba*

3. Incluyéndose a usted mismo, ¿cuántos adultos de 18 o más años viven actualmente en su hogar?

por favor escriba

4. ¿Cuántos niños de 5 a 17 años viven en su hogar? _____ *por favor escriba*

5. ¿Cuántos niños menores de 5 años viven en su hogar? _____ *por favor escriba*

6. ¿Quién en su hogar recibe los beneficios de comida de WIC? Por favor seleccione todas las respuestas que correspondan.

- | | | | | | | |
|----------------------------|----------------------------|-----------------------------|----------------------------|-----------------------------|-----------------------------|----------------------------|
| <input type="checkbox"/> 0 | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 | 6 <input type="checkbox"/> |
| Mujer embarazada | Mamá que sólo da pecho | Mamá que da pecho y fórmula | Mamá que sólo usa fórmula | Uno o más niños de 1-2 años | Uno o más niños de 3-5 años | Otro |

En otro caso, por favor especifique _____

7. ¿Cuáles son sus medidas de su peso y estatura más recientes?

Altura (en pies y pulgadas) _____ *por favor escriba* Peso (en libras) _____ *por favor escriba*

8. ¿Cuál es el nivel de educación más alto que usted completó?

- | | | | | | | |
|-----------------------------|----------------------------|-------------------------------------|----------------------------|--------------------------------|--------------------------------|---------------------------------------|
| <input type="checkbox"/> 0 | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 | 6 <input type="checkbox"/> |
| Menos de escuela secundaria | Algo de escuela secundaria | Diploma de secundaria o equivalente | Algo de universidad | Título universitario de 2-años | Título universitario de 4-años | Título universitario de más de 4-años |

SECCIÓN 2B

Estas preguntas son sobre los alimentos que comió o bebió durante el mes pasado, es decir, durante los últimos 30 días. Cuando conteste, por favor incluya las comidas y meriendas (antojitos) que haya consumido en la casa, el trabajo, la escuela, en restaurantes, y en cualquier otro lugar.

1. Durante el mes pasado, ¿qué tan seguido comió cereales calientes o fríos? Marque sólo una opción.

- | | | | | | | | | |
|----------------------------|-----------------------------|---------------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| <input type="checkbox"/> 0 | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 | 6 <input type="checkbox"/> | <input type="checkbox"/> 7 | <input type="checkbox"/> 8 |
| Nunca Vaya a la pregunta 4 | 1 vez durante el mes pasado | 2-3 veces durante el mes pasado | 1 vez por semana | 2 veces por semana | 3-4 veces por semana | 5-6 veces por semana | 2 veces por día | 2 o más veces al día |

2. Durante el mes pasado, ¿qué tipo de cereal comió usualmente?

_____ (por favor escriba el nombre del cereal)

3. Si hay otro tipo de cereal que usted comió durante el mes pasado usualmente, ¿cuál fue?

_____ (por favor escriba, si no deje en blanco)

4. Durante el mes pasado, ¿con qué frecuencia tomó leche (ya sea para beber o en el cereal)? Incluya la leche regular, leche lactosa sin grasa, suero de leche, de chocolate o de cualquier otro tipo de sabor. Por favor no incluya soya o pequeñas cantidades de leche en el café o en el té. Marque sólo una opción.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8	<input type="checkbox"/> 9	<input type="checkbox"/> 10
Nunca→	1 vez	2-3	1 vez	2 veces	3-4	5-6	1 vez	2-3	4-5	6 o más
Vaya a la	durante	veces	por	por	veces	veces	por día	Veces	veces	veces
pregunta	el mes	durante	semana	semana	por	por		por día	por día	por día
6	pasado	el mes			semana	semana				
		pasado								

5. Durante el mes pasado, ¿qué tipo de leche bebió usualmente? Por favor marque sólo una opción.

<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6
Leche entera o regular	Leche con 2 % de grasa o leche reducida en grasa	Leche con 1 %, de grasa ½ %, o leche baja en grasa	Libre de grasa, descremada, o sin grasa	Leche de soya	Otro tipo de leche

6. Durante el mes pasado, ¿con qué frecuencia bebió gaseosas (soda o bebida carbonatada) que contienen azúcar? Por favor no incluya refrescos de dieta. Marque una opción.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8	<input type="checkbox"/> 9	<input type="checkbox"/> 10
Nunca	1 vez	2-3 veces	1 vez	2 veces	3-4	5-6	1 vez	2-3	4-5	6 o mas
	durante	durante el	por	por	veces	veces	por día	Veces	veces	veces
	el mes	mes	semana	semana	por	por		por día	por día	por día
	pasado	pasado			semana	semana				

7. Durante el mes pasado, ¿con qué frecuencia bebió jugo 100% de fruta, como de naranja, mango, manzana, uva y jugo de piña? No incluya bebidas con sabor a frutas que contienen azúcar agregada o jugo de fruta que usted haya hecho en su casa y le agrega azúcar. Marque sólo una opción.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8	<input type="checkbox"/> 9	<input type="checkbox"/> 10
Nunca	1 vez	2-3 veces	1 vez	2 veces	3-4	5-6	1 vez	2-3	4-5	6 o mas
	durante	durante el	por	por	veces	veces	por día	Veces	veces	veces
	el mes	mes	semana	semana	por	por		por día	por día	por día
	pasado	pasado			semana	semana				

8. Durante el mes pasado, ¿con qué frecuencia bebió café o té que ya tenía azúcar o miel añadidos? Incluya el café o té que usted mismo haya endulzado, y té o café pre-endulzado como Arizona Ice Tea y Frappuccino. Incluya té, café, o té de dieta endulzado artificialmente.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8	<input type="checkbox"/> 9	<input type="checkbox"/> 10
Nunca	1 vez	2-3 veces	1 vez	2 veces	3-4	5-6	1 vez	2-3	4-5	6 o mas
	durante	durante el	por	por	veces	veces	por día	Veces	veces	veces
	el mes	mes	semana	semana	por	por		por día	por día	por día
	pasado	pasado			semana	semana				

9. Durante el mes pasado, ¿con qué frecuencia bebió bebidas de frutas endulzadas, refrescos de deportes o bebidas energéticas, tales como Kool-Aid, limonada, HI-C, arándano, Gatorade, Red Bull o agua vitaminada? Incluya jugos de frutas que usted hace en casa y a los que les añade azúcar. No incluya bebidas dietéticas o bebidas con endulzantes artificiales.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8	<input type="checkbox"/> 9	<input type="checkbox"/> 10
Nunca	1 vez durante el mes pasado	2-3 veces durante el mes pasado	1 vez por semana	2 veces por semana	3-4 veces por semana	5-6 veces por semana	1 vez por día	2-3 Veces por día	4-5 veces por día	6 o mas veces por día

10. Durante el mes pasado, ¿con qué frecuencia comió frutas? Incluya las frutas frescas, congeladas o enlatadas. No incluya los jugos.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Nunca	1 vez durante el mes pasado	2-3 veces durante el mes pasado	1 vez por semana	2 veces por semana	3-4 veces por semana	5-6 veces por semana	1 vez por día	2 o más veces al día

11. Durante el mes pasado, ¿con qué frecuencia comió verduras de hojas verdes o ensalada de lechuga, con o sin otro vegetal?

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Nunca	1 vez durante el mes pasado	2-3 veces durante el mes pasado	1 vez por semana	2 veces por semana	3-4 veces por semana	5-6 veces por semana	1 vez por día	2 o más veces al día

12. Durante el mes pasado, ¿con qué frecuencia comió cualquier clase de papas fritas, incluya las papas fritas de restaurante o hechas en casa, o tortas de papas?

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Nunca	1 vez durante el mes pasado	2-3 veces durante el mes pasado	1 vez por semana	2 veces por semana	3-4 veces por semana	5-6 veces por semana	1 vez por día	2 o más veces al día

13. Durante el mes pasado, ¿con qué frecuencia comió cualquier otra clase de papas, tales como al horno, hervidas, puré de papas, camote o ensalada de papas?

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Nunca	1 vez durante el mes pasado	2-3 veces durante el mes pasado	1 vez por semana	2 veces por semana	3-4 veces por semana	5-6 veces por semana	1 vez por día	2 o más veces al día

14. Durante el mes pasado, ¿con qué frecuencia comió frijoles fritos, al horno, frijol en sopa, frijol con puerco, y frijol u cualquier otro tipo de frijoles cocidos? No incluya las legumbres (judías) verdes.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Nunca	1 vez durante el mes pasado	2-3 veces durante el mes pasado	1 vez por semana	2 veces por semana	3-4 veces por semana	5-6 veces por semana	1 vez por día	2 o más veces al día

15. Durante el mes pasado, ¿con qué frecuencia comió arroz integral o cualquier otro tipo de grano entero cocido tal como trigo bulgar, trigo quebrado o trigo millet? No incluya el arroz blanco.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	6 <input type="checkbox"/>	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Nunca	1 vez durante el mes pasado	2-3 veces durante el mes pasado	1 vez por semana	2 veces por semana	3-4 veces por semana	5-6 veces por semana	1 vez por día	2 o más veces al día

16. Durante el mes pasado, no incluya lo que usted me acaba de decir sobre (la ensalada verde, papas, frijoles cosidos), ¿con qué frecuencia usted comió otro tipo de vegetales?

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	6 <input type="checkbox"/>	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Nunca	1 vez durante el mes pasado	2-3 veces durante el mes pasado	1 vez por semana	2 veces por semana	3-4 veces por semana	5-6 veces por semana	1 vez por día	2 o más veces al día

17. Durante el mes pasado, ¿con qué frecuencia usted comió salsa tipo mexicana que usted hizo con jitomate (tomate)?

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	6 <input type="checkbox"/>	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Nunca	1 vez durante el mes pasado	2-3 veces durante el mes pasado	1 vez por semana	2 veces por semana	3-4 veces por semana	5-6 veces por semana	2 veces por día	2 o más veces al día

18. Durante el mes pasado, ¿con qué frecuencia usted comió pizza? Incluya la pizza congelada, pizza de restaurante y pizza hecha en casa.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	6 <input type="checkbox"/>	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Nunca	1 vez durante el mes pasado	2-3 veces durante el mes pasado	1 vez por semana	2 veces por semana	3-4 veces por semana	5-6 veces por semana	1 vez por día	2 o más veces al día

19. Durante el mes pasado, ¿con qué frecuencia comió purés hechos de jitomate (tomates) tal como los que se utilizan en el espagueti, en la pasta o en los alimentos mezclados tales como de la lasaña? No incluya salsa de jitomate para la pizza.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	6 <input type="checkbox"/>	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Nunca	1 vez durante el mes pasado	2-3 veces durante el mes pasado	1 vez por semana	2 veces por semana	3-4 veces por semana	5-6 veces por semana	1 vez por día	2 o más veces al día

20. Durante el mes pasado, ¿con qué frecuencia comió cualquier tipo de queso? Incluya el queso que comió como bocadillo, queso en hamburguesas, sándwiches, y queso que añadió en comidas como de lasaña, quesadillas, o cacerolas. No incluya el queso de la pizza.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	6 <input type="checkbox"/>	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Nunca	1 vez durante el mes pasado	2-3 veces durante el mes pasado	1 vez por semana	2 veces por semana	3-4 veces por semana	5-6 veces por semana	1 vez por día	2 o más veces al día

21. Durante el mes pasado, ¿con qué frecuencia comió carnes rojas, como carne de res, puerco, jamón, o salchicha? Incluya carnes rojas que añadió en el sándwich, lasaña, caldos y otras combinaciones. Las carnes rojas también puede ser la carne de cordero y cualquier almuerzo hecho con estas carnes.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	6 <input type="checkbox"/>	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Nunca	1 vez durante el mes pasado	2-3 veces durante el mes pasado	1 vez por semana	2 veces por semana	3-4 veces por semana	5-6 veces por semana	1 vez por día	2 o más veces al día

22. Durante el mes pasado, ¿con qué frecuencia comió carnes procesadas, tales como tocino, almuerzo de carnes, o perros calientes? Incluya carnes procesadas que añadió a su sándwich, sopas, pizza, cacerolas, y otras combinaciones. Las carnes procesadas son aquellas que se conservan al ahumar, curar o salar, o mediante la adición de conservantes. Los ejemplos son jamón, tocino, pastrami, salami, salchichas, salchichas, Frankfruters, perros calientes y spam.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Nunca	1 vez	2-3 veces	1 vez	2 veces	3-4 veces	5-6 veces	1 vez	2 o más
	durante el	durante el	por	por	por	por	por día	veces al
	mes pasado	mes pasado	semana	semana	semana	semana		día

23. Durante el mes pasado, ¿con qué frecuencia comió pan integral incluyendo el tostado, bollos y en sándwiches? El pan integral o de grano entero incluye el pan de trigo, rye, avena y de centeno. No incluya el pan blanco.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Nunca	1 vez	2-3 veces	1 vez	2 veces	3-4 veces	5-6 veces	1 vez	2 o más
	durante el	durante el	por	por	por	por	por día	veces al
	mes pasado	mes pasado	semana	semana	semana	semana		día

24. Durante el mes pasado, ¿con qué frecuencia usted comió chocolate o cualquier otro tipo de dulces? No incluya dulces sin azúcar.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Nunca	1 vez	2-3 veces	1 vez	2 veces	3-4 veces	5-6 veces	1 vez	2 o más
	durante el	durante el	por	por	por	por	por día	veces al
	mes pasado	mes pasado	semana	semana	semana	semana		día

25. Durante el mes pasado, ¿con qué frecuencia usted comió donas, bollos dulces, daneses, panecillos, pan dulce, o panecillos de paquete? No incluya el pan sin de azúcar.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Nunca	1 vez	2-3 veces	1 vez	2 veces	3-4 veces	5-6 veces	2 veces	2 o más
	durante el	durante el	por	por	por	por	por día	veces al
	mes pasado	mes pasado	semana	semana	semana	semana		día

26. Durante el mes pasado, ¿con qué frecuencia usted comió galletas, pasteles, queques, o bizcochos (brownies)? No incluya productos libres de azúcar.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Nunca	1 vez	2-3 veces	1 vez	2 veces	3-4 veces	5-6 veces	1 vez	2 o más
	durante el	durante el	por	por	por	por	por día	veces al
	mes pasado	mes pasado	semana	semana	semana	semana		día

27. Durante el mes pasado, ¿con qué frecuencia comió helado o postres congelados? No incluya alimentos libres de azúcar.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Nunca	1 vez	2-3 veces	1 vez	2 veces	3-4 veces	5-6 veces	1 vez	2 o más
	durante el	durante el	por	por	por	por	por día	veces al
	mes pasado	mes pasado	semana	semana	semana	semana		día

28. Durante el mes pasado, ¿con qué frecuencia comió palomitas?

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8
Nunca	1 vez	2-3 veces	1 vez	2 veces	3-4 veces	5-6 veces	1 vez	2 o más
	durante el	durante el	por	por	por	por	por día	veces al
	mes pasado	mes pasado	semana	semana	semana	semana		día

SECCIÓN 3B

Por favor califique cada una de las siguientes preguntas usando la escala proporcionada.

1. Usar mis beneficios de comida del WIC es fácil y conveniente al ir de compras a las tiendas que aceptan los beneficios de comida del WIC.

- | | | | | |
|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 |
| Nunca | Raramente | A veces | La mayoría de las veces | Siempre |

2. En los últimos 3 meses, yo he decidido utilizar todos los beneficios de la comida del WIC.

- | | |
|----------------------------|----------------------------|
| <input type="checkbox"/> 1 | <input type="checkbox"/> 2 |
| Sí | No |

3. En promedio, en los últimos 3 meses, ¿cuáles de los beneficios de comida del WIC ha utilizado? Incluya todos los beneficios de comida que usted y/o sus hijos reciban. Por favor seleccione todo lo que aplique. En caso de que haya utilizado todos los beneficios de comida, vaya a la pregunta 7.

- | | | | | | | | | | |
|-----------------------------|----------------------------|----------------------------|----------------------------|---|--|----------------------------|----------------------------|--------------------------------------|----------------------------|
| <input type="checkbox"/> 0 | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 | <input type="checkbox"/> 6 | <input type="checkbox"/> 7 | <input type="checkbox"/> 8 | <input type="checkbox"/> 9 |
| Yo usé todos los beneficios | Cereal de desayuno | Leche, yogur, o queso | Frutas y verduras | Pan integral y otro tipo de harina integral | Frijoles, legumbres, o mantequilla de cacahuete. | Jugo de frutas | Fórmula infantil | Comida infantil de frutas y verduras | Carne de comida infantil |

4. En un promedio, en los últimos 3 meses, ¿cuáles beneficios de comida del WIC usted NO utilizó? Incluya todos los beneficios de comida que usted y sus hijos reciben. Por favor seleccione todo lo que aplique.

- | | | | | | | | | | |
|-----------------------------|----------------------------|----------------------------|----------------------------|---|---|----------------------------|----------------------------|--------------------------------------|----------------------------|
| <input type="checkbox"/> 0 | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 | <input type="checkbox"/> 6 | <input type="checkbox"/> 7 | <input type="checkbox"/> 8 | <input type="checkbox"/> 9 |
| Yo use todos los beneficios | Cereal de desayuno | Leche, yogur, o queso | Frutas y verduras | Pan integral y otro tipo de harina integral | Frijoles, legumbres, o mantequilla de cacahuete o maní. | Jugo de frutas | Formula infantil | Comida infantil de frutas y verduras | Carne de comida para bebés |

5. En los últimos 3 meses, Yo he decidido utilizar solo algunos de los beneficios de comida del WIC, debido a que me toma demasiado tiempo pagar en la registradora.

- | | |
|----------------------------|----------------------------|
| <input type="checkbox"/> 1 | <input type="checkbox"/> 2 |
| Sí | No |

5a. Si respondió afirmativamente a la pregunta 5, en los últimos 3 meses, ¿con qué frecuencia ha utilizado solo algunos de los beneficios de comida del WIC, debido a que le toma demasiado tiempo pagar en la registradora?

- | | | | | |
|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 |
| Nunca | Raramente | A veces | La mayoría de las veces | Siempre |

6. En los últimos 3 meses, Yo he decidido utilizar solo algunos de los beneficios de comida del WIC porque mi familia no puede comer toda la comida que me dan sin que se eche a perder.

- | | |
|----------------------------|----------------------------|
| <input type="checkbox"/> 1 | <input type="checkbox"/> 2 |
| Sí | No |

6a. Si respondió afirmativamente a la pregunta 6, en los últimos 3 meses, ¿con qué frecuencia ha utilizado solo algunos de los beneficios de comida del WIC, debido a que su familia no puede comer toda la comida antes de que se eche a perder?

- | | | | | |
|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 |
| Nunca | Raramente | A veces | La mayoría de las veces | Siempre |

7. Constantemente siento vergüenza al usar mis beneficios de comida del WIC en las tiendas que aceptan WIC.

1 2 3 4 5
muy en desacuerdo En desacuerdo indeciso de acuerdo totalmente de acuerdo

8. En un mes típicamente, ¿cuántas veces usted va a compra la comida de beneficios del WIC?

1 2 3 4 5
1-2 veces 3-4 veces 5 veces 6 veces 7+ veces

9. Mi experiencia en general ha sido positiva al realizar compras utilizando mis beneficios del WIC.

1 2 3 4 5
muy en desacuerdo En desacuerdo indeciso de acuerdo totalmente de acuerdo

Nos gustaría recibir sus comentarios acerca de la experiencia que ha tenido cuando usted esta usando su tarjeta de eWIC para que podamos seguir mejorando su experiencia de WIC. Cuando lea las siguientes declaraciones, por favor piense en su experiencia de compras que ha tenido de WIC desde que recibió su tarjeta eWIC.

10. Me han sobrado beneficios de comida en mi tarjeta de eWIC al final del mes.

1 2 3 4 5
Nunca Raramente A veces La mayoría de las veces Siempre

11. He perdido mi tarjeta de eWIC y me la han remplazado.

1 2 3 4 5
Nunca Raramente A veces La mayoría de las veces Siempre

12. He tratado de usar mi tarjeta de eWIC and la autocomprobación pero no es aceptado.

1 2 3 4 5
Nunca Raramente A veces La mayoría de las veces Siempre

13. No estoy segura cuales son las comidas que son aprobadas de WIC y cuales no son aprobadas de WIC.

1 2 3 4 5
Nunca Raramente A veces La mayoría de las veces Siempre

14. Se me ha olvidado regresar a la oficina del WIC para que recarguen mi tarjeta de eWIC.

1 2 3 4 5
Nunca Raramente A veces La mayoría de las veces Siempre

15. No he podido usar mi app(aplicación) de eWIC en mi teléfono.

1 2 3 4 5
Nunca Raramente A veces La mayoría de las veces Siempre

16. He tenido dificultad de examinar el balance de mis beneficios en la tarjeta de eWIC.

1 2 3 4 5
Nunca Raramente A veces La mayoría de las veces Siempre

17. No he podido usar varias de tarjetas de eWIC durante una transición. Y si usted nadamos tiene una tarjeta de eWIC marque “No aplica”

1 2 3 4 5 6
Nunca Raramente A veces La mayoría de las veces Siempre No Aplica

18. Tengo menos vergüenza cuando estoy usando la tarjeta de eWIC que cuando usaba los cheques de papel de WIC.

1 2 3 4 5 6
 muy en desacuerdo En desacuerdo indeciso de acuerdo totalmente de acuerdo Nunca me daba vergüenza

19. Ahora más probablemente usare toda la comida de mis beneficios de mi tarjeta de eWIC que cuando recibía cheques de papel de WIC.

1 2 3 4 5
 muy en desacuerdo En desacuerdo indeciso de acuerdo totalmente de acuerdo

20. Prefiero usar mi tarjeta de eWIC para mis beneficios de comida de WIC que los cheques de WIC.

1 2 3 4 5
 muy en desacuerdo En desacuerdo indeciso de acuerdo totalmente de acuerdo

21. En general, eWIC ha mejorado mi experiencia de compras.

1 2 3 4 5
 muy en desacuerdo En desacuerdo indeciso de acuerdo totalmente de acuerdo

SECCIÓN 4B

INSTRUCCIONES

- Piense acerca de lo que comió durante el mes pasado normalmente.
- Por favor piense acerca de todas las frutas y verduras que usted comió el mes pasado. Incluya aquellos que estaban:
 - crudos y cocidos,
 - comió como merienda o antojito y en las comidas principales,
 - comió en la casa y fuera de la casa (restaurante, amigos, comida para llevar), y
 - comió sola y combinada con otros alimentos.
- Reporte cuántas veces per mes, semana, o cada día usted comió cada comida, y si usted la comió, cuál fue la cantidad que consumió normalmente.
- Si usted marcó “Nunca” en alguna pregunta, dirijase a “vaya a” en las instrucciones.
- Elija la mejor respuesta para cada pregunta que se le haga. Marque solamente una respuesta en cada pregunta.

1. Sobre el mes pasado, ¿cuántas veces por mes, semana o día usted tomó jugo 100% de fruta, tales como el jugo de naranja, manzana, o jugo de toronja? No incluya los jugos tales como: Kool-Aid, limonada, HI-C, arándano, Tang, y Twister. Incluya todas las bebidas de jugos que tomó durante las comida y entre comidas también.

0 1 2 3 4 5 6 7 8 9
 → 1-3 1-2 veces 3-4 veces 5-6 veces 1 vez 2 veces 3 veces 4 veces 5 o más
Nunca Veces por por por por día por día por día por día veces por
vaya a la por el semana semana semana día
pregunta mes
2 pasado

1a. Cada vez que usted bebió jugo 100% de fruta, ¿cuántas veces lo tomó usualmente?

- | | | | |
|---------------------------------------|-------------------------------|-------------------------------|-------------------------------------|
| <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 |
| Menos de ¾ taza
(menos de 6 onzas) | ¾ a 1¼ taza
(6 a 10 onzas) | 1¼ a 2 tazas
(10-16 onzas) | Más de 2 tazas
(más de 16 onzas) |

2. Durante el mes pasado ¿cuántas veces al mes, semana o día comió frutas? Incluya cualquier tipo de fruta fresca, de lata, y congelada. No cuente los jugos. Incluya frutas que usted comió todo el tiempo y también los antojitos o meriendas.

- | | | | | | | | | | |
|---|----------------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| <input type="checkbox"/> 0 | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 | <input type="checkbox"/> 6 | <input type="checkbox"/> 7 | <input type="checkbox"/> 8 | <input type="checkbox"/> 9 |
| → | 1-3 | 1-2 veces | 3-4 veces | 5-6 veces | 1 vez | 2 veces | 3 veces | 4 veces | 5 o más |
| Nunca
vaya a la
pregunta
3 | Veces
por el
mes
pasado | por
semana | por
semana | por
semana | por día | por día | por día | por día | veces por
día |

2a. Cada vez que usted come frutas, ¿cuánta come generalmente?

- | | | | |
|----------------------------|----------------------------|----------------------------|----------------------------|
| <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 |
| Menos de 1 fruta mediana | 1 fruta mediana | 2 frutas medianas | Más de 2 frutas medianas |
- O**
- | | | | |
|----------------------------|----------------------------|----------------------------|----------------------------|
| <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 |
| Menos de ½ taza | Como un ½ taza | Como 1 taza | Más de una 1 taza |

3. Durante el mes pasado, ¿cuántas veces comió ensalada de lechuga (con o sin otra verdura)?

- | | | | | | | | | | |
|---|----------------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| <input type="checkbox"/> 0 | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 | <input type="checkbox"/> 6 | <input type="checkbox"/> 7 | <input type="checkbox"/> 8 | <input type="checkbox"/> 9 |
| → | 1-3 | 1-2 veces | 3-4 veces | 5-6 veces | 1 vez | 2 veces | 3 veces | 4 veces | 5 o más |
| Nunca
vaya a la
pregunta
4 | Veces
por el
mes
pasado | por
semana | por
semana | por
semana | por día | por día | por día | por día | veces
por día |

3a. Cada vez que usted come ensalada de lechuga, ¿cuánta come generalmente?

- | | | | |
|----------------------------|----------------------------|----------------------------|----------------------------|
| <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 |
| Como ½ taza | Come 1 taza | Come 2 tazas | Mas de 2 tazas |

4. Durante el mes pasado, ¿cuántas veces comió papas a la francesa o papas fritas?

- | | | | | | | | | | |
|---|-------------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| <input type="checkbox"/> 0 | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 | <input type="checkbox"/> 6 | <input type="checkbox"/> 7 | <input type="checkbox"/> 8 | <input type="checkbox"/> 9 |
| → | 1-3 | 1-2 | 3-4 veces | 5-6 veces | 1 vez | 2 veces | 3 | 4 | 5 o más |
| Nunca
vaya a la
pregunta 5 | Veces por
el mes
pasado | veces
por
semana | por
semana | por
semana | por día | por día | veces
por día | veces
por día | veces por
día |

4a. Cada vez que usted come papas a la francesa o papas fritas, ¿cuántas come generalmente?

- | | | | |
|--|--|--|--|
| <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 |
| Ordenes pequeñas o menos
(como de 1 taza o menos) | Ordenes medianas
(como de 1 ½ taza) | Ordenes grandes o menos
(como de 2 tazas) | Ordenes súper grandes o
menos (como de 3 tazas o más) |

5. Durante el mes pasado, ¿con qué frecuencia comió papas blancas? Incluya papas horneadas, hervidas, y puré de papas, ensalada de papas, y papas blancas que no estaban fritas.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	6 <input type="checkbox"/>	<input type="checkbox"/> 7	<input type="checkbox"/> 8	<input type="checkbox"/> 9
→	1-3	1-2	3-4 veces	5-6 veces	1 vez	2 veces	3	4	5 o más
Nunca vaya a la pregunta 6	Veces por el mes pasado	veces por semana	por semana	por semana	por día	por día	veces por día	veces por día	veces por día

5a. Cada vez que usted comió esas papas, ¿cuántas comió generalmente?

<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
1 papa pequeña o menos (de ½ taza o menos)	1 papa mediano (½ taza a 1 taza)	1 papa grande (1 a 1½ tazas)	1 papa medianos o más (1½ taza o más)

6. Durante el mes pasado, ¿con qué frecuencia comió frijoles secos o cosidos? Incluya los frijoles preparados al horno, frijoles en sopa, frijoles refritos, con puerco, y frijol y otros platos de frijoles.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	6 <input type="checkbox"/>	<input type="checkbox"/> 7	<input type="checkbox"/> 8	<input type="checkbox"/> 9
→	1-3	1-2	3-4 veces	5-6 veces	1 vez	2 veces	3	4	5 o más
Nunca vaya a la pregunta 7	Veces por el mes pasado	veces por semana	por semana	por semana	por día	por día	veces por día	veces por día	veces por día

6a. Cada vez que usted comió esos frijoles, ¿cuánto comió generalmente?

<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
Menos de un ½ taza	De un ½ de taza a 1 taza	1 a 1 ½ taza	Más de 1 ½ taza

7. Durante el mes pasado ¿con qué frecuencia comió otras verduras?

NO INCLUYA:

- Ensalada de lechuga
- Papas blancas
- Verduras en combinación con otros alimentos, tal como en sándwiches, tortas de huevo, cacerolas, platillos mexicanos, caldos, guisados fritos, sopa, etcétera.

INCLUYA

- Todas las verduras- crudas, cocidas, en lata, o congeladas.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	6 <input type="checkbox"/>	<input type="checkbox"/> 7	<input type="checkbox"/> 8	<input type="checkbox"/> 9
→	1-3	1-2	3-4 veces	5-6 veces	1 vez	2 veces	3	4	5 o más
Nunca vaya a la pregunta 8	Veces por el mes pasado	veces por semana	por semana	por semana	por día	por día	veces por día	veces por día	veces por día

7a. Cada vez que usted comió esas verduras, ¿qué cantidad comió generalmente?

<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4
Menos de ½ taza	½ taza a 1 taza	1 a 2 tazas	Más de 2 tazas

8. Durante el mes pasado, ¿con qué frecuencia comió salsa de jitomate o tomate? Incluya salsas de jitomate que haya comido en la pasta o macaroni, arroz, pizza y otros platillos.

<input type="checkbox"/> 0	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	6 <input type="checkbox"/>	<input type="checkbox"/> 7	<input type="checkbox"/> 8	<input type="checkbox"/> 9
→	1-3 vez	1 -2 vez	3-4 veces	5-6 veces	1 vez	2 veces	3 veces	4 veces	5 o más
Nunca vaya a la pregunta 9	del mes pasado	por semana	por semana	por semana	por día	por día	por día	por día	veces por día

8a. Cada vez que usted comió salsa de jitomate, ¿cuánta comió generalmente?

- 1 2 3 4
Menos de ¼ taza Como ½ taza Como 1 tazas Más de 1 tazas

9. Durante el mes pasado, ¿con qué frecuencia comió sopa de verduras? Incluya sopas de jitomate, gazpacho, de carne de res con verduras, sopa de minestrone, y otros tipos de sopas con verduras.

- 0 1 2 3 4 5 6 7 8 9
Nunca 1-3 vez 1 -2 vez 3-4 veces 5-6 veces 1 vez 2 veces 3 veces 4 veces 5 o más
→ del mes por por por por por día por día por día por día veces por
Vaya a la pasado semana semana semana semana
pregunta
10

9a. ¿Cada vez que usted come sopa de verduras, cuanto usted comió?

- 1 2 3 4
Menos de 1 taza 1-2 tazas 2-3 tazas Más de 3 tazas

10. Durante el mes pasado, ¿con qué frecuencia comió mezclas de alimentos que incluyeran verduras? Incluya comidas tales como los sándwiches, cacerolas, caldos, comida fritas, torta de huevo, y tacos.

- 0 1 2 3 4 5 6 7 8 9
Nunca 1-3 vez 1 -2 vez 3-4 veces 5-6 veces 1 vez 2 veces 3 veces 4 veces 5 o más
del mes por por por por por día por día por día por día veces por
pasado semana semana semana semana

11. ¿Ha utilizado alguna vez antes una tarjeta de eWIC?

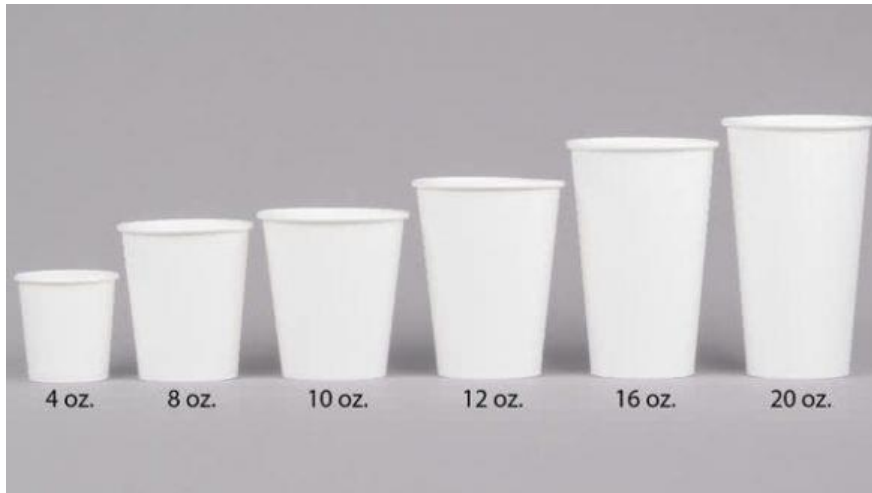
- 0 1
No Sí

FIN DE LA ENCUESTA

APPENDIX H

SERVING SIZE VISUAL GUIDES

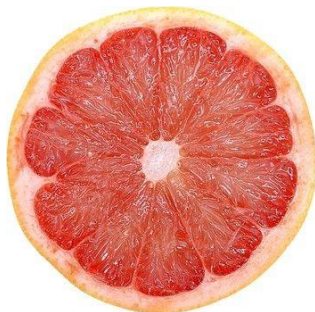
Serving Sizes for Beverages:



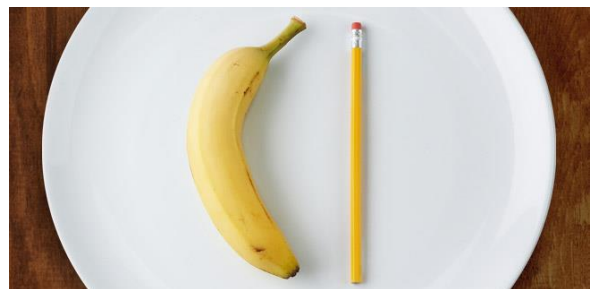
Medium Fruits



1 medium fruit = 1 baseball



½ grape fruit = 1 medium fruit



7 inch banana = 1 medium fruit

½ cup of Fruit



½ cup fresh, frozen, or canned fruit = 1 computer mouse or
2 halves of whole fruit

Examples of Lettuce Salad:



1 cup
spinach



1 cup
lettuce



2 handfulls = 2 cups cups

1 handfull = 1 cup

Examples of French Fries:



Small

1 cup
or less



Medium

1 ½ cups



Large

2 cups



Extra Large

3 cups or more

White Potatoes:



**Small whole potato
= 1 computer mouse**

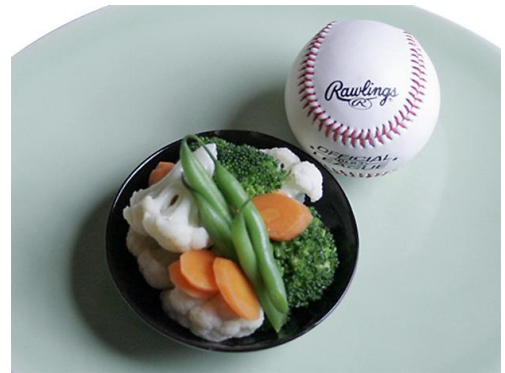


½ cup mashed = 1 light bulb

Beans and Other Vegetables:



**½ cup beans or other vegetables
= 1 light bulb**



**1 cup beans or other vegetables
= 1 baseball**

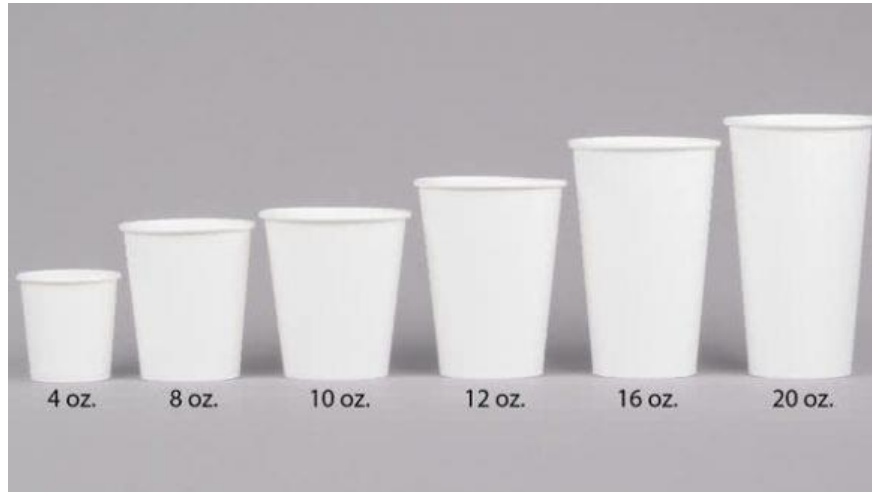


½ cup = 6 baby carrots



1 cup = 1 ear of corn

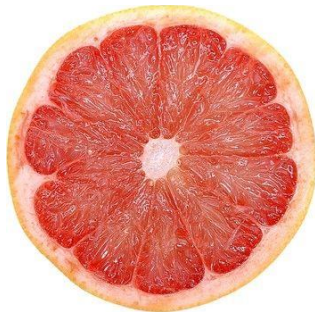
Tamaños de servicio para bebidas:



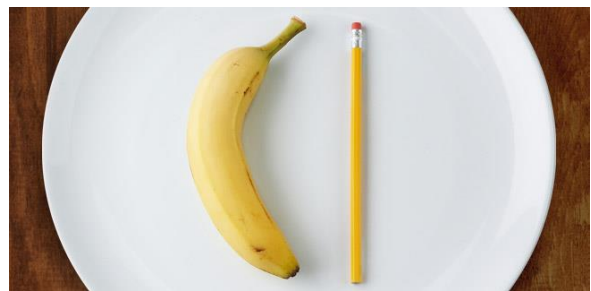
Frutas Medianas



1 fruta mediana = 1 béisbol



1/2 pomelo = 1 fruta mediana



Plátano de 7 pulgadas = 1 fruta mediana

1/2 taza de Fruta



1/2 taza fresca, congelada o enlatada de fruta = 1 ratón de computadora o hectáreas de fruta entera

Ejemplos de Ensalada de Lechuga:



1 cup
spinach



1 cup
lettuce



1 manos = 1 taza

2 manos = 2 tazas

Ejemplos de Papas Fritas



Small

Pequeño
1 taza o meno



Medium

Mediano
1 ½ tazas



Large

Grande
2 tazas



Extra Grande
3 tazas o más

White Potatoes:



**1 pequeña patata entera =
ratón de computador**



**1 taza de puré =
1 bombilla**

Frijoles y Otras Verduras:



**½ taza frijoles y otras verduras
= 1 bombilla**



**1 taza frijoles y otras verduras
= 1 béisbol**



½ taza = 6 zanahorias bebe



1 taza = mazorca de maíz