

An Exploration of Attitudes and Perceptions of Cash Value Vouchers  
in the Arizona Special Supplemental Nutrition Program  
for Women, Infants, and Children (WIC)

by

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## ABSTRACT

In October, 2009, participants of the Arizona Special Supplemental Nutrition Program for Women, Infants and Children (WIC) began receiving monthly Cash Value Vouchers (CVV) worth between six and 10 dollars towards the purchase of fresh fruits and vegetables. Data from the Arizona Department of Health Services (ADHS) showed CVV redemption rates in the first two years of the program were lower than the national average of 77% redemption. In response, the ADHS WIC Food List was expanded to also include canned and frozen fruits and vegetables. More recent data from ADHS suggest that redemption rates are improving, but variably exist among different WIC sub-populations. The purpose of this project was to identify themes related to the ease or difficulty of WIC CVV use amongst different categories of low-redeeming WIC participants. A total of 8 focus groups were conducted, four at a clinic in each of two Valley cities: Surprise and Mesa. Each of the four focus groups comprised one of four targeted WIC participant categories: pregnant, postpartum, breastfeeding, and children with participation ranging from 3-9 participants per group. Using the general inductive approach, recordings of the focus groups were transcribed, hand-coded and uploaded into qualitative analysis software resulting in four emergent themes including: interactions and shopping strategies, maximizing WIC value, redemption issues, and effect of rule change. Researchers identified twelve different subthemes related to the emergent theme of interactions and strategies to improve their experience, including economic considerations during redemption. Barriers related to interactions existed that made their purchase difficult, most notably anger from the cashier and other shoppers. However, participants made use of a number of strategies to facilitate WIC purchases or extract

more value out of WIC benefits, such as pooling their CVV. Finally, it appears that the fruit and vegetable rule change was well received by those who were aware of the change. These data suggest a number of important avenues for future research, including verifying these themes are important within a larger, representative sample of Arizona WIC participants, and exploring strategies to minimize barriers identified by participants, such as use of electronic benefits transfer-style cards (EBT).

## DEDICATION

I would like to thank my husband, Andre M. Bertmann, for his relentless support as a spouse, best friend, and father to our children. I would also like to thank my father; Lattie F. Coor, who taught me to look for new summits and who always provided me the love and support to climb higher and higher.

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## Chapter 1

### INTRODUCTION

#### **Statement of the Problem**

In October 2009, participants of the Arizona Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) began receiving monthly Cash Value Vouchers (CVV) worth between \$6 and \$10 toward the purchase of fresh fruits and vegetables.<sup>1</sup> This change was part of a larger programmatic overhaul of WIC food packages, the focus of which was to better target nutritional deficits and poor intake of certain food groups among WIC clients.<sup>2-4</sup> The newly available CVV initially could be redeemed at participating WIC stores and farmers' markets for the tax-free cash equivalent of fresh fruits and vegetables.<sup>1</sup> However, data from the Arizona Department of Health Services (ADHS) showed CVV redemption rates in the first two years of the program were lower than the national average of 77% redemption (K. Sell, personal communication).<sup>5</sup> In response, in October 2011, the Arizona WIC Program's food list was expanded to include canned and frozen fruits and vegetables along with fresh produce, in hopes that greater variety and flexibility would improve redemption rates.<sup>6</sup> More recent data from ADHS suggest that redemption rates are improving, but variably among different WIC subpopulations. As such, questions remain regarding what other factors might influence participants' decisions to fully utilize, or utilize at all, WIC CVV for purchase of fruits and vegetables.

## **Background**

In 2011, 8.9 million women and children received WIC benefits across the country, of which 199,343 participated in Arizona.<sup>7</sup> With the continued economic turmoil, issues of food insecurity are becoming ever more severe, and concerns are growing that low-income children, pregnant women, and lactating women are not consuming the nutrients they need to promote health and prevent or ameliorate acute and chronic disease.<sup>8,9</sup> For example, inadequate intakes of vitamin E, magnesium, calcium, potassium, and fiber have been identified among WIC participants,<sup>10</sup> and poor fruit and vegetable intake has been identified as an enduring problem in children and adults in general.<sup>11,12</sup> Fruit and vegetable intake is associated with lower risk of some cancers, as well as a reduction in risk of heart disease, stroke, cataract formation, chronic obstructive pulmonary disease, and hypertension.<sup>3,9,12,13</sup> The consequences of poor redemption of WIC CVV benefits for healthy foods can extend beyond unrealized health benefits to include under utilized food assistance dollars, potential increases in future medical costs, loss of federal dollar to the boost local economy and the possibility of reduced productivity.<sup>14</sup>

**Research Deficiencies.** Although only a small body of literature exists regarding food-related behaviors of WIC participants, some studies have been published documenting perceived barriers to healthy food purchase among low-income individuals in general. Studies have also examined impacts of financial incentives to improve fruit and vegetable purchases among WIC participants, and others have identified perceived barriers to fruit and vegetable purchases as part of WIC or WIC-related programs, specifically. A 2004 Minnesota study investigated barriers to healthy eating in a low-income community.<sup>15</sup>

Using the North American Industry Classification System's (NAICS) codes for grocery store access and higher levels of poverty than the state average, four communities were selected. Participants who lived in low-income neighborhoods identified multiple barriers to purchasing healthy foods, including lack of time, cost, disinterest, and concern about the taste of healthy foods. Similar barriers have been identified in other studies as well.<sup>16,17</sup>

Similar results have been seen in studies addressing barriers to use other WIC options for fruit and vegetable purchasing such as the Farmers' Market Nutrition Program (FMNP). One study focused on FMNP, which provides vouchers that participants can redeem at farmers' markets specifically for the purchase of fresh fruits and vegetables.<sup>7</sup> Racine and colleagues conducted a survey among currently pregnant WIC participants to assess barriers to using FMNP benefits.<sup>18</sup> Researchers used descriptive statistics to identify trends related to lower FMNP use. Trends resulting from the survey included transportation limitations, cost of produce, distance of participants' homes to the nearest market, and issues of perceived quality of produce found at markets.<sup>18</sup> Several respondents, however, also noted they had never considered going to a farmers' market, preferred grocery stores, and did not know where farmers' markets were located. Some also noted they were unsure of what a farmers' market was.<sup>18</sup>

Some data also exist that provide insight into barriers of use related to CVV specifically. Herman and colleagues<sup>19</sup> conducted a study in 2008 in which vouchers were provided to WIC participants that mimicked the yet-to-be-introduced CVV program benefits. One

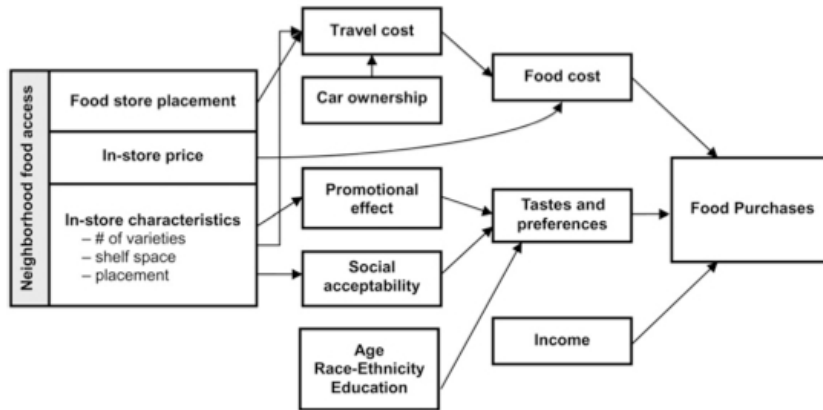
group of participants was given \$10 a week – a benefit well above current CVV benefits – for six months to be used at a farmers’ market. Another group received a similar benefit for use at a supermarket, and a control group received coupons for disposable diapers worth \$13 a month.<sup>19</sup> Data were gathered pre-intervention (baseline), two months after baseline, at the end of the six-month intervention, and once more six months after the conclusion of the intervention. Based on interviews and multiple-pass method 24-hour recalls at the conclusion of the intervention, participants receiving farmers’ market benefits consumed an average of 3.9 servings of fruits and vegetables combined per 1,000 kcal of food consumed compared to 3.0 servings combined among individuals who did not receive any benefits ( $p<0.001$ ). At six months post-intervention, fruit and vegetable consumption in the farmers’ market intervention group remained high at 4.0 servings of fruits and vegetables per 1,000 kcal of food consumed compared to 3.1 servings per 1,000 kcal of food consumed among participants who never received benefits.<sup>19</sup> Although the monetary benefits provided in this study were higher than the current CVV amount, they were suggestive of the impact of financial incentives for fruits and vegetables purchase.

More recent research has provided some insight into the impact of the new WIC package on barriers to purchase healthy foods. Focus groups were conducted in Wisconsin at six months and 18 months following the implementation of the new WIC package.<sup>5</sup>

Researchers noted that some participants were frustrated with CVV transactions. For example, although Wisconsin allows for split-transactions (i.e., use of CVV and cash or other form of payment to complete a single transaction), there is the potential for a high

level of clerk error. Some participants reported that clerks prevented them from paying out of pocket for fruit and vegetable transactions above and beyond the CVV cash equivalent, and this led some participants to not redeem at least a portion of their fruit and vegetable purchase.<sup>5</sup> Participants also noted angst about the math involved in calculating the cost of fruit and vegetable purchases, especially when children were present at the time of purchase due to the potential for distractions.

**Conceptual Model.** Based on these and other data, a reasonable conceptual framework from which to identify at least some areas of qualitative exploration exists in the model published by Rose and colleagues.<sup>17</sup> Although the model focuses more generally on neighborhood food access, it incorporates a number of previously identified potential barriers to fruit and vegetable purchase for WIC clients. The model can be used as a conceptual basis, but one that could need modification in relation to specific issues identified among Arizona WIC participants. The most relevant aspect of the model to fruit and vegetable purchase include travel cost, promotion effect, social acceptability, food cost, and tastes and preferences.



**Figure 1.** Conceptual model of neighborhood food access. Image courtesy of Rose et al<sup>17</sup>

## Purpose

The specific objectives of this project were to examine trends and attitudes related to CVV use to provide insight regarding:

1. The overall use of CVV among Arizona WIC participants.
2. The effect of CVV fruit and vegetable rule changes on overall CVV use.
3. Differences in CVV redemption among WIC participants of different categories.

## Delimitations

The study included current WIC participants in Maricopa County, Arizona, specifically women at least 18 years of age who were the primary food purchasers of the household. The primary food purchasers of the household were enrolled in WIC under the category of pregnant, postpartum, breastfeeding and caretakers of children.

## **Limitations**

Given the qualitative nature of this study, results do not apply to WIC participants in other areas of the state or perhaps beyond the clinics being utilized for this study. Due to the recruitment methodology used in the study, there was a high level of ‘no-shows’ across focus groups. Investigating mechanisms to increase attendance, such as conduct focus groups in the clinic on the same day as their WIC visit, might aid in gathering more and better data while, in particular through encouraging respondents to voice their opinions more freely. Participants who might experience transportation barriers would experience these barriers when traveling to a focus group. However, it was clear from in-depth analyses of transcripts that saturation of themes had been reached; as such, it is unclear if gathering more data would have provided different or more consistent results. Participant demographic information was not collected during the study, this has prevented the researchers from analyzing participant background and demographic characteristics. Finally, due to the nature of focus group research, the researcher’s presence may also bias participants’ responses.

## Chapter 2

### LITERATURE REVIEW

#### **Dietary Patterns and Chronic Disease Risk**

The consumption of fruits and vegetables have been shown to be associated with cancer prevention, reduction in coronary heart disease, stroke, cataract formation, chronic obstructive pulmonary disease and possible decreases in hypertension.<sup>13</sup> They also have been shown to be associated with reduced body mass index (BMI) in children<sup>20</sup> and have been associated with improved glucose control.<sup>21</sup> A number of mechanisms are likely involved in the protective effects of fruit and vegetable consumption, including their high micronutrient density, antioxidant and other phytochemical content, and fiber content, among others. Fruits and vegetables contain essential micronutrients such as vitamins A, C and E, and essential minerals such as potassium, calcium, and selenium.<sup>22</sup> Each of these nutrients is involved in important metabolic and sometimes cardioprotective processes, including those involved in antioxidant activity. Research suggests that lower plasma antioxidant levels are linked to increased risk of cancer.<sup>23,24</sup> Büchner and colleagues found that increased variety in fruit and vegetable consumption had an inverse association with lung cancer risk among current smokers by increasing the number of bioactive, antioxidant constituents consumed.<sup>25</sup>

Fiber from fruits and vegetables can also positively impact risk for various chronic diseases. Consumption of soluble fiber found in fruits and vegetables is associated with decreased low-density lipoprotein (LDL) cholesterol, but has been shown to not significantly affect high-density lipoprotein (HDL) cholesterol.<sup>26</sup> In one study that

examined data from children and adolescents as part of the NHANES III dataset, researchers found that intakes of dairy, grains and total fruits and vegetables were inversely associated with central obesity among adolescents.<sup>27</sup> According to a meta-analysis by Dauchet and colleagues including nine studies that focused on the relationship between cardiovascular disease and fruit and vegetable consumption, coronary heart disease was decreased by four percent for each additional portion of fruits and vegetables consumed each day.<sup>28</sup>

### **Socioeconomic Status and Chronic Disease Risk**

Socioeconomic status (SES) may negatively affect consumption of fruits and vegetables, making the low-income population potentially more susceptible to chronic disease. Socioeconomic status is associated with chronic disease risk in a number of ways, including low fruit and vegetable access and intake, increased sedentary behavior, and lower utilization of the built environment.<sup>29</sup> These issues lead to poorer health outcomes, such as obesity, higher incidences of skeletal malformation in children, and type 2 diabetes.<sup>27</sup> Obesity is a major chronic disease problem, Abdullah and colleagues reported that there is a dose-response relationship between years of obesity and cancer, cardiovascular and all-cause and other-cause mortality.<sup>30</sup> According to Townsend,<sup>29</sup> the most significant predictor of overweight status in women is their level of food security. For example, one study showed that women who were mildly food insecure were 30% more likely to have a BMI greater than 24 compared to women who were food secure;<sup>29</sup> this phenomenon is referred to as the hunger-obesity paradox.<sup>31</sup> However, other studies found that the ratio between low and high SES and weight is declining.<sup>32</sup>

These SES disadvantages can lead to a number of long-term health problems in both children and adults. For example, researchers in the United Kingdom compared anthropometric findings and level of enrollment in the free school meal program of children aged 4-10 years attending schools of varying SES levels.<sup>33</sup> Results from this study indicated that children had no significant difference in weight based on differing SES levels. However, children attending schools with a high prevalence of low-income families had an average height that was 1.26cm shorter than children attending schools with lower prevalence of low-income family. This height disparity may explain the higher prevalence of overweight and obesity.<sup>33</sup> Drewnowski and Spector suggested that low-SES populations prefer high-energy-density foods rather than high-nutrient-density foods,<sup>31</sup> and adolescents could be suffering from stunting due to inadequate micronutrients rather than higher levels of adiposity. Some studies also suggest that low-SES individuals may have self-control problems leading to unhealthy food consumption practices.<sup>34,35</sup>

SES is also associated with type 2 diabetes, one of the most common and costly chronic diseases in the US. Currently, an estimated 20.6 million Americans suffer from type 2 diabetes.<sup>36</sup> The disease is most prevalent among African-American women,<sup>36,37</sup> who make up a greater proportion of those considered low SES. A number of studies have demonstrated an inverse relationship between SES factors, such as income and education, and the incidence of diabetes.<sup>38,39</sup> Researchers from Boston University also showed that neighborhood-level SES was a stronger predictor of type 2 diabetes than SES at the individual level.<sup>38</sup> Other research has shown similar results; the Jackson Heart Study in

Mississippi found that SES was associated with awareness and treatment of diabetes in women, but not in men, and this awareness and treatment was not associated with SES.<sup>40</sup>

### **Food Environment and Chronic Disease Risk**

An important driver of the health disparities in risks for chronic diseases might be issues related to the food environment. Health disparities may result from limited access to healthy foods, especially fruits and vegetables in low-income urban neighborhoods<sup>41-44</sup>

Additionally, less healthy, energy-dense foods are often readily available and cheap, especially in low-income areas.<sup>31</sup> Studies show that low-income individuals in low SES communities were more likely to be surrounded by a greater density of fast-food establishments and convenience stores with limited numbers of supermarkets.<sup>45-48</sup>

Another study based on the Census 2000 investigated 28,050 zip codes and found that low- and middle-income neighborhoods had approximately 1.25-1.3 times the number of fast food restaurants within a mile radius compared to high-income neighborhoods.<sup>49</sup>

Lower-income households have been shown to select diets high in low-cost meats, inexpensive grains, added sugars, and added fats, as these diets offer more calories for less cost, this has been correlated with the food environment.<sup>50</sup> Households struggling to maintain a sustainable budget work to stretch their food dollar and often select less expensive food, which also tends to be more energy-dense.<sup>51</sup> One study conducted by the United States Department of Agriculture (USDA) showed that low-income families spent as little as \$25 per person per week on food. Economic Research Service (ERS) researchers also showed that low-income households spent about \$1.43 less per person

per week on fruits and vegetables compared with higher income households.<sup>52</sup> They tended to select less expensive food, which was more often energy-dense in nature.<sup>31</sup> A focus group study by Wilde and colleagues that examined diet quality of Supplemental Nutrition Assistance Program (SNAP) and WIC participants also found that a primary concern among food assistance recipients was obtaining sufficient calories at low cost to avoid complaints of feeling hungry.<sup>53</sup>

Recent studies have also established that energy-dense foods are more resistant to inflation, might have decreased in comparative cost over time, and might benefit from agricultural policies artificially keeping commodity costs low.<sup>54</sup> These trends are not surprising given the costs of these foods: between 1990 and 2007, fast food prices fell by 12% and soft drink prices fell by 32%, after being adjusted for inflation.<sup>55</sup> The cost of meat, cheese, and high-fructose corn syrup, common components of fast food and soft drinks, depend in part on farm commodity pricing.<sup>3</sup> According to an Institute of Medicine report,<sup>3</sup> lower commodity costs might ultimately encourage unhealthy food consumption.<sup>56</sup>

At the same time, low-income families have faced continued economic pressures although food prices have fallen. The amount of personal income that Americans in general are willing to spend on food has decreased from 10% in 1970 to 7.8% in 2001, and fell again to 5.4% in 2011.<sup>55</sup> In 2006, however, households in the lowest income quintile allocated 32% of their income to food expenditures. Since the most recent recession, low-income households have experienced additional budgetary pressures. By

2009, the percentage of food expenditures increased to 35.9% in the lowest income quintile.<sup>55</sup> Food assistance programs have the potential to ameliorate these food costs for low-income households.

### **Economics and Policy Related to Food Choice**

Economic and policy issues likely play an important role in how and what foods are available and affordable to Americans of various SES levels. For example, the 2008 Farm Bill lists most fruits and vegetables as specialty crops and does not subsidize them at the same level as commodity crops. This lack of government support may be reflected in higher prices of fruits and vegetables.<sup>46</sup> Between 1985-2000, fruits and vegetables led all other food categories in retail price increases and were much higher than processed products.<sup>57</sup> The current structure of food prices is that high-sugar and high-fat foods provide calories at the lowest cost. The farm policy for commodity crops has made sugars and fats inexpensive; this may indirectly influence food processors and manufacturers to expand their product lines to include more fats and sweeteners<sup>46</sup> and potentially continue to lead to the preference of energy-dense foods over fruits and vegetables for the monetary reasons listed.

As a mechanism to streamline the marketing of fruits and vegetables, these items have become increasingly available in consistent-weight packages.<sup>10</sup> Fruits and vegetables are commonly sold in bulk and considered random-weight items. Grocers and food manufacturers refer to the pre-weighed fruit and vegetable packages' as stock-keeping units (SKU). The number of overall SKUs in a typical supermarket has risen from

20,000 items in 1990 to over 38,000 items in 2010.<sup>58</sup> The mechanism of consistent-weight packages may reduce the cost of fruits and vegetables by packaging some of the less desirable fruits and vegetables with fruits and vegetables that would be selected when sold in bulk.

### **Food Security and History of WIC**

Food security is related to issues regarding access to healthy and unhealthy food, as well as utilization of such foods. Food insecurity is a household-level economic and social condition characterized by limited or uncertain access to adequate food. Food security can be defined as access by all household members at all times to enough food for an active healthy life and acquired in a manner that is socially acceptable.<sup>59</sup> This excludes the use of emergency food supplies, stealing, scavenging and other coping strategies.<sup>26</sup> Food security theory is based on Amartya Sen's<sup>60</sup> entitlement theory of famine. In this pivotal work, Sen explained famine does not occur because there is not enough food available for use, but rather because people do not have enough access to available food.<sup>60</sup>

Food security in the US is still a significant problem. According to the most recent Economic Research Report, 85.1 percent of US Households report being food secure in 2011. Of the 14.9 percent of households that are food insecure, 5.7 percent have very low food security indicating that the household's eating patterns were disrupted by lack of money and resources to acquire food.<sup>61</sup> The percentage of very low food security has increased to its current level from 5.4 in 2010.<sup>61</sup>

To address problems of food security, the federal government coordinates 15 US nutrition assistance programs targeting different needs and populations. Among the largest is the WIC. The premise of WIC is the following: that programs that intervene in critical times of human growth and development may have a greater impact on the prevention of chronic disease and developmental problems.<sup>62</sup> The administration of WIC is at the federal level through the Food and Nutrition Service, an agency of the USDA. In 1994, WIC underwent a name change as part of the Healthy Meals for Healthy Americans Act.<sup>63</sup> Prior to this legislation, the program was known as the Special Supplemental Food Program for Women, Infants and Children; after passage of the bill, it was referred to as a Nutrition, rather than Food Program to emphasize the role nutrition intervention should be playing in the program.<sup>63</sup>

Today, WIC is found in all 50 states. There are 90 WIC state agencies as well as WIC operations in the District of Columbia, five US territories (American Samoa, the Commonwealth of the Northern Mariana Islands, the Commonwealth of Puerto Rico, Guam, and the US Virgin Islands), and among 34 Indian tribal organizations. Ten percent of the total federal budget for food and nutritional assistance programs is allocated to WIC, making it the third largest of the federal assistance programs.<sup>64</sup> In fiscal year 2012, the federal government spent over \$7 billion on WIC, which served almost half of all infants and one-fourth of all children aged one to their 5<sup>th</sup> birthday in the US.<sup>65,66</sup> Although the federal spending on WIC is substantial, annual appropriations for the program are based on a discretionary grant program.<sup>63</sup> The funding level is sufficient to serve all of the people eligible who are currently seeking enrollment in the program,

according to the US Census. However, it is believed there are still many people who are eligible but do not seek enrollment.<sup>62</sup>

Unlike many other food and nutrition assistance programs in the US, the federal government funds 100% of WIC and does not require states to provide matching funds.<sup>63</sup> The majority of government spending on WIC is allocated to food packages. Most of the remainder, about twenty-eight percent of the total program funding, is used for nutrition services and administration.<sup>63</sup> These services include nutrition education and breastfeeding support and promotion. To receive benefits from the WIC program, all three of the following criteria must be met: categorical eligibility, income eligibility, and nutritional risk.<sup>10</sup> In the beginning, the WIC program provided mothers, infants, and children with “market baskets” of food that were available for pick-up. The amount did not exceed a set maximum quantity. These baskets were later renamed WIC food packages.<sup>10</sup> In most cases, the WIC clinic will not distribute food packages but will provide WIC participants or their caregivers a food-itemized voucher that they can redeem at a WIC-approved grocery outlet.<sup>10</sup>

The WIC program officially began in 1972, when it was referred to as the Supplemental Food Program. It had been implemented to provide commodities to feed low-income pregnant women, infants, and children aged up to 6 years. In this program, doctors would prescribe foods they determined to be under-consumed by the participant in the form of a voucher. These vouchers were then taken by participants in the program to a commissary where participants could obtain the specified foods. To ensure that risks of under-

nutrition, including poor intake of high quality protein, iron, calcium, vitamin A and vitamin C, were dealt with, participants were further required to visit health professionals for evaluation as a program eligibility requirement. From its inception, the Supplemental Food Program was designed to supplement the food stamp program and therefore did not preclude a person from participating in both.<sup>10</sup> The program became permanent in 1974.<sup>10</sup>

The program is considered an investment in low-income residents of the US during their most influential and vulnerable periods of growth. The investment is made with the intention of promoting both short-term and long-term health.<sup>10</sup> The aims of the program are "to provide supplemental nutritious food as an adjunct to good health care during such critical times of growth and development ... to prevent the occurrence of health problems,"<sup>65,66</sup> and to "improve the health status of these persons".<sup>67</sup> During the time that the WIC program was established, WIC food packages were based on food consumption data. Therefore, the selection of foods in the WIC program were items seen as good sources of identified under-consumed nutrients.<sup>10</sup> At the outset of this program, the US Congress allotted \$100 million for the WIC program during fiscal year 1975.<sup>10</sup>

### **WIC Participation and Health Outcomes**

WIC participation is meant to improve dietary patterns and at the same time improve micro- and macro-nutrient intakes. As such, the USDA bases the selection of foods included in the WIC food packages on the following stated rationale: "Those foods [are included that contain] nutrients determined by nutritional research to be lacking in the diets of pregnant, breastfeeding and postpartum women, infants and children, and those

foods that promote the health of the population served by the program authorized by this section, as indicated by relevant nutrition science, public health concerns, and cultural eating patterns . . . ”.<sup>68</sup> Some research has shown that this rationale has translated to measurable outcomes. For example, one study showed that WIC participants increased their intake of nutrient-dense foods.<sup>69</sup> WIC participants also increased intakes of vitamin C, vitamin B<sub>6</sub>, niacin and thiamin, as well as iron. These increases in nutrients and nutrient-dense foods were not associated with an increase in saturated fat or cholesterol. Postpartum participants who received WIC food packages were also shown to have higher hemoglobin levels than nonparticipants.<sup>69</sup>

Research has also indicated that WIC participation improves birth outcomes as well as access to health care. Gai and Feng showed that WIC participation led to a decrease in the number of premature births as well as moderately low-birth-weight and very low-birth-weight infants.<sup>70</sup> Pregnant women who participated in WIC were more likely to receive prenatal care, have longer pregnancies, and have viable birth outcomes.<sup>69</sup> Beyond the increase in prenatal care, children participating in WIC were also more likely to visit their primary care physician and experience improved growth rates.<sup>69</sup> Other research indicated that 80% of WIC participants had some form of health care insurance.<sup>70,71,72</sup>

Conversely, Nelson found an increased risk of obesity in children participating in WIC.<sup>73</sup> These results have not been replicated in other studies.<sup>74</sup> Nelson noted that the nature of the sample might have been biased because one of the qualifying nutritional risk factors for WIC children was excessive weight for stature.<sup>73</sup> A study by Ploeg<sup>67</sup> compared body

weight among four groups of children aged two to five years. Included in the study were WIC participants, non-WIC participants who qualify for WIC, moderate-income households, and households with incomes 300% above poverty guidelines. No relationship was found between WIC participation and body weight in the WIC participant group and non-WIC participants who qualify for WIC. Also, no relationship was found in the group with household incomes 300% above poverty guidelines. According to the Centers for Disease Control and Prevention (CDC),<sup>75</sup> little evidence yet exists supporting the contention that WIC participants might be more or less prone to overweight.

### **Evaluation of WIC Food Packages by the Institute of Medicine**

In 2003, in response to concerns about the ability of WIC food packages to meet modern nutrition needs, the Institute of Medicine (IOM) was asked by the Food and Nutrition Service of USDA to review the WIC food packages. The Food and Nutrition Board of the IOM formed a committee, which was assigned the following task:<sup>10</sup>

The committee's focus was the population served by the Special Supplemental Nutrition Program for Women, Infants, and Children (the WIC program). Specific tasks for the committee during Phase I were to review nutritional needs, using scientific data summarized in Dietary Reference Intake reports;<sup>76-81</sup> assess supplemental nutrition needs by comparing nutritional needs to recent dietary intake data for pertinent populations; and propose priority nutrients and general nutrition recommendations for the WIC food packages. The publication,

*Proposed Criteria for Selecting the WIC Food Packages: A Preliminary Report of*

*the Committee to Review the WIC Food Packages* (released in August 2004), presented the committee's findings for Phase I of the project.<sup>82</sup> The Phase II task was to recommend specific changes to the WIC food packages.

Recommendations were to be cost-neutral; efficient for nationwide distribution and vendor checkout; non-burdensome to administration; and culturally suitable.

The committee also considered the supplemental nature of the WIC program, burdens and incentives for eligible families, and the role of WIC food packages in reinforcing nutrition education, breastfeeding, and chronic disease prevention.<sup>10</sup>

The committee investigating the changes to the WIC food packages identified nutrients that were consumed below the Estimated Average Requirement (EAR) and above the Tolerable Upper Intake Level (UL). In 1978, *target nutrients* included calcium, iron, vitamin A, vitamin C, and high-quality protein.<sup>10</sup> In 1992, the National Advisory Council on Maternal, Infant, and Fetal Nutrition recommended additional nutrients that were identified as being under consumed in a report to Congress; those nutrients were folate, vitamin B<sub>6</sub> and zinc.<sup>10</sup> The analysis conducted as part of the 2005 IOM report indicated that WIC children were meeting all of their micronutrient and macronutrient intakes with the exception of vitamin E and the women participants had inadequate intakes of a number of nutrients. Ninety percent of lactating women, all of the pregnant women, non-lactating, postpartum women had inadequate intake of vitamin E. More than 40% of non-lactating, postpartum women had lower than adequate levels of vitamins A and C, and approximately 33% of lactating and pregnant women were meeting adequate intake of vitamins A, C and B<sub>6</sub>.<sup>10</sup> Inadequate levels of folic acid were found in 40% of pregnant

and lactating women; similarly, almost one-quarter of these women were not consuming enough zinc, 8% had inadequate niacin intake, and 17% had inadequate levels of thiamin. The percentage of non-breastfeeding postpartum women not receiving adequate levels of folate, zinc, thiamin and niacin, however, was better than pregnant and breastfeeding women: only 12% had low intakes of folate, and only 3% had low intakes of thiamin or niacin.<sup>10</sup>

To analyze the energy intakes of WIC participants, the committee compared the usual energy intake for each category of participants with their calculated estimated energy requirement (EER). WIC infants aged six to 11 months consumed 238 kcals more per day than the EER, and one-year-old children consumed 346 kcals more than the mean EER. Children aged two to four years consumed 303 kcals more than the mean EER. Interestingly, the reverse was reported for pregnant, lactating and non-breastfeeding postpartum WIC participants. Pregnant and lactating women consumed 350 kcals less than the mean EER, and 389 kcals less than the mean EER for non-breastfeeding postpartum women. The committee also considered excessive intake of more problematic nutrients, such as sodium, among WIC participants. They found that 90% of WIC participants consumed sodium above the UL, with the exception of one-year-old WIC children; 60% of participants consumed sodium above the UL. Saturated fat was also consumed at levels above the recommended 10% of total food energy in WIC children aged two to four years (91%), pregnant and breastfeeding women (81%), and non-lactating postpartum women (96%).<sup>10</sup>

Based on the above findings and trends in nutrition-related health problems, the committee was concerned that the intake of kilocalories above the EER as seen in a number of WIC participants may contribute to the rates of overweight and obesity among WIC participants. The committee also expressed concerns about low folate intake among pregnant participants and birth defects, based on the well-established relationship between maternal folate levels and neural tube defects of spina bifida and anencephaly.<sup>10</sup>

More generally, the IOM found that WIC food packages did not align with recommendations from the Dietary Guidelines for Americans (DGA). A number of micro- and macro-nutrient discrepancies were seen between the WIC food packages and the DGA. Federal food, nutrition education, and information programs must be based on the DGA.<sup>83</sup> The most recent DGA, the DGA 2010, was released on January 31, 2011. The press release announcing the new guidelines described the updated 2010 guidance system as a mechanism to address the levels of overweight and obese children and adults in the United States. The 2010 system placed a strong focus on reducing caloric consumption and increasing physical activity as well as increasing fruits and vegetables consumption while minimizing intake of certain problematic nutrients.<sup>11</sup>

Fruits and vegetables intake was of particular concern for IOM in its review of WIC food packages, but it has also been a persistent problem among Americans in general. The USDA previously recommended at least five servings of fruits and vegetables, although today recommendations are more specifically based on age, gender, and activity level; unfortunately many children and adults fall short of even the five-a-day guidelines.<sup>9-11</sup>

Krebs-Smith and colleagues<sup>12</sup> showed that, among two to three year old children, 50.2% did not consume the minimum recommended amount of whole fruit, 80.3% did not consume enough total vegetables, 97.3% did not eat enough dark-green vegetables, and 79.4% did not consume enough orange vegetables. Krebs-Smith and colleagues also found that women aged 19-30 years do not meet the daily guidelines: 89.9% did not consume enough whole fruit, 92.6% did not consume enough total vegetables, 98.6 did not consume enough dark greens, and 98.9 % did not consume enough orange vegetables. Although Krebs-Smith and colleagues examined the general population, these same age categories are enrolled in WIC. The IOM report identified dark-leafy vegetables and deep orange vegetables as a food subgroup that is very low in the WIC food package when aligning the food package with the dietary guidelines.<sup>10</sup>

### **Package Recommendations by the Institute of Medicine**

Based on the variety of factors above, IOM produced a report in 2005 identifying both priority nutrients and priority food groups for the food packages to address both inadequate intakes and excessive intakes, using a combination of scientific evidence and dietary guidelines.<sup>10</sup> IOM took into account a number of factors into its recommended changes as well, including the fact that, “marked demographic changes have occurred in the WIC population; the food supply and dietary patterns have changed; the health risks of the WIC-eligible population have changed; nutrient recommendations and dietary guidance have changed; and many stakeholders are calling for change”.<sup>10</sup> Before these revisions occurred, there were seven food packages available for participants based on their category and nutritional needs.

These categories included:<sup>63</sup>

- *Infants aged  $\leq 3$  months*
- *Infants aged 4-11 months*
- *Children or women with special dietary needs*
- *Children aged 1-4 years*
- *Pregnant and breastfeeding women (basic)*
- *Non-breastfeeding, postpartum women*
- *Breastfeeding women (enhanced)*

The revised WIC food package categories are:<sup>63</sup>

- *Food Package I: Infants aged  $\leq 5$  months*
- *Food Package II: Infants aged 6-11 months*
- *Food Package III: All individuals with medical needs, including infants*
- *Food Package IV: Children aged 1-4 years*
- *Food Package V: Pregnant and partially breastfeeding (up to 1 year postpartum)*
- *Food Package VI: Postpartum (up to 6 months postpartum)*
- *Food Package VII: Fully breastfeeding (up to 1 year postpartum)*

The new food packages were designed to provide target nutrients and some of the food energy needs for WIC participants  $>6$  months, therefore meeting the definition of “supplemental”.<sup>10</sup> This was not necessarily the case for infant participants receiving formula; in this case, the food package was meant to meet or exceed infants’ nutrient and energy needs.<sup>10</sup>

Taking all relevant data together, IOM recommended the following in its 2005 report:<sup>10</sup>

1. *The package reduces the prevalence of inadequate and excessive nutrient intakes in participants.*
2. *The package contributes to an overall dietary pattern that is consistent with the Dietary Guidelines for Americans for individuals aged  $\geq 2$  years.*
3. *The package contributes to an overall diet that is consistent with established dietary recommendations for infants and children  $< 2$  years, including encouragement of, and support for, breastfeeding.*
4. *Foods in the package are available in forms suitable for low-income participants who may have limited transportation, storage, and cooking facilities.*
5. *Foods in the package are readily acceptable, widely available, and commonly consumed; take into account cultural food preferences; and provide incentives for families to participate in the WIC program.*
6. *Foods will be proposed giving consideration to the impacts that changes in the package will have on vendors and WIC agencies.*

### **Pilot Studies Involving Package Change**

Prior to the implementation of any changes by USDA to WIC food packages based on IOM recommendations, some research was conducted to understand aspects of food behaviors among WIC participants and low-income individuals, as well as studies regarding what impact potential changes could have on these populations. Although only a small body of literature exists regarding food-related behaviors of WIC participants, some studies have been published documenting perceived barriers to healthy food

purchase among low-income individuals in general. Studies have also examined the impact of financial incentives to improve fruits and vegetables purchases among WIC participants, and others have identified perceived barriers to fruits and vegetables purchases as part of WIC or WIC-related programs, specifically. A 2004 Minnesota study investigated barriers to healthy eating in a low-income community.<sup>15</sup> Four communities were characterized using the North American Industry Classification System's (NAICS) codes for grocery store access and higher levels of poverty than the state average. Participants who lived in low-income neighborhoods identified multiple barriers to purchasing healthy foods, including lack of time, cost, disinterest, and concern about the taste of healthy foods. Similar barriers have been identified in other studies.<sup>16,17</sup>

Similar results have been seen in studies addressing barriers to use of other WIC options for fruit and vegetable purchasing. One study focused on the Farmers' Market Nutrition Program (FMNP), which provides vouchers that participants can redeem at farmers' markets specifically for the purchase of fresh fruits and vegetables.<sup>7</sup> Racine and colleagues<sup>18</sup> conducted a survey among pregnant WIC participants to assess barriers to using FMNP benefits. Themes resulting from the survey included transportation limitations, cost of produce, distance of participants' homes to the nearest market, and issues of perceived quality of produce found at markets.<sup>18</sup> Several respondents, however, also noted they had never considered going to a farmers' market, preferred grocery stores, and did not know where farmers' markets were located. Some also noted they were unsure of what a farmers' market was.<sup>18</sup>

Some data also exist that provide insight into barriers of use related to purchase of fruits and vegetables specifically. Herman and colleagues<sup>19</sup> conducted a study in 2008 in which vouchers were provided to WIC participants that mimicked the yet-to-be-introduced fruits and vegetables benefits changes for WIC. One group of participants was given \$10 a week for six months to be used at a farmers' market. Another group received a similar benefit for use at a supermarket, and a control group received coupons for disposable diapers worth \$13 a month.<sup>19</sup> Data were gathered pre-intervention (baseline), two months after baseline, at the end of the six-month intervention, and once more six months after the conclusion of the intervention. Based on interviews and multiple-pass method 24-hour dietary recalls at the conclusion of the intervention, participants receiving farmers' market benefits consumed an average of 3.9 servings of fruits and vegetables combined per 1,000 kcal of food consumed compared to 3.0 servings combined among the control group individuals who did not receive any food-related benefits ( $p < 0.001$ ). At six months post-intervention, fruit and vegetable consumption in the farmers' market intervention group remained high at 4.0 servings of fruits and vegetables per 1,000 kcal of food consumed compared to 3.1 servings per 1,000 kcal of food consumed among the control group participants who received no food-related benefits.<sup>19</sup> Although the benefits provided in this study were high, they were suggestive of the impact of financial incentives for fruit and vegetable purchase.

### **Implementing the Package Change**

On December 6, 2007 an interim rule was passed to reflect the recommendations made by the 2005 IOM report.<sup>10</sup> The rule revisions were based on the need to align the WIC

food packages with DGA, increase the variety of foods provided to WIC participants, increase the flexibility of state agencies to prescribe food packages in an effort to include cultural preferences for food, and several infant feeding objectives. The revisions to the WIC food packages that were fully implemented on October 1, 2009 were described as the most significant change to the WIC program since its initial implementation.<sup>64</sup> Prior to this, there was a notable change in 1992 when food packages were adjusted to expand food to breastfeeding women.<sup>10</sup> The food package changes were the first of this magnitude since 1980. Due to the need to keep the food cost neutral with previous food package costs, the interim rule made modifications to the IOM recommendations.

The IOM estimated that the proposed food package change would address nearly all of the micronutrients that were being under-consumed, with few exceptions such as vitamin C due to the reduction of fruit juices.<sup>10</sup> The committee also expected the new food packages to provide fewer of the nutrients that are being over-consumed with benefits to children aged two to four years who will receive higher levels of vitamin E and fiber while reducing intakes of sodium, cholesterol, saturated fat, and food calories.<sup>10</sup> Pregnant and partially breastfeeding women were expected to improve their vitamin E, B<sub>6</sub>, folate and magnesium consumption while decreasing their sodium, total fat, cholesterol, and saturated fat intake. Similar effects were predicted in non-breastfeeding postpartum women. The fully breastfeeding group received increased calcium, vitamin A, vitamin C, and fiber. This group decreased sodium, total fat, cholesterol, food calories, and saturated fat consumption.<sup>10</sup>

The CVV amount that was originally suggested by the IOM was not implemented. Due to cost containment needs to keep the food package cost-neutral, only breastfeeding women were provided \$10 a month; the remaining WIC mothers were provided only \$8 a month. This amount was revised and increased shortly after implementation. On December 31, 2009, revisions were made to the new food packages. The cash-value vouchers were increased from \$8 to \$10 for women participants who are pregnant, postpartum, and partially breastfeeding.<sup>84</sup> The revision allowed all women participants to receive the \$10 suggested in the 2005 IOM report.<sup>10</sup> This increased funding was provided under the Agriculture, Rural Development, Food and Drug Administration, and Related Agencies Appropriations Act, which became law on October 21, 2009.

## **WIC CVV**

One of the significant changes to the program was the introduction of cash value vouchers, or CVV, for purchase of fruits and vegetables. This is part of a nationwide improvement to the WIC package, providing fresh fruits and vegetables for the first time in 30 years to WIC participants.<sup>2,4</sup> CVV are vouchers that can be used at WIC-approved venues and farmers markets to purchase fruits and vegetables.<sup>4</sup> As part of the introduction of CVV, state agencies initially gave \$10 to breastfeeding women and \$8 to other categories of women as a mechanism to encourage breastfeeding and contain cost. This amount was increased shortly after implementation to meet the amount the IOM recommended. State agencies were initially given until April 30, 2010 to implement the \$10 increase in CVV funding for women.<sup>85</sup> Most states allowed CVV to be used to purchase fresh, frozen, or canned fruits and vegetables. However, beginning with their

introduction on October 1, 2009, CVV in Arizona was worth \$6, \$8 or \$10 based on the food package and could only be used for the purchase of fresh fruits and vegetables.<sup>6</sup> Although the amount was the same as other states, only Arizona and one other state required that the CVV be limited to fresh fruits and vegetables and did not include either canned or frozen fruits and vegetables.

The following is a list of fruits and vegetables requirements under the CVV program.

States had the authority to offer the following foods based on their opinion:<sup>84,85</sup>

- *Any variety of fresh whole or cut fruit without added sugars*
- *Any variety of fresh whole or cut vegetable, except white potatoes, without added sugars, fats, or oils (Orange yams and sweet potatoes are allowed.)*
- *Any variety of frozen beans (including frozen beans authorized under the mature beans category) and any other kind of bean not authorized under the mature legume category (eg, snow peas)*
- *Any variety of canned fruits including applesauce, juice pack or water pack without added sugars, fats, oils, or salt (ie, sodium)*
- *Any variety of frozen fruits without added sugars*
- *Any variety of canned or frozen vegetables except white potatoes without added sugars, fats, or oils. May be regular or lower in sodium. (Orange yams and sweet potatoes are allowed.)*
- *Any type of dried fruits or dried vegetables without added sugars, fats, oils, or salt (ie, sodium) (Not authorized for children because of choking hazard.)*

- *Canned fruit must conform to FDA standard of identity at 21 CFR Part 145.*
- *Canned vegetables must conform to FDA standard of identity at 21 CFR Part 155.*

The following items were not allowed for purchase using CVV:<sup>85</sup>

- *White potatoes*
- *Catsup or other condiments*
- *Pickled vegetables*
- *Olives*
- *Juices*
- *Soups*
- *Herbs or spices*
- *Edible blossoms and flowers (eg, squash blossoms). (Broccoli, cauliflower and artichokes are allowed.)*
- *Creamed or sauced vegetables*
- *Vegetable-grain (pasta or rice) mixtures*
- *Fruit-nut mixtures; breaded vegetables*
- *Fruits and vegetables for purchase on salad bars*
- *Peanuts*
- *Ornamental and decorative fruits and vegetables such as chili peppers on a string; garlic on a string; gourds; painted pumpkins; fruit baskets and party vegetable trays*
- *Items such as blueberry muffins and other baked goods are not authorized.*

- *Mature legumes (dry beans and peas) and juices are provided as separate food WIC categories and are not authorized under the fruit and vegetable category.*
- *Fruit leathers and fruit roll-ups*

States were given flexibility to vary WIC food packages from those in other states. The WIC state agency could determine the form and brand of WIC food permitted. They could also substitute foods deemed culturally appropriate if they were cost-neutral and nutritionally equivalent.<sup>10</sup> States could also determine whether to meet—or exceed—the minimum federal nutritional standards and also designate which types of foods would be permissible, such as fresh, frozen, or canned.<sup>10</sup>

### **WIC CVV Use in Arizona**

In Arizona, exclusively breastfeeding WIC participants (food package VII) were given fruit and vegetable CVV totaling \$10 a month. Pregnant, postpartum, and partially breastfeeding participants (food packages V and VI) were given fruit and vegetable CVV totaling \$8 a month, while children aged one to five years (food packages IV) were given \$6 a month CVV (personal communication ADHS). As part of the WIC Policy Memorandum #2010-1, the CVV amount for food packages V and VI (pregnant, postpartum, and partially breastfeeding participants) was raised to \$10 a month during the 2011 fiscal year.<sup>85</sup>

Arizona also allowed the redeemer of WIC vouchers to pay above and beyond the amount indicated on the CVV (e.g., mixed tender). This payment can be made in the

form of SNAP EBT, cash, or debit or credit card. During the 2010 fiscal year, 45.9% of CVV were redeemed at the full value. Food package IV (\$6 a month CVV) CVV were redeemed at a slightly higher level (50.3%) than food package V, VI and VII vouchers (45.8%); the CVV for food packages V, VI and VII, however, were provided in two \$5 vouchers. In fiscal year 2011, 19.2% of the \$5 vouchers were redeemed at less than 90% of the total amount, 17.1% at greater than 90% of the total amount, and 17.9% of the \$5 vouchers were not redeemed at all. During that same time, 21.2% of \$6 vouchers were redeemed at less than 90% of the total amount, 14.4% were redeemed at greater than 90% of the total amount, and 14.1% of the \$6 vouchers were not redeemed at all. ADHS reported a “slight increase” in redemption rates after the rule change that allowed for the purchase of frozen and canned fruits and vegetables, compared to the redemption rates prior to the change that only allowed for the purchase of fresh fruits and vegetables. The increase was reported without a dollar amount or percentage included.

In communication with ADHS, it reported that the redemption of CVV was variable based on the food package. According to its reports, 52.2% of children aged 4 years redeemed at 100% of the CVV value, making it the most likely group to do so. This group also redeemed the highest percent of the total value (83.3%). The postpartum group was the least likely to redeem at full value (40.3%); this group only redeemed at 70.7% of the total value. ADHS also provided information about the overall family-level redemption practices and reported that 3.4% of families did not redeem any of their allotted CVV, while 7.6% redeemed all of their CVV.

## **Current Study**

WIC incurs a large amount of funding for its administration and benefits, which makes consistently high redemption of its benefits a high priority. The total amount of food grants allotted by USDA to Arizona WIC was \$91,264,004 in 2012.<sup>7</sup> Arizona was also provided \$38,522,695 for nutritional services and administration of the program; as such, the total funding for WIC in Arizona in fiscal year 2012 was \$129,786,699. Given the vital need of the WIC program to address nutritional concerns, in particular fruit and vegetable consumption, coupled with the issue of variable redemption of CVV for fruits and vegetables purchase and therefore inefficient use of funds, ADHS was interested in understanding what barriers and facilitators existed for the Arizona WIC population in terms of CVV use. The present study was targeted at addressing this gap in knowledge by exploring trends and attitudes of CVV use among participants in the ADHS WIC program. Because little research has been conducted on use of CVV in general,<sup>5</sup> this study was novel in its exploration of issues specific to Arizona ADHS WIC participants and may provide broader implications.

## Chapter 3

### METHODOLOGY

#### **Participants**

Participants for WIC focus groups were recruited from current WIC participant lists assembled by ADHS. These lists were updated just prior to recruitment due to the constant flux of WIC participation. Participant lists were divided into four WIC participation categories: women who were currently pregnant (henceforth referred to as '*pregnant*'); women who were up to six months postpartum ('*postpartum*'); women who were exclusively or partially breastfeeding, up to one year after delivery ('*breastfeeding*'); and women who were not participating in WIC themselves, but their children were ('*children*'). Each of the four participant lists contained approximately 32,000 participants. Due to the large volume and the wide geographic area of Arizona, recruitment began with a focus on participants who attended the clinics at which focus groups would be conducted, and if exhausted, zip codes proximal to focus group locations. Locations were chosen in conjunction with ADHS to allow for greater geographic distribution across the Phoenix metropolitan area (known as the Valley of the Sun), and to reduce any financial hardships due to travel requirements.

Focus group participants were contacted via telephone, and only those WIC participants who had previously agreed to be available for research purposes were included. Upon contact, researchers described the proposed study and its focus on understanding how WIC CVV were used to buy fruits and vegetables. Participants were asked if they would be willing to participate in a short, one-time meeting for 1 to 1 1/2 hours. Participants

were also assured that their participation would be voluntary and would not affect their WIC benefits in any way. Participants were then informed that discussions at the meeting would be recorded and that any information gathered via audio or otherwise would be securely stored.

### **Focus Group Design**

Researchers focused on recruitment of mothers and caregivers of children participating in WIC who were at least 18 years of age and who had the primary responsibility of buying and preparing food for their households. Up to 24 participants per group were recruited in anticipation of potentially high no-show rates, an issue noted by ADHS among area WIC clinics. A total of 8 focus groups were conducted, four at a clinic in each of two Valley cities: Surprise and Mesa. Each of the four focus groups at each location comprised WIC participants representing one of four targeted categories: pregnant, postpartum, breastfeeding, and children. Each focus group only included participants categorized by ADHS as participating within one of the categories. The focus groups were conducted in English. The same moderator was used for all eight focus groups.

The focus group leader employed a semi-structured focus group guide (Appendix A). That guide was based on a previously published focus group discussion guide designed to evaluate the effects of revisions to WIC food packages on redemption of WIC benefits.<sup>2</sup> This guide was modified for purposes of this study in close collaboration with ADHS (Appendix B). Upon arrival, participants signed an informed consent form (Appendix C),

and at the conclusion of the focus group each participant received a \$20 gift card for a nearby supermarket.

The focus group rules as read verbatim to the participants were the following:

- This is a research project, and your participation is voluntary.
- There are no wrong answers to any of the questions that we will be discussing today. Your opinions and experiences are important and we want to hear them.
- Participating in this study will not affect any of your WIC benefits now or in the future.
- We will be recording this discussion, so I can listen to what you are saying. We will destroy the recording and any other form you completed when our project is finished.
- We will not use your name or personal information in any reports. Your comments will be combined with comments from other focus group participants and presented in the aggregate. The aggregated information/results from this study may be presented in meetings or in internal reports to the Arizona Department of Health Services. Aggregated results from this study and portions of audio recordings (with no identification of individuals by name) may be presented in meetings or oral presentation to the Arizona Department of Health Services. Your name, and any information that can be traced back to you, will not be included in any reports or meetings.
- When reviewing the transcripts from today's session, it is helpful for me to know when we change speakers. So, please identify yourself when you speak. You may

just use your first name or your initials, or make up a name for today's session, as long as you use the same name throughout the session. There are name tags; please write the name you plan to use for this session, so we can refer to you by this name.

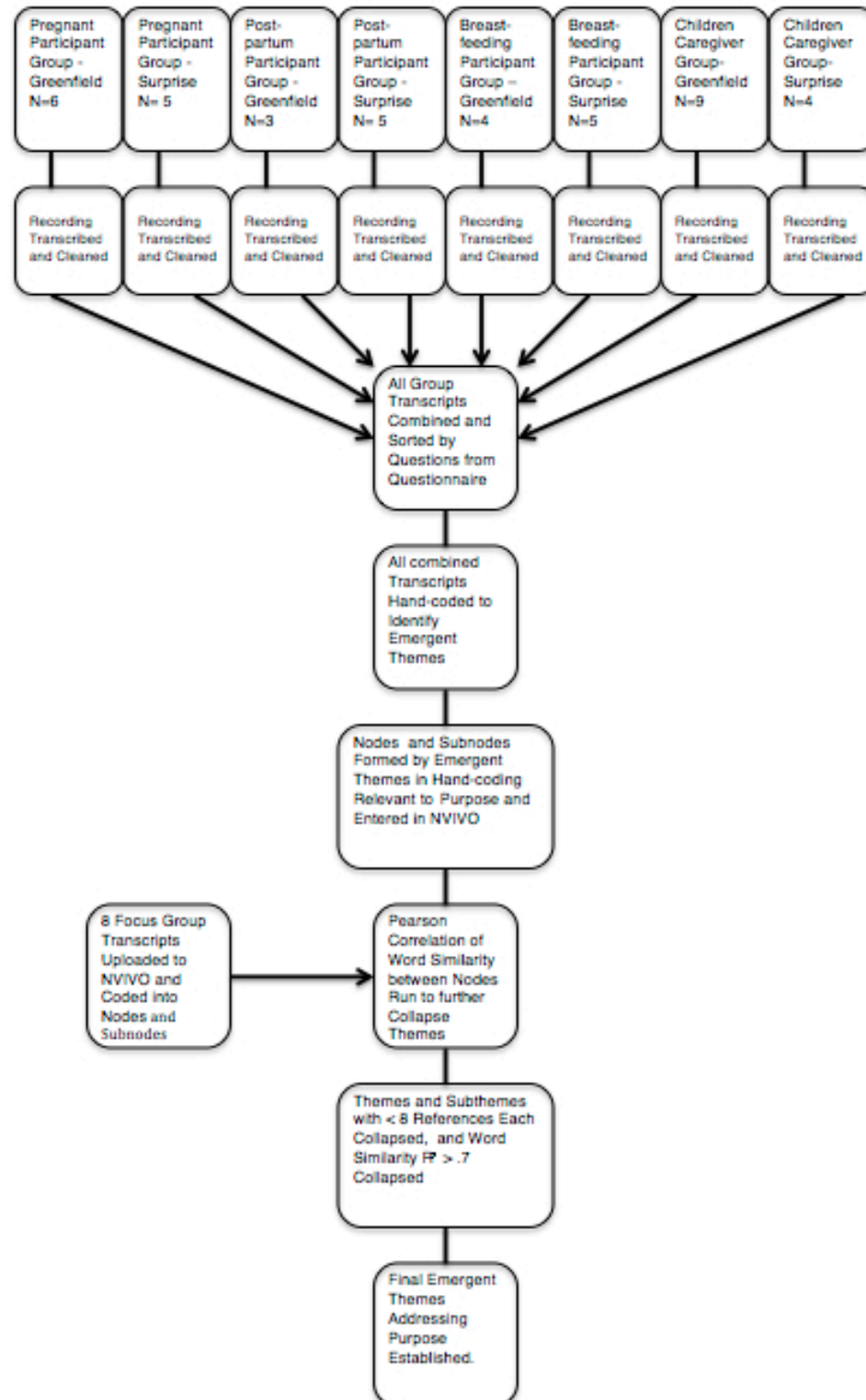
- Before you leave today, I will give you all a gift card for \$20, to thank you for coming and sharing your opinions and insights with us.
- Does anyone have any questions thus far?

The focus group leader used the guide to conduct discussions among focus group participants about their perceptions of CVV usage in terms of benefits and limitations (e.g., physical and perceived barriers, cost, access to stores and farmers' markets, knowledge and awareness of produce availability, and redemption strategies). The focus group leader also asked focus group participants about other aspects of facilitators and barriers to using WIC benefits in general, but also explored other themes that arose organically and were relevant to participants. Each focus group discussion was recorded using at least two digital recorders. Resulting recordings were transcribed by the discussion leader, and transcriptions were cleaned by a second researcher.

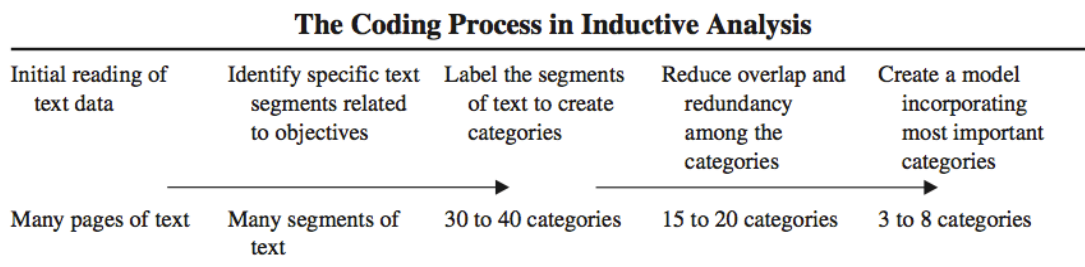
### *Data Analysis*

Focus group responses were transcribed verbatim (Figure 2). The data were checked for accuracy, then separated and grouped together by question from the semi-structured guide. Using a general inductive approach, each question was hand-coded to create categories (Figure 3).<sup>86-93</sup> Categories pertinent to the research purpose were then entered

into a qualitative analysis software program.<sup>94</sup> Using previously published methods, the researcher further created categories from actual phrases in text segments.<sup>88,89,92,93</sup> Categories (Nodes) and Subcategories (Subnodes) were quantified by the number of coded phrases relating to each. Categories and subcategories that had 8 or more references by individuals were retained. This process reduced the categories down to four categories. Although debate exists regarding whether or not coded text should be quantified as part of a qualitative analytical approach,<sup>90</sup> the research team deemed this necessary to develop prominent themes emerging from the transcripts and to assist in the comparison of participant categories.<sup>95</sup> By using the qualitative analysis software, the researcher created a node cluster for word similarity, a process based on Pearson's correlation analysis to investigate overlapping and redundant text within all coded text filed under each category (Figure 4).<sup>94</sup> A final model was developed incorporating the most important categories relative to the purpose. Due to the recent implementation of CVV rule changes, this approach allowed researchers to capture ideas and themes not previously reported in the literature.



**Figure 2.** Flow diagram of data collection and coding procedure implemented to determine emerging themes and subthemes from key informant focus groups.



Source: Adapted from Creswell (2002, p. 266, Figure 9.4) by permission of Pearson Education, Inc. (© 2002, Upper Saddle River, NJ).

**Table 1.** The Coding Process in Inductive Image courtesy of Thomas<sup>87</sup>



**Figure 3.** Nodes clustered by word similarity found in coded text based on Pearson's coefficient correlation produced by NVIVO to confirm removal of redundancy and overlap in collapsed coding procedure<sup>94</sup>

## Chapter 4

### **RESULTS**

Focus group participants identified key issues and attitudes related to WIC CVV use (Table 2). There was overlap over the eight focus groups, but the number of coded references varied between groups. The results are divided into three sections addressing each of the three specific objectives of the project. The results for the overall use of CVV among Arizona WIC participants and the effect of CVV fruits and vegetables rule changes on overall CVV use were combined to assess the overall trend and attitudes of CVV use. Differences in CVV redemption among WIC participants of different categories are reported separately, however the location reporting for each category is combined.

<b>Research Aim: Overall Use of CVV Among Arizona WIC Participants</b>
Theme: Interactions in the store and shopping strategies Subtheme: Positive experience using WIC CVV Subtheme: Anger from the cashier or other shoppers Subtheme: Lack of proper WIC training among cashiers Subtheme: Fluctuation of WIC-approved items at point of sale Subtheme: Embarrassed to use WIC Subtheme: Judged by cashier or other shoppers Subtheme: Select specific cashier to improve experience Subtheme: Use store WIC labeling to avoid selecting wrong item Subtheme: Suggest implementing EBT cards for WIC to improve redemption Theme: Maximizing WIC CVV amount Subtheme: Avoid shopping at expensive stores Subtheme: Utilize sales Subtheme: Suggest increasing WIC CVV amount
<b>Research Aim: Effect of CVV Fruit and Vegetable Rule Changes on Overall CVV Use</b>
Theme: Rule change on overall CVV use Subtheme: Fresh fruits and vegetables are preferred Subtheme: Frozen fruits and vegetables are convenient Subtheme: Mixture of fresh, frozen and canned is preferred
<b>Research Aim: Differences in CVV Redemption Among WIC Participants of Different Categories</b>
Theme: CVV redemption among different categories Subtheme: Ease of use Subtheme: Amount provided is worth the effort Subtheme: Pooled CVV together during purchase Subtheme: Redeemed CVV separately over the whole month Subtheme: Full amount of CVV redeemed Subtheme: Full amount of CVV redeemed plus mixed tender

**Table 2.** Emerging themes and subthemes from key informant focus groups.  
WIC=Special Supplemental Nutrition Program for Women, Infants, and Children  
CVV= Cash Value Voucher

## **OVERALL USE OF CVV AMONG ARIZONA WIC PARTICIPANTS**

### **Interactions in the Store and Shopping Strategies**

Nine subthemes emerged from respondent discussions which addressed the emergent theme of interactions they experienced at the store while redeeming their WIC CVV, and strategies they implemented to improve their experience. Both interaction and strategies emerged throughout the focus group conversations. On some occasions, respondents described negative interactions with either the cashier or other shoppers in a distressed manner. They became louder and agitated when discussing these experiences.

Conversely, respondents often used an upbeat and positive voice when describing strategies to improve their shopping experience. Other participants often interrupted the conversation to agree or thank the speaker for suggesting a strategy that they can implement when they are shopping in the future.

**Positive Experience Using WIC CVV.** Across the eight focus groups, there were 10 individual references to having a positive experience redeeming the WIC CVV.

Respondents often expressed that the CVV were the easiest to use among all WIC benefits and that cashiers seemed most comfortable processing CVV transactions compared to other WIC vouchers. Several participants expressed the desire to make all WIC vouchers as flexible and easy to use as the WIC CVV:

“I have actually had a great experience with the cashiers. I haven’t had a negative experience yet with them being annoyed . . . I go to Fry’s most often and they are . . . ‘Do you still want to grab some veggies?’ And I am like ‘no, no, no, no,

no' because I don't want to take more time. And they are like 'no, no, no, no, no, just go and grab what you want.' So they go and grab two more bell peppers for me for a dollar.”

**Anger from the Cashier or Other Shoppers.** Respondents described anger from the cashier or other shoppers as a barrier to using the CVV. Of the different responses describing interactions while shopping with WIC CVV, this subtheme had the most references: 24 participants described issues with anger from fellow shoppers or the cashier. Participants often described heavy sighs from both the cashier and shoppers while at the point of purchase. Respondents expressed different reactions to this interaction such as leaving the store or trying to explain the participant's current financial situation in their defense. One participant described not being bothered by others' reactions because she felt confident in her choice to provide herself and her children with healthy foods.

“You can just tell, you know, they give you dirty looks; others like sigh. Like one time, one lady like a month ago. She was like, she was like um, she was like um, ‘Are you f-ing kidding me?’ This is ridiculous because I was taking a long time and I was just doing my WIC checks and I turn around and was like, really? Whatever, and I got so mad that I just wanted to get my baby food and I didn't even do that check here and I just left, and I didn't, and it affects the cashiers and sometimes they don't even know what they're doing and it took like an hour, say, to wait until another cashier. So I typically don't like doing my WIC checks

certainly, but I know I have to, so, doing it all at once, you know, sort of, to do with them.”

In at least one case, the participant left the store without fully redeeming the WIC voucher due to a negative interaction with a shopper waiting in line behind her:

“I know and, if people have a little bit of stuff, I let them go through but if they have a lot of stuff like me, then I don’t. But it’s usually the ones with a lot of stuff that also like ‘Are you kidding me really? Really are you kidding me?’ and I get frustrated fast. I just get mad and I, and I walked out on the dealing with the people.”

**Lack of Proper WIC Training among Cashiers.** Respondents expressed frustration with cashiers' lack of training. Several expressed that they sometimes have to teach the cashier how to process WIC vouchers in general. This subtheme had 17 individual references and was often described as a point of frustration. In the cases where participants experienced this barrier, they described having to spend more time at the point of purchase, which several participants noted led to other shoppers behind them in line becoming angry. Other respondents expressed that this barrier led to them not being able to fully redeem their voucher because the cashier was not able to process the check. In some cases, the lack of training prevented participants from being able to pool their WIC CVV or use mixed tender to complete transactions.

“But most of the time it’s the workers. If we encounter somebody who is a little bit on the negative side or doesn’t know what they are doing and has to look

through the book and they are annoyed or the customers behind you, that's usually where we have a negative experience."

**Fluctuation of WIC-Approved Items at Point of Sale.** Respondents expressed that fluctuation in the redemption rules from store to store, week to week, and sometimes cashier to cashier can create barriers for CVV use. There were nine references to this fluctuation across all focus groups excluding those representing the children category.

"There are times where you get so frustrated because what one week it's in the system and the other week the computer *glitched* it out."

**Embarrassed to Use WIC.** Respondents mentioned a feeling of embarrassment when using the WIC CVV and, in some cases, the need to justify their enrollment in the program to other shoppers and the cashier. As with the previous subtheme, there were no participants in the children group that mentioned feeling embarrassed; there were, however, eight references to this emotion among other groups.

"Like when we first started to be on it was because my husband lost his job so it was no control of our own. So I felt like I had to explain that to every cashier. Like 'My husband just lost his job and that's why I am on WIC', you know. And now I don't really care but when it first started it was, I don't know what it felt like."

**Judged by Cashier or Other Shoppers.** Respondents to the questionnaire expressed the barrier of being scrutinized by other shoppers and the cashier; 11 references were identified in relation to this subtheme. In one of the focus groups, participants described hiding their smartphone to avoid confrontation by other shoppers who may judge them for both using WIC and owning a smartphone. Several respondents mentioned that social media has made redeeming WIC vouchers more uncomfortable because of anti-nutrition assistance program sentiments expressed on Facebook. One participant expressed that she used her WIC CVV at grocery stores where she will not run into friends or neighbors to avoid possible judgment.

“I am sorry I sometimes feel judged in a way. Like, oh I don’t know, but you feel like they are looking at your appearance and they think, if you can afford this then you can afford food or whatever, you know? And so like I should do the consign thing, you know? I do not have any Internet or cable at my house and we cut back on all and you know this helps us out. Sometime it seems like people judge more; you should not be doing this or have this if you’re getting help from the government, so.”

**Select Specific Cashier to Improve Experience.** As a mechanism to avoid interactions such as anger and judgment, respondents expressed the strategy of selecting a particular cashier each time they were shopping using WIC vouchers. Respondents in some cases would shop during specific hours when their selected cashier was working. These cashiers in some cases were described as being older and female as opposed to younger

employees. In this subtheme, there were 12 references to this strategy for easing the redemption process.

“So when I go to the store and I go to Albertsons and I look for certain cashiers and I will wait in a line forever to wait for that cashier instead of going to that one that’s not and that will be rude.”

**Use Store WIC Labeling to Avoid Selecting Wrong Item.** Eight respondents discussed using the WIC labels found in several grocery stores. These labels are described as square and pink or in the case of Walmart, a small “w” on the label. Several respondents only relied on the label for selecting items, whereas other participants first used the label then checked their WIC book to make sure the item was approved. Although a couple of participants described labeling as a positive experience, they became very frustrated when the item was mislabeled and they described a feeling of frustration at both the store and WIC for changing the approved items.

“When you go to Fry's, they label every single thing, even the cheese, and the produce, and the fruits, and vegetables, like I do now. I didn't know until like three weeks ago that you could buy the salad, the prepackaged salad, and I saw the label there, so I was like ‘Really?’, so I got salad instead.”

**Suggest Implementing EBT Cards for WIC to Improve Redemption.** In several focus groups, one or more participants had recently moved to Arizona from a state that had incorporated the EBT form of WIC vouchers. In these cases, other participants in the focus group became very interested and responsive to the possibility of EBT WIC

vouchers coming to Arizona. Of the 13 references to implementing EBT cards for WIC in Arizona, respondents described these cards as providing more flexibility and convenience to the WIC shopping experience. Several mentioned that it would reduce the time it took to process WIC at the point of purchase and that using a card versus a large book with checks would decrease the bias displayed toward them.

“I am from New Mexico and in New Mexico they do a little card and you just put it into a machine, and like, the credit card machine, and you plug it in and if you just need milk that day you get a gallon of milk and you do not need to get everything. I think it is a little easier over there than it is here.”

The following is an interaction between three focus group participants when asked if they have any recommendations for improving WIC CVV:

“The card thing would be way easier.”

“Yes, the card.”

“Yes, the card, yes.”

“So anyone doesn’t have to have those looks or feel embarrassed, yeah.”

“Because then you don’t have to carry a book around with you everywhere you go.”

“Yeah, that thing is huge.”

### **Maximizing WIC CVV Amount**

Respondents identified economic factors as a point of much contemplation while redeeming WIC CVV, specifically. Of the different vouchers provided to WIC participants in their food package, WIC CVV was the only benefit where the price of the item might have come into consideration for the redeemer. Respondents appeared very enthusiastic while describing different mechanisms for stretching the WIC CVV amount.

**Avoid Shopping at Expensive Stores.** Respondents discussed avoiding certain grocery stores due to their produce prices. Several of these stores were described as having fresh and quality produce; however, participants mentioned that they place greater value on maximizing the amount of fruits and vegetables over the quality of these items.

“Yeah, the most savings are on fruits, in things like Food City, and so I used my food vouchers in those stores, and ‘cause you can get a lot more for the six bucks there, more than you can at Fry's.”

**Utilize Sales.** Respondents were enthusiastic about utilizing sales to stretch the WIC CVV amount. These strategies included shopping on days with more sales and shopping for seasonal foods when they were marked down. There were 11 individual references to this strategy.

“I like the Fry’s, too because, even with the produce, it's fresh and also to get the Sunday paper they have sometimes coupons there for like 50 cents off cantaloupe.

Well, Fry's honors it up to a dollar so you get a dollar off cantaloupe and when they are 88 cents a piece you get free cantaloupe added to your five-dollar WIC check or six-dollar WIC check, which is nice because it stretches the money that they give you a lot longer."

Additionally a number of other responses, although not enough to be included as a subtheme, mentioned other cost-reduction mechanisms such as coupons, price-matching, loyalty cards and gas points.

**Suggest Increasing WIC CVV Amount.** Respondents who were caregivers for children participating in WIC suggested that WIC should increase the monthly amount provided on the CVV. For at least two respondents, the CVV were their only method of purchasing fruits and vegetables. Several of the nine individual respondents who discussed this issue suggested that the produce purchased with WIC CVV was eaten not only by their children enrolled in WIC, but also by their older children and other members of the household.

"... The fruits and vegetables (prices) are really high. I'm trying to find a sale on apples, because we were out of apples. There's no apple sale, and I found once the apples for like 99 cents, 97 cents a pound, and that was the cheapest I could find. But it still a lot, but like three apples is like one pound, and you need what? Like eight? Really enough for one person, and if you have three people, persons, in your family, and each person wants an apple a day, that is a lot of apples."

## **EFFECT OF CVV FRUIT AND VEGETABLE RULE CHANGES ON OVERALL CVV USE**

### **Fresh Fruits and vegetables are Preferred**

Respondents suggested that they preferred to purchase fresh fruits and vegetables but they will purchase frozen and canned for convenience. After the moderator asked about the rule change to CVV redemption, many participants mentioned not knowing that they could purchase canned or frozen fruits and vegetables with WIC CVV. There were 18 references to purchasing only fresh fruits and vegetables.

“I have only with the WIC done the fresh. I didn't even know we could do frozen.

Typically, most likely, do the fresh anyway.”

### **Frozen Fruits and Vegetables are Convenient**

Respondents mentioned that their occasional preference for frozen fruits and vegetables came from both the convenience at the point of purchase because the item was priced based on the package and not bulk, or convenience in preparation. Several participants mentioned using steamer bags as a quick method for preparing vegetables. There were nine references to preferring to purchase frozen fruits and vegetables using WIC CVV over fresh fruits and vegetables, and these often related to specific vegetables such as corn. One respondent mentioned that, unlike fresh fruits and vegetables, frozen fruits and vegetables were labeled as WIC-approved and that made for an easier transaction at the point of purchase.

“I buy vegetables probably entirely frozen, like steamer packs. I don't like the sauce on it. We just buy the straight, put salt and pepper on it and great. I would say that's probably most for convenience factor.”

### **Mixture of Fresh, Frozen, and Canned is Preferred**

Ten participants mentioned purchasing a mixture of fresh, frozen, and canned fruits and vegetables. Several participants mentioned preferring fresh, but that they liked the convenience of frozen steamer bags and canned (or plastic cup) fruits to send with their children to school. One respondent, quoted below, preferred frozen fruits and vegetables, stating they provide a better value. Several respondents also mentioned serving their children “green smoothies” and using frozen fruits that they purchased with WIC CVV as an ingredient in the smoothies.

“I really like fresh but I've noticed you can get a lot more going to packaged, like frozen. Since my little girls . . . liking . . . broccoli is and I would prefer fresh but buy fresh, frozen or canned.”

### **DIFFERENCES IN CVV REDEMPTION AMONG WIC PARTICIPANTS OF DIFFERENT CATEGORIES**

The following results include differences in CVV redemption among WIC participants in the four WIC categories included for this study. These categories included pregnant, postpartum, and breastfeeding women, as well as caregivers of children. This section addressed the identified research need described by the ADHS. ADHS found that redemption practices, especially full value of the CVV redeemed varied between

categories and requested a further investigation into themes associated with redemption especially between groups.

### **Ease of Use**

Figure 3 displays the subtheme, WIC CVV ease of use. A total of 15 respondents described WIC CVV as easier to redeem than the other vouchers. However, although the response rate was similar across pregnant, postpartum, and breastfeeding participants, there were no references to ease of use by caregivers of children.

<b>Ease of use:</b>	
Pregnant 4 responses	"I've never seem to really have a problem."
Postpartum 5 responses	"I haven't had a bad one with those because those are a little bit easier than the other ones, so."
Breastfeeding 6 responses	"It's actually easier because the cashier can weigh all out and then they just have to push a couple of buttons."
Children 0 responses	

**Figure 3.** Responses and quotes regarding the subtheme: Ease of Use across different categories of Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) participants.

### **Amount Provided is Worth the Effort**

Many respondents find that the WIC CVV with increments of \$6 or \$10 per month were worth the effort each month to redeem. Although no one reported that it was not worth the effort, three of the breastfeeding participants reported that it was “barely” worth the effort.

“Yeah, I don’t think it matches in reality to price, pricing especially today. If they want the kids to eat more fruits and vegetables, it needs to match a little more to what the actual prices are . . .”

Of the different groups of WIC participants, breastfeeding participants had the lowest number of references to this subtheme compared to the other groups of WIC participants.

<b>Amount provided is worth the effort:</b>	
Pregnant 6 responses	“I think that it is absolutely worth it.”
Postpartum 6 responses	“I say, it’s very, very valuable to use in the store, saves you money that you can spend on something else that you need.”
Breastfeeding 3 responses	“It’s worth it because it helps our family a lot, but just like her, I wish we wouldn’t have to be on it. I would rather be independent, but it does help.”
Children 7 responses	“I do think it is because, like I said, I have two children on WIC, so it’s double that, so it’s even more for me, so it is better.”

**Figure 4.** Responses and quotes regarding the subtheme: Amount provided is worth the effort across different categories of Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) participants.

### **Pooled CVV Together During Purchase**

There were 19 references to pooling at the point of purchase WIC CVV as a mechanism of redemption (Figure 5). In this case, pooling WIC CVV refers to using multiple WIC CVV at one time to pay for a larger amount of fruits and vegetables (e.g., purchasing \$10 worth of fruits and vegetables by providing the cashier with two \$5 WIC CVV instead of separating the fruits and vegetables into \$5 piles and redeeming each pile separately). Notably, postpartum and breastfeeding participants referred to this practice more than pregnant participants; caregivers of children did not mention the strategy at all.

<b>Pooled CVV together during purchase:</b>	
Pregnant 3 responses	"I like the fruits and vegetables I like and they will combine multiple checks at the register to speed it up."
Postpartum 8 responses	"I use them at once because it's \$10 per month just one time. I can get not too much fruits and vegetables."
Breastfeeding 8 responses	"Yeah, it is pretty easy and now some other stores actually will just let you run all of them. Before some of them would only run one at a time and I would have to be a few cents over and I'd have to pay for it now. The next one might be under 30 cents then I lost there. Actually some of the stores actually run all of your fruits and then all of your WIC coupons so you don't have as much overage cost. So it works out better that way too."
Children 0 responses	

**Figure 5.** Responses and quotes regarding the subtheme: Pooled CVV together during purchase different categories of Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) participants.

### **Redeemed CVV Separately Over the Whole Month**

In Figure 6, respondents described using single WIC CVV over the entire month. In some cases, they appeared willing to use other mechanisms for payment, in addition to WIC CVV. Only one respondent mentioned forgetting about the remaining WIC CVV check at the end of the month and therefore losing the check because it expired. Pregnant participants most often mentioned the practice of spreading out redemption of WIC CVV over the whole month.

<b>Redeemed CVV separately over the whole month:</b>	
Pregnant 5 responses	"I typically use the fruits and vegetables all through the month with the checks and, you know, supplement with either cash or EBT through the month . . . I'll go to extra with EBT so spreading the WIC checks out through the month so they are not all gone."
Postpartum 2 responses	"I use mine throughout the month. Whenever I need them, I use them."
Breastfeeding 1 responses	"When I had multiple, I would split them up. I would use the vouchers towards what I needed for fruits and vegetables and that way I was able to break it up throughout the month and that way it worked fine."
Children 2 responses	"I've three (checks) so I kind of just do one at the beginning, middle and then one towards the end and then I start the next month."

**Figure 6.** Responses and quotes regarding the subtheme: Redeemed CVV separately over the whole month across different categories of Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) participants.

### Full Amount of CVV Redeemed

Many respondents claimed using the whole amount of the WIC CVV each month; this can be seen in both Figures 7 and 8. Altogether, 35 of the 41 total WIC individuals participating in these focus groups expressed that they either redeemed at the full amount, or they redeemed at an amount higher than the full amount.

Full amount of CVV redeemed:	
Pregnant 6 responses	"I use all of it. I use the full amount."
Postpartum 6 responses	"I get everything."
Breastfeeding 4 responses	"I use all of it and I could use more fruits and vegetables. I remember and I buy more."
Children 4 responses	"Yes, the amount that is given to me, I use all of it for vegetables and fruit, so that's mainly it."

**Figure 7.** Responses and quotes regarding the subtheme: Full amount of CVV redeemed across different categories of Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) participants.

### **Full Amount of CVV Redeemed plus Mixed Tender**

Respondents who mentioned that they redeemed the full WIC CVV amount plus the used mixed tender and noted paying the additional amount with cash, debit/credit card, or SNAP EBT. Several respondents explained this practice resulted from trying to cover the high price of fruits and vegetables. Pregnant participants had the highest number of references (six) and postpartum participants had the lowest number of references (two) to this subtheme.

<b>Full amount of CVV redeemed plus mixed tender:</b>	
Pregnant 6 responses	"I usually always, I always go over so I know at least I am getting the five-dollars worth. I will never use half of a five-dollar check . . . I would rather pay the difference than waste half of the check."
Postpartum 2 responses	". . . With the fruits and vegetables you've got to see how much a pound is and then see how many pounds add it up and if you go over, how much they will give you in which most cases I do go over and it's like in most cases you can't get it perfect. You just pay the difference."
Breastfeeding 4 responses	"I always go over, too, so I always have them ring it up until it goes over, pay the extra and then add the other to the rest of my groceries."
Children 3 responses	"Yeah, you end up going over, so because prices of fruit and vegetables sometimes are high . . ."

**Figure 8.** Responses and quotes regarding the subtheme: Full amount of CVV redeemed plus mixed tender across different categories of Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) participants.

## DISCUSSION

### **Overall Use of CVV Among Arizona WIC Participants**

Previous studies have identified a variety of barriers to purchasing fruits and vegetables, including limited transportation, distance to market, and the math associated with purchasing in bulk.<sup>5,18</sup> Because these are well known barriers, and because the focus of the current study was on CVV use in Arizona specifically, these particular barriers were addressed if they came up organically. Otherwise, the present data show that Arizona WIC participants who participated in this study face similar, but occasionally other potential barriers, and that they have found novel ways of coping with, and overcoming, them.

Previous studies have identified frustration during CVV transactions,<sup>5</sup> an issue noted by a number of participants in this study. Of all emerging themes, interactions in the store and with other shoppers received the most references during the focus groups. Although many participants mentioned that they found WIC CVV easy to use and reported having a positive shopping experience, it appeared that, of all of the themes, interactions with the cashiers and shoppers may have been the biggest barrier to WIC CVV redemption. Focus group participants identified different ways that both cashiers and other shoppers expressed anger toward them. These expressions varied from audible sighs to eye-rolling and swearing at them.

Similarly, previous research identified lack of cashier training as a barrier to successful WIC CVV use.<sup>5</sup> In several cases, participants expressed that the cashier was not familiar with the mixed tender allowances in the state. Arizona allows WIC participants to pay any residual amount beyond the WIC CVV in the form of EBT, cash, or debit or credit cards. Participants described that, in some cases, cashiers were not familiar with using mixed tender and, on specific occasions, removed grapes or bananas to bring the amount under the CVV value. Participants also reported that cashiers seemed not to have a consistent policy regarding allowing the pooling of CVV checks. Pooling of WIC CVV refers to using multiple WIC CVV at one time to pay for a larger amount of fruits and vegetables. Participants reported that, as a coping mechanism, they separated their fruits and vegetables for each check (although some preferred buying all the items together) because they were not sure if that particular cashier would allow pooling of checks.

Focus group members who are familiar with WIC EBT cards reported preferring the use of EBT over the current Arizona WIC tender, including both coupons and vouchers. Although EBT is currently in the planning phase for Arizona, the efficient implementation of this new form of WIC purchasing could be important in facilitating better use of CVV and WIC benefits overall. In particular, and based on focus group responses, participants might have been able to reduce their transaction time at the point of purchase by not needing to redeem all items on the voucher, nor place items in the order found on the voucher. It also might make redeeming WIC more discreet. Although there is a lack of peer-reviewed studies investigating changes to redemption practices

post-EBT implementation; a multiple dimensions model developed for New York state concludes that implementing the WIC EBT will increase utilization rates by 23 percent.<sup>96</sup>

Several previous studies identified the cost of purchasing fruits and vegetables as a possible barrier.<sup>16-19</sup> Data collected from Arizona focus groups, however, did not confirm price as a barrier. Twenty-two participants in the focus groups remarked that the \$6 and/or \$10 fruit and vegetable checks were worth the effort it took to redeem them. Participants mentioned several coping mechanisms that they implemented to maximize the amount provided. Individuals reported that they stretch their WIC CVV dollars by avoiding shopping at expensive stores and taking advantage of produce sales. Although not common enough to be identified as a subtheme, a small minority of participants also reported using their “club card” for buy-one-get-one-free sales; using their gas card when shopping for WIC to earn gas points to reduce their transportation costs; and price-matching using fliers from other stores to obtain savings that equal, or in some cases, exceed those at other stores. This further illustrates participants desire and ability to stretch the CVV amount by seeking innovative mechanisms to increase purchasing power or receive discounts off of other purchases such as gas.

Although it was not an issue researchers planned to explore explicitly, use of farmers’ markets, as well as difficulties associated with them, came up organically in multiple groups. WIC participants included in the focus groups noted that they did not shop at farmers’ markets using their WIC CVV, or in most cases at all. This was the case despite the fact that all WIC CVV include printed language stating, “Redeemable at authorized

farmers' markets or approved WIC stores." There was one exception; however, the focus group participant who did note that she had shopped at a farmers' market had used Farmers' Market Nutrition Program (FMNP) checks and not CVV. Findings from previous studies have shown that perception of fruit and vegetable costs at farmers' markets might prevent CVV utilization there.<sup>97</sup> This perception was not mentioned by focus group participants in the present study, but it is possible that the strong and multiple incentives for shopping at grocery stores to make use of benefits, such as utilization of sales, gas points, club cards, and price matching, might by contrast make shopping at farmers' market seem a relatively poor use of benefits. More importantly, a number of participants noted that they did not go to farmers' markets because they were unaware CVV were accepted there, were unaware where a farmers' market could be found, and in some cases, were unaware of what a farmers' market was. The lack of awareness could indicate the need for further investigation of barriers to FM utilization among WIC participants.

### **Effect of CVV Fruit and Vegetable Rule Changes on Overall CVV Use**

Data indicated that about half of the focus group participants continued to prefer fresh fruits and vegetables; however, half provided responses indicating that they preferred frozen or a mix of fresh, frozen, and canned fruits and vegetables. This suggests that the recent rule change to WIC CVV has been well received. Participants found that the addition of frozen and canned fruits and vegetables has improved the convenience of WIC CVV. Respondents mentioned that frozen fruits and vegetables are more convenient to purchase because they are labeled and prepackaged, and that these items are more

convenient to prepare in the case of vegetables in steamer bags. Respondents also mentioned that a canned fruit, such as applesauce, is easier to send to school with their children than fresh fruits and vegetables. Based on some responses, knowledge of the rule change has not been fully disseminated. Several respondents were surprised that they could purchase cups of fruit and applesauce using WIC CVV.

### **Differences in CVV Redemption Among WIC Participants of Different Categories**

Based on previously collected ADHS data, women participants in the postpartum category were the least likely to redeem their WIC CVV at its full amount. Caregivers of children aged 1-4 years were the most likely to redeem WIC CVV at the full amount (personal communication, Karen Sell). Data from this study showed that attitudes about redemption of CVV differed among categories of WIC participants, but in ways dissimilar to redemption patterns suggested by ADHS findings. For example, caregivers of children did not refer to WIC CVV as easy to use, however five postpartum participants referred to WIC CVV as easy to use. A similar pattern was found under the subtheme *pooling WIC CVV during purchase*: five postpartum participants referred to this practice, and no participating caregivers of children mentioned this practice. Based on these qualitative data, however, it is impossible to know if postpartum participants more often pool their checks and, therefore, did not redeem the full value of the second five-dollar check being pooled. For example, if a postpartum participant has \$8 of fruits and vegetables in her basket and pools her two \$5 WIC checks, only \$3 of the second check would be redeemed. On the other hand, more postpartum participants (six of eight)

reported using, or exceeding, the full value of the WIC CVV compared to caregivers of children (seven of 13 participants).

Another notable difference in redemption practices related to the perceived value of CVV. Across focus groups, participants generally believed the value was worth the effort to make use of CVV. It is possible that, due to social desirability, participants in the focus groups did not admit freely to redeeming at a lesser amount than the full WIC CVV. It is also possible that selection bias played a role in some of the responses regarding use of CVV; those who were most likely to participate in WIC focus groups might also have been those who were most committed to make full use of CVV.

ADHS should conduct a survey of current WIC participants to quantify the identified emergent themes and subthemes identified by this study. This is a necessary step prior to policy implications due to limitations inherent to qualitative research. If the broader population significantly confirms the emergent themes and subthemes, then ADHS should consider these results as suggestions for policy change.

### **Future Research**

As described previously, future studies should include systematic assessments of the extent to which themes emerging from this work might in fact represent the attitudes, concerns, and strategies for overcoming barriers identified by our participants. Such studies would include survey-based data collection methods using systematic sampling schemes to include representative samples of the sub-groups of WIC participants studied

here. Similarly, hypothesis-driven studies could also be developed to gain a better understanding of whether, for example, improved cashier training increases WIC CVV redemption. Similar studies could be conducted using phone interview methodology. This strategy has the potential to also include participants who, due to time constraints, could not participate in focus groups or otherwise be present to complete in-person surveys.

Many respondents suggested interactions with cashiers and other shoppers as a barrier to WIC CVV redemption. Implementing and evaluating an intervention to address these concerns might provide insight into how to improve redemption overall, results that could be useful eventually for informing policy makers. These interventions might include, for example, testing the use of EBT cards on ease of purchasing and time taken to complete transactions; increasing cashier training in the context of WIC redemptions; providing more prepackaged fruits and vegetables that are labeled for CVV or priced in standard CVV increments; creating a grocery aisle with only WIC-approved food items; or, finally, designing a WIC smartphone application that would scan an item and indicate whether it is approved for purchase in the state.

## Chapter 6

### CONCLUSION

This study focused on attitudes, barriers, and facilitators related to WIC CVV use specifically, and WIC use generally, among English-speaking WIC participants in Arizona. Eight focus groups across four categories of WIC participation were conducted in two locations within Maricopa County. To the authors' knowledge, this exploratory study is, to date, only the second focus group study conducted to investigate WIC CVV, and the first of its kind to place women in groups based on their participation category. Results indicated that many of the participants found WIC CVV easy to use, especially in comparison to other WIC benefits, and they often had positive experiences redeeming them. Contrary to similar studies, respondents in this study did not find fruit and vegetable availability, distance to market, or the math associated with purchasing fruits and vegetables in bulk to be a barrier to redemption.

Respondents in this study, however, found interactions with cashiers and other shoppers to be a barrier. In some cases, these interactions prevented the full redemption of WIC CVV at the point of purchase. Participants mentioned that the perceived anger and judgment from the cashiers and other shoppers while redeeming their vouchers resulted in feelings of embarrassment. However, respondents identified a number of ways to cope with these and other issues. They often identified stores at which WIC redemption was more common, times for shopping during which less traffic would be an issue, and particular cashiers who understood the WIC system well, as strategies to use to make best

use of WIC. And, to maximize the purchasing power of their WIC CVV, participants described using sales and other store incentives, as well as avoiding supermarkets or grocery stores that they deemed to have expensive fruits and vegetables. These as well as other factors might partially explain why respondents in this study consistently did not use WIC CVV at farmers' markets.

Results of this study indicated that, at least among participants in these focus groups, the fruits and vegetables rule change has been well received. Half of all respondents remarked that they only purchased fresh fruits and vegetables with their WIC CVV, which was the only form permitted before the rule change. Half of respondents, however, used their WIC CVV to purchase frozen and mixed forms of fruits and vegetables. And, several participants responded that they did not know about the rule change, and with this awareness remarked that they intend to purchase frozen and canned items in the future. Such information might be useful to gather more systematically across larger samples as ADHS cannot track the types of fruits and vegetables purchased with the WIC CVV.

Participants' attitudes did not match redemption data provided by ADHS; however, it is difficult to know whether selection bias or other issues factored into the types of issues discussed in focus groups. In particular, postpartum participants more often described redeeming their CVV for the full dollar value, while caregivers of children less often described redeeming full values, a pattern dissimilar to that identified by ADHS. Similarly, in this study, caregivers of children—unlike postpartum participants—did not remark that WIC CVV were easy to use.

This study suggests a number of future directions. First, it may be important to explore new and better strategies for cashier training and the extent to which such strategies might improve the WIC CVV purchasing experience. Implementing the WIC EBT card has the potential to reduce negative experiences when redeeming the WIC CVV, but this will require in-depth study to understand. Caregivers of children suggested that ADHS increase the cash value of CVV. As such, it may be interesting to explore what effect slightly increasing the value of CVV could have on redemption rates, and whether additive or synergistic effects of redemption rates might occur in combination with a WIC EBT in Arizona.

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APPENDIX A  
RECRUITMENT SCRIPT

### **Phone Recruitment Script**

Hello, my name is\_\_\_\_\_, and I am a student in the Nutrition Program at Arizona State University. I am conducting a research study to understand how WIC coupons are used to buy fruits and vegetables.

I am looking for people to come to a small meeting where we would ask about how you use WIC coupons to buy fruits and vegetables. If you come to the meeting, you will get a \$20 giftcard to Walmart. The meeting will take 1 – 1 1/2 hours. We will record the meeting, but will not collect anyone's name. No one will know what information you gave us. We will keep audio tapes in a locked office for three years, after which they will be erased.

Your participation in this study is voluntary and will not affect your WIC benefits in any way. If at any time you would like to stop participating in the meeting, you may do so.

You must be at least 18 years old to participate in this study and currently participating in the WIC program.

(IF MEETS CRITERIA): Would you come to a meeting?

(IF YES): Great. We have three different days. ... (Times and locations were determined in collaboration with the Arizona Department of Health Services).

## APPENDIX B

### FOCUS GROUP SEMI-STRUCTURED GUIDE

## **Focus Group Moderator Guide**

### **Introduction**

Thank you for joining us in a discussion about food shopping today. Please help yourself to food and drinks. My name is \_\_\_\_\_. I will be leading the session today. This is \_\_\_\_\_ and s/he will be taking notes. We are conducting these focus groups on behalf of the Arizona Department of Health Services.

### **Ground Rules:**

Before we get started, I would like to mention a few things.

- This is a research project, and your participation is voluntary.
- There are no wrong answers to any of the questions that we will be discussing today. Your opinions and experiences are important and we want to hear them.
- Participating in this study will not affect any of your WIC benefits now or in the future.
- We will be recording this discussion, so I can listen to what you are saying. We will destroy the recording and any other form you completed when our project is finished.
- We will not use your name or personal information in any reports. Your comments will be combined with comments from other focus group participants and presented in the aggregate. The aggregated information/results from this study may be presented in meetings or in internal reports to the Arizona Department of Health Services. Aggregated results from this study and portions of audio recordings (with no identification of individuals by name) may be presented in meetings or oral presentation to the Arizona Department of Health Services. Your name, and any information that can be traced back to you, will not be included in any reports or meetings.
- When reviewing the transcripts from today's session, it is helpful for me to know when we change speakers. So, please identify yourself when you speak. You may just use your first name or your initials, or make up a name for today's session, as

long as you use the same name throughout the session. There are name tags; please write the name you plan to use for this session, so we can refer to you by this name.

- Before you leave today, I will give you all a gift card for \$20, to thank you for coming and sharing your opinions and insights with us.
- Does anyone have any questions thus far?

If any of my questions are unclear, please let me know. Taking turns is very important. Please wait until someone is finished speaking before you speak. If you need to use the restroom during this time, [NAME], who is sitting outside this room, can tell you where it is. If you haven't helped yourself to refreshments, please feel free to do so now OR anytime during our discussion.

I am going to turn the tape recorder on now.

### **Participant Introductions**

I would like to start by having everyone introduce themselves. Please just use your first name. Tell us a little bit about yourself, how long you've lived in <NAME OF CITY/TOWN/ NEIGHBORHOOD> and where you usually go for grocery shopping.

### **I. GENERAL GROCERY SHOPPING**

**As we just heard, people buy their groceries from several different types of stores.**

1. Let's start by thinking about how many different stores we usually go to in a week for grocery shopping and what groceries we buy at each store.

PROBE: One-stop shopping or multiple stores for specific items? Why do you prefer to shop at these different stores for the products you buy there (eg, quality, price, coupons, convenience, transportation, store timing, etc.)?

## **II. WIC LIKES AND DISLIKES**

**As you know, you are all invited to this discussion because of your participation in WIC.**

2. Is this your first time on WIC or have you received WIC benefits before (ie, received WIC benefits for prior pregnancies and infants, or someone else in the family received WIC benefits before this time)?
  1. What are some of the things you like most about WIC?
  2. What are some things you like least about WIC?
  3. Are there any WIC-approved foods you don't buy? Why?

## **III. SHOPPING FOR WIC AND NON-WIC FOODS**

**Now let's think about the stores where you buy WIC foods.**

4. Do you buy WIC foods at the same stores or different stores than those you go to for groceries?
5. Why do you buy WIC foods at these stores?

PROBE: Quality, price, always has WIC foods, staff are friendly, feel comfortable using WIC coupons here, etc.

6. Have you ever had a situation where the store ran out of WIC foods? How often has this happened? What do you do then (eg, buy non-WIC foods available and pay out of pocket, go to another store, come back a few days later when the stock is available)?

## **IV. SHOPPING FOR FRUITS AND VEGETABLES**

**Now we are going to talk about where we buy fruits and vegetables for our family.**

**Let's start by talking about the types of fruits and vegetables your family eats.**

7. Do you think your family eats enough fruits? Do you worry about them not eating enough fruits? How much would you consider being enough?
8. Do you think your family eats enough vegetables? Do you worry about them not eating enough vegetables? How much would you consider being enough?

9. Are you able to find and buy the types of fruits and vegetables your family likes? If so, where? PROBE: Stores where you buy groceries, other ethnic stores, farmers' markets, etc.
10. When you buy fruits and vegetables, would you say you usually buy more fresh, frozen, or canned produce?
11. For the fresh produce you buy each week, what kinds of things are generally eaten? What produce, if any, gets thrown away? How much gets thrown away (eg, a little, half, most)?
12. What are some reasons that you don't get to finish the fresh fruits and vegetables you purchased? PROBE: Spoiled before you got to eat them, did not have time to cook them, forgot about them, bought them because they are good for you but not many people in the family like it, etc.
13. How important is it for you to buy "healthy food" when you go grocery shopping?
14. How do you usually pay for your produce? PROBE: Cash, WIC vouchers, EBT card, other

## **V. WIC FRUIT AND VEGETABLE BENEFITS AND CVV REDEMPTIONS**

**As you may know, WIC offers fruit and vegetable checks also called CVV [facilitator holds up a sample check] to be used to buy fresh, frozen, or canned fruits and vegetables.**

15. In your family, how many people are getting CVV WIC checks now? If multiple people get CVV, how do you go about using these vouchers? PROBE: Do you: i.) shop for vegetables at different times using each CVV; ii.) pool them together to do a big fruit and vegetable shopping trip; or iii.) something else?
16. Do you use WIC CVV to buy fruit and vegetables?
17. Do you think about using your CVV when you make grocery shopping plans? If so, how?
18. Each month, how many of your WIC checks do you generally use (eg, all,

most, half, less than half, or none)?

19. What keeps you from using all of your WIC checks? PROBE: Don't usually eat a lot of fruits and vegetables, prefer other payment method for all groceries, do not want to combine payment methods, checks are not convenient to use, stores that accept CVV are not easy to get to, etc.)
20. What would make it easier for you to buy all the food items on your WIC CVV?
21. Can you talk about your approach to deciding how to pay for fruits and vegetables in a typical month? PROBE DIFFERENT SCENARIOS: Cash, SNAP, and CVV are more than enough for what our family needs, only buy fruits and vegetables when have CVV.
22. Can you describe your experience in using the fruit and vegetable checks?  
[Facilitator holds up a sample check.]
  - i. Is it easy or hard to use in stores? PROBE: Why?
  - ii. Is the value of the check worth the effort to use it in the store?  
PROBE: Why?
  - iii. What are your interactions like with store employees when you use WIC CVV? PROBE: Do the register clerks treat you with respect?  
Do other customers treat you with respect?
  - iv. Are there any stores you do or do not shop at on purpose when you are using WIC CVV's? PROBE: Why?
- b. Is there anything that could make it easier to use the fruit and vegetable CVV?
  - i. Have you used any specific strategies to make it easy for you to use the CVV?
  - ii. Have the stores where you shop done anything specific to make it easy for you to use the CVV?
- c. Have you wanted to buy fruits and/or vegetables using your WIC vouchers but you weren't able to? WHY? What did you do then? PROBE: Produce looked bad/old, too expensive, not available.

23. Do you have any recommendations for improving WIC CVV that will make it easy for you to use them to buy fruits and vegetables?

Those are all the questions I have for you today. Thank you for sharing your time and thoughts with us. Do you have any questions for me?

We truly appreciate your joining us. Thank you.

[Hand out gift certificates and get signatures on payment received form.]

APPENDIX C  
INFORMATION LETTER

## **Information Letter: Focus Group Buying Fruits and vegetables with WIC Benefits**

Date Dear \_\_\_\_\_:

I am a professor in the Nutrition Program at Arizona State University. I am conducting a research study to better understand the ways people use their WIC benefits to buy fruits and vegetables at stores in the metro-Phoenix area.

I am inviting your participation, which will involve participating in a focus group (a group discussion) for one and a half to two hours. You must be at least 18 years of age or older to participate. The discussion group will include between 5-10 individuals. You have the right not to answer any question, and to withdraw from the focus group at any time. Your participation in this study is voluntary. If you choose not to participate or to withdraw from the study at any time, there will be no penalty.

Your responses to the focus group will be used to develop a better understanding of consumers' attitudes and beliefs regarding local foods. You will be compensated with a \$20 Walmart giftcard for your time. There are no foreseeable risks or discomforts resulting from your participation.

We will take every measure to protect confidentiality, however please be aware that complete confidentiality cannot be maintained because you will be answering questions along with others in a group setting. In aggregating and analyzing information from our focus groups, however, participants will be identified only by an assigned number. Your name will not be revealed in order to maintain anonymity. The results of this study may be used in reports, presentations, or publications but your name will not be known.

This focus group will be audiotaped. The focus group will not be recorded without your permission. Please indicate whether you give permission for the focus group to be taped. If you give permission to be taped, you have the right to ask for the recording to be

stopped. The tapes will be kept in Dr. Wharton's office in a locked file cabinet for three years, after which they will be destroyed.

If you have any questions concerning the research study, please contact Christopher Wharton at 602-827-2256 or [christopher.wharton@asu.edu](mailto:christopher.wharton@asu.edu). If you have any questions about your rights as a subject/participant in this research, or if you feel you have been placed at risk, you can contact the Chair of the Human Subjects Institutional Review Board, through the ASU Office of Research Integrity and Assurance, at (480) 965-6788. By signing in both spaces below, you consent to participate in the above study and to have your responses audio taped. Your signature below also indicates that you are granting to the researchers the right to audiotape your responses and to use your transcribed responses for presenting or publishing this research. Your actual voice will not be used in the presentation of these data.

Consent to Participate: \_\_\_\_\_ Participant's Signature

APPENDIX D  
IRB APPROVAL

**To:** Christopher Wharton  
ABC1 122

**From:** Mark Roosa, Chair  
Soc Beh IRB

**Date:** 05/23/2012

**Committee Action:** Exemption Granted

**IRB Action Date:** 05/23/2012

**IRB Protocol #:** 1205007856

**Study Title:** The relation of WIC CVV use with participant attitudes and perceptions

The above-referenced protocol is considered exempt after review by the Institutional Review Board pursuant to Federal regulations, 45 CFR Part 46.101(b)(2) .

This part of the federal regulations requires that the information be recorded by investigators in such a manner that subjects cannot be identified, directly or through identifiers linked to the subjects. It is necessary that the information obtained not be such that if disclosed outside the research, it could reasonably place the subjects at risk of criminal or civil liability, or be damaging to the subjects' financial standing, employability, or reputation.

You should retain a copy of this letter for your records.