

Nutrition Assistance Program Report Series  
Office of Research and Analysis

Supplemental Nutrition Assistance Program

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***SNAP Education and Evaluation  
Case Study Report:***

*University of Nevada Cooperative Extension's  
All 4 Kids Program*

***Volume I: Report***



United States  
Department of  
Agriculture

Food and  
Nutrition  
Service

January 2012

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## *SNAP Education and Evaluation Case Study Report:*

*University of Nevada Cooperative Extension's All 4 Kids Program*

### *Volume I: Report*

Authors:

Gloria Aponte Clarke  
Sheryl Cates  
Vivian Gabor  
Jonathan Blitstein  
Loren Bell  
James Hersey

Submitted by:

Altarum Institute  
1200 18th Street N.W. Suite 700  
Washington, DC 20036

Submitted to:

Office of Research and Analysis  
Food and Nutrition Service  
3101 Park Center Drive  
Alexandria, VA 22302-1500

Project Director:

Loren Bell

Project Officer:

Sara Olson

This study was conducted under Contract number AG-3198-D-08-0098 with the Food and Nutrition Service.

This report is available on the Food and Nutrition Service website: <http://www.fns.usda.gov>

Suggested Citation:

U.S. Department of Agriculture, Food and Nutrition Service, Office of Research and Analysis, *SNAP Education and Evaluation Case Study Report: University of Nevada Cooperative Extension's All 4 Kids Program* by Gloria Aponte Clarke, Sheryl Cates, Vivian Gabor, Loren Bell, Jonathan Blitstein, and James Hersey. Project Officer: Sara Olson, Alexandria, VA: January 2012.

This report was prepared by the *Models of SNAP Education and Evaluation* project team at Altarum Institute and RTI International for the U.S. Department of Agriculture, Food and Nutrition Service (FNS), Office of Research and Analysis. Many individuals made important contributions to this report. From RTI International, the authors thank Karen Morgan for her management of the impact data collection, Melanie Ball for her programming expertise, Pamela Williams for her contributions to the development of the impact instruments, and Katherine Kosa for her research support throughout the project. The authors also thank Deborah Finette from Altarum and Sharon Barrell from RTI International for preparing the report.

The authors would also like to thank the following individuals for their assistance in the study and development of this report.

- The two FNS project officers, Hoke Wilson and Sara Olson, who provided valuable advice and guidance throughout the study and in the planning and editing of this report.
- Anita Singh and Carol Olander of the FNS Office of Research and Analysis and Alice Lockett from FNS' national SNAP Program office, who provided detailed reviews of the draft report and very helpful comments about the application of the findings for SNAP-Ed implementing agencies.
- FNS' national SNAP Program staff for their review of the draft reports.
- Dr. Marilyn Townsend at the University of California–Davis for her contributions to the development of the impact instruments and Dr. Marilyn Townsend and Kathryn Sylva for the use of the fruit and vegetable graphics for the parent surveys.
- Teresa Byington, Anne Lindsey, and Madeleine Sigman-Grant from the University of Nevada Cooperative Extension for their review of the draft report and the time that they and other All 4 Kids program staff took time out of their busy schedules to share their knowledge about the details of the development, administration, and evaluation of the program.

Finally, the authors would like to thank the many childcare center directors and teachers who answered our questions about their experiences with the All 4 Kids program, and the parents and caregivers who completed the evaluation surveys and participated in focus group discussions. These individuals' generous contribution of time and knowledge has helped create a valuable resource for the field.

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# Executive Summary

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This executive summary presents the background, methods and highlights key findings from one of four case study reports produced for the *Models of SNAP Education and Evaluation, Wave I*. This report is specific to the evaluation of the University of Nevada Cooperative Extension (UNCE)'s All 4 Kids Supplemental Nutrition Assistance Program-Education (SNAP-Ed) demonstration project. The evaluation, which was sponsored by the Food and Nutrition Service (FNS) of the U.S. Department of Agriculture (USDA), included three components: a process evaluation of the program's implementation, an evaluation of the program's impact on nutrition behaviors, and an assessment of the methods and results of UNCE's own evaluation of its program.

All 4 Kids is a SNAP-Ed program which targets preschool children attending Head Start childcare centers and their parents and caregivers. Each lesson and its accompanying materials incorporates the key message "Eat Smart, Be Active" and is geared toward helping children increase their consumption of healthy snacks and fruits and vegetables, enhance their movement skills, and increase their level of physical activity.

Based on models describing changes over time between the intervention and comparison groups, there is no indication that the All 4 Kids program had a statistically significant impact on children's average daily at-home consumption of fruits and vegetables based on parental reports. However, UNCE's own evaluation reported a number of positive changes in children's knowledge, attitudes, and behavior in the Head Start setting that were beyond the features measured by the independent impact evaluation. The UNCE evaluation found that the program had significant positive effects on developing children's motor skills and a positive effect on their understanding of and preference for healthy snacks. These gains, while important, were not sufficient to translate into statistically significant changes in at-home fruit and vegetable consumption.

The process evaluation revealed a high degree of satisfaction with the program by childcare center staff members, teachers, parents, and caregivers. Satisfaction and ease of program implementation were attributed to the quality of the program design, materials, educators, and the commitment of the management team to continuous program improvement. Key informants noted several challenges related to implementation of the program, particularly during the summer months. Future efforts to enhance the All 4 Kids program should consider strategies to better reach parents and caregivers with the goal of increasing availability and parents' offerings of fruits and vegetables to their children.

## A. Background on SNAP-Ed

Under subcontract agreements with State SNAP agencies, a variety of organizations partner to implement SNAP-Ed within States. The goal of these programs is to improve the likelihood that SNAP participants and persons eligible for SNAP nutrition assistance will make healthy food choices within a limited budget and choose physically active lifestyles. FNS' SNAP-Ed Guiding Principles call for interventions that are science-based and behaviorally focused. FNS also requests that States' SNAP-Ed efforts be consistent with the current (2010) Dietary Guidelines for Americans, including the following<sup>1</sup>:

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<sup>1</sup> See SNAP-Ed Plan Guidance at: <http://www.nal.usda.gov/fsn/Guidance/FY2012SNAP-EdGuidance.pdf> and snap-Ed Connections website at: <http://nap.nal.usda.gov>.

- Eat fruits and vegetables, whole grains, and fat-free or low-fat milk products every day;
- Be physically active every day as part of a healthy lifestyle; and
- Balance caloric intake from food and beverages with calories expended.

SNAP-Education Guidance also encourages all States to evaluate the effectiveness of their SNAP-Education interventions. These can include formative, process, outcome, and impact evaluations. In Federal Fiscal Year (FY) 2004, 74 percent of SNAP-Education implementing agencies (IA) reported that they did conduct outcome evaluations on at least some aspects of services. However, based on interviews with 17 IAs, these evaluations were focused to a greater extent on process outcomes, such as program use, than they were on participant behavior change (FNS, 2006). As one of the largest Federal funding sources for nutrition education, FNS, States, and local IAs have a significant stake in ensuring that SNAP-Education meets FNS' goals.

This study, *Models of SNAP Education and Evaluation (Wave I)*, is the first of two FNS-initiated independent evaluations designed to identify potential models of effective SNAP-Education nutrition education and impact evaluation. The overarching goal of this evaluation is to determine whether the selected projects can serve as good examples of effective nutrition education and promotion activities within SNAP-Education by meeting the following criteria:

- ▲ Positively affecting the nutrition and health behaviors of SNAP clients while adhering to FNS SNAP-Education Guiding Principles,
- ▲ Exhibiting the potential to serve as models of effective nutrition intervention for large segments of the SNAP audience that can be replicated by other IAs, and
- ▲ Providing methodologically robust yet logistically practical examples of project-level SNAP-Education evaluation efforts.

FNS also sought to understand the factors influencing the implementation of these nutrition education programs and lessons learned from these projects' experiences. In early 2009, an FNS study review committee competitively selected four SNAP-Education IAs to participate in this study, including UNCE's All 4 Kids program. Each of the four agencies implemented their demonstration programs between March and August of FY 2010 and conducted their own evaluations.

## **B. Overview of the All 4 Kids Program**

First developed by UNCE in 2008, the All 4 Kids program is an educator-led, preschool-based nutrition education intervention designed to help young children and their families increase healthy eating and physical activity behaviors. The curriculum content and approach were developed based on the findings of past research demonstrating that children are active learners and that effective preschool education must consider the children's physical, social, emotional, cognitive, and language abilities. Each lesson incorporates the key message: "Eat Smart, Be Active" and includes a nutrition focus. The program's stated behavioral outcome goals are to:

- Increase preschool children's intake of healthy snacks,
- Increase their fruit and vegetable consumption,
- Enhance their movement skills, and
- Increase their level of physical activity through dancing to music.

To achieve these outcomes, the demonstration program used the three complementary program components shown in figure ES-1.

### Figure ES-1.— All 4 Kids Program Components

- ▲ **Direct education.** At each Head Start center over a two month period, the All 4 Kids educators went onsite to provide 24 unique 30-minute lessons for children in their classrooms. To reinforce the concepts of healthy eating and promote the development of physical movement skills and physical activity, the key messages were repeated throughout the lessons. Each lesson was taught using age-appropriate language and activities, including didactic, interactive, and movement components. As part of these lessons, the direct educators used an original music CD and taught the children four choreographed dance pieces, which incorporated the “Eat Smart, Be Active” theme and physical movement skills.
- ▲ **Indirect education to parents and caregivers.** Parent and caregiver participation was an important component of the All 4 Kids program. Each week, educational handouts were provided to the Head Start teachers to place in each child’s All 4 Kids Family Pack (an insulated lunchbox). All of the handouts were translated into Spanish, with most of these handouts having text in English on one side of the page and in Spanish on the other side. Children were also given simple play materials, such as rainbow ribbons, the Hungry Meter, and the Watch Me Move game, to practice with their families what they learned in school. These materials were designed to support the content and objectives of the lessons. At each center, the direct educator also led three 1-hour Family Activity sessions. Each session included a dance performance by the children and incorporated the music, lyrics, and physical movements that were taught in the child classes. These sessions also involved food tastings, information sharing, and discussion of the messages learned in the preceding child lessons.
- ▲ **Information for classroom teachers.** Before the start of the intervention, the All 4 Kids program provided an orientation class for the teachers to explain the All 4 Kids goals and curriculum and encourage their support in informing parents about the program and its Family Activity sessions. The teachers were also encouraged to use the program messages and materials at other times of the day in their classroom or at mealtimes.

## C. Study Methodology

### 1. Evaluation Design

The All 4 Kids program evaluation was designed to examine the implementation and impact of the program at Acelero Head Start centers in Las Vegas, Nevada. The evaluation included six matched pairs of Head Start centers. Centers were matched on primary language (English or Spanish) and the number of children enrolled in Head Start. With the exception of two centers that had previous exposure to the program during a pilot study and were assigned to the intervention group, random assignment was made to the intervention or comparison group. Six centers received the All 4 Kids program and were included in both the impact and process evaluations. The six centers in the comparison group did not receive the intervention. The intervention was conducted in two sequential waves. The spring wave was conducted from March through April 2010 and the summer wave was conducted from June through July 2010.

### 2. Process Evaluation Methods

The UNCE process evaluation began by creating a baseline description of the objectives, approach, and components of the design, administration, and implementation of the program. This information was obtained from interviews with the principal investigators and program officer, who together made up the

senior-level program staff, and from secondary documents.<sup>2</sup> Once the intervention was implemented, data collection and analysis of information on factors influencing the implementation and the lessons learned for program improvement and replicability began. This information was gained from in-person and telephone interviews with the senior-level program staff members, educators who implemented All 4 Kids, Head Start center directors, and teachers in the classrooms where the intervention was taught. To supplement the interviews, onsite observations of child classes and Family Activity sessions were conducted to assess how well direct educators followed the curriculum, observe child and parent engagement levels, and document any factors that may have supported or impeded program implementation. Key informant responses to each interview or questionnaire item were compiled into a master Microsoft Word 2007 document and organized by broad process evaluation research questions and process indicators. This approach helped to organize the extensive amount of information that was available and allowed for the identification of broad themes (e.g., implementation facilitators and challenges) and specific topics (e.g., lesson plan scheduling) as well as agreement and disagreement amongst respondents.

Another important component of the process evaluation was the assessment of the experience and satisfaction of the parents and caregivers with the intervention. Information was collected on factors such as program accessibility for parents and caregivers, perceived goals of the program, how the program helped them change their children's nutrition behaviors, and potential barriers faced in trying to increase their fruit and vegetable intake. These data were collected through a follow-up parent survey and focus groups with a subset of parents and caregivers at three intervention sites who attended at least one of the Family Activity sessions.

Program administrative data were used to assess the project's reach and the amount of exposure that children and their parents had to the All 4 Kids intervention. The process evaluation also describes the resources and costs UNCE reported for implementation and evaluation of the All 4 Kids demonstration program. Based upon the implementation costs and reach data, the study also estimates the program's cost per child participant.

The analysis approach for the process evaluation was primarily qualitative, encompassing the triangulation of information collected from secondary data sources, interviews with key informants, and parent and caregiver focus groups. Quantitative analysis was conducted on program reach, dosage, cost, and the parent follow-up survey responses.

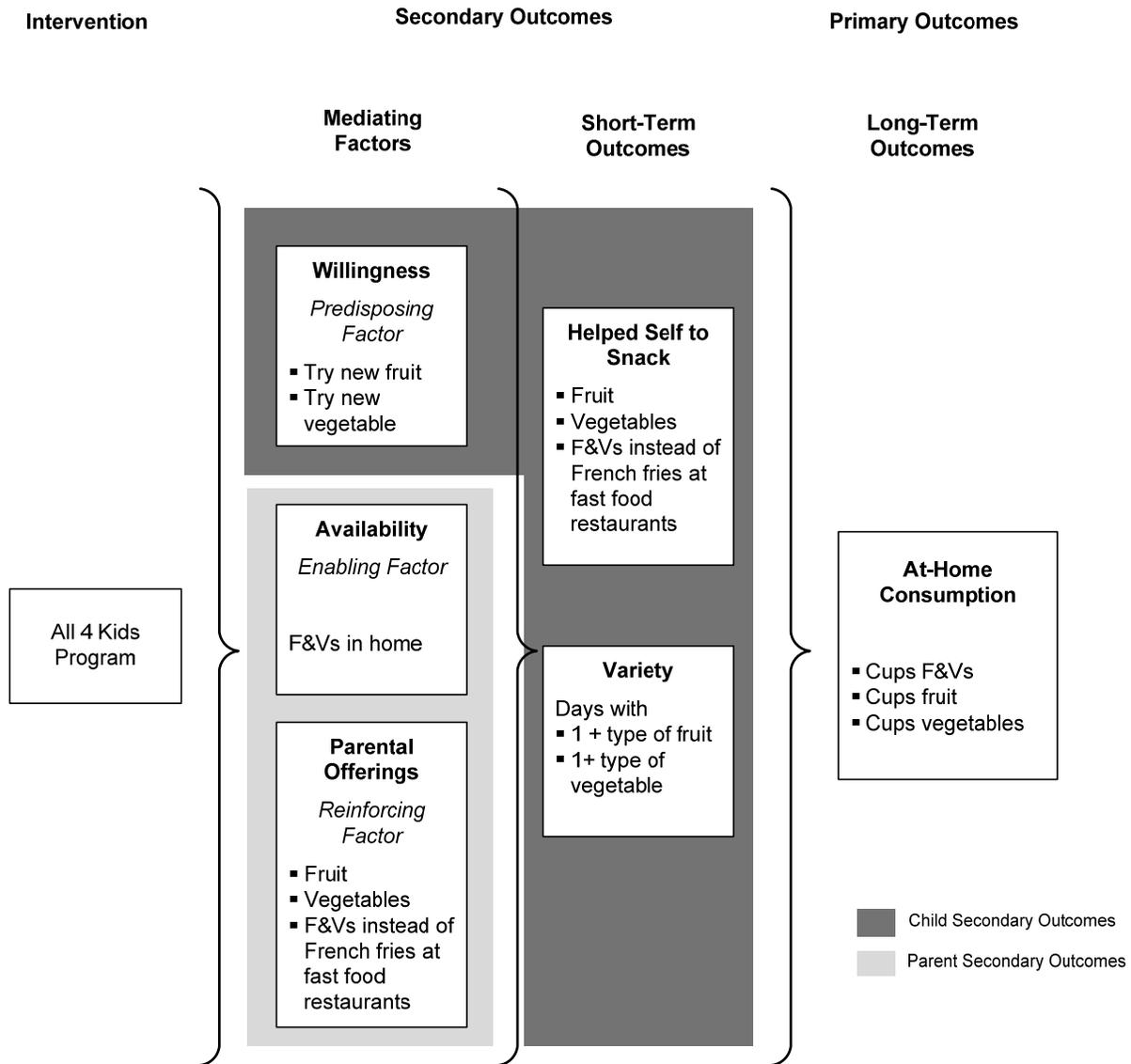
### **3. Impact Evaluation Methods**

To better understand the factors affecting behavioral change, the analysis included an examination of potential program effects. The framework shown in figure ES-2 enabled the evaluation of the effects of the All 4 Kids program through the specification of secondary outcomes that link the intervention to the long-term outcome of the child's average daily at-home consumption of fruits and vegetables. The secondary outcomes capture, in greater detail, some of the complexity of the behavior change process. The greater the number and strength of the changes seen among the secondary outcomes, the greater the likelihood of observing change in fruit and vegetable consumption.

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<sup>2</sup> Documents included UNCE's application to FNS for this study, UNCE program reports, the All 4 Kids curriculum, and outlines used for training direct educators.

**Figure ES-2. —Conceptual Framework for the All 4 Kids Program Impact Evaluation**



Adapted from: Green, L. W., Kreuter, M. W., Deeds, S. G., & Partridge, K. B. (1980). *Health education planning: A diagnostic approach*. Palo Alto, CA: Mayfield Publishing Co.

The independent evaluators assessed the impact of the program on the primary measure of children’s average daily at-home consumption of fruits and vegetables. Based on FNS’s interest in observing a minimum increase in children’s dietary intake of 0.30 standard deviation units, it was hypothesized that children participating in the program would increase their average daily at-home consumption of fruits and vegetables by approximately 0.30 cups per day compared with children not participating in the program.

The impact analysis considered the following secondary outcome measures:

- ▲ Variety: Eat more than one type of fruit or vegetable each day.
- ▲ Snacking: Help oneself to or request a fruit or vegetable as a snack.

- ▲ Willingness: Willingness to try new fruits and vegetables.
- ▲ Choosing healthy foods: Ask for fruits or vegetables instead of French fries when eating at fast food restaurants.
- ▲ Availability: Average weekly at-home availability of fruits and vegetables.
- ▲ Parental offerings at home: Frequency of parental offerings of fruits or vegetables as a snack and at dinner.
- ▲ Parental offerings at fast food restaurants: Ordering their child fruits or vegetables instead of French fries when eating at fast food restaurants.

Parents and caregivers were surveyed at baseline and follow-up to collect information on children's at-home consumption and other dietary behaviors.<sup>3</sup> In-person interviews were conducted to collect the baseline data (response rate was 80 percent for the intervention group and 54 percent for the comparison group), and a mail and telephone survey approach was used for the follow-up survey (response rate was 83 percent for the intervention group and 81 percent for the comparison group). The potential impact of attrition from the evaluation study on generalizability of the impact analysis findings was assessed by comparing the pre-intervention similarity of study participants who provided follow-up data with those who did not. There were differences between the two groups with regard to respondent race and ethnicity, age, and gender.

General linear mixed models (continuous impact variables) and generalized linear mixed models (dichotomous impact variables) were used to evaluate the impact of the program while accounting for the clustering of children within centers. These models were estimated via difference-in-difference estimates of program effect, comparing change across time (baseline and follow-up) in the intervention group with change across time in the comparison group. Covariates in the model included child age, child sex, household size, respondent race and ethnicity, respondent age, and respondent sex.

#### **4. Methods for the Assessment of UNCE's Self-Evaluation**

This study also examined the soundness of UNCE's self-evaluation. This assessment included a detailed description of UNCE's evaluation methodology, including the management, staffing, and costs of the evaluation; an assessment of the quality of UNCE's evaluation; an identification of strengths, weaknesses, and areas for improvement; and a comparison of UNCE's evaluation results with those of the independent impact evaluation.

## **D. Process Evaluation Findings**

During the two waves of the demonstration project in 2010, the All 4 Kids program was taught by 1.75 full time equivalent (FTE) direct educators and 0.5 FTE student assistant teachers. According to program administrative data, they reached 403 children and, indirectly, their parents and caregivers. Nearly two-thirds of the children in the intervention classrooms were identified as Hispanic. On average, the participating children attended two-thirds (16.6 of 24) of the 30 minute lessons taught in their classroom, for a total of 8.3 hours of instruction. Not surprisingly, given the uneven attendance in Head Start during the summer months, average lesson attendance was higher in the spring wave than the summer wave (19.4 lessons compared to 13.9 lessons). The estimated cost of implementing the program was approximately \$370 per participating child.

<sup>3</sup> The survey instrument and other survey materials were available in English and Spanish.

While the large majority of parent and caregiver survey respondents reported receiving and using the All 4 Kids take-home materials, parent and caregiver exposure to the program through the Family Activity sessions was low. Compared to the 403 children who attended All 4 Kids classroom lessons, a total of 209 parents and caregivers attended at least one session, or one-half the number of children who participated in the program. Only 17 percent (69 of 403) attended all three sessions.

### **1. Key Informant Perspectives on Program Implementation**

Overall, the All 4 Kids program staff members, Head Start center directors, and classroom teachers involved in the demonstration project reported that many factors in the All 4 Kids program design allowed it to be easily implemented and well received. The Head Start staff uniformly praised the fun and engaging nature of the classes, noting that the music and movement components promoted enthusiasm for the subject matter and retention of the knowledge by the children. The focus on children and their caregivers was also perceived as key to the program's successful acceptance at Head Start programs. The center directors also expressed appreciation for the fact that the All 4 Kids curriculum addresses the State's Pre-Kindergarten Content standards.

The direct educators uniformly reported that they were very confident in implementing the program and attributed this to the quality and format of the training they received, the attention to continuous quality improvement, and the well-written lesson plans. The program officer, who supervised these educators, reported that the educators were very talented at engaging the preschool-age target population and successful in implementing the curriculum as it was intended. This was confirmed during the independent evaluation's observation of each of the classes and Family Activity sessions.

At the same time, key informants also identified several critical challenges to implementing this program. The most common challenges cited were reaching parents and caregivers and maintaining center director interest and engagement. The program officer and principal investigators pointed out that the level of center director interest and engagement was strongly correlated to the level of caregiver and teacher involvement with the program. While all center directors reported that they wanted the program at their center, some were not engaged once the program started. At these sites, it was reportedly more difficult for the All 4 Kids staff to obtain needed space and recruit parents for the Family Activity sessions and there was less teacher support in the classrooms.

### **2. Participant Feedback**

The parent follow-up survey found that the large majority of parents and caregivers used the All 4 Kids take-home materials, and among those who attended the Family Activity sessions a large majority found them very useful in helping to improve their children's eating habits. Focus group participants who had each participated in at least one Family Activity session remarked that these sessions were fun and engaging. Many of them said they attended the sessions to observe and participate in what their child was learning. Several added that they wanted to learn how to help their children develop good eating habits from a young age. Moreover, focus group participants whose primary language was Spanish said that the bilingual instructors and materials made the program accessible and appealing to them.

Among the survey respondents who did not participate in any or all of the Family Activity sessions, scheduling issues and lack of awareness about these sessions were their most common reasons for not attending, indicating a need for UNCE to explore different ways of reaching this important target group.

## E. Impact Evaluation Findings

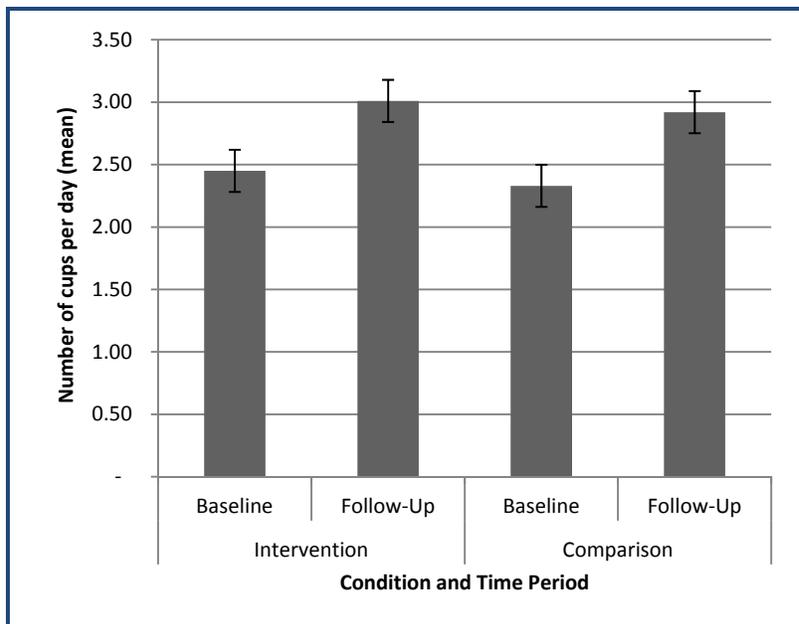
### 1. Primary Impact Results

The baseline analysis included 622 parent respondents from 12 Head Start centers: 294 for the intervention group and 328 for the comparison group. At baseline, the demographic characteristics of children and their parent respondents and households were similar for the intervention and comparison groups, and there were no statistically significant differences in outcome measures.

Based on the results of the impact analysis, one cannot conclude that the All 4 Kids program had a statistically significant impact on children's daily at-home consumption of fruits and vegetables (see figure ES-3).

Despite small increases in the mean number of cups of fruits and vegetables consumed at home each day, there was little evidence to support the claim that changes in consumption of fruits or vegetables were related to the program. Because improvements were observed in both the intervention group and the comparison group, the possibility that other factors contributed to these changes (e.g., seasonal trends, other events in the community, and the increased sensitivity of parents to their children's eating behavior prompted by study participation) could not be ruled out. The lack of statistically significant findings may also have been influenced by ceiling effects that limited the ability to detect significant change. As reported by parents, children's combined fruit and vegetable consumption in the home at baseline was quite close to USDA's Food Guidance System recommendations for this age group (2.45 cups for the intervention group and 2.32 cups for the comparison group).<sup>4</sup> This may suggest that there was less room to improve children's diets than initially anticipated. Alternatively, it may be that parents expressed an upward bias (e.g., social desirability) in reporting their children's diet. Either of these would have limited the ability to detect self-reported changes.

Figure ES-3. —Changes in Daily At-Home Consumption of Fruits and Vegetables ( $p = 0.8541$ )



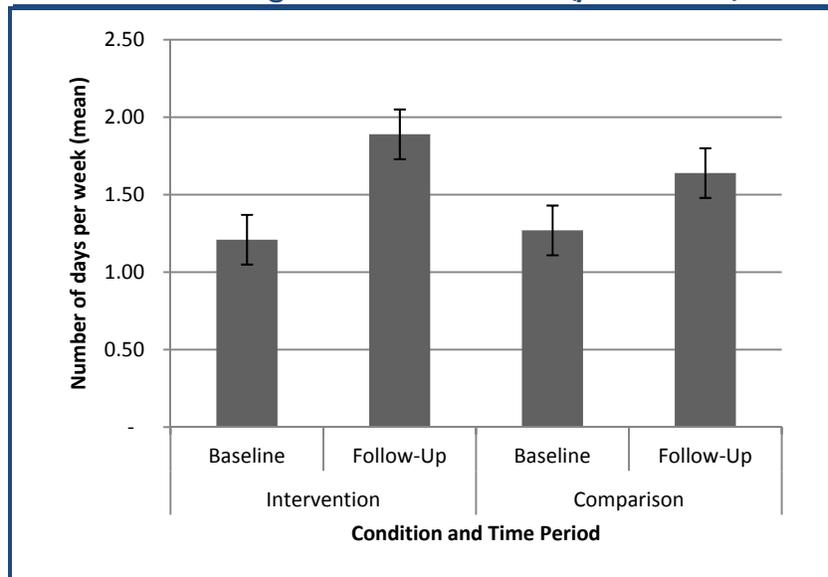
<sup>4</sup> According to USDA's Food Guidance System, it is recommended that children aged 2 to 5 years eat about 1 to 2 cups of vegetables each day and 1 to 1.5 cups of fruit each day, depending on the child's gender and activity level (USDA,2011).

## 2. Secondary Impact Results

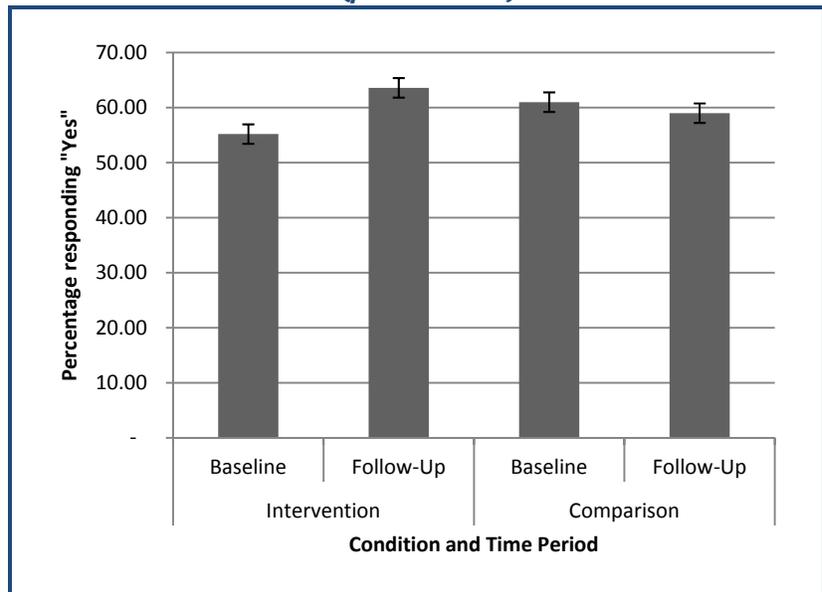
There were not statistically significant changes in children's other dietary behaviors, parent behaviors, and household variables such as the availability of fruits and vegetables. Although there were small increases in most secondary outcomes, there were corresponding increases in the comparison group. The increases in the comparison group suggest that completing the baseline survey may have sensitized parents or that parents expressed an upward bias (e.g., social desirability) when completing the survey.

There were promising improvements in two of the secondary outcome measures that approached statistical significance—children helping themselves to or requesting vegetables for a snack (see figure ES-4) and children's reported willingness to try new fruits (see figure ES-5). These behaviors, if sustained, may lead to increased at-home consumption of fruits and vegetables. However, the program did not appear to influence reinforcing factors, such as parents' offering children vegetables as snacks. The absence of greater changes in reinforcement by parents may be one reason there were no changes in overall reported consumption of fruits and vegetables.

**Figure ES-4.—Changes in Children Asking or Helping Themselves to Vegetables for a Snack ( $p = 0.0658$ )**



**Figure ES-5.—Changes in Children's Willingness to Try New Fruits ( $p = 0.0774$ )**



## F. Findings from the Assessment of UNCE's Self-Evaluation

The UNCE evaluation used pre- and post-assessments with children and caregivers using the same intervention and comparison groups employed for the independent evaluation. Strengths of UNCE's evaluation included the use of a viable comparison strategy, well-planned and implemented data collection, modest attrition between the pre- and post-surveys for the caregiver survey, and little missing

data for the impact analysis. Weaknesses included considerable attrition for the preschooler survey, which limited the amount of paired data for the impact analysis using this data; the impact instruments for the caregiver survey lacked validity and reliability testing; the data analyses did not account for the clustering of individuals within centers; and the research objectives and hypotheses were not stated in quantifiable terms.

UNCE reported that preschoolers at intervention centers demonstrated a significant increase in their ability to name snack foods, select a healthy snack to eat, and distinguish healthy snacks from unhealthy ones. The UNCE caregiver survey considered the following outcome measures: variety, consumption, purchasing, and accessibility of fruits and vegetables. The only statistically significant change in these measures was in the combined variety of fruits and vegetables (child eats most fruits and vegetables). UNCE attributed the lack of other significant findings to a ceiling effect.

The All 4 Kids program placed equal emphasis on physical activity and on nutrition. UNCE found that children in the intervention group, in contrast to children in the comparison group, were observed as significantly more likely to improve their movement skills, their balance, and their hopping endurance.

Together, the two evaluation studies suggest that the All 4 Kids program had a positive effect on children's understanding of and preference for healthy snacks. However, these gains were not sufficient to translate into statistically significant effects on consumption of fruits and vegetables at home. Hence, future efforts to enhance the All 4 Kids program may consider strategies to translate improvements in the childcare setting to the home.

The UNCE principal investigators attributed some of the challenges they experienced in conducting their own evaluation, including the lower-than-expected number of completed surveys, to unanticipated enrollment and scheduling changes at the Head Start sites. They report that they have learned many lessons from this experience that will help them as they refine the program and continue to evaluate it in the future. Specifically, the principal investigator plans to make improvements to data collection procedures and to the parent and caregiver survey instrument so they can better assess program impacts on at-home behaviors.

## **G. Recommendations**

Based on the findings from the independent evaluation, the All 4 Kids program did not result in a measurable increase in children's daily at-home consumption of fruits and vegetables. However, the program appears to be a well-designed and well-liked intervention that is appropriate and easy to implement in Head Start childcare settings. Parents and caregivers of children receiving the intervention reported relatively high use of program take-home materials and expressed satisfaction with the program overall. Those who participated in the Family Activity sessions and attended focus groups were impressed with how their children were repeating the program's nutrition messages and were willing to try new fruits and vegetables at home. Increasing the focus on parent and caregiver education and finding ways to enhance relationships with the director and staff at each program site might improve future program implementation efforts and the program's impact on child's fruit and vegetable consumption at home. For these reasons, with some improvements, the All 4 Kids program is a potentially promising example of early childhood nutrition education."

### ▲ **Key areas for program improvement**

As UNCE continues to implement and refine the All 4 Kids program and assess its impact on preschool children and their families, the following actions should be considered for program improvement.

- **Maximize parent and caregiver reach.** UNCE should consider other ways to design and promote the Family Activity sessions that allow more parents to attend. For example, UNCE might want to schedule more than three events at each center and offer them at different time periods so that parents with different types of scheduling conflicts could attend. Where space is a limiting factor they may want to offer the events to only two classrooms at a time to limit crowding. UNCE could also enlist center directors' support for making reminder calls the week of each Family Activity session. UNCE may also want to consider additional ways to reach caregivers in face-to-face education, such as classes designed for parents and caregivers only.
- **Improve content of program information directed to parents and caregivers.** UNCE's senior team for this project has already recognized the need to revise the take-home materials included in the Family Packs. Upon completion of the evaluation, revisions were underway to better communicate the program's healthy eating messages to parents and caregivers. To help address parents' food cost concerns, these revisions could also include written materials and parent class lessons that provide information on meal planning, shopping on a limited budget, food storage tips, and information on how to apply for SNAP, the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC ) and access emergency food providers. Consistent with the current (2010) Dietary Guidelines for Americans, the curriculum should encourage the use of all forms of fruits and vegetables, including fresh, frozen, canned, and dried (USDA, CNPP 2011). Many of these resources could be attained at little or no cost from other nutrition education and food resource management programs at UNCE.
- **Actively engage childcare center staff.** The UNCE management team highlighted the critical role that the childcare staff plays in shaping children's behaviors and in motivating parent engagement. They also noted the varied levels of center staff involvement during the demonstration project. In the future, the principal investigator said the All 4 Kids program will place a greater emphasis on building good working relationships with the directors and classroom teachers at each center before the classes begin onsite. If resources allow, UNCE could also consider offering a series of training workshops for Head Start directors and teachers to provide them information and tools to increase children's healthy eating and be role models of healthy eating at the center.

### ▲ **Suggestions for improving evaluations**

As the team at UNCE continues to refine and implement the All 4 Kids program and its approach to evaluation, they may want to consider changes to increase the rigor of its evaluations. For future evaluations, it is suggested that UNCE determine the anticipated size of the program impact on the target audience before the intervention and take into account the clustering of individuals within centers when conducting their impact analyses. If resources are not available to use a quasi-experimental design for future evaluations, UNCE may want to collect additional waves of data from participants receiving the intervention for trend and interrupted time-series analyses. These changes would improve the quality of the evaluation and increase UNCE's ability to accurately measure changes attributable to the program.



## Chapter I • Introduction

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Nutrition education is an optional component of the Supplemental Nutrition Assistance Program (SNAP), known as SNAP-Education or SNAP-Ed. The goal of SNAP-Ed is to improve the likelihood that SNAP participants and persons eligible for SNAP nutrition assistance will make healthy food choices within a limited budget and choose physically active lifestyles consistent with the current (2010) Dietary Guidelines for Americans (USDA, CNPP, 2011).

The Food and Nutrition Service's (FNS) official SNAP-Ed Guidance not only provides information to help States in designing and implementing SNAP-Ed programs, but also specifically encourages States to evaluate the effectiveness of their SNAP-Ed programs.<sup>5</sup> In FY 2004, 74 percent of SNAP-Ed implementing agencies (IA) reported that they did conduct outcome evaluations on at least some aspects of services. However, based on interviews with 17 IAs these evaluations were focused to a greater extent on program use than they were on participant behavior change (FNS, 2006). As one of the largest Federal funding sources for nutrition education, FNS, States, and local IAs have a significant stake in ensuring that SNAP-Ed nutrition education meets FNS' goals.

This study, *Models of SNAP-Education and Evaluation (Wave I)*, is the first of two FNS-initiated independent evaluations designed to identify models of effective SNAP-Ed nutrition education and impact evaluation. The overarching goal of this evaluation is to determine whether the selected projects can serve as good examples of effective nutrition education and promotion activities within SNAP-Ed delivery by meeting the following criteria:

- Positively impacting the nutrition and health behaviors of SNAP participants while adhering to FNS guiding principles,
- Exhibiting the potential to serve as models of effective nutrition intervention for large segments of the SNAP audience while requiring levels of resources that are manageable by a large percentage of SNAP-Ed implementing agencies, and
- Providing methodologically robust yet logistically practical examples of project-level SNAP-Ed evaluation efforts.

To accomplish the study goal, three complementary types of assessments were conducted: a process evaluation, an impact evaluation, and an assessment of the demonstration project's own outcome or impact evaluations. Exhibit I-1 lists the broad research questions framing the design and measures used in each component of the evaluation.

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<sup>5</sup> See SNAP-Ed Plan Guidance at: <http://www.nal.usda.gov/fns/Guidance/FY2012SNAP-EdGuidance.pdf>

## Exhibit I-1.— Research Questions

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### *Process Evaluation*

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- What were the demonstration project’s overall objectives and approach?
- How was the intervention implemented and administered?
- How many people did the intervention reach, and how much exposure did participants have to it?
- What resources and costs were needed for the design (where relevant) and implementation of the intervention?
- What were the facilitators, challenges, and lessons learned regarding implementation and administration of the intervention?
- What feedback did participants have about the implementation of and their satisfaction with the intervention?

### *Impact Evaluation*

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- What was the intervention’s impact on primary nutrition behavioral outcomes (i.e., cups of fruits and vegetables consumed)?
- What was the intervention’s impact on secondary outcomes (i.e., eating a variety of fruits and vegetables each day)?

### *Assessment of the Demonstration Project’s Self-Evaluation*

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- How did the demonstration project’s actual evaluation compare with its ideal planned evaluation?
- What were the resources needed and costs of the evaluation?
- What were the results of the self-evaluation, and how do these compare with the independent impact evaluation?
- What were the lessons learned?

## **A. Selection of Wave I Demonstration Projects**

In FY 2008, FNS issued a request for applications to States to propose models of SNAP-Education and evaluation and participate in the FNS-funded independent evaluation. Applicants proposed various program and evaluation designs with children and/or women as their primary target audience. Numerous applications were received, including ongoing SNAP-Ed programs, modifications to existing programs, or new programming models. Each application was competitively scored and ranked by an independent technical review panel, chaired by FNS. The quality criteria used for scoring are shown in exhibit I-2. The highest scoring applicants were selected as finalists and asked to respond to clarification questions. Based on these responses, the review panel selected four projects to participate in the study:

- ▲ **University of Nevada Cooperative Extension Service’s (UNCE) All 4 Kids,**
- ▲ **Chickasaw Nation Nutrition Services’ (CNNS) Eagle Adventure, and**
- ▲ **New York State Department of Health’s (NYSDOH) Eat Well Play Hard in Child Care Settings,**
- ▲ **Pennsylvania State University’s (PSU) About Eating.**

Each of the four agencies implemented model SNAP-Ed programs in fiscal year (FY) 2010 and conducted their own evaluations, supported by SNAP-Ed administrative funds and State and local matching resources. Selected demonstration projects received a \$100,000 incentive to offset expenses directly incurred as a result of their participation in this evaluation project, such as those associated with

## Exhibit I-2.— Scoring Criteria Used for Demonstration Project Selection

Criterion	Specific Requirements
<b>Quality of intervention plan</b> (30 points)	<ul style="list-style-type: none"><li>• Incorporates SNAP Ed Guiding Principles</li><li>• Budgets are provided as per SNAP-Ed annual guidance</li></ul>
<b>Intervention schedule fits the proposed FNS data collection period</b> (5 points)	<ul style="list-style-type: none"><li>• Intervention will begin and end sometime between March 2010 and September 2010</li></ul>
<b>Suitability for an FNS evaluation using a rigorous impact evaluation design</b> (30 points)	<ul style="list-style-type: none"><li>• Can support the random assignment of multiple units (person, classes, etc.) to treatment and control conditions or the quasi-experimental, non-random assignment of matched units to both treatment and control groups</li><li>• If <i>other</i> nutrition education or promotions are delivered to the target audience, they are delivered to both the treatment and control groups during the course of the project</li></ul>
<b>Promise for replication</b> (15 points)	<ul style="list-style-type: none"><li>• Does not require unusually high levels of resources and technical expertise</li><li>• Materials and curricula are, or can be made, readily accessible to other nutrition educators</li></ul>
<b>Quality of staff and staffing plan</b> (20 points)	<ul style="list-style-type: none"><li>• Individuals with key project responsibilities are identified and their allocated hours are indicated and adequate</li><li>• Proposed staff members are well qualified and planned training is provided</li></ul>

facilitating access to SNAP-Ed participants, participation in interviews, record keeping, and providing documents describing the implementer’s SNAP-Ed intervention and evaluation processes.

The evaluation of UNCE’s All 4 Kids program is the focus of this case study report. Similar case study reports have been prepared for the other demonstration projects. Key evaluation findings and cross-cutting themes from across all Wave I demonstration projects are presented in a separate final report.<sup>6</sup>

### B. Overview of the All 4 Kids Program

UNCE’s All 4 Kids Healthy, Happy, Active, and Fit program (hereafter referred to as All 4 Kids) is an educator-led, preschool-based SNAP-Ed program. Its target audience is low-income children ages 3–5 and their parents and caregivers. The curriculum and materials were first developed in 2008 and piloted by UNCE prior to this demonstration project evaluation. The program curriculum and methods were based on past research demonstrating that children are active learners and that their physical, social, emotional, cognitive, and language abilities must be a major consideration of the program design.

All 4 Kids’ overarching goals are to promote healthy eating, support age-appropriate physical development, and encourage children’s self acceptance and acceptance of differences among peers. Each lesson and its accompanying materials incorporate the key message “Eat Smart, Be Active” and include a nutrition focus to help children and their parents identify and choose healthy snacks while increasing their daily fruit and vegetable consumption. The four behavioral outcome goals of the All 4 Kids program are to:

<sup>6</sup> The individual case studies and integrated final report are published separately and available at: [www.fns.usda.gov/ora/](http://www.fns.usda.gov/ora/).

- Increase preschool children’s intake of healthy snacks,
- Increase their fruit and vegetable consumption,
- Enhance their movement skills, and
- Increase their level of physical activity through exercise to music.

To achieve these outcomes, the All 4 Kids curriculum uses both direct and indirect education methods. The core of the curriculum is direct education, with 24 unique 30-minute lessons provided by trained direct educators in the preschool classroom and three Family Activity sessions also provided onsite at the childcare center. Healthy eating, physical activity, and physical development are promoted through different and complementary messages throughout the lessons using language and activities designed for preschool-age children. The central program goals and objectives are further reinforced with music and dance through the learning of three choreographed pieces which the children perform for the parents and caregivers at the Family Activity sessions.

Indirect education is provided through Family Connection activities, designed as at-home activities for parents and caregivers to complete with their children. These materials are distributed weekly to the parents and caregivers through their child’s classroom. The teachers in the centers are also involved in the program through weekly Teacher Connection handouts that outline concrete methods for applying All 4 Kids concepts in the classroom and ways to reinforce the program’s messages with parents and caregivers.

For this evaluation, the All 4 Kids program was conducted by UNCE at a total of six different Head Start centers in Las Vegas, Nevada, in two sequential waves. The spring wave of the intervention ran at four centers from March through April 2010, and the summer wave ran at four centers from June through July 2010.<sup>7</sup> Each wave generally consisted of three weekly classes taught in two to three classrooms per center. In total, the intervention reached 403 children in 22 classrooms through direct education. Family Connection take-home materials were distributed to all of their families and 209 parents and caregivers attended at least one of the Family Activity sessions. Six Head Start centers in Las Vegas served as comparison sites.

### **C. Organization of the Report**

This report provides a detailed summary of the findings and conclusions of, as well as the specific methods used in, the evaluation of the UNCE SNAP-Ed demonstration project. Outlined below are the topics addressed in each of the remaining chapters of this report:

- Chapter II: Process Evaluation Methods and Results,
- Chapter III: Impact Evaluation Methods and Results,
- Chapter IV: Assessment of UNCE’s Self-Evaluation, and
- Chapter V: Conclusions and Discussion.

Following these chapters is a series of appendices which include data collection instruments, supplemental data, and detailed descriptions of the methods employed for each of the three components of the evaluation. Additionally, appendix K provides a complete list of all cited references within this report.

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<sup>7</sup> Two Head Start centers participated as intervention sites for both waves. At these centers, in each wave the intervention was conducted in different classrooms with different children.

## Chapter II • Process Evaluation Results

This chapter describes the findings of the process evaluation of the University of Nevada Cooperative Extension (UNCE)'s All 4 Kids program. The overall goal of the process evaluation is to describe the design and implementation of the intervention as well as examine the success of the implementation process from the perspectives of the principal investigators, program officer, direct educators, intervention site staff members, and program participants. The data sources, data collection methods, and analysis approach for the process evaluation are summarized below and detailed in appendix H.

### A. Process Evaluation Methods

The broad process-focused research questions described in chapter I guided the design of the All 4 Kids evaluation. To address the research questions, it was necessary to gather both objective and subjective information. The process evaluation team acquired and assessed data from secondary and primary data sources using multiple methods, including data abstraction, in-depth open-ended interviews with stakeholders, direct nutrition education observation, and focus groups with parents and caregivers of children who participated in the All 4 Kids program.

#### 1. Data Sources

The secondary data sources that were collected and reviewed at various stages of the evaluation are provided in exhibit II-1. These served as rich sources of descriptive, objective information on key aspects of the demonstration project's design and implementation. The data sources that were collected and reviewed by the evaluation team can be categorized into four groups: planning and reporting documents, implementation documents, administrative data on program reach and dosage, and program costs.

### Key Findings

- **Program Reach and Cost:** The All 4 Kids demonstration project reached 403 children and their parents and caregivers in 22 childcare classrooms at an estimated cost of \$370.10 per child.
- **Ease of Implementation:** All 4 Kids direct educators and the Head start staff members reported that the program's fun classroom and family activities, simple nutrition messages, incorporation of music and movement into the program, culturally appropriate materials and bilingual educators were well received and made it easy to implement.
- **Caregiver Satisfaction:** Parent and caregiver survey results and focus group discussions revealed a high level of use and satisfaction with the program materials in both waves of the intervention, though use was somewhat lower at centers during the summer wave of the demonstration project.
- **Center Director Support:** The majority of center directors were highly supportive of the program materials, educators, and the curriculum's consistency with the State's Pre-Kindergarten Content standards. They helped interest parents and teachers in the program and its goals.
- **Parent and Caregiver Participation:** The number of adults attending the Family Activity sessions was only one-half the number of children who participated in the program. Scheduling conflicts and lack of awareness were by far the most common reasons cited by parents and caregivers for not attending these events. Revisions could be made to increase parent and caregiver participation at these sessions and other face-to-face educational formats.

**Exhibit II-1.— Secondary Data Collected for the Process Evaluation of the UNCE Demonstration Project**

Document Category	Specific Documents Reviewed
<b>Planning and Reporting Documents</b>	<ul style="list-style-type: none"> <li>• Demonstration project application</li> <li>• FY 2010 SNAP-Ed Plan</li> <li>• UNCE's IRB application</li> <li>• Reports from UNCE's All 4 Kids pilot</li> </ul>
<b>Implementation Documents</b>	<ul style="list-style-type: none"> <li>• The All 4 Kids curriculum</li> <li>• Copies of educational materials used in the program</li> <li>• Training agendas and protocols</li> <li>• Quality assurance materials and logs</li> </ul>
<b>Administrative Data on Program Reach and Dosage</b>	<ul style="list-style-type: none"> <li>• UNCE administrative data collected for the SNAP-Ed Education and Administrative Reporting System (by site) on: number and demographics of child participants and number of parents or caregivers participating in each of the Family Activity sessions</li> </ul>
<b>Program Costs<sup>a</sup></b>	<ul style="list-style-type: none"> <li>• Standardized cost tables consistent with FNS SNAP-Ed expenditure reporting requirements</li> </ul>

<sup>a</sup>The evaluators provided a form for UNCE to complete to ensure cost data were collected in a standardized way (see "Resource and expenses tracking form" in appendix A).

Primary data were collected through questionnaires and interviews with three categories of key informants: All 4 Kids program staff, intervention site key informants (childcare center directors and classroom teachers), and parents and caregivers who participated in All 4 Kids Family Activities. The interviews with program staff and intervention site directors were conducted approximately one month prior to the start of the All 4 Kids program and within 1–3 weeks after completion of the last lesson. The interviews with the teachers were conducted after the last All 4 Kids class was completed at their center. For the spring wave, the teachers were interviewed on-site; for the summer wave the teachers were mailed the interview questions in a questionnaire format. In total, 17 of 22 intervention classroom teachers completed interviews or mail questionnaires.

Another important component of the process evaluation was the assessment of the experience and satisfaction of the parents and caregivers with the intervention. Information was collected on factors such as program accessibility for parents and caregivers, perceived goals of the program, how the program helped them change their children's nutrition behaviors, and potential barriers faced in trying to increase their fruit and vegetable intake. These data were collected through a follow-up parent survey and focus groups with a subset of parents and caregivers at three intervention sites who attended at least one of the Family Activity sessions.

Descriptive information about the types of respondents, number of respondents by type, and timing of data collection are presented in exhibit II-2. Descriptive statistics on the demographics of focus group participants are provided in appendix B.

**Exhibit II-2.— All 4 Kids Process Evaluation Respondent Types, Data Collection Methods, and Number of Respondents**

Type of Respondent	Data Collection Method	Number of Respondents	
		Pre-intervention	Post-intervention
<b>All 4 Kids Program Staff</b>			
UNCE Principal Investigators	Interview	3	3
Program Officer	Interview	1	1
Direct Educators	Interview	3	3
<b>Intervention Site Staff</b>			
Childcare Center Directors	Interview	6	6
Lead Teachers in classrooms where All 4 Kids was taught	Onsite Interview (spring wave)	n/a	11
	Mail Questionnaire (summer wave)	n/a	6
<b>Program Participants</b>			
Parents or Other Primary Caregivers of Children Who Participated in All 4 Kids Program	Focus Group	n/a	3 groups (20 adults)
	Survey <sup>a</sup>	n/a	244

<sup>a</sup> Process questions included in parent follow-up survey

Note: n/a = not applicable

Evaluation team members also visited 3 intervention centers in each wave of the intervention to observe a child class and a Family Activity session. During these observations, the classroom setting, classroom teachers’ role, participants’ interest in the nutrition education lessons, and a description of how implementation was consistent with or deviated from the lesson plan were documented. The evaluator also spoke briefly with the direct educator after the class observation to identify facilitators and challenges to implementation of the lesson plan in the observed setting. Focus groups were also conducted post-intervention at three of the intervention centers with parents and caregivers who had attended at least one All 4 Kids Family Activity session to obtain their views and experiences with the program.

**2. Instrumentation**

Data collectors used a set of standardized secondary data abstraction tools and primary data collection instruments for the process evaluation. The wording of many of the questions in each key informant interview guide and the focus group discussion guide was tailored to the specific characteristics of the All 4 Kids program. All data collectors were trained on the use of these approved instruments to collect information essential to answering the process-related research questions and queries. In addition, key informant interviews included relevant, probing questions to allow for in-depth discussions of important issues or topics. Copies of most of the instruments are provided in appendix A. The parent follow-up survey instrument which was also used for the impact evaluation is included in appendix C.

### **3. Analysis Approach**

The evaluation team applied an analysis approach to the data that takes into account the range of data and respondent types used in the process evaluation. Key informant responses to each interview or questionnaire item were compiled into a master Microsoft Word 2007 document and organized by broad process evaluation research questions and process indicators. This approach helped to organize the extensive amount of information that was available and allowed for the identification of broad themes (e.g., implementation facilitators and challenges) and specific topics (e.g., lesson plan scheduling) as well as agreement and disagreement amongst respondents. Direct quotations were identified where relevant and used to support key findings.

Quantitative process data were primarily used to describe objective aspects of the All 4 Kids intervention, such as those related to dose, reach, and costs. With the exception of cost data, which were provided through a series of standardized tables, these data were received in or entered into Microsoft Excel spreadsheets. Excel was then used to conduct basic frequencies and mean tabulations. Quantitative process data collected from parents or caregivers through the post-intervention parent survey were analyzed using SAS 9.2. Frequencies of participant responses to each process question are reported in appendix B and incorporated with the qualitative findings that follow in this chapter.

Transcripts from focus groups with parents or caregivers of nutrition education recipients were coded in QSR International NVivo version 8, which allowed the evaluation team to systematically organize, process, and summarize information provided by this key stakeholder group. It also allowed the team to capture the breadth of opinions offered by parents or caregivers while identifying common themes and issues. Direct quotations from the focus groups were used as examples to support the parent survey findings and common themes from the focus groups.

## **B. Program Development and Design**

### **1. Program Development**

The All 4 Kids program was developed in 2007 by an interdisciplinary team of three UNCE faculty members who were the leads for this demonstration project. The principal investigator, with expertise in early childhood education, was assisted by two co-investigators (one from maternal child health and nutrition and one from exercise physiology). In 2007, they each applied for internal UNCE grants and received a total of \$30,000 to create the All 4 Kids lesson plans, materials, activities, music, and movement choreography for a CD. A faculty member from the exercise physiology department, who is also a musician, took the lead in developing the music CD that was integrated into each lesson and designed to make the lessons fun and engaging for preschoolers. The CD was created with the help of more than 120 volunteers, including musicians and sound technicians.

Over the course of two years, the UNCE principal investigators tested the program's lessons and materials with children, parents, and caregivers at two Head Start centers in Las Vegas. According to the senior program team, the program's core messages were refined and improved with each pilot test to better meet child ability levels and parent/caregiver needs. As part of the All 4 Kids pilot conducted in the spring of 2008, UNCE surveyed parents and caregivers to measure changes in children's fruit and vegetable consumption. According to UNCE, the pilot results showed increases in the percentages of parents and caregivers reporting that their children "often" consumed fresh fruits, canned fruits, fresh vegetables, and canned vegetables. The specific increase for reported child consumption of fresh fruits and vegetables "often" was from 62.5 percent at baseline to 91.7 percent after the intervention. (See appendix B for

additional information on the pilot test.) These positive outcome results encouraged UNCE to apply for the FNS demonstration project evaluation.

## 2. Theoretical Framework

The principal investigators aimed to create an age-appropriate, interdisciplinary program that would provide children, parents and caregivers with the tools and information they need to support the desired behavioral outcomes. To this end, the All 4 Kids program was designed based on guidelines for developmentally appropriate practices by the National Association for the Education of Young Children (Copple & Bredekamp, 2009). For example, the All 4 Kids program follows the guideline that teaching is designed to enhance development and learning. UNCE program planners designed their program to engage young children as active learners and consider their physical, social, emotional, cognitive, and language abilities.

The All 4 Kids program design—with activities and written materials designed to reach parents, caregivers, and classroom teachers—was based on past research indicating that parent and caregiver involvement leads to better educational outcomes for young children and that childcare staff involvement plays an important role in affecting children’s behavioral and physical health. Exhibit II-3 lists the major research findings that the principal investigators cite as having influenced their selection of their target audience and the design of the All 4 Kids program.

### Exhibit II-3.— Research That Influenced the Design of the All 4 Kids Program

Research Finding	Implications for Intervention Design
1 <b>Children are active learners (Shonkoff, 2000; Pica, 2006)</b>	Inclusion of chants, movement, stories, and art activities based on key health concepts
2 <b>Prevalence of obesity among preschoolers (Polhamus, 2007; Nevada State Plan)</b>	Preschool children as the primary target audience
3 <b>Parental involvement leads to better outcomes for children (Epstein, 1990)</b>	Inclusion of parents and caregivers in the All 4 Kids programming
4 <b>Variable preschool-age physical activity (Pate, 2004)</b>	Inclusion of physical activity and movement lessons
5 <b>Food insecurity association with overweight (Casey et al., 2006)</b>	Inclusion of social and environmental cues for eating
6 <b>Childcare center role in affecting children’s health (Maher, 2008)</b>	Involvement of childcare teachers in the All 4 Kids program

## 3. Description of Curriculum

As noted above, the main objectives of the All 4 Kids program are to increase preschool children’s intake of healthy snacks, increase their fruit and vegetable consumption, enhance their movement skills, and increase their physical activity through exercise to music. Exhibit II-4 lists the specific measurable objectives of the program, as determined by the UNCE program team, in each of these four areas.

## Exhibit II-4.— Intended Impacts of the All 4 Kids Program

Topic	Specific Objectives
<b>Healthy Snacks</b>	Preschoolers will be able to identify “healthy” snacks and will exhibit their understanding by describing types of healthy snack foods, choosing healthy foods as snacks, and distinguishing between healthy and unhealthy snacks.
<b>Fruits and Vegetables</b>	Children’s parents and caregivers will identify an increase in the variety and amount of fruits and vegetables eaten by their child. In addition, the number of parents and caregivers buying fruits and vegetables will increase, as will the number of parents and caregivers who keep fruits and vegetables as readily available snacks at home.
<b>Movement Skills</b>	Preschoolers will show enhanced movement skills as well as increased proficiency in crossing the midline, timed balance, and hopping.
<b>Physical Activity</b>	At least 90 percent of the preschoolers in the intervention program will have taken part in some sort of physical activity every day, as reported by their parents and caregivers.

### a. Classes for children

The All 4 Kids curriculum that was designed by UNCE includes 24 lessons to be taught in the classrooms at childcare centers, each designed to last 25–35 minutes. Though the program had been designed to be delivered over a 12-week period, to conform to the independent evaluation’s timeframe for data collection, the 24 lessons were provided 3 times a week for 8 weeks.<sup>8</sup> The lessons engage children in a mixture of active learning experiences that involve singing, movement, stories and art activities in the classroom. The program is intended to increase children’s knowledge and skills to change their nutrition and physical activity behaviors through repetition and reinforcement of key messages. These All 4 Kids program messages and the number of child lessons that incorporated each message are shown in exhibit II-5.

### Exhibit II-5. —Key All 4 Kids Educational Messages and the Number of Child Lessons that Incorporate Each

#### Nutrition messages:

- Eat fruits and vegetables every day (24)
- Eat healthy (24)
- Eat smart (24)
- Use energy from food (4)
- Choose healthy snacks (5)
- Know their Go and Whoa snacks (5)

#### Behavioral messages:

- Eat when they are hungry; stop when they are full (3)
- Are healthy, happy, active, and fit at any shape or size (4)

#### Physical activity messages:

- Are active every day (24)
- Move to keep their hearts, muscles, and bones strong (4)
- Don’t just sit and sit and sit; they keep moving to stay fit (2)

Each child lesson incorporated didactic, interactive, and physical movement components and included nutrition messages focused on children eating not only more fruits and vegetables every day, but also a larger variety of fruits and vegetables. Original music and physical movements that emphasize the “Eat Smart, Be Active” message are used throughout the All 4 Kids program and the children learn four choreographed dance pieces, which include important physical activity targets for the children (such as reaching with their arms and legs over the middle of the body to the other side of the body).

<sup>8</sup> The spring wave of the intervention was conducted from March – April and the summer wave was conducted from June - July. During both waves, at all but one intervention sites, the Head Start centers were open for eight weeks and three child lessons were taught each week. At one center during the summer wave, the 24 lessons were conducted over a 9-week period and two or three child lessons were taught each week.

To support the written lesson plans, All 4 Kids direct educators received many resources to bring to the lessons and Family Activity sessions. This included a portable music player, books to read the children, food for tasting, foam hearts, and skeleton puzzles. (Appendix B contains a listing of these resources.)

***b. Family Connection take-home materials***

Parent and caregiver participation was an important component of the All 4 Kids intervention design. Each week, educational materials were provided to the Head Start classroom teachers and placed in each child’s Family Pack (insulated lunchbox). All materials were available in English and Spanish with the majority having text in English on one side and in Spanish on the other. Children were also given simple play materials, such as rainbow ribbons, the Hungry Meter, and the Watch Me Move game, to take home and practice what they learned in school with their parents and caregivers. On a weekly basis, the children took home the Family Packs to share materials with their parents and caregivers and were asked to return them the following week so new education materials could be inserted. These materials were chosen to support the specific content and objectives of the in-classroom lessons. Appendix B contains a detailed listing of the materials sent home in each week’s Family Pack with a description of how these materials specifically support and reinforce the weekly lessons.

***c. Family Activity sessions***

The All 4 Kids program also includes three Family Activities, where parents are invited to join their children for a one-hour session. During site visits, evaluation researchers observed that these sessions were active sessions using a variety of teaching modes, including time for the direct educators to lead discussions with the parents and caregivers, learning stations, a food tasting, a dance performance by the children, and group dancing with parents, caregivers, and children together. Each session was designed to focus on the messages that were provided in the preceding child lessons, but focused primarily on three topics: helping children choose healthy snacks, encouraging physical activity as a family, and helping children accept differences in other children and accept their unique bodies. These sessions also included time for parents and caregivers to ask questions and to share ideas, successes, and challenges in carrying out the program’s goals and activities. The lesson objectives for each Family Activity session are shown in exhibit II-6.

**Exhibit II-6.— Lesson Objectives for All 4 Kids Family Sessions**

Lesson Number/Name	Objectives
<b>Family Activity #1</b>	<ul style="list-style-type: none"> <li>▪ Families will explore mangoes as a healthy family snack</li> <li>▪ Families will discuss the benefits of being a physically active family</li> <li>▪ Children and families discuss their bones, muscles, and heart</li> <li>▪ Children and families will practice following basic directions (i.e., up, down, right, left, fast, and slow) with rainbow ribbons</li> <li>▪ Families will complete whole body movements as they move with various children’s songs</li> </ul>
<b>Family Activity #2</b>	<ul style="list-style-type: none"> <li>▪ Families will explore kiwifruit as a healthy family snack and discuss hunger and fullness cues</li> <li>▪ Children and families look through local grocery ads to find healthy snacks that they would like to try together</li> <li>▪ Families will engage in a relay race trying to find Go Snacks</li> <li>▪ Children perform hip-hop dance</li> <li>▪ Families will balance on one foot together</li> </ul>

Lesson Number/Name	Objectives
<b>Family Activity #3</b>	<ul style="list-style-type: none"> <li>Families will explore jicama as a healthy family snack</li> <li>Families discuss how to incorporate a variety of fruits and vegetables into the family menu</li> <li>Children perform their Latin salsa dance</li> <li>Families will outline their preschooler's body on butcher paper and draw ways they plan to be active and fit together</li> <li>Children and families will engage in various parachute games and complete an obstacle course together</li> </ul>

## C. How Was the Intervention Implemented and Administered?

### 1. Program Management and Oversight Structure

The management team for the All 4 Kids demonstration project consisted of the three lead UNCE faculty members as well as a program officer who reported to them. Management and oversight were a team effort, with each faculty member sharing equally in the management workload. One faculty member took the lead in coordinating with the evaluators. The program officer supervised the community-based instructors. The team collaborated in the design, planning, and implementation of the demonstration project. Exhibit II-7 provides an overview of each of their roles and involvement with the program.

#### Exhibit II-7.— Summary of All 4 Kids Project Staff Roles and Responsibilities

Position	Summary of Responsibilities	Program Administration	Design and Development	Planning	Implementation	Evaluation Design and Planning	Data Collection	Data Tabulations
<b>Principal and Co-investigators (n = 3)</b>	Conducted general administration of program; assisted in design, development, and planning; provided program oversight during implementation and evaluation phases of project; developed evaluation; provided training to data collectors; developed and reviewed project materials	•	•	•	•	•	•	•
<b>Program Officer</b>	Coordinated demonstration project-related activities; supervised direct educators; reviewed project materials; trained direct educators; provided direct nutrition education, data entry, and tabulations	•	•	•	•	•	•	•
<b>Evaluation Coordinator</b>	Assisted with implementation of evaluation, provision of training, and data entry					•	•	•

## **2. Partnerships**

The principal investigator reported that strong, positive working relationships were developed with the local area Head Start program administrators and individual center directors during the piloting of the All 4 Kids program. These relationships and the invitation of UNCE investigators to the center director meetings was key in helping UNCE to tailor the program to the target audience's needs, understand their scheduling issues, and recruit centers to participate. Additionally, the principal investigator made sure that this program would be designed in alignment with Nevada's preschool Pre-Kindergarten Content standards so that Head Start centers would be interested in not only the program's healthy eating and physical activity goals but also how its teaching methods and messages were aligned with the State's broader educational goals for preschoolers.

## **3. Direct Educators and Their Training**

Three direct educators and the program officer were the lead educators for the spring and summer waves of this demonstration project. Each of these individuals had previous experience working with young children. Two of the lead educators held child development associates (CDA) certification and the two others had worked extensively with special needs children. Three of the four lead educators were also bilingual in Spanish and English. Each lead educator was also accompanied by an assistant teacher who helped conduct the child and family sessions.

The training of the direct educators and assistant teachers was conducted over a two to three week period. The UNCE senior program team held training meetings with the educators to review the lessons, using role plays and demonstrations of different strategies to help them learn how to implement the lessons successfully. The direct educators noted that ongoing, one-on-one feedback and technical assistance from the program officer were also an important part of their training.

## **4. Recruitment of Childcare Centers**

To recruit Head Start centers for this evaluation UNCE contacted the administrators of the local Head Start program (Acelero Head Start) with whom they had previously worked, including two centers that had participated in the pilot.<sup>9</sup> At a Head Start center directors meeting, the county Head Start director presented the option of participating in the All 4 Kids demonstration project. According to the principal investigator, all of the Head Start center directors were very enthusiastic to host the All 4 Kids program and some were so enthusiastic that they contacted the UNCE All 4 Kids faculty to request that they be chosen as an intervention site. During the evaluation interviews, many of the directors said they wanted to participate because of the positive feedback they had heard about All 4 Kids from the pilot sites.

## **5. Recruitment of Parents and Caregivers to Family Activity Sessions**

Before the program was launched at each site, UNCE's All 4 Kids staff hosted three days of open houses at each intervention center to explain the goals and structure of the program and inform parents about the Family Activity sessions. Additionally, before each Family Activity session, fliers were distributed by the All 4 Kids staff through the children's classrooms to inform the parents and caregivers about upcoming Family Activity sessions and encourage their attendance.

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<sup>9</sup> Two of the centers included in the evaluation intervention sample had participated in the pilot; however, the classrooms that participated in the pilot did not participate in this evaluation.

The All 4 Kids staff also requested assistance from the classroom teachers and Head Start directors in recruiting for the Family Activity sessions. Based on key informant interviews, some classroom teachers and Head Start directors reportedly talked to the parents and caregivers of the children in the intervention classrooms at pick-up or drop-off times about the benefit and fun of attending a Family Activity session. The All 4 Kids educators reported that they would also interact with caregivers whenever possible to make a personal connection with them about what their child was learning and the benefits of attending the Family Activity session with their child. The educators reported that highlighting the children's dance performances seemed to be the best way to interest parents and caregivers in the Family Activities.

## **6. Methods for Quality Assurance and Tracking Program Fidelity**

The All 4 Kids senior team played crucial roles in assuring the high quality of the program with periodic program team meetings. The program officer used a combination of onsite observations and logs completed by the direct educators to track the educators' adherence to the lesson plans and provide suggestions for their teaching methods if improvements were needed. Specifically, the program officer conducted four observations of the direct educators in the spring wave and two in the summer wave after the direct educators had gained more experience with the program. The focus of the visits was to observe the direct educators' delivery of the intended content, classroom management capabilities, and use of their teaching assistant. The program officer also developed a form (Community Log) for the direct educators to use after each lesson to document features of the classroom environment, adequacy of the direct educator's lesson preparation, as well as fidelity of the educator's lesson implementation. Key informants indicated that these logs offered the framework for a great deal of useful information for self-reflection by the educators and discussions with the program officer. The program officer periodically reviewed these logs with the educators and offered positive suggestions for their implementation of the curriculum.

## **7. Program Reach**

Six different Head Start centers served as the All 4 Kids intervention sites for this demonstration project. At each center, the program was conducted with two to three classrooms of preschool children and their families.<sup>10</sup> Table II-1 displays the number of children, parents, and caregivers who participated in the program and the number and mean number of children in the classrooms where All 4 Kids was taught during each intervention wave. Across the two implementation waves, 403 children in 22 classrooms participated in All 4 Kids lessons.<sup>11</sup>

According to UNCE program data for the intervention sites, the number of parents and caregivers who attended All 4 Kids Family Activity sessions was approximately one-half (52 percent) of the number of children who participated in the program. The proportion of parents and caregivers who participated in at least one Family Activity session was somewhat higher in the summer wave than the spring wave (59 percent compared to 45 percent). (See table II-1.) Factors that may have limited the program's reach to parents and caregivers are discussed in section D of this chapter, regarding challenges to program implementation.

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<sup>10</sup> At the initiation of this evaluation, UNCE planned to implement All 4 Kids at four centers in the spring wave and two in the summer wave. Due to reduced enrollment in the spring wave and a change from full-day to half-day programming at the summer sites, the program was implemented at four Head Start centers per wave, with two centers participating in both waves. The additional summer wave classrooms did not include any children who had participated previously in the All 4 Kids pilots or in the intervention or control groups for this evaluation.

<sup>11</sup> Child participants are defined as children who attended at least one All 4 Kids lesson in the classroom. Caregiver participants are defined as those who attended at least one of the three Family Activity sessions offered at each center.

**Table II-1.— All 4 Kids Program Reach, by Intervention Wave<sup>a</sup>**

Intervention Wave (number of centers)	Child Reach			Parent and Caregiver Reach	
	Number of Child Participants	Number of Classrooms Where Intervention Took Place	Mean Size of Intervention Classrooms (Number of Children)	Number of Parents and Caregivers Participating in at Least One Family Activity Session	Participating Parents and Caregivers as Percentage of Participating Children
Spring (n=4)	218	12	18	99	45.41%
Summer (n=4)	185	10	19	110	59.46%
<b>Total</b>	<b>403</b>	<b>22</b>	<b>18</b>	<b>209</b>	<b>51.86%</b>

<sup>a</sup> The spring wave was conducted from March-April 2010; the summer wave was conducted from June-July 2010.

Source: UNCE All 4 Kids administrative data

Table II-2 shows the demographics of the children reached by the intervention based on program administrative data. The data are displayed again for each wave of the intervention, though there were no statistical differences between the waves in these characteristics. Not surprisingly, given the demographics of the low-income population in Las Vegas, nearly two-thirds of the children at these centers were identified as Hispanic.

**Table II-2.— Demographics of Children who Participated in One or More All 4 Kids Class, by Center and Intervention Wave**

Intervention Wave	Demographics of Children Enrolled <sup>a</sup>							
	N	Sex		Race or Ethnicity				
		Male (%)	Female (%)	Asian or Pacific Islander (%)	American Indian or Alaska Native (%)	Black or African American (%)	White (%)	Hispanic <sup>b</sup> (%)
Spring	218	51.9	48.1	1.5	0.0	31.3	6.4	60.9
Summer	185	47.8	52.4	0.8	0.0	23.5	6.4	69.2
<b>Total</b>	<b>403</b>	<b>49.9</b>	<b>50.3</b>	<b>1.2</b>	<b>0.0</b>	<b>27.4</b>	<b>6.4</b>	<b>65.1</b>

<sup>a</sup> Child participation is defined as children who attended at least one All 4 Kids lesson at the center.

<sup>b</sup> UNCE collected data to classify participants into one of five race and ethnicity categories. Hispanic ethnicity was one of these five categories.

Source: UNCE All 4 Kids program administrative data

## 8. Program Dosage and Exposure

In addition to the program reach, it is important to know the extent to which children were exposed to the intervention. On average, children in the intervention classrooms attended two-thirds of the intervention lessons (16.6 out of 24 lessons). With an estimated lesson length of 30 minutes per class this translates into 8 hours and 18 minutes of lesson exposure per child (16.6 lessons times 30 minutes per lesson).

Children's average exposure to the intervention was much higher in the spring than the summer wave. In the spring wave, the mean lesson dosage was 19.4 lessons and 92 percent of the children who participated

in at least one All 4 Kids lesson attended at least half the lessons. During the summer wave, children’s exposure to the program was lower, with a mean lesson dosage of 13.9 lessons and only 61 percent of the children who participated in at least one lesson attended at least half the lessons. (See table II-3.)

**Table II -3.— Exposure of Children to All 4 Kids, by Center and Intervention Wave**

Intervention Wave (number of centers)	Number of Total Children Participating in Intervention	Percentage Attending More Than Half (12 or More) of the Intervention Lessons	Number of Lessons That Children Attended	
			Mean	Range
Spring (n=4)	218	91.7	19.4	2-24
Summer (n=4)	185	61.1	13.9	1-24
<b>Total</b>	<b>403</b>	<b>77.7</b>	<b>16.6</b>	<b>1-24</b>

Source: UNCE All 4 Kids administrative data

As discussed above, the number of adults who attended a Family Activity session was 52 percent of the number of children who participated in the program. In this group of 209 adults, one-third attended only one session, one-third attended two sessions, and one-third attended all three sessions offered at their child’s center (see Table II-4).

**Table II -4.— Exposure of Parents and Caregivers to Family Activity Sessions, by Intervention Wave**

Number of Family Activity Sessions Attended	Overall (N = 209) <sup>a</sup>	Spring Wave (n = 99) <sup>a</sup>	Summer Wave (n = 110) <sup>a</sup>
Mean	2.0	2.1	2.0
Number of sessions attended	n (%)	n (%)	n (%)
1 session	69 (33.0)	26 (26.3)	43 (39.1)
2 sessions	71 (34.0)	39 (39.4)	32 (29.1)
All 3 sessions	69 (33.0)	34 (34.3)	35 (31.8)

<sup>a</sup> Includes only caregivers who reported attending at least one All 4 Kids class.

Source: UNCE All 4 Kids program administrative data

## 9. Resources and Costs of Program Implementation<sup>12</sup>

This section discusses the cost of implementing the All 4 Kids program, the sources of funding used by UNCE, and a breakout by budget category. It also includes an analysis, where appropriate, of the costs as they related to the number of individuals served. The detailed budget tables UNCE provided for this evaluation, including a breakout of Federal funding and non-Federal matching funding for each budget category, and a listing of staff resources are included in appendix B.

The costs associated with the demonstration project-led evaluation component are reported separately in chapter IV.

<sup>12</sup> Because All 4 Kids was created over a 2-year period prior to this evaluation study, UNCE did not incur any planning and design related costs during this study period.

**a. Overall costs for program implementation**

Table II-5 shows the actual expenditures UNCE reports as the costs of implementing the All 4 Kids program at the spring and summer wave evaluation intervention sites. Costs associated with implementing the All 4 Kids program for this demonstration project, including direct and indirect costs, totaled \$149,151. Salaries and benefits were the most substantial cost center, accounting for 74 percent of all program costs. The following is a description of the major cost centers of All 4 Kids program implementation and the types of expenditures accounted for in each.<sup>13</sup>

- **Salary and benefits.** This expense includes salaries for the following personnel supporting All 4 Kids directly or administratively for the 9-month period during which this project was implemented:
  - Principal investigators (0.15 FTE)
  - Project officer (0.6 FTE)
  - Direct educators (1.75 FTE)
  - Student assistant teachers (0.5 FTE)
- **Noncapital equipment and supplies.** These expenses are for items used to teach the intervention and items distributed to the participants such as the All 4 Kids Family Pack and CD.
- **Travel.** These expenditures are for local travel to and from the implementation sites.
- **Building space (operational costs).** This cost was for the rental of space at an offsite facility used to store All 4 Kids supplies and materials.

**Table II-5.— Summary of UNCE All 4 Kids Program Implementation Costs (Federal FY 2010)**

Budget Category	Expenditures	Percent of Total Costs
Salary/benefits	\$110,059	73.8
Non capital equipment and supplies	\$15,300	10.3
Travel	\$900	0.6
Administrative	\$0	
Building/space	\$900	0.6
<b>Total Direct Costs</b>	<b>\$ 127,159</b>	<b>85.3</b>
Total Indirect Costs	\$21,992	14.7
<b>Total Costs</b>	<b>\$ 149,151</b>	<b>100.0</b>

Source: Cost data provided by UNCE (see “Resource and expense tracking form” in appendix B)

**b. Program cost per participant**

Cost per program participant is difficult to calculate. Depending on the type of intervention, one can calculate this cost based on the number of participants who actually received a single intervention dose, those who completed the entire intervention, or those enrolled in a classroom where interventions were being conducted, whether or not they attended all interventions or received materials. In addition, costs for parent and caregiver direct involvement in the intervention and costs of indirect education (take-home materials) are hard to distribute and account for in any sort of cost allocation by participant type. Therefore, it was determined that the logical construct for reporting cost per “participant” was to use the

<sup>13</sup> Budget justification language was provided by UNCE and FTE information was extracted from the “Program Resource and Expense Tracking Form” completed by UNCE (see appendix B).

number of child participants as the basis for calculations. Using the total costs for the demonstration program implementation (\$149,151) as the numerator and the total number of children who participated in at least one All 4 Kids class (n=403) as the denominator, the estimated program cost per child participant was \$370.10.

## D. Factors Affecting Program Implementation and Opportunities for Improvement

The UNCE staff members responsible for implementing the All 4 Kids program at the intervention sites and the Head Start center staff members emphasized many factors in the program’s design that they said made it an easy and effective program to implement and contributed to it being well-received by the target audience. The oversight and quality assurance systems developed for the program officer were especially important in promoting the delivery of the program with fidelity. All 4 Kids’ focus on child, parent, and caregiver learning was also perceived as key to its acceptance by most Head Start program staff members. At the same time, key informant interviews and the onsite observations of All 4 Kids classes and Family Activity sessions identified several challenges to implementing this demonstration program. Most of the implementation challenges would be relevant for future replication and represent key opportunities for program improvement, while some were specific to scheduling and unexpected changes at the intervention sites during this particular demonstration project.

The most commonly reported facilitators and challenges to program implementation are shown in exhibit II-8. Facilitators and challenges are described in more detail below with quotes included from key informants to highlight their perspectives.

### Exhibit II-8.— Key Facilitators and Challenges to All 4 Kids Implementation

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#### Facilitators

- Program design, methods, and messages well received by center staff
- Widespread parent and caregiver satisfaction
- Support from most Head Start directors and classroom teachers
- Culturally appropriate materials and bilingual staff members
- Strong focus on continuous quality improvement

#### Challenges

- Maximizing parent and caregiver awareness and engagement
- Limited implementation support at some centers
- Limited space for Family Activities
- Limited staffing relative to demonstration project scope
- Implementing in summer
- Availability of fruits and vegetables in the home

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### 1. Facilitators

#### ▲ Program design, methods, and messages were well-received by center staff

When asked what factors contributed most to promoting quality and successful implementation of the program, the majority of key informants—including the direct educators and the Head Start center directors and teachers—pointed to the engaging design and format of the All 4 Kids curriculum. The fact that the All 4 Kids program lesson plans address the State’s preschool Pre-Kindergarten Content

standards was noted as an additional attribute of the program that made it attractive and well received by Head Start directors.

*"This [All 4 Kids] has been great to have in the center. The kids love it; they love the teachers who come in, and the kids are singing and dancing all the time .... The fact that I know the [Nevada Preschool] standards are in the program just makes it a no-brainer."*

—Head Start director

*"I really enjoyed the program and thought it was a fabulous way to incorporate nutrition into a classroom. Fun and fabulous! I just hope that the program will roll over in the new school year."*

—Head Start teacher

Head Start staff uniformly indicated that the All 4 Kids program was fun for the children, parents, caregivers, and teachers and that it effectively promoted enthusiasm for the subject matter with simple messages that can aid in the retention of knowledge.

*"The information was given to the children first at school and then provided to the parents at home. Having this linkage was very helpful to reinforce the program's messages. And the music—even I have to groove to those songs!"*

—Head Start director

*"I would say simply the motto 'healthy, happy, active, and fit,' something simple for kids to grasp that gets them excited and delivers the message. I hear them refer to [All 4 Kids] at lunch and breakfast, saying, 'This is a Whoa Food' or 'This is a Go Food,' and I definitely encourage this. So mealtime is where it is mostly discussed."*

—Head Start teacher

Several Head Start directors and classroom teachers reported that the All 4 Kids take-home materials were also very well designed and engaging. The Family Activities with dance performances were singled out by many Head Start staff members as effective ways to engage parents, caregivers, and children.

*"Just bringing all the kids and doing a joint dance—I could tell they all had a lot of fun with that and the other activities. They had fun trying new foods and the obstacle courses, and the parents could have fun with their kids, too. And I think at any performance with parents, the kids always enjoy showing off to their parents."*

—Head Start teacher

### ▲ Widespread parent and caregiver satisfaction

As noted in the methods section above, all of the parents and caregivers in the focus groups had attended at least one Family Activity session. When focus group discussants were asked for their views about the program and its impact on them and their children they spoke with great enthusiasm about the program. Parents and caregivers were very pleased that their preschoolers were beginning to use the new healthy food language they learned in the All 4 Kids classes. Not only were their children able to discern between healthy and unhealthy foods and snacks, but they were able to vocalize their preferences effectively to their parents and caregivers. Many specifically discussed their children's increased fruit and vegetable consumption, as well as changes in their own diets. Several parents and caregivers told stories of children

choosing fruits for the first time at meals or snacks, and others praised the program for having made their children eager to try new vegetables.

*"My daughter loves to eat fruits after each meal, and that is something she would not do before. Before, she would eat junk and go out and play, and now she wants to have a fruit or something else, and she is changing. She tries to eat more fruit; that is a change from before."*

—Caregiver focus group participant

*"My thing is that my son tries new vegetables now! Before [All 4 Kids], he wouldn't try new foods at all, and now he tries new foods. And he eats broccoli. He wouldn't eat broccoli, and now he does."*

—Caregiver focus group participant

When asked why they came to the Family Activity sessions, focus group participants identified several reasons. They often mentioned a desire to observe what their child was learning and see their child perform in the dance. However, the most commonly referenced reason was that they wanted to learn how to help their children develop good habits from a young age.

*"They learn everything they need to know in their first few years, and then they elaborate on that ... And I'm not the perfect example, so I think, as far as a role model for healthy eating for my kids, so this was a good thing for him, because I don't eat the healthiest things. But I try to get them to, because I want them to do better than I've done."*

—Caregiver focus group participant

The parent follow-up survey also found that parents and caregivers highly valued the All 4 Kids materials. When asked how useful the All 4 Kids program materials were in helping their child eat healthier foods, 86 percent of survey respondents reported that these materials were "very useful" or "useful." Among parents and caregivers who reported attending at least one Family Activity session, 93 percent reported that they found these sessions "very useful" or "useful" in helping their child eat healthier foods. (See figure II-1.)

The majority of the parents and caregivers in the focus groups also said that the All 4 Kids program provided practical and relevant information they could use to help their children.

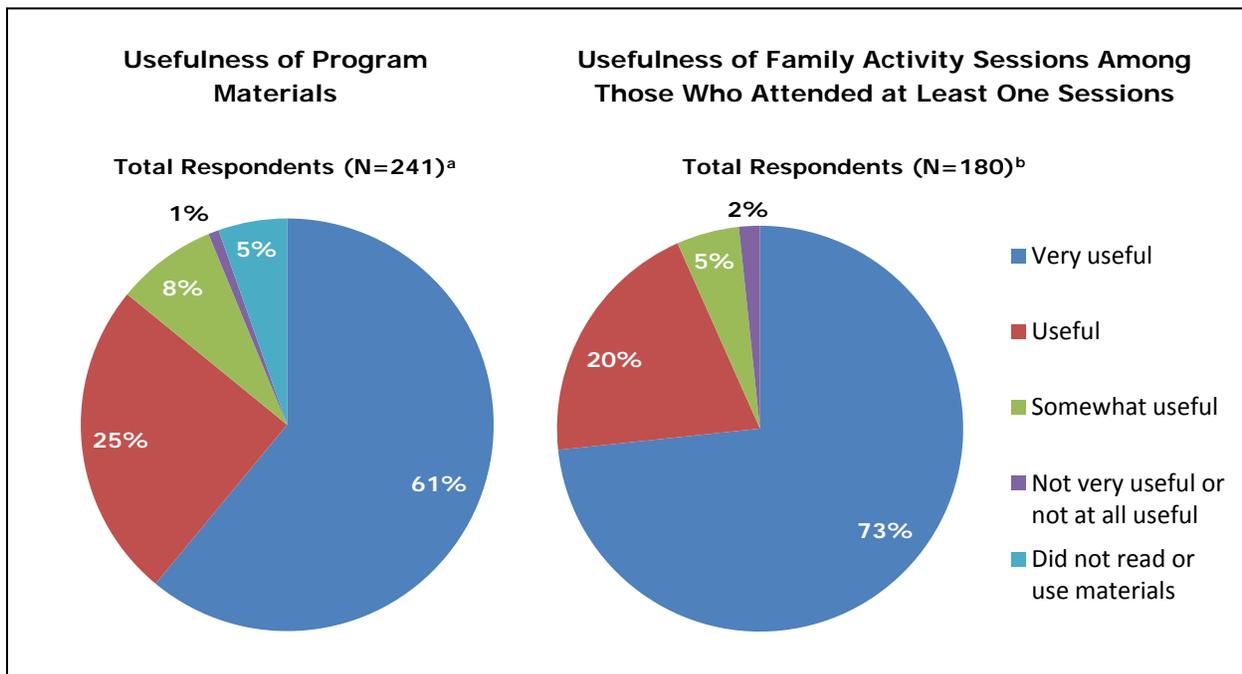
*"For me it [All 4 Kids] was very useful, because [All 4 Kids educators] show you how to select healthy fruits or that you can go outside and play with the kids outside. The kids will ask you for [healthy food and exercise]. I try to have more fruits and vegetables now at home to be at their reach."*

—Caregiver focus group participant

*"I loved it all. I'm serious. I loved it all, because as it taught her, it taught me—because everything she brought home that would help her was helping me."*

—Caregiver focus group participant

**Figure II-1.— Parents’ and Caregivers’ Perceptions of the Usefulness of the All 4 Kids Program Materials and Family Activity Sessions in Helping Their Child Eat Healthier Foods**



<sup>a</sup>The number excludes the three survey respondents who responded “don’t know” or did not answer this question.

<sup>b</sup>The number excludes the one survey respondent who attended a family activity session but did not respond to this question.

Source: Parent follow-up survey descriptive tables for process questions, table B-4 on “Parent/Caregiver Satisfaction With All 4 Kids Program Materials and Family Activity Classes,” in appendix B

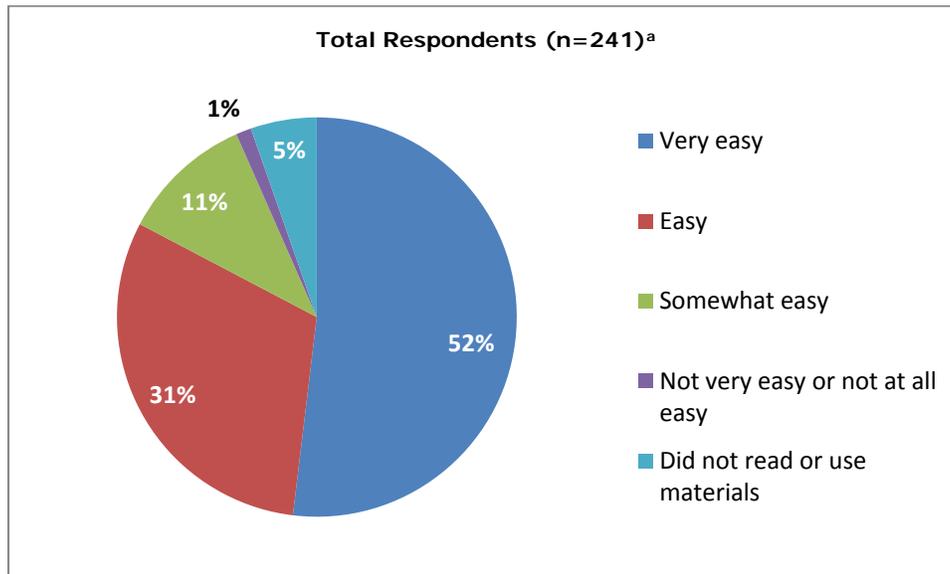
When asked what aspect of the program their children most liked and may be useful in helping them to change their behaviors, several parents and caregivers highlighted the music CD that was given to them.

*“He [my son] will tell me what is the healthiest snack for him, and in the car he will sing his song about healthy foods. They gave him a CD at the program, and he is constantly listening to it. There is an exercise they do here—something about apples and how they cut them, and that is what he dances to.”*

—Caregiver focus group participant

Although not specifically cited as contributing to their satisfaction, when the survey respondents were asked about their level of understanding of the All 4 Kids materials, 83 percent reported that the materials were “very easy” or “easy” to understand (see figure II-2).

**Figure II-2.— Parents' and Caregivers' Level of Understanding of All 4 Kids Program Materials**



<sup>a</sup> The number excludes the three survey respondents who responded "don't know" or did not answer this question.

Source: Parent follow-up survey descriptive tables for process questions, table B-4 on "Parent/Caregiver Satisfaction With All 4 Kids Program Materials and Family Activity Classes," in appendix B

The widespread satisfaction with the program among those who had attended Family Activity sessions was epitomized by the recommendation from several parents and caregivers that All 4 Kids be expanded to a year-round program at their center.

**▲ Support from most Head Start directors and classroom teachers**

Head Start directors and teachers were responsible for ensuring that All 4 Kids materials were posted and distributed in the Family Packs and reminding parents and caregivers to attend Family Activity sessions. Each of the interviewed All 4 Kids staff members noted that the level of commitment of the Head Start director was critical to the engagement of the parents, caregivers, and classroom teachers. For example, directors who were engaged and supportive not only helped in scheduling the child classes and family events but also with generating support among classroom teachers, who then encouraged parent and caregiver involvement. Engaged Head Start center directors, they said, were also more likely to talk to the parents and encourage them to read and use the All 4 Kids materials with their children at home. At intervention sites with higher levels of director support for the program, the educators reported that the directors worked hard both to recruit parents to the Family Activities and to promote teacher buy-in. While most directors strongly supported the program, a few Head Start directors accepted the program at their site but offered little support.

According to the direct educators, teacher presence and engagement in the classroom was also an important factor in executing the lesson as planned. Classroom teachers were not asked to help teach the All 4 Kids classes, but they were encouraged to participate in the dances and movement activities and to stay in the classrooms during the All 4 Kids lessons to prevent and address behavioral issues among the children. During the nutrition education observations, evaluation data collectors noted that teachers did stay in the classroom during the lessons and helped with behavioral problems that might have otherwise

disrupted the lesson. In most of the classrooms there were some children with special needs; teachers or aides who remained in the classroom also provided assistance to these students during the lesson.

Not only did the Head Start teachers help maintain classroom order during the lessons and support individual children as needed, many reported using the All 4 Kids CD in the classroom at various times throughout the day. Additionally, all of the Head Start teachers who completed in-person interviews or mail questionnaires reported that they repeated the nutrition messages from the All 4 Kids lessons at least once a week in the classroom or at mealtime. The following examples from teachers' open-ended survey responses explain how they were using these materials.

*"With the kids, I used the lessons a lot. I discussed nutrition and how staying active helps their health. I also used the dance routines and used the new vocabulary words."*

—Head Start teacher

*"I mostly used the All 4 Kids materials during mealtimes, encouraging the children to think about what they are eating."*

—Head Start teacher

#### **▲ Culturally appropriate materials and bilingual staff**

As discussed in section C above, for both waves of the intervention, 65 percent of the children who participated in the intervention were of Hispanic origin. There was a stated commitment on the part of the All 4 Kids staff to meet the needs of the Hispanic population. The translation of materials into Spanish was seen not as an option, but as an integral step in the development of the All 4 Kids program. The All 4 Kids principal investigator stated that with the very high percentage of Hispanics in the Las Vegas area it was critical to the program's success to have all materials available in Spanish. The principal investigator also noted the importance of the bilingual (Spanish and English) educators in the All 4 Kids program. Teachers also commented positively on the fact that all of the program materials were translated into Spanish and the foods served and mentioned in the Family Connection materials were culturally appropriate.

*"The music was easy to incorporate, especially after receiving the CD of songs. It was also helpful to have the materials in Spanish, since many kids and families served by the center are Spanish speaking."*

—Head Start teacher

*"The All 4 Kids lessons had foods from several different ethnic groups and introduced new foods as well. All the cultures are taken into consideration in language, and unit 3 of our lessons really addresses accepting others—and the dances."*

—All 4 Kids direct educator

#### **▲ Strong focus on continuous quality improvement**

When asked about the strengths of the All 4 Kids program, a common theme in the interviews with the UNCE project team was the emphasis on feedback and continuous quality improvement. The direct educators repeatedly remarked that the UNCE principal investigators, while trying to help them implement the curriculum and messages, were also always open to their ideas about ways to improve the program. Several educators specifically stated that the class observations and feedback that they received

from the program officer helped them improve the quality of their implementation and develop new ideas to use in their work. The educators also discussed the importance of the All 4 Kids Community Logs in helping them improve their teaching methods. During interviews, direct educators indicated that they valued the time to “figure out what worked and what didn’t work so we could get better and better at teaching the kids.” During the independent evaluation’s nutrition observations, it was noted that the All 4 Kids Community Log was used by the lead educator and assistant after the classes and promoted discussion about what worked well and what they could improve upon in their own teaching styles.

The All 4 Kids management team said they greatly appreciated the feedback provided by the direct educators through the Community Logs. If a part of the curriculum was identified as needing improvement, the management team would begin to study the issue and observe the lessons in question. Although changes were not made to the lessons and activities during this evaluation, records were kept and changes have since been made by UNCE to improve the program as the All 4 Kids program staff members continue to implement the program in Nevada and expand it to other States.

## 2. Challenges

### ▲ Maximizing parent and caregiver awareness of and engagement in the program

Maximizing participation of parents and caregivers in the All 4 Kids Family Activities proved to be a challenge for this intervention. As shown in tables II-1 and II-4 above, 52 percent (209 of 403) of parents and caregivers of children who participated in the intervention classrooms attended at least one of the All 4 Kids Family Activity sessions, and 17 percent (69 of 403) attended all three of the sessions offered. Among surveyed caregivers who reported not participating in any sessions or missing some of the Family Activity sessions, the most commonly reported reason was that “class times were offered at times that did not work.” This reason was cited by 47 percent of caregivers who did not attend any sessions and 43 percent of those who missed some of the sessions. Scheduling related to work demands was the reason for nonattendance among 12 percent of survey respondents who did not attend any of the Family Activity sessions. (See figure II-3.)

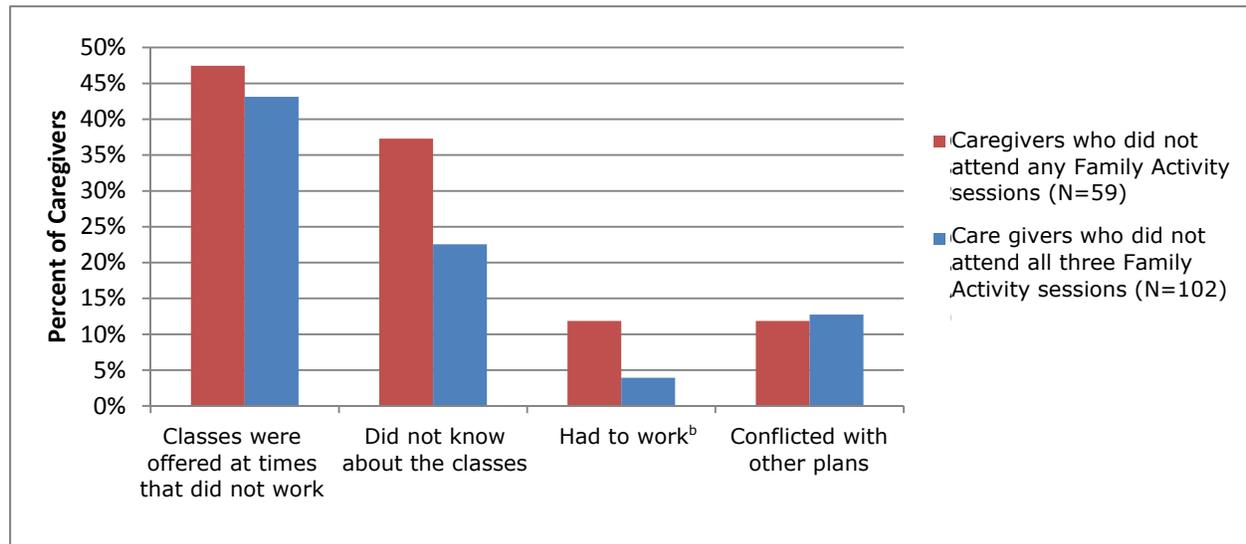
When Head Start directors and teachers were asked why parents and caregivers did not participate at all or more often in these events they also pointed to scheduling as a problem. They said they tried multiple ways to recruit parents to attend, but that the timing of the Family Activity sessions was an obstacle. At the same time, the Head Start staff and participants in the caregiver focus groups agreed that no one time would ever fit the schedules of all parents and caregivers.

*“Pulling the parents in was the biggest challenge. We just worked with parents every day, trying to get them more involved. We talked with the parents when they dropped their children off in the mornings and also at the monthly meetings with parents. There were also letters mailed to parents to remind them about the parent classes. We did all we could.”*

—Head Start director

Despite the large amount of materials that were reportedly sent home about the Family Activities, the second most common reason parents stated for not attending classes was that they were unaware of them. Among survey respondents who did not attend any All 4 Kids Family Activities, 37 percent said it was because they did not know about the sessions (see figure II-3). (For a listing and frequency of all responses to this question, see “Parent and caregiver follow-up survey: Descriptive tables for process questions,” table B-2 on “Reasons for nonparticipation in the All 4 Kids family events,” in appendix B).

**Figure II-3.— Most Commonly Reported Reasons for Nonparticipation in the All 4 Kids Family Activity Sessions<sup>a</sup>**



<sup>a</sup> Respondents could select multiple responses.

<sup>b</sup> Write-in responses provided by caregivers.

Source: Parent and caregiver follow-up survey descriptive tables for process questions, table B-2 on “Reasons for Nonparticipation in All 4 Kids Program Family Activity Sessions,” in appendix B

Parents in the focus groups, who had attended the Family Activity sessions, noted that the dance performances were a particular draw for them to come to the sessions. However, they suggested that other parents and caregivers like them may plan to come to the sessions but forget on the day of the event and could benefit if they received a call to remind them the day before the family events.

**Opportunities for Improvement.** Given the lower than hoped for parent and caregiver attendance, UNCE has already decided to develop a calendar listing all of the Family Activity session dates and times. It may be particularly helpful for this calendar to be distributed by the Head Start directors and in the Family Packs at the beginning of the program cycle and again at least one week before each family event. It may also be useful to schedule the three Family Activity sessions at different times of the day to meet families’ work and other scheduling needs. Based on the remarks of focus group participants, UNCE should also consider instituting reminder calls the day before each session, emphasizing that their child will be performing a dance.

**▲ Limited implementation support for the program at some centers**

When asked about facilitators and challenges to implementation, All 4 Kids staff said that the level of engagement by the center director could be either a major facilitator or an obstacle to successful program implementation. The educators said that part of the recruitment effort for All 4 Kids is designed to secure the buy-in of the directors, but that this is not always successful. The UNCE principal investigator and program officer suggested that the very low parent and caregiver participation may be due in large part to variability in center staff’s engagement with the program and thus also in their willingness to conduct their own recruitment efforts for these sessions. A majority of the All 4 Kids staff reported that at centers where

the director was not helpful in planning the logistics and scheduling of the program or in recruiting for the Family Activity sessions, there was also less teacher support for these aspects of program implementation.

*“Foundation has to be at the centers—have to have director and teacher buy-in, so classroom teacher training and being visible in that center is really important. You have to have classroom teacher support. Classroom teachers are key to parents getting materials in the Family Packs to go home. Focusing on building relationship with center directors and teachers was one of our biggest lessons learned.”*

—All 4 Kids staff member

**Opportunities for Improvement.** While most direct educators at the intervention sites said that Head Start center directors and teachers were largely supportive and had received training on the All 4 Kids program at an orientation meeting, they had specific recommendations for promoting buy-in among center directors and teachers. In implementing the program in the future, All 4 Kids staff members urged a stronger emphasis on building relationships with the Head Start staff at each center, including meeting with them one-on-one before the classes start at their center. At the same time, the project officer and direct educators recognized that there may continue to be challenges in securing support from all center directors for program implementation. They mentioned that many childcare centers operate with very limited or reduced budgets and staff and some directors may not be welcoming or willing to assist outside programming conducted at their site.

#### ▲ **Limited space for Family Activities**

While some centers had large rooms or open areas available for the Family Activity sessions, others did not (as was observed during the onsite visits). The principal investigator, program officer, and several All 4 Kids direct educators and Head Start center directors noted that the physical space available for the Family Activities was inadequate. One center director commented, “Finding enough space for the parent classes was our biggest challenge.” The All 4 Kids educators added that they could adapt the lessons and activities to the space available, but the activities would have been much easier to lead with a larger space and limited space may have negatively impacted parent turnout.

*“When we had room and space, the parents could get involved more. When there wasn’t enough room, parents couldn’t engage as much with their kids.”*

—All 4 Kids program direct educator

This concern was echoed by several focus group participants who noted that the room for the family sessions was too crowded. They suggested that they would have been able to engage with the children and talk with the direct educators more effectively if fewer children and adults were in the same room.

*“That was one thing, it was a little chaotic and crowded ... the first time, there were so many parents that showed up ... I think maybe if it could be at different times and then it wouldn’t be so loud and so many people. We could have heard the music better. We could have done the dances with more room.”*

—Caregiver focus group participant

**Opportunities for Improvement.** Key informants suggested that limiting the number of participants in each of the Family Activity sessions could allow for more interaction between parents or caregivers and the All 4 Kids educators and between parents and caregivers and their children. UNCE’s SNAP-Ed program staff should consider the option of holding these sessions at multiple times at each site and

inviting fewer families to each session. If resources permit, they should also consider expanding the All 4 Kids curriculum to include classes for parents and caregivers only.

#### ▲ **Limited staffing relative to demonstration project scope**

Because this project was designed around a model of SNAP-Ed that could withstand a rigorous impact evaluation, UNCE needed to modify its customary approach to conducting All 4 Kids to meet the needs of the independent evaluation. All 4 Kids was taught in more Head Start centers and more classrooms than ever before in order to meet the rigor of the independent evaluation. However, increasing the numbers of classes taught and the number of Head Start centers engaged for a short implementation period was a difficult challenge for the limited number of direct educators and other All 4 Kids project staff members available. All 4 Kids staff members reported that they were effective in implementing all of the lessons in the curriculum at each intervention site, but they also said they felt stressed and “very stretched” by the increased workload.

*“If we had just been in nine classes, which is what All 4 Kids had typically done, things would have been easier. We were running at least 12 classes at a time in the spring, and that was really hard on the staff. There is a heavy burden on the staff to teach six classes a day—more classes than teachers were used to. Teaching more classes also impacted the ability to keep consistent teaching teams.”*

—All 4 Kids staff member

**Opportunities for Improvement.** The scheduling and staff issues encountered during the demonstration project may be unique to the demands of the independent evaluation to implement the program at four different sites in a two-month period instead of the curriculum’s usual 12-week cycle. When UNCE schedules the classrooms for the program in the future they are committed to providing adequate staffing levels to support the program’s planned reach.

#### ▲ **Implementing in summer**

When UNCE agreed to expand its initial application plan to expand the demonstration project to the summer months, the principal investigators recognized that attendance in childcare during the summer could be uneven from week to week for several reasons. For example, during the summer months the centers have a relaxed attendance policy compared to the school-year when children can be dropped from the program if they are absent more than a set number of days. The summer wave Head Start intervention sites also had to reduce programming length from a full-day to a half-day. This contributed to some families moving their children out of Head Start into other childcare arrangements for the summer.

As noted in the presentation of data on All 4 Kids child exposure to the intervention, during the summer wave of the intervention only 61 percent of the children attended at least one-half (12 out of 24) of the classes, compared to 92 percent in the spring wave (see table II-3 above). Given the obstacles to effective summer implementation of the program, it is not surprising that parent use and perceptions of the usefulness of All 4 Kids take-home materials were weaker in the summer wave than the spring wave. Among summer wave survey respondents, 76 percent found the materials very useful or useful, compared to 93 percent in the spring wave. Moreover, nearly one in ten (9.5 percent) survey respondents in the summer wave said they did not read or use any of the All 4 Kids materials, compared to 2 percent of respondents in the spring wave (Appendix B, Parent and caregiver follow-up survey descriptive tables for process questions, B-4).

**Opportunities for Improvement.** UNCE faculty recognized that implementing any educational program in the summer months at Head Start centers would be a challenge. In response, they have determined that future implementation of this program at Head Start centers should occur only during the school year.

▲ **Availability of fruits and vegetables in the home**

In the focus groups, caregivers discussed a concern about their ability to keep enough fruit and vegetables in the house, along with the added expense of maintaining a supply of fruits and vegetables. Although fresh fruits and vegetables are available year-round in Nevada, caregivers still reported seasonal variation in cost. Many caregivers spoke of the expense of maintaining an adequate household supply of fruits and vegetables. The spoilage of overripe fruits and vegetables was also mentioned frequently as an issue.

| *“Yeah, storing the fruits and veggies makes it hard to have them around all the time. Because they don’t tend to last as long.”*

—Caregiver focus group participant

| *“Many times the healthy fruits and vegetables are not accessible to everyone because some things are expensive.”*

—Caregiver focus group participant

**Opportunities for Improvement.** Maintaining a supply of fresh fruits and vegetables in the home can be a challenge, particularly for persons of limited financial means. Given the problems described by caregivers, All 4 Kids educators could discuss the issue of cost and spoilage directly with the parents and caregivers during the Family Activity sessions and take-home materials could include simple written materials on meal planning and shopping on a limited budget, and food storage tips. Consistent with the current (2010) Dietary Guidelines for Americans, program materials and educators should encourage the use of all forms of fruits and vegetables, including fresh, frozen, canned and dried (USDA, CNNP, 2011).

To help parents stretch their shopping dollar, the materials sent home to parents and caregivers could also be revised to ensure that several recipes include the same fruits or vegetables. As a way to motivate the parents to read and use the information, UNCE could consider presenting this information in a format that would allow the children to decorate the pages and bring them home to their parents. Additionally, All 4 Kids should include informational materials to help parents and caregivers access food assistance programs they may be eligible for including SNAP, the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), and emergency food programs.

# Chapter III • Impact Evaluation Methods and Results

## A. Conceptual Framework for the Impact Evaluation

To provide an integrative understanding of the impacts of the All 4 Kids program, the analysis was guided by a conceptual framework that helped track the range of potential program effects. The framework enabled the evaluation of the effects of the All 4 Kids program through the specification of secondary outcomes that link the intervention to the long-term outcome of children’s average daily at-home consumption of fruits and vegetables. The secondary outcomes capture, in greater detail, the complexity of the behavior change process. The greater the number and strength of the changes seen among the secondary outcomes, the greater the likelihood of observing changes in fruit and vegetable consumption.

The framework presented in figure III-1 is adapted from Green and colleagues (1980). It has been applied in other studies to capture the main types of secondary outcomes associated with changes in nutrition behavior (Mullen, Hersey, & Iverson, 1987). The secondary outcomes include mediating factors and short-term outcomes. Three main types of mediating factors can influence changes in dietary consumption:

- Predisposing factors include the knowledge and attitudes of an individual related to the motivation to act. In this evaluation, an example of a predisposing factor is the willingness of a child to try new fruits and vegetables.
- Enabling factors include the skills and resources needed to engage in good nutrition. In this evaluation, an example of an enabling factor is the availability of fruits and vegetables in a child’s home.
- Reinforcing factors include factors that help reinforce healthy nutrition. In this evaluation, an example of a reinforcing factor is a parent offering fruits and vegetables as options for snacks or at dinner.

These mediating factors could affect dietary-related behaviors that include the following short-term outcomes: (1) child helped self to fruits or vegetables as a snack and (2) daily variety of fruits and vegetables eaten by the child. These short-term outcomes are directly related to lessons in the All 4 Kids curriculum. For example, according to the model, greater willingness to try new fruits and vegetables may influence the frequency with which a child eats a variety of fruits and vegetables or asks for fruits or vegetables as a snack. Changes in these short-term outcomes might, in turn, influence at-home consumption of fruits and vegetables.

### Key Findings

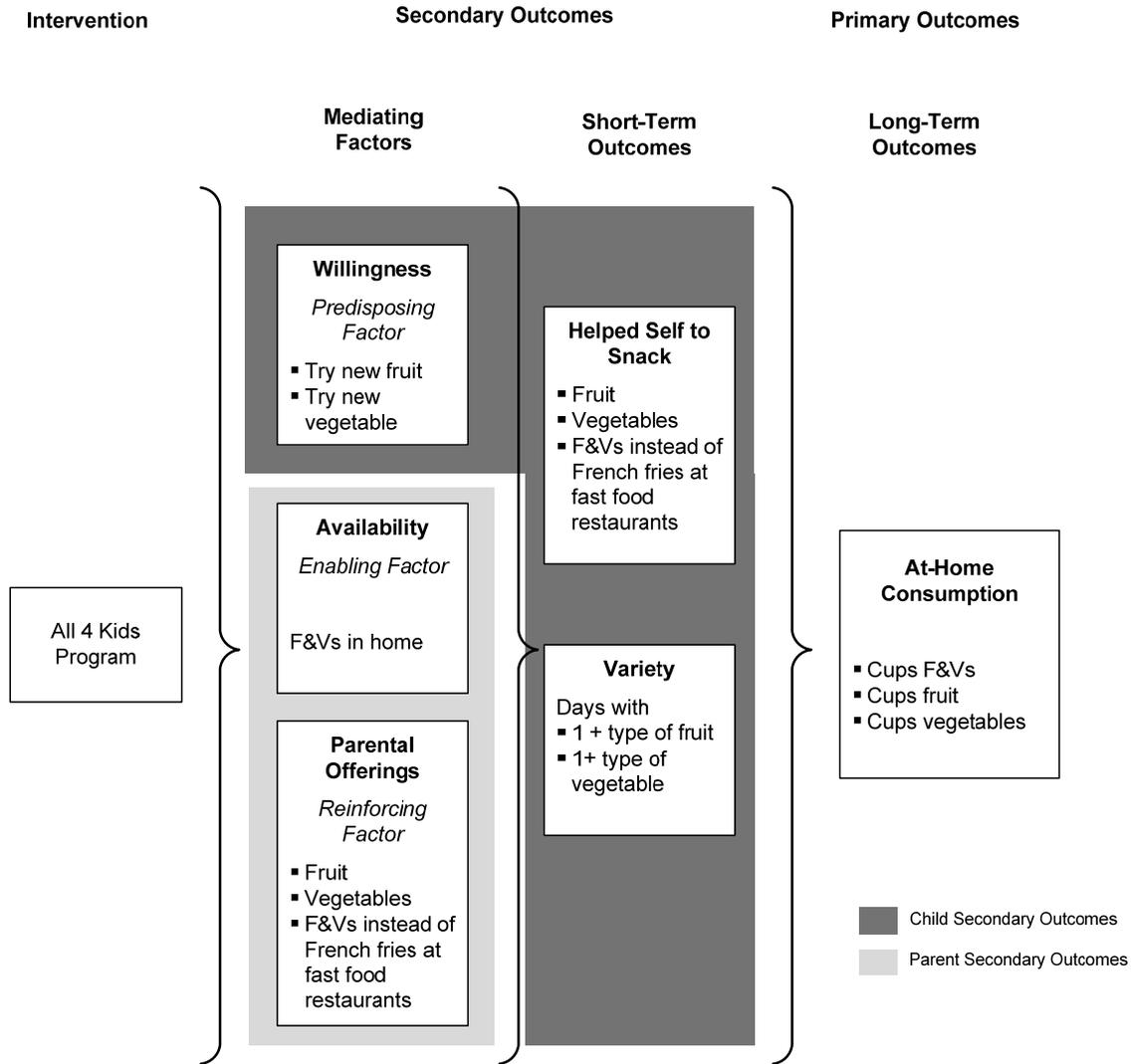
#### Primary Impacts

- The All 4 Kids program had no statistically significant impact on children’s average daily at-home consumption of fruits and vegetables.

#### Secondary Impacts

- There were trends suggesting that children exposed to the All 4 Kids program were more likely to help themselves to or request vegetables for snacks and were more willing to try new fruits compared with children not exposed to the program.

**Figure III-1.—Conceptual Framework for the All 4 Kids Program Impact Evaluation**



Adapted from: Green, L. W., Kreuter, M. W., Deeds, S. G., & Partridge, K. B. (1980). *Health education planning: A diagnostic approach*. Palo Alto, CA: Mayfield Publishing Co.

This conceptual framework is helpful in tracking program impacts, but it is not intended to represent a comprehensive logic model for the All 4 Kids program. The program could also affect consumption through other pathways that are not reflected in this framework. Nonetheless, the use of this conceptual framework helps provide a fuller evaluation of the impacts of the All 4 Kids program.

## **B. Methodology**

### **1. Evaluation Design and Sample Selection**

The All 4 Kids program evaluation was designed to examine the implementation and impact of the program at Acelero Head Start Centers in Clark County (Las Vegas), Nevada, using a quasi-experimental research design. A fully randomized design was not appropriate because 2 of the 12 centers had been previously exposed to the intervention and needed to be assigned to the intervention condition. Centers were matched based on primary language (English versus Spanish) and center size (the number of children enrolled at the time of sample selection). With the exceptions of the two centers that had previous exposure, random assignment was made to the intervention or comparison group. Pairs of centers were assigned to the spring or summer wave of the evaluation study.

Several challenges during baseline data collection affected the final assignment of centers. Center enrollment was anticipated to be 60 students per center, but actual enrollment was about 50 to 55 students per center. Cecile Walnut, a comparison center that was matched with an intervention center for the summer wave of the evaluation study, did not operate during the summer, so it was necessary to collect data from this center during the spring wave. To increase the number of study participants for the intervention group, UNCE implemented the intervention at additional classrooms at the Herb Kaufman and the Yvonne Atkinson Gates centers during the summer wave of the evaluation. Because all classrooms were surveyed during the spring wave, it was not possible to collect data during the summer wave for the corresponding comparison centers. Thus for the four centers that received the intervention during the summer, only one corresponding comparison center was surveyed during the summer.

Sample size was estimated following commonly accepted evaluation practices (i.e., 80 percent statistical power and a type I error rate of 0.05 with a two-tailed test). Sample size estimation was based on observing a change in reported daily at-home consumption of fruits and vegetables combined of 0.30 standard deviation units or better, as specified by the Food and Nutrition Service (FNS). Estimates are based on a statistical model that assesses change across time between the intervention and comparison groups. This analysis indicated that to observe a net difference of 0.30 cups with six centers in each study condition, completed baseline and follow-up information would be needed from 480 parents or caregivers. Appendix I provides additional information on the evaluation design and sample size calculations.

### **2. Primary and Secondary Outcome Measures**

Exhibit III-1 lists the primary and secondary outcome measures for the impact evaluation of the All 4 Kids program. The independent evaluators estimated the impact of the program on the primary outcome measure of the child's average daily at-home consumption of fruits and vegetables as reported by their parents. It was hypothesized that children participating in the program would increase their average daily at-home consumption of fruits and vegetables by approximately 0.30 cups per day compared with children not participating in the program. The secondary outcome measures describe mediators and short-term outcomes that may influence at-home consumption of fruits and vegetables. The secondary outcome measures are grouped into two categories: (1) child's other dietary behaviors and (2) parent behavior and household variables.

## Exhibit III-1.— Primary and Secondary Outcome Measures for the All 4 Kids Program Impact Evaluation

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### Primary outcomes: child's dietary intake at home

Cups of fruits and vegetables consumed each day<sup>a</sup>

Cups of fruits consumed each day

Cups of vegetables consumed each day

### Secondary outcomes: child's other dietary behaviors at home

Number of days child ate more than one type of fruit during past week

Number of days child ate more than one type of vegetable during past week

Number of days child helped self to or requested fruit as a snack during past week

Number of days child helped self to or requested vegetables as a snack during past week

Willingness to try a new kind of fruit

Willingness to try a new kind of vegetable

Frequency that child asked for fruits or vegetables instead of French fries when eating at fast-food restaurants<sup>b</sup>

### Secondary outcomes: parent behavior and household variables

Availability of fruits and vegetables at home during past week<sup>c</sup>

Number of days parent offered fruit as a snack during past week

Number of days parent offered fruit at dinner during past week

Number of days parent offered vegetables as a snack during past week

Number of days parent offered vegetables at dinner during past week

Number of days parent made child eat everything on his or her plate

Frequency that parent ordered fruits or vegetables for child instead of French fries when eating at fast-food restaurants<sup>b</sup>

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<sup>a</sup> This measure represents an index of dietary intake created by summing two survey items: one asks for the number of cups of fruit eaten in the home and the other asks for the number of cups of vegetables eaten in the home. Each survey item includes response options that range from "none" to "three or more cups" giving the index a range of "zero" to "six or more."

<sup>b</sup> Response categories were converted to a dichotomous variable, with 0 = "never" or "seldom" and 1 = "sometimes," "most of the time," or "almost always."

<sup>c</sup> Calculated an index score (0–7) based on the number of the following fruits and vegetables available in the home during the past week: bananas, apples, grapes, mangoes, kiwis, carrots, and jicamas.

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### 3. Instrument Development and Testing

To develop the impact evaluation instruments for the baseline and follow-up surveys, the independent evaluators reviewed the University of Nevada Cooperative Extension's (UNCE's) application and the program curriculum and talked with the UNCE project staff to identify the primary and secondary outcome measures for the intervention. Existing instruments as compiled for the literature review conducted for this study (Altarum Institute and RTI International, 2009) were reviewed to identify those that address these outcomes and are feasible, appropriate for the target audience, reliable, valid, and sensitive to change.

In developing the impact instruments, the appropriateness of the instruments for collecting data on fruit and vegetable outcomes was assessed. Exhibit III-2 provides information on the study population, mode(s) of data collection, reliability, validity, and sensitivity to change for the instruments used to develop the questionnaire items on outcome measures. The majority of the items were taken or adapted from instruments that have been administered successfully with low-income audiences, validated, and demonstrated to be reliable and sensitive to change in previous studies.

For the primary outcome measures, child's dietary behavior, questions from previously validated instruments, the Food Stamp Program Fruit and Vegetable Checklist (Townsend, Kaiser, Allen, Joy, & Murphy, 2003) and University of California Cooperative Extension Food Behavior Checklist (Townsend, Silva, Martin, Metz, & Wooten-Swanson, 2008), were modified to ask the respondent (parent or other caregiver) to report on his or her child's consumption of fruits and vegetables. Respondents were instructed not to include meals eaten at childcare so that they were reporting only on observed consumption behavior.

Two rounds of interviews with parents and caregivers were conducted to test and refine the instruments. The readability of the instruments was assessed using the Fry Test, which examines the proportion of syllables and sentence length and is a commonly used measure of reading level (Fry, 1968). Generally, the questions were at the fifth-grade reading level. Appendix C provides a copy of the final survey instruments, and appendix D provides a copy of the supplemental survey materials. The survey instruments and other materials were available in English and Spanish.

#### **4. Survey Administration Procedures and Response**

To collect information on the program's impact, a survey was administered to parents and caregivers of children who participated in the evaluation before and after the intervention. For the baseline data collection, the survey was administered in person at the same time that the respondent completed the baseline survey for the UNCE evaluation study.<sup>14</sup> To control for starting point bias, half of the study participants completed the UNCE questionnaire first and half completed the FNS questionnaire first. The baseline survey for the spring wave was conducted in February and March 2010,<sup>15</sup> and the baseline survey for the summer wave was conducted in May 2010. For the follow-up survey, the survey questionnaire was mailed and telephone follow-ups were made to nonrespondents. Respondents received \$10 cash for completing the baseline survey and \$15 cash for completing the follow-up survey. Appendix I provides additional information on interviewer training and the survey procedures.

At baseline, 294 participants in the intervention group (80 percent response rate) and 328 participants in the comparison group (54 percent response rate) completed the survey. The response rate for the comparison group was lower than anticipated because study enrollment was open to the entire center, instead of specific classrooms, thus greatly increasing the size of the eligible population. At follow-up, 244 participants in the intervention group (83 percent response rate) and 267 participants in the comparison group (81 percent response rate) completed the survey, thus meeting the required sample size of 240 participants per group at follow-up.

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<sup>14</sup> To increase the number of participating parents at centers where participation was low, parents unable to schedule an onsite baseline interview were allowed to complete the survey over the phone.

<sup>15</sup> The data collection for the intervention centers was completed before the intervention started in March; however, the data collection for the comparison centers extended into March due to the need to conduct the data collection at a comparison center that was assigned to the summer wave but was not going to be operating during the summer.

**Exhibit III-2.— Summary of Instruments Used to Develop Impact Instruments for the All 4 Kids Impact Evaluation**

Outcome Measures	Instrument	Study Population(s)	Mode(s) of Data Collection	Reliability	Validity	Sensitivity to Change
Cups of fruits, vegetables, and fruits and vegetables consumed by child each day <sup>a</sup> Child ate variety of fruits each day <sup>a</sup> Child ate variety of vegetables each day <sup>a</sup>	Food Stamp Program Fruit and Vegetable Checklist (Townsend et al., 2003) University of California Cooperative Extension Food Behavior Checklist (Townsend et al., 2008)	Low-income women	Self-administered, self-administered in group setting, and interviewer administered individually and in groups	The internal consistency for the 7-item fruit and vegetable subscale was high ( $\alpha = 0.80$ )	The 7-item fruit and vegetable subscale showed a significant correlation with serum carotenoid values ( $r = 0.44$ , $p < 0.001$ ), indicating acceptable criterion validity and showed significant correlation with dietary variables	Demonstrated sensitivity to change for items expected to change as a result of the study intervention
Willingness of child to try new fruits Willingness of child to try new vegetables	Willingness to try new fruits and vegetables (Jamelske, Bica, McCarty, & Meinen, 2008)	4th, 7th, and 9th graders	Self-administered	Not reported	Not reported	Compared with controls, intervention participants reported an increased willingness to try new fruits and vegetables at school ( $p < 0.01$ )
Availability of fruits and vegetables at home during past week	Fruit, juice, and vegetable availability questionnaire (Marsh, Cullen, & Baranowski, 2003; Cullen et al., 2003)	Parents of 4th and 6th graders	Self-administered and interviewer administered via telephone	The internal consistencies for the fruit and vegetable availability items were high	There was significant agreement between self-reported and observed at-home availability for all fruit juices and most fruits and vegetables	Fruit, juice, and vegetable availability was a significant predictor of child fruit, juice, and vegetable consumption ( $p < 0.05$ )

<sup>a</sup> The questions were modified to ask the respondent (parent or other caregiver) to report on his or her child's consumption of fruits and vegetables.

## 5. Impact Analysis Procedures

The impact evaluation included repeated measures on individual respondents who are nested within centers, and centers that are nested in a study condition (i.e., intervention or comparison). When data are nested, responses within the same cluster tend to be correlated. If the correlated nature of the data is ignored in the specification of the model, it is likely to lead to inflated type I error rates. A series of hierarchical, or mixed-effects, regression models were developed to account for correlated responses by allowing for the inclusion of multiple sources of random variation.

General linear mixed models were used for continuous impact variables and generalized linear mixed models were used for dichotomous impact variables to evaluate program impacts while accounting for the clustering of children within centers. These models were estimated via difference-in-difference estimates of program effect, comparing change across time (baseline and follow-up) in the intervention group with change across time in the comparison group. Covariates in the model included child age, child sex, household size, respondent race and ethnicity, respondent age, and respondent sex. Missing data for covariates ranged from 1.6 to 2.2 percent of responses. Appendix I provides additional detail on the sampling models and link functions that describe the statistical models used to assess program outcomes and the structural models that detail the explanatory variables and the model coefficients.

In two of the intervention centers, data were collected in both the spring and summer waves, leading to concerns that seasonality may influence reported fruit and vegetable consumption. This issue was addressed by comparing reported fruit and vegetable consumption among children at the centers whose parents were surveyed in the spring to reported fruit and vegetable consumption among children at the centers whose parents were surveyed in the summer. Reported baseline rates of consumption, reported follow-up rates of consumption, and the baseline to follow-up difference were examined. In all cases, differences were not statistically significant, thus it appears that seasonality did not influence reported fruit and vegetable consumption in this evaluation.

Before conducting the impact analyses, the potential impact of attrition from the evaluation study on generalizability of the findings was assessed by comparing the pre-intervention similarity of study participants who provided follow-up data and those who did not.<sup>16</sup> This was accomplished by fitting a logistic regression model that regressed completion status on variables that describe survey responders and their children (child sex, child age, respondent age, respondent sex, respondent race and ethnicity, and household size). This analysis provided odds ratios that highlight any association between the descriptive characteristics of participants and the likelihood of providing data at follow-up.

### C. Impact Analysis Results

This section describes the baseline demographic characteristics of parents and children who participated in the evaluation study and the baseline outcome measures, discusses the results of the attrition analysis, and presents the impact results. A *p*-value of 0.05 was used for determining statistical significance.

#### 1. Baseline Data

The baseline analysis included 622 parent respondents, 294 for the intervention group (parents of children attending six centers) and 328 for the comparison group (parents of children attending six centers).

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<sup>16</sup> Attrition includes individuals who did not complete the intervention (e.g., their child stopped attending Head Start during the intervention) and individuals who did not complete the follow-up survey.

Table III-1 shows the baseline demographic characteristics for parent respondents and their children who participated in the All 4 Kids evaluation study overall and by study condition.<sup>17</sup> Children in the intervention and comparison groups were similar with regard to their demographic characteristics. Likewise, the characteristics of parent respondents and their households were similar for the intervention and comparison groups.

Appendix E, table E-3 shows the baseline outcome measures overall and by intervention wave (spring vs. summer), and appendix E, table E-4 shows the baseline outcome measures by study condition.<sup>18</sup> At baseline, there were no statistically significant differences in any of the primary or secondary outcome measures between the two waves of the intervention and between the two study conditions.

For the primary outcome measure, the baseline mean daily reported at-home consumption of fruits and vegetables combined was 2.45 cups (1.37 for fruits and 1.09 for vegetables) for the intervention group and 2.32 cups (1.32 for fruits and 1.00 for vegetables) for the comparison group. When looking at these figures, it is important to bear in mind that these data are for at-home consumption of fruits and vegetables and do not include fruits and vegetables consumed while at childcare. As a point of reference, USDA Food Guidance System recommends that preschoolers (2 to 5 years) eat about 1 to 2 cups of vegetables each day and 1 to 1.5 cups of fruit each day, depending on the child's gender and activity level (USDA, 2011). These results suggest that some children may be meeting the guidelines depending on their age and gender. Figures III-2 and III-3 show the baseline distribution of reported consumption of fruits and vegetables, respectively, for children participating in the All 4 Kids evaluation by condition.

With regard to the secondary outcome measures, this study found the following at baseline for all study participants (intervention and comparison groups) (see Appendix E, table E-3):

- Children ate more than one type of fruit each day about 4.5 days during the past week and more than one type of vegetable each day about 3 days during the past week.
- Children helped themselves to or requested fruit as a snack about 3.5 days during the past week and helped themselves to or requested vegetables as a snack about once during the past week.
- Fifty-eight percent of parents reported that their children are willing to try new fruits, and 42 percent of parents reported that their children are willing to try new vegetables.
- During the past month, when eating at fast-food restaurants, 40 percent of children asked their parents for fruits or vegetables instead of French fries at least sometimes.
- The at-home availability of seven fruits and vegetables was 3.98 (index score: 0–7).
- Parents offered fruit for a snack about 4 days during the past week and offered vegetables for a snack about 2 days during the past week.
- At dinner, parents offered fruit about 1.5 days during the past week and vegetables about 3 days during the past week.
- Parents made their child eat everything on his or her dinner plate about 3 days during the past week.
- During the past month, when ordering food for their child at fast-food restaurants, 49 percent of parents ordered fruits or vegetables instead of French fries at least sometimes.

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<sup>17</sup> Appendix E, tables E-1 and E-2 provide the baseline demographic characteristics for parent respondents and their children who participated in the All 4 Kids evaluation study by study wave (spring vs. summer) and condition.

<sup>18</sup> Appendix E, tables E-5 and E-6 provide the unadjusted baseline means and post-test means for the 244 intervention group participants and 267 comparison group participants who completed the baseline and follow-up surveys.

**Table III-1.— Baseline Demographic Characteristics for Parent Respondents and Their Children Who Participated in the All 4 Kids Program Evaluation Study, by Condition**

<b>Characteristic</b>	<b>Overall (SE)</b>	<b>Intervention Group (SE)</b>	<b>Comparison Group (SE)</b>	<b>Difference</b>
Child demographics				
Sex, % male	48.87 (2.61)	48.04 (3.97)	49.60 (3.80)	-1.56
Age	4.60 (0.05)	4.64 (0.07)	4.57 (0.07)	0.08
Parent <sup>a</sup> /household demographics				
Respondent age, %				
18 to 34	70.06 (1.75)	70.41 (2.68)	69.73 (2.54)	0.68
35 to 44	23.10 (1.42)	23.47 (2.46)	22.63 (2.33)	0.84
45 or older	7.05 (1.26)	6.22 (1.89)	7.83 (1.80)	-1.61
Respondent sex, % male	14.54 (1.66)	17.18 (2.30)	12.12 (2.17)	5.06
Respondent is Hispanic or Latino, %	65.55 (5.62)	65.87 (8.36)	65.21 (8.29)	0.67
Respondent race, %				
American Indian or Alaska Native	2.29 (0.78)	1.32 (1.21)	3.13 (1.17)	-1.80
Asian	1.95 (0.71)	2.65 (1.12)	1.25 (1.09)	1.40
Black or African American	41.66 (5.43)	45.10 (7.97)	38.31 (7.83)	6.78
Native Hawaiian or other Pacific Islander	1.68 (1.01)	2.82 (1.40)	0.66 (1.36)	2.15
White	49.68 (5.23)	47.05 (7.72)	52.28 (7.59)	-5.23
More than one race <sup>b</sup>	3.20 (0.87)	1.99 (1.44)	4.38 (1.40)	-2.39
Size of household	5.00 (0.14)	5.01 (0.21)	4.98 (0.21)	0.03
Single-adult household, %	17.60 (3.09)	19.29 (4.57)	15.99 (4.47)	3.30
Language spoken by family at home, %				
Speak English all of the time	32.17 (6.33)	31.19 (9.41)	33.15 (9.34)	-1.96
Speak English some of the time and speak another language some of the time	53.50 (4.31)	53.19 (6.45)	53.74 (6.33)	-0.55
Speak another language all of the time	14.61 (3.25)	15.80 (4.84)	13.43 (4.76)	2.36

(continued)

**Table III-1.— Baseline Demographic Characteristics for Parent Respondents and Their Children Who Participated in the All 4 Kids Program Evaluation Study, by Condition (continued)**

<b>Characteristic</b>	<b>Overall (SE)</b>	<b>Intervention Group (SE)</b>	<b>Comparison Group (SE)</b>	<b>Difference</b>
Center-provided food, %				
Received two meals (breakfast and lunch) <sup>c</sup>	58.44 (3.95)	55.61 (5.75)	61.16 (5.62)	-5.55
Received one meal (breakfast or lunch) <sup>c</sup>	33.89 (2.65)	35.08 (3.96)	32.79 (3.81)	2.29
Received snacks only	4.30 (1.36)	4.82 (2.01)	3.78 (1.94)	1.04
Received no food from center	3.63 (1.04)	5.31 (1.38)	2.19 (1.32)	3.12
Number of respondents	622	294	328	
Number of centers	12	6	6	

<sup>a</sup> Represents the parent/caregiver who completed the survey.

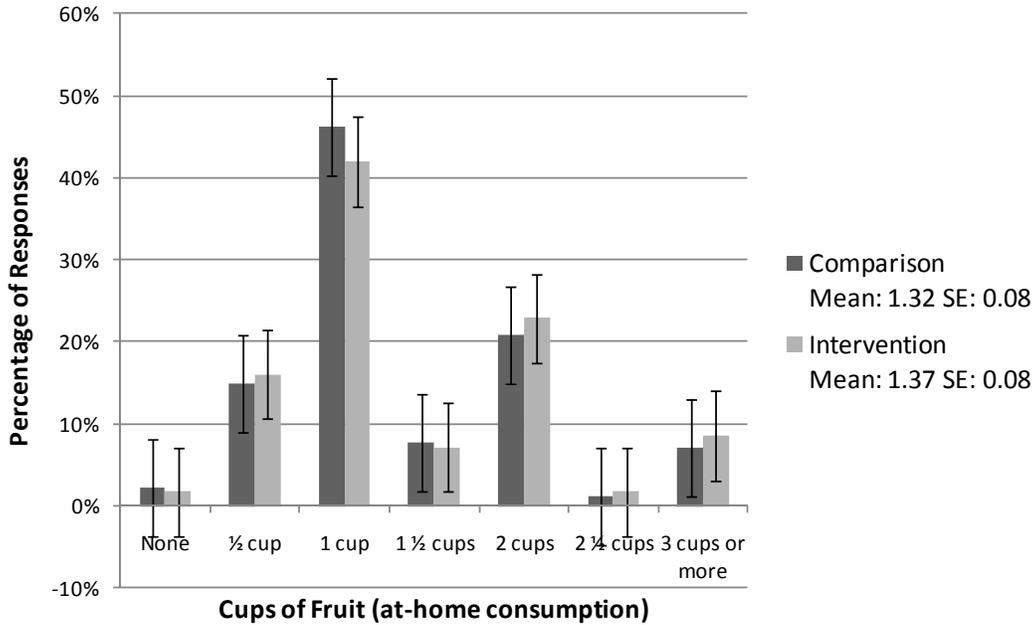
<sup>b</sup> Includes respondents who selected more than one race category.

<sup>c</sup> Some in this category also reported receiving center-provided snacks.

Note: Standard errors (SEs) and t-statistic used to test the null hypothesis of no difference between intervention and comparison groups were derived from model-based comparisons adjusted for clustering of students within centers.

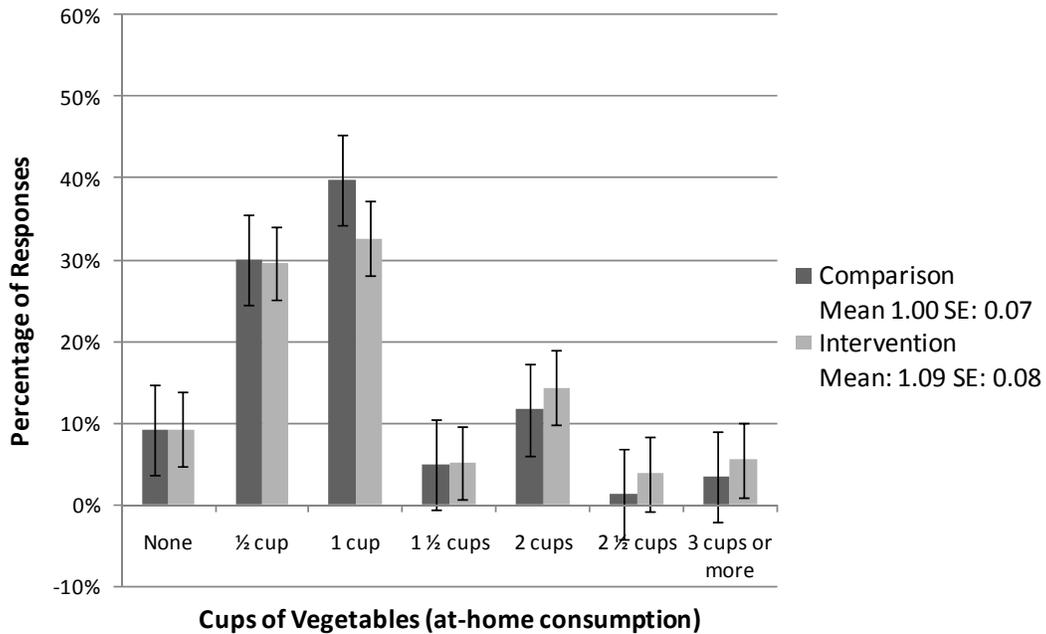
Source: Parent Baseline Survey, spring wave data collected February–March 2010 and summer wave data collected May 2010

**Figure III-2.—Baseline Distribution of Cups of Fruit Consumed at Home by Children Who Participated in the All 4 Kids Program, by Condition**



Source: Parent Baseline Survey, spring wave data collected February–March 2010 and summer wave data collected May 2010

**Figure III-3.—Baseline Distribution of Cups of Vegetables Consumed at Home by Children Who Participated in the All 4 Kids Program, by Condition**



Source: Parent Baseline Survey, spring wave data collected February–March 2010 and summer wave data collected May 2010

## **2. Attrition Analysis**

The potential impact of attrition from the evaluation study on generalizability of the study findings was assessed by comparing the pre-intervention similarity of study participants who provided follow-up data and those who did not. Appendix E, table E-7 provides the results of this analysis. Some differences were observed between the two groups. Hispanic respondents were nearly three times more likely to complete the follow-up survey than non-Hispanic respondents ( $p = 0.0024$ ); this may be due to the relatively high frequency of Hispanic respondents. Respondents in the oldest age group (45 years or older) were nearly four times more likely to complete the follow-up survey than individuals in the youngest age group (18 to 34;  $p = 0.0387$ ). Female respondents were less likely to complete the follow-up survey compared with male respondents ( $p = 0.0030$ ); this may be due to the relatively high frequency of female respondents.

## **3. Child Primary Impact Results**

Table III-2 shows the model-adjusted means at baseline and follow-up for the intervention and comparison groups and the estimated impact on the primary outcomes of number of combined cups of fruits and vegetables, cups of fruits, and cups of vegetables consumed at home. For both the intervention and comparison groups, parents reported increases in cups of fruits and vegetables, cups of fruits, and cups of vegetables consumed by their children between baseline and follow-up. The difference in the changes between the intervention and comparison groups was not statistically significant; thus, there is no indication that the All 4 Kids program had an impact on children's average daily at-home consumption of fruits and vegetables.

## **4. Child Secondary Impact Results**

Table III-3 shows the model-adjusted means at baseline and follow-up for the intervention and comparison groups and the estimated impact on children's other dietary behaviors. Although there were small increases in most of the dietary behaviors in both the intervention and comparison groups, the difference in the changes between the two groups was not statistically significant. This suggests that the All 4 Kids program did not have an impact on children's other dietary behaviors. There were positive improvements in two of the measures that approached statistical significance: children's willingness to try new fruits ( $p = 0.0774$ ) and the number of days that children helped themselves or requested vegetables for a snack ( $p = 0.0658$ ).

## **5. Parent Secondary Impact Results**

Table III-4 shows the model-adjusted means at baseline and follow-up for the intervention and comparison groups and the estimated impact on parent offerings of fruits and vegetables and at-home availability of eight fruits and vegetables. Because there were small increases in most of the parent behavior and household variables in both the intervention and comparison groups, the results did not support a conclusion that the All 4 Kids program had a statistically significant impact on these outcomes.

**Table III-2.— Child’s Dietary Intake: Primary Impacts for the Evaluation of the All 4 Kids Program**

Child’s Dietary Intake (daily at-home consumption)	Model-Adjusted Baseline Means (SE)		Model-Adjusted Follow-Up Means (SE)		Estimated Impact <sup>a</sup> (95% CI)	Wald Chi-Square <i>p</i> -value
	Intervention Group	Comparison Group	Intervention Group	Comparison Group		
Cups of fruits and vegetables	2.45 (0.14)	2.33 (0.14)	3.01 (0.14)	2.92 (0.14)	−0.04 (−0.43, 0.36)	0.8451
Cups of fruits	1.37 (0.07)	1.32 (0.07)	1.70 (0.08)	1.56 (0.07)	0.09 (−0.15, 0.32)	0.4300
Cups of vegetables	1.08 (0.07)	1.01 (0.07)	1.31 (0.08)	1.36 (0.07)	−0.12 (−0.33, 0.09)	0.2212
Number of respondents	294	328	244	267		
Number of centers	6	6	6	6		

<sup>a</sup> Program impact (with 95% confidence limits) was estimated via difference-in-difference models comparing change across time in the intervention versus comparison group.

Notes: General linear mixed models (SAS PROC MIXED) were used to evaluate the program impact while accounting for the clustering of students within centers. Covariates in the model included child age, child sex, household size, respondent race/ethnicity, respondent age, and respondent sex. SE = standard error. CI = confidence interval.

Source: Parent Survey, spring wave: February–March 2010 (Baseline) and May–June 2010 (Follow-Up); summer wave: May 2010 (Baseline) and August–September 2010 (Follow-Up)

**Table III-3.— Child’s Other Dietary Behaviors: Secondary Impacts for the Evaluation of the All 4 Kids Program**

Child’s Other Dietary Behaviors at Home <sup>a</sup>	Model-Adjusted Baseline Means (SE)		Model-Adjusted Follow-Up Means (SE)		Estimated Impact <sup>b</sup> (95% CI)	Wald Chi-Square <i>p</i> -value
	Intervention Group	Comparison Group	Intervention Group	Comparison Group		
Ate variety of fruits <sup>c</sup>	4.59 (0.19)	4.58 (0.18)	4.43 (0.19)	4.35 (0.19)	0.06 (−0.37, 0.50)	0.7504
Ate variety of vegetables <sup>c</sup>	3.33 (0.19)	3.43 (0.18)	3.61 (0.19)	3.59 (0.19)	0.11 (−0.33, 0.56)	0.5850
Helped self/requested fruit as snack <sup>c</sup>	3.63 (0.17)	3.50 (0.16)	3.68 (0.18)	3.51 (0.17)	0.05 (−0.51, 0.61)	0.8415
Helped self/requested vegetable as snack <sup>c</sup>	1.21 (0.13)	1.27 (0.12)	1.89 (0.13)	1.64 (0.13)	0.32 (−0.03, 0.67)	0.0658
Willingness to try new fruits <sup>d</sup>	55.26 (0.04)	61.06 (0.03)	63.60 (0.04)	59.09 (0.04)	1.54 (0.94, 2.49)	0.0774
Willingness to try new vegetables <sup>d</sup>	41.42 (0.03)	41.25 (0.03)	50.17 (0.03)	41.99 (0.03)	1.38 (0.90, 2.12)	0.1223
Child asked for fruits or vegetables instead of French fries at least some of the time when eating at fast food restaurants <sup>e</sup>	37.83 (0.03)	41.29 (0.03)	52.17 (0.04)	49.32 (0.03)	1.30 (0.77, 2.18)	0.2946
Number of respondents	294	328	244	267		
Number of centers	6	6	6	6		

<sup>a</sup> Based on continuous measures of the identified construct, unless otherwise indicated.

<sup>b</sup> Program impact (with 95% confidence limits) was estimated via difference-in-difference models comparing change across time in the intervention versus comparison group. Impact estimates are provided as odds ratios for dichotomous outcomes.

<sup>c</sup> Reported as the number of days in the past week.

<sup>d</sup> Dichotomous variable indicates the proportion responding yes.

<sup>e</sup> Response categories were converted to a dichotomous variable, with 0 = “never” or “seldom” and 1 = “sometimes,” “most of the time,” or “almost always.”

Notes: General linear mixed models (SAS PROC MIXED) for continuous impact variables and generalized linear mixed models (SAS PROC GLIMMIX) for dichotomous impact variables were used to evaluate the program impact while accounting for the clustering of students within centers. Covariates in the model included child age, child sex, household size, respondent race/ethnicity, respondent age, and respondent sex. SE = standard error. CI = confidence interval.

Source: Parent Survey, spring wave: February–March 2010 (Baseline) and May–June 2010 (Follow-Up); summer wave: May 2010 (Baseline) and August–September 2010 (Follow-Up)

**Table III-4.— Parent Offerings and Fruit and Vegetable Availability in Households: Secondary Impacts for the Evaluation of the All 4 Kids Program**

Parent Behavior and Household Variables	Model-Adjusted Baseline Means (SE)		Model-Adjusted Follow-Up Means (SE)		Estimated Impact (95% CI) <sup>a</sup>	Wald Chi-Square <i>p</i> -value
	Intervention Group	Comparison Group	Intervention Group	Comparison Group		
Availability of fruits and vegetables <sup>b</sup>	4.01 (0.10)	4.02 (0.10)	4.57 (0.10)	4.49 (0.10)	0.09 (−0.22, 0.39)	0.5408
Parent offered fruit as snack <sup>c</sup>	4.15 (0.18)	4.15 (0.17)	4.08 (0.18)	4.11 (0.18)	−0.03 (−0.49, 0.43)	0.8810
Parent offered fruit at dinner <sup>c</sup>	1.57 (0.16)	1.59 (0.15)	2.16 (0.17)	2.18 (0.16)	−0.01 (−0.45, 0.44)	0.9789
Parent offered vegetable as snack <sup>c</sup>	1.71 (0.14)	1.86 (0.13)	2.15 (0.15)	2.18 (0.14)	0.12 (−0.33, 0.58)	0.5575
Parent offered vegetable at dinner <sup>c</sup>	2.68 (0.26)	3.20 (0.25)	3.01 (0.27)	3.23 (0.23)	0.30 (−0.18, 0.79)	0.1921
Parent made child eat everything on his/her plate <sup>c</sup>	3.49 (0.19)	3.24 (0.19)	3.19 (0.20)	2.97 (0.20)	−0.03 (−0.45, 0.38)	0.8731
Parent ordered fruits or vegetables for child instead of French fries at least some of the time when eating at fast food restaurants <sup>d</sup>	43.94 (0.04)	54.55 (0.04)	56.60 (0.04)	57.84 (0.04)	1.46 (0.87, 2.42)	0.1312
Number of respondents	294	328	244	267		
Number of centers	6	6	6	6		

<sup>a</sup> Program impact (with 95% confidence limits) was estimated via difference-in-difference models comparing change across time in the intervention versus comparison group. Impact estimates are provided as odds ratios for dichotomous outcomes.

<sup>b</sup> Index score (0–7) based on reported household availability of seven fruits and vegetables.

<sup>c</sup> Reported as the number of days in the past week.

<sup>d</sup> Response categories were converted to a dichotomous variable, with 0 = “never” or “seldom” and 1 = “sometimes,” “most of the time,” or “almost always.”

Notes: General linear mixed models (SAS PROC MIXED) for continuous impact variables and generalized linear mixed models (SAS PROC GLIMMIX) for dichotomous impact variables were used to evaluate the program impact while accounting for the clustering of students within centers. Covariates in the model included child age, child sex, household size, respondent race/ethnicity, respondent age, and respondent sex. SE = standard error. CI = confidence interval.

Source: Parent Survey, spring wave: February–March 2010 (Baseline) and May–June 2010 (Follow-Up); summer wave: May 2010 (Baseline) and August–September 2010 (Follow-Up)

## **D. Analysis of the Treated**

Analyses were also conducted that were limited to parent respondents whose children were still enrolled in Head Start at the end of the intervention period<sup>19</sup> (intervention group), and respondents who provided baseline and follow-up data (intervention and comparison groups). Appendix F presents the results for the analysis of the treated. The key findings are summarized below.

### **1. Demographic Characteristics**

Appendix F, table F-1 provides information on the demographic characteristics for parent respondents and their children for the analysis of the treated. The baseline analysis included 497 respondents, 230 for the intervention group and 267 for the comparison group. Responding parents and children in the intervention and comparison groups had similar demographic characteristics, with no statistically significant differences observed.

### **2. Primary Impact Results**

Appendix F, table F-2 shows the model-adjusted means at baseline and follow-up for the intervention and comparison groups and the estimated impact on average daily number of combined cups of fruits and vegetables, cups of fruits, and cups of vegetables consumed. Based on these results, there is no indication that the All 4 Kids program had a statistically significant impact on the average daily consumption of fruits and vegetables for children still enrolled in Head Start at the end of the intervention period.

### **3. Secondary Impact Results**

Appendix F, tables F-3 and F-4 show the model-adjusted means at baseline and follow-up for the intervention and comparison groups and the estimated impact on children's other dietary behaviors (table F-3) and at-home availability of fruits and vegetables and parental offerings of fruits and vegetables (table F-4). Because there were small increases in most of the parent behavior and household variables in both the intervention and comparison groups, the results did not support a conclusion that the All 4 Kids program had a statistically significant impact on these outcomes. There was a positive improvement in children helping themselves or requesting vegetables for a snack after exposure to the program that approached statistical significance ( $p = 0.0582$ ).

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<sup>19</sup> UNCE provided information on student enrollment at the end of the intervention.

# Chapter IV ● Assessment of UNCE's Self-Evaluation

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## A. Methodology

Determining the effectiveness of the evaluation conducted by the University of Nevada Cooperative Extension (UNCE) required a clear understanding of the planning, design, and implementation of the evaluation based on both objective and subjective measures. To the extent possible, the assessment was based on objective information such as the evaluation report prepared by UNCE. Qualitative methods were used to gather in-depth information as well as perspectives of key players in the evaluation (e.g., the principal investigator and the program manager). Exhibit IV-1 describes the data sources used for the assessment, and appendix G provides copies of the forms and instruments used in the assessment.

The assessment of UNCE's evaluation of the All 4 Kids program included a detailed description of their evaluation methodology, including management, staffing, and costs of the evaluation; an assessment of the quality of UNCE's evaluation, including strengths and weaknesses; a comparison of UNCE's study design and results with the Food and Nutrition Service (FNS) independent evaluation; and an assessment of lessons learned based on the quality assessment, cost analysis, and reported factors affecting evaluation implementation. Appendix J provides additional information on the methodology for assessing UNCE's self-evaluation.

## Key Findings

- The UNCE evaluation employed the same quasi-experimental design used for the independent evaluation. Strengths of UNCE's evaluation included the use of a viable comparison strategy, the data collection was well-planned and implemented, modest attrition between the pre- and post-surveys for the caregiver survey, and little missing data for the impact analysis.
- Weaknesses included considerable attrition for the preschooler survey, which limited the amount of paired data for the impact analysis; lack of validity and reliability testing on the impact instruments for the caregiver survey; the data analyses did not account for the clustering of individuals within centers; and the research objectives and hypotheses were not stated in quantifiable terms.
- Both evaluations found a positive effect on children's understanding and preference for healthy snacks. However, these gains were not sufficient to translate into statistically significant effects on consumption of fruits and vegetables in the home.

## Exhibit IV-1.—Description and Use of Data Sources for the Assessment of UNCE’s Self-Evaluation

Data Source	Description and Use
<b>UNCE’s application</b>	The application to request funding as a demonstration project provided information on the proposed evaluation procedures. The independent evaluators abstracted information from UNCE’s application to describe their evaluation approach and identify any differences between their planned and actual evaluation approach.
<b>Evaluation review form</b>	This form included eight evaluation components (e.g., viable comparison strategy) that were rated on a 1 to 5 scale. The form was completed using information from UNCE’s application and evaluation report and additional information obtained in the key informant interviews conducted following the evaluation. The completed review form was used to prepare a descriptive assessment of the quality of UNCE’S evaluation that identified the strengths and weaknesses of the evaluation and detailed areas for improvement.
<b>Evaluation cost form</b>	This form, completed by UNCE, documented the resources used and costs incurred to evaluate the All 4 Kids program. The completed form and the findings from the key informant interviews were used to prepare a descriptive assessment of the cost of conducting the evaluation.
<b>UNCE’s evaluation report</b>	The independent evaluators provided UNCE with an outline for preparing a report on their evaluation methodology and results. The report was reviewed and key information was abstracted from the report to complete the assessment of the quality of UNCE’s evaluation and to compare UNCE’s study design and results with the FNS independent evaluation.
<b>Key informant interviews</b>	Using structured interview guides, the independent evaluators conducted in-depth interviews with key informants, including the principal investigator, co-principal investigators, evaluator, and the program manager, before and after the evaluation was conducted. The findings from these interviews informed all aspects of the assessment of UNCE’s self-evaluation, in particular, the assessment of the management of the evaluation and lessons learned from conducting the evaluation.

### B. Description of UNCE’s Self-Evaluation

This section describes the methodology employed by UNCE to evaluate the All 4 Kids program and provides information on the management, staffing, and costs of the evaluation. This description is based on information provided in UNCE’s demonstration project application (UNCE, 2008) and its evaluation report (UNCE, 2011).

#### 1. Research Objectives and Hypotheses and Outcome Measures

The evaluation study conducted by UNCE hypothesized that more low-income caregivers of preschoolers (aged 3 to 5 years) would report increases in children’s fruit and vegetable consumption and physical

activity at home after participating in the intervention compared with those in the control group (i.e., did not participate in the program).<sup>20</sup>

The UNCE self-evaluation included outcome measures for preschoolers participating in the program and their primary caregivers. Exhibit IV-2 identifies the objectives for the UNCE self-evaluation. The All 4 Kids evaluation included outcome measures for physical activity; however, the FNS independent assessment focused on evaluating the nutritional outcome measures only.

## **Exhibit IV-2.—Objectives for the UNCE All 4 Kids Program and Self-Evaluation**

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### **Healthy Snacks**

Preschoolers in the intervention will demonstrate an increased understanding of the concept of healthy snacks by being able to name snack foods, select healthy snacks to eat, and distinguish healthy snacks from unhealthy snacks when compared with the preschoolers in the control group.

### **Fruit and Vegetables**

At the end of the All 4 Kids program, the intervention children’s caregivers will report an increase in the following variables related to fruits and vegetables when the child is at home:

1. The number of primary caregivers reporting their preschooler eats most fruits and vegetables served at home will have a statistically significant increase from pre to post when compared with a control group.
2. The number of primary caregivers reporting their preschooler eats fruits and vegetables at home will have a statistically significant increase from pre to post when compared with a control group.
3. The number of primary caregivers reporting they buy fruits and vegetables will have a statistically significant increase from pre to post when compared with a control group.
4. The number of primary caregivers reporting that they keep fruits and vegetables ready for their preschooler to eat at home will have a statistically significant increase from pre to post when compared with a control group.

### **Milk Consumption**

The number of primary caregivers reporting their preschooler drinks milk at home will have a statistically significant increase from pre to post when compared with a control group.<sup>a</sup>

### **Physical Movement**

Movement skills – preschoolers in the intervention group will demonstrate higher competency in performing physical movement skills than preschoolers in the control group.

Cross the midline – preschoolers in the intervention group will demonstrate higher competency for crossing the midline than preschoolers in the control group.

Timed-balance – preschoolers in the intervention group will demonstrate an increased ability to meet Nevada’s Pre-K Standard of balancing on one foot for at least 5 seconds, as compared to the control group.

Hopping – Preschoolers in the intervention group will demonstrate higher competency in the number of times they can hop in 15 seconds, as compared to the control group.

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<sup>a</sup> Consumption of milk was not one of the original evaluation objectives.

Source: UNCE Evaluation Report, 2011

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<sup>20</sup> UNCE referred to the non-intervention group as the control group, whereas the independent evaluation referred to the non-intervention group as the comparison group.

## 2. Research Design and Sample Selection

UNCE's application specified that eight Head Start centers would participate in the evaluation study and that there would be random assignment of centers to an intervention group (four centers) and control group (four centers).<sup>21</sup> Each group would contain approximately 200 children. However, to increase the statistical power of the design, FNS requested that UNCE increase the total number of centers from 8 to 12 (6 intervention and 6 control), with approximately 240 children in each study group. With these changes, the UNCE study design matched that of the independent evaluation.

The study population consisted of preschool children attending 12 Acelero Head Start centers in Las Vegas, Nevada. Six Head Start centers were assigned to the intervention group, and six to the comparison or control group. Three classrooms were selected for the intervention group at each center to achieve a minimum of 240 children in the intervention group at follow-up, and 4 to 10 classrooms were selected at the control centers to achieve a minimum of 240 children in the control group at follow-up. The intervention group classrooms received the All 4 Kids program intervention. The control classrooms did not receive the program, but primary caregivers were given weekly Nutrition Connection newsletters (same as the intervention group) to keep them engaged and encourage them to participate in the post-assessment. Although UNCE's evaluation report states that the sample size was sufficient for the preschooler and caregiver surveys, a formal power analysis was not conducted or provided in their application or evaluation report.

## 3. Instrument Development and Testing

Exhibit IV-3 on the following page provides information on the instruments and/or measures used by UNCE for the preschooler and caregiver surveys, including available information on reliability and validity.

## 4. Survey Administration Procedures and Response

To collect information on the outcomes of interest, UNCE conducted pre-surveys with both preschoolers and caregivers 1 to 2 weeks before the intervention and post-surveys with preschoolers and caregivers 1 to 2 weeks after the intervention. UNCE implemented two waves (spring and summer) of the intervention and corresponding data collection for the evaluation study. The surveys were offered in English and Spanish. Table IV-1 shows the number of completed pre- and post-surveys for the preschooler and caregiver surveys.

**Table IV-1.— Number of Completed Surveys for the UNCE Self-Evaluation**

	Intervention Group		Control Group	
	Pre-survey	Post-survey	Pre-survey	Post-survey
Preschooler survey	220	149	175	97
Caregiver survey	300	234	331	295

Source: UNCE Evaluation Report, 2011

<sup>21</sup> Assignment to the intervention and control groups was random, with the exception of the two centers that participated in the pilot study which were assigned to the intervention group though the classrooms at those centers that had participated in the pilot were excluded from the intervention.

### Exhibit IV-3.— Instruments and/or Measures for the UNCE Self-Evaluation

Impact	Instrument and/or Measure	Type of Measure	Information on Reliability and Validity
<p><b>Data Collection With Preschoolers</b></p> <p>Understand the concept of “healthy” snacks by being able to name snack foods<sup>a</sup></p> <p>Select healthy snacks to eat</p> <p>Distinguish healthy snacks from unhealthy snacks</p>	Preschooler Snack Survey (PSS)	Composite of single measures	No formal reliability and validity tests were conducted, although multiple rounds of testing helped increase preschoolers’ understanding of the tasks. The tools were revised for the evaluation study based on 2 years of pilot testing with preschoolers. The PSS was redesigned so that children were asked to first name the snack, then identify the snack they would prefer to eat, and then identify which snack was healthy.
<b>Data Collection With Caregivers</b>			
Variety of fruits and vegetables eaten by preschooler	Primary caregiver report of preschooler’s consumption (About My Preschooler [AMP] Parts 1, 2, and 3)	Scale	Content validity matched questions with the Fruit and Vegetable Checklist created by Dr. Marilyn Townsend, University of California, Davis, which has been validated.
Preschooler’s consumption of fruits and vegetables <sup>b</sup>	Primary caregiver report of preschooler’s consumption (AMP Parts 1 and 17)	Scale	
Purchasing fruits and vegetables	Primary caregiver report (AMP Parts 1, 15, and 16)	Scale	
Accessibility of fruits and vegetables	Primary caregiver report (AMP Parts 1, 18, and 19)	Scale	

<sup>a</sup> The instrument asked about 18 foods, or 9 pairs of healthy versus unhealthy snacks (e.g., apples versus French fries). Seven of the nine pairs included a fruit or vegetable.

<sup>b</sup> UNCE originally proposed to use the Fruit and Vegetable Checklist developed by Dr. Townsend of the University of California-Davis. Because this instrument was being used for the independent evaluation and to avoid asking respondents the same questions twice during the interview period, UNCE used a different instrument which had not been validated.

Source: UNCE Evaluation Report, 2011

### ***a. Interviewer training***

UNCE project staff trained data collectors on the administration of the preschooler and caregiver assessments, data handling, and data security. The data collectors conducted mock interviews using each specific instrument or tool for pacing, timing, and transition between tools. Data collectors were trained to use a neutral tone of voice and limit facial expressions. Bilingual data collectors were given additional time to practice administering the tools in Spanish.

Program educators conducted the interviews; however, an attempt was made to assign the program educators to collect data at centers where they did not themselves implement the program. The exception to this was for interviews conducted with Spanish-speaking children. Because the number of bilingual educators was limited, it was necessary in a few instances (estimated to be less than 2 percent) for the educator to administer the interviews at the same centers at which they taught.

### ***b. Caregiver surveys***

Flyers were distributed at each Head Start center, inviting primary caregivers to attend open houses about the All 4 Kids program. There, primary caregivers were given program information and invited to sign up for an interview for the pre-survey. Interviews for the pre- and post-surveys were scheduled during child drop off and pickup times and phone interviews were offered to parents unable to complete the surveys on site.

The data collection for the pre-survey was conducted concurrently with the baseline survey for the independent evaluation. At each participating center, signup sheets were posted so caregivers could schedule a 45-minute time slot to complete the baseline survey. During the scheduled interview time, study participants were asked to complete a questionnaire administered by UNCE staff and a separate questionnaire administered by the independent evaluator's interviewer. Consent was obtained separately for each questionnaire. To control for starting point bias, half of the study participants completed the UNCE interview first and half completed the independent evaluation interview first.

UNCE faced several challenges during the baseline data collection period that affected both the final assignment of centers to the spring and summer waves and the number of completed surveys. UNCE was very responsive in responding to these challenges and implementing procedures to increase the likelihood of achieving the required number of completed surveys for the impact analyses being conducted both for the UNCE and independent evaluation. These measures included conducting some interviews by phone and offering the intervention during the summer wave in additional classrooms at two centers that participated in the spring wave.

For the post-survey, UNCE conducted the majority of the interviews in person at the Head Start centers. Attendance sheets were kept during the administration of the intervention and compared with current class rosters. If a child attended at least 13 of 24 All 4 Kids program lessons but was not enrolled at the center at the time of the post-survey, UNCE contacted primary caregivers by telephone and attempted to complete the post-survey. As incentives, for completing the pre-intervention survey caregivers received a magnetic shopping list and for completing the post-intervention survey they received a gift bag valued at approximately \$10, which included the All 4 Kids CD/DVD, a vegetable peeler, and adjustable measuring spoons and were paid for by demonstration project funds. At pre-intervention, UNCE completed 300 surveys with the intervention group and 331 surveys with the control group. At follow-up, UNCE completed the required number of completed surveys for observing a minimum detectable effect ( $n = 240$ ) for the control group ( $n = 295$ ) but not the intervention group ( $n = 234$ ).

### ***c. Preschooler surveys***

The pre- and post-assessments with preschoolers included administering the Preschooler Snack Selection (PSS) and the Preschool Movement Assessment (PMA). Additionally, data on physical activity were collected on a subset of children using accelerometers. A much higher number of preschooler evaluations were conducted at the pre-survey ( $n = 395$ ) compared with the post-survey ( $n = 246$ ). As a result, only 233 matched pairs were available for the impact analysis. Several factors contributed to matched data not being available for all study participants. UNCE experienced a high number of children who needed the assessment administered in Spanish. Too few bilingual assessors were available to meet this need, particularly for the post-evaluation, because of limited staff availability. UNCE was unable to conduct any preschooler assessments at Cecile Walnut because of the last-minute requirement to change the site from a summer control to a spring control location. UNCE also experienced a high number of children who were absent on the days scheduled for assessments, and some children did not want to participate.

### ***d. In-depth interviews***

UNCE hired a contractor to conduct in-depth interviews with caregivers. One week post-intervention, 63 caregivers who completed the survey also participated in an in-depth interview. Quantitative responses were collected along with oral responses to questions related to family food and physical activity choices. Interviews with caregivers in the intervention group included additional items to provide feedback about caregivers' perceptions of the program in terms of what they and their child learned and what they liked about the program. The contractor summarized the interviews and findings were reported in an appendix to UNCE's evaluation report. The design, administration, and analysis of the in-depth interviews were not assessed by the independent evaluators because the purpose of the assessment was to compare and contrast the results and findings of the UNCE impact evaluation with the FNS impact evaluation.

## **5. Data Analysis Procedures**

Chi square, crosstabs, t-tests, and analysis of covariance (ANCOVA) were used to distinguish groups by pre- and post-survey and study cohort (intervention, control) and identify statistically significant differences. According to UNCE, main effects were controlled for using the Bonferroni correction and Levene's test of homogeneity was used. Excel and SPSS were used for statistical analysis. An attrition analysis (i.e., comparing pre-intervention similarity of participants who did and did not complete the follow-up survey) was not conducted to investigate the potential impact of attrition on generalizability. Analysis was conducted (but not presented in the evaluation report) to determine whether there were any significant differences among centers; these results indicated no significant differences between the intervention and the control centers. Because the predominant ethnic or racial group completing both the pre- and post-surveys was Hispanic, a separate analysis was conducted for this group. Item nonresponse (i.e., missing data) was minimal, with the exception of data on education level. Missing data on this item resulted from interviewer failure to ask this question, which was easily missed because of its placement on the instrument.

## **6. Description of Management, Staffing, and Costs of the Evaluation**

The demonstration project's evaluation was coordinated mutually by the principal investigator, the two co-principal investigators, and the evaluation coordinator. The All 4 Kids evaluation team included the principal investigator, who was in charge of overseeing the evaluation design and data collection efforts; a co-principal investigator, who oversaw evaluation design and data collection efforts for PMAs; and a second co-principal investigator, who facilitated data collection efforts at selected sites and coordinated

data analysis and final reports. The evaluation coordinator was in charge of coordinating all staffing and evaluation efforts at control and intervention sites. Staffing for the All 4 Kids evaluation was for a period of 12 months.

Total costs for the evaluation were \$264,656. Salary and benefits were the largest expense at 63.8 percent of the total evaluation cost. Appendix B includes the detailed budget tables UNCE provided for this evaluation.

The following is a description of the major cost centers of UNCE program implementation and the types of expenditures accounted for in each:<sup>22</sup>

- **Salary and benefits.** This expense included the salaries of the following All 4 Kids staff and contractor staff who supported All 4 Kids evaluation for this demonstration project:
  - Primary principal investigator (0.50 FTE),
  - Co-principal investigator I (0.50 FTE),
  - Co-principal investigator II (0.10 FTE),
  - Letter of appointment (0.48 FTE)
  - Project officer (0.25 FTE),
  - Child and adult assessors (1.0 FTE), and
  - Data entry and data analysis (0.14 FTE).

The primary principal investigator managed the day to day aspects of the overall evaluation including evaluation design, survey development, training of data collectors, and completion of the final evaluation report and tables with results. The co-principal investigator I managed the physical activity portion of the evaluation, including creating tools, and training and managing the staff to collect data and data entry. The co-principal investigator II facilitated data collection efforts at select sites and performed data analysis. The letter of appointment position coordinated all the staffing and evaluation efforts at control and intervention sites. The project officer conducted data collection with children. The child and adult assessors conducted the evaluations with the caregivers and children, and the data entry and analysis staff members performed these tasks.

- **Materials and other operating costs.** These expenditures were for purchasing accelerometers, screens for privacy to conduct interviews, incentives for parent interviews,<sup>23</sup> computer management program licenses, and printing.
- **Travel.** These expenditures were for local travel to and from the implementation sites.

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<sup>22</sup> Budget justification language was provided by UNCE to Altarum Institute and FTE information was extracted from Resource and Expenses Tracking Form completed by UNCE (see appendix B).

<sup>23</sup> The incentives UNCE provided for parent survey respondents were paid for by the *Models of SNAP-Ed and Evaluation* demonstration project funds. These funds were not regular SNAP-Ed program dollars and thus not subject to the \$4 gift ceiling in SNAP-Ed program rules.

Table IV-2 shows the actual expenditures UNCE reports as the costs of its All 4 Kids evaluation in Federal FY 2010 with breakouts by budget category.

**Table IV-2.— Summary of UNCE All 4 Kids Evaluation Costs (for Federal FY 2010)**

<b>Budget Category</b>	<b>Expenditures</b>	<b>Percentage of Total</b>
Salary and benefits	\$192,990	72.9
Contracts (for participant interviews)	\$44,368	16.8
Noncapital equipment and supplies	\$0	0.0
Materials and other operating costs	\$5,794	2.2
Travel	\$1,000	0.4
<b>Total direct costs</b>	<b>\$244,152</b>	<b>92.3</b>
Total indirect costs	\$20,504	7.7
<b>Total costs</b>	<b>\$264,656</b>	<b>100.0</b>

Source: Cost data provided by UNCE (see completed "Resource and expense tracking form" in appendix B)

### C. Assessment of the Quality of UNCE's Self-Evaluation

Although FNS' SNAP-Ed Guidance encourages all States to evaluate the effectiveness of their SNAP-Ed interventions, measuring and identifying the results of nutrition education in terms of concrete changes to dietary behaviors are challenges for both FNS and its State and local partners. In FY 2004, 74 percent of SNAP-Ed implementing agencies reported that they conducted outcome evaluations on at least some aspects of services. However, their evaluations often did not distinguish between activity monitoring and outcome evaluations (USDA FNS, 2006). Based on interviews with staff from 17 implementing agencies, the focus of their evaluations was to some extent on behavior change among participants, but to a much greater extent on program use (e.g., quantifying the number of events held, the number of participants reached, and the number of contacts per participant). Forty-three percent of implementing agencies surveyed in 2004 indicated that significant barriers to conducting successful evaluations included a lack of funds and expertise on the part of their local project staff and subcontractors (USDA FNS, 2006).

To compare findings from an intervention's self-evaluation with a rigorous independent evaluation, the independent evaluators adapted a scoring tool based on the one used by the Center for Substance Abuse Prevention in development of the National Registry of Evidence-based Programs and Practices (NREPP) database (see <http://nrepp.samhsa.gov/> for additional information). The evaluation review form, provided in appendix G, includes eight evaluation components and requires a reviewer to assign a numerical score ranging from one to five for each component. Reviewers were provided the following anchors for scoring each component:

- 1 = missing or so poorly described that its value to the evaluation cannot be determined;
- 2 = is inappropriate, misunderstood, or misrepresented in such a way that it cannot contribute to an effective evaluation of the program. The actions or materials reported are not appropriate for the evaluation effort proposed;
- 3 = shows a general understanding of its role in the evaluation. However, key details have been overlooked or not thoroughly reported. Needs moderate revision to be considered acceptable;

- 4 = is appropriate for the evaluation, is technically correct, and is described well enough to show a general understanding of its role in the overall evaluation. Evidence shows that it will or has been implemented properly, but minor details may be missing or unclear; and
- 5 = is appropriate for the program being evaluated and is presented in a way that shows the evaluator has a clear understanding of its role in the evaluation.

Scores of 1, 2, and 3 indicate components that are not aligned with the overall evaluation design in a way that makes them unlikely to contribute to useful or interpretable information. Scores in this range indicate opportunities for improvement in future evaluations. Scores of 4 and 5 indicate components that are well matched to the design; these components are likely to contribute useful or interpretable information to the overall evaluation. Scores in this range indicate evaluation components that could be replicated in future evaluations.

Using the evaluation review form, two members of the impact evaluation staff (one rater was the designated impact evaluation leader for the independent evaluation) rated each evaluation component. Inter-rater agreement was assessed and a consensus score reached for each evaluation component. Table IV-3 provides the results of the completed review form.

**Table IV-3.— Assessment Scores for the UNCE Self-Evaluation**

<b>Evaluation Component<sup>a</sup></b>	<b>Score</b>
Research objectives and hypotheses	3
Viable comparison strategy	4
Sampling size and strategy	4
Outcome measures	3
Data collection	4
Data analysis	3
Attrition/nonresponse between pre- and post-surveys	4
Missing data (i.e., survey item nonresponse)	5

<sup>a</sup>Appendix J provides a description of the criteria used to assess each evaluation component.

The strengths and weaknesses of UNCE’s evaluation are summarized in exhibit IV-4. Based on the assessment, the strengths of UNCE’s evaluation include the use of a viable comparison strategy. The data collection was well planned and implemented. UNCE was very proactive in responding to the challenges faced during data collection, exceeding the sample size requirements for the control group and nearly meeting the sample size requirements for the intervention group. There was modest attrition between the pre- and post-surveys for the caregiver survey (22 percent for the intervention group and 11 percent for the control group), and there were very little missing data for the impact analysis (less than 1 percent).

Weaknesses included the following: the preschooler survey had considerable attrition, which limited the amount of paired data for the impact analysis; the impact instruments for the caregiver survey lacked validity and reliability testing; the data analyses did not account for the clustering of individuals within centers; and the research objectives and hypotheses were not stated in quantifiable terms. Additional information on the weaknesses, and a discussion on why these weaknesses are a concern, is provided in section D, which compares the UNCE evaluation methodology with that of the independent evaluation.

## Exhibit IV-4.— Summary of Strengths and Weaknesses of UNCE’s Self-Evaluation

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### Strengths

- The outcome measures used to assess actual behavior change map onto the research objectives and hypotheses and include intermediate factors (i.e., the child can name healthy snacks and distinguish between healthy and unhealthy snacks). Although no formal reliability and validity testing was conducted with preschoolers, the instruments went through many iterations of testing and revisions.
- The staff employed the same quasi-experimental research design used for the independent evaluation.
- The study design included the entire population of Head Start centers in Clark County, Nevada, so program effects should be generalizable across Head Start centers in the county.
- The project team was very flexible and creative, taking many measures to increase the likelihood that the target population participated in the study, including offering the option to complete the survey by phone and providing additional days and times to complete the baseline survey.
- Data collection procedures included well-trained data collectors. Project staff controlled data collection so that educators did not collect data at centers where they provided instruction, with the exception of about 2 percent of Spanish-speaking children, because of limited availability of bilingual data collectors.
- There was modest attrition/nonresponse between the pre- and post-surveys for the parent and caregiver survey (22 percent for the intervention group and 11 percent for the control group).
- There were minimal missing data (less than 1 percent) for the impact analysis, except for one question because of a formatting or interviewer error, which will be revised for future studies.

### Weaknesses

- The study aimed to find statistically significant levels of improvement but did not specify a desired or expected amount of behavior change based on a relevant evidence-based literature.
  - It was unclear whether some of the measures used in the impact instrument for the parent and caregiver survey were from published sources and/or whether validity or reliability testing data were available for these measures.
  - The impact instrument for the parent and caregiver survey used a single item to assess children’s consumption of fruits and vegetables. The item did not appear to be sensitive to change (using a scale of “never” to “always”).
  - Because of lower-than-anticipated enrollment, UNCE offered the intervention during the summer to additional classes at intervention sites but not at control sites, because all control sites were surveyed during the spring. At follow-up, UNCE completed the required number of completed surveys for observing a minimum detectable effect ( $n = 240$ ) for the control group ( $n = 295$ ) but not the intervention group ( $n = 234$ ).
  - There was considerable attrition for the preschooler survey (38 percent), which limited the amount of paired data for the impact analysis using the preschooler survey data.
  - The data analysis did not take into account the complexity of the evaluation design, that is, the clustering of individuals within centers. Thus, the standard errors are likely to be underestimated, and reported  $p$ -values may overestimate significance.
  - Attrition analysis was not conducted to investigate the potential impact of attrition on generalizability of the study findings.
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## D. Comparison of Evaluation Methods and Results for the UNCE and Independent Evaluations

Exhibit IV-5 compares the study design for the UNCE self-evaluation and the independent impact evaluation of the All 4 Kids program. The UNCE evaluation and the independent evaluation used the same research design and sampling strategy. As previously noted, the pre-survey data collection with caregivers was conducted concurrently for the two evaluations. For the post-survey, UNCE interviewed caregivers primarily in person, whereas the independent evaluation used a mail survey and followed up with nonrespondents by telephone. The UNCE evaluation included both preschooler and caregiver surveys, whereas the independent evaluation was limited to surveys of parents and caregivers. The two studies employed different impact instruments and analysis procedures.

The analysis conducted for the independent evaluation accounts for the nesting of individual-level observation. When analyses are conducted on data from respondents who are embedded (i.e., nested) in predefined social units (such as childcare centers), there is a strong potential that their responses to survey items could be similar because of shared experiences or similar sociodemographics. This similarity reflects the fact that individuals do not aggregate in social units randomly. Children within the same Head Start centers may have similar family economics or shared values, and they certainly have shared experiences that are unique to the center (e.g., teachers). This similarity results in correlated observations that, if ignored, will likely lead to underestimated standard errors and falsely inflated test statistics (Zucker, 1990; Murray et al., 1996; Murray, 1998). By specifying centers as the between-subjects factor and employing a mixed modeling approach, one can account for potential correlation among individuals within the same center and provide *p*-values from tests of program impacts that are accurate. In contrast, the analyses provided by UNCE specified children or parents as the unit of analysis and made no adjustments to account for correlated data at the center level; thus, the *p*-values reported in their evaluation are likely to be inflated.

Tables IV-4 and IV-5 present the results of UNCE's analysis. Table IV-4 shows the percentage of preschoolers in the intervention and control groups who correctly named snack foods, preferred a healthy snack, and correctly distinguished between healthy and unhealthy snacks for the pre- and post-surveys. Limitations in the UNCE data analysis strategy previously discussed should be considered when assessing reported impacts. UNCE summarized the findings from the preschooler survey as follows:

- **Named snack foods.** The average percentage of preschoolers in the intervention group who could recognize and name snack foods correctly increased by 16.8 percentage points. This change could be attributed to the “Go” and “Whoa” snack cards that children used in All 4 Kids to learn and recognize the difference between healthy and unhealthy snack choices.
- **Selected a healthy snack as a preference to eat.** Preschoolers in the intervention group showed a significant increase in their preference for a healthy snack to eat (+18.6 percentage points) compared with their control group counterparts (+6.2 percent).
- **Distinguished a healthy snack from an unhealthy snack:** Preschoolers given the option to select the healthy snack from a snack pair identified a healthy option three times (+15.4 percent) more often than the preschoolers in the control group (+5.9 percent) at post-assessment. Changes in the control group could be attributed to cognitive maturation and participation in the Head Start Food Groupies program, which increased their exposure to naming foods.
- **Preschoolers at the intervention sites demonstrated a significant increase in their ability to name snack foods, select a healthy snack to eat, and distinguish healthy snacks from unhealthy ones** (UNCE, 2011).

## Exhibit IV-5— Comparison of Study Designs for the UNCE and Independent Evaluations

Study Design Characteristics	UNCE Evaluation	Independent Evaluation
<b>Comparison strategy</b>	Employed same research design as independent evaluation.	Quasi-experimental research design with six matched pairs of centers.
<b>Sampling strategy and required sample size</b>	Preschool children aged 3 to 5 years attending Acelero Head Start Centers in Clark County, Nevada, and their primary caregivers. Intervention group = 240 Control group <sup>a</sup> = 240	Parents of preschool children aged 3 to 5 years attending Acelero Head Start Centers in Clark County, Nevada. Intervention group = 240 Comparison group = 240
<b>Primary outcome measure(s)</b>	Preschoolers will understand concept of healthy snacks by being able to name snack foods, select healthy snacks to eat and distinguish healthy snacks from unhealthy snacks (preschooler survey). Increase in child's consumption and variety of fruits and vegetables and in purchases and availability of fruits and vegetables in the home (caregiver survey).	Increase in average daily consumption of fruits and vegetables by approximately 0.30 cups.
<b>Data collection</b>	Pre- and post-intervention surveys administered primarily in person by UNCE (some interviews were conducted by telephone).	Pre-intervention survey was administered in person concurrent with UNCE data collection. For post-survey, surveys were mailed to participants, and nonrespondents were contacted by telephone.
<b>Impact estimate</b>	Pre- and post-test change between intervention and control group.	Pre- and post-test change between intervention and comparison group.
<b>Data analysis</b>	Chi square, crosstabs, t-tests, and ANCOVA were used to distinguish groups by pre- and post- and study cohort (intervention, control) and identify statistically significant differences. Main effects were controlled for using Bonferroni correction, and Levene's test of homogeneity was used. No attrition analysis was conducted.	Mixed model regression using maximum likelihood estimation. Conducted attrition analysis to investigate potential impact of attrition on generalizability by comparing pre-intervention similarity of participants who completed follow-up survey and those who did not.

<sup>a</sup> UNCE referred to the non-intervention group as the control group, whereas the independent evaluation referred to the non-intervention group as the comparison group.

**Table IV-4.— Results for UNCE Self-Evaluation: Preschooler Healthy Snack Selection Assessment**

Outcome <sup>a</sup>	Percentage of Correct Responses				ANCOVA (n = 233)	
	Intervention (n = 136)		Control (n = 97)		F df = 1	p
	Pre	Post	Pre	Post		
Named snack foods correctly	64.2	81.0	65.3	76.2	8.474	0.004
Selected a healthy snack as a preference to eat	33.6	52.2	33.4	39.6	15.345	< 0.001
Distinguished a healthy snack from an unhealthy snack	46.9	62.3	45.5	51.4	11.181	0.001

<sup>a</sup>Preschoolers were shown a series of nine snack pairs (18 food items total) and asked to name the snack food, select the food that they would prefer to eat for snack, and identify which snack is the healthy snack that “helps their heart, muscles, and bones.” Results are for matched pre- and post-surveys.

Source: UNCE Evaluation Report, 2011

Table IV-5 shows the mean caregiver responses for the pre- and post-surveys for the intervention and control groups for the outcome measures of variety, consumption, purchasing, and accessibility of fruits and vegetables as well as consumption of milk. Limitations in the UNCE data analysis strategy previously discussed should be considered when assessing reported impacts. The only statistically significant change in these measures was in the combined variety of fruits and vegetables. In its evaluation report, UNCE attributed the limited impact of the program to a ceiling effect because the means for all responses for both intervention and control groups were in the “often” or “always” category. UNCE also noted that both the intervention and control groups received weekly Nutrition Connection newsletters on healthy eating and that the Head Start program encouraged healthier habits during the 2010 calendar year. These activities could have potentially suppressed the impact of the program, thus decreasing the overall difference in outcomes between the intervention and the control groups. However, UNCE believed that it was important to distribute the newsletter to keep parents engaged in the study.

UNCE also noted that the study was conducted from March to August, the time of the year when availability and price structure make fresh fruits and vegetables more affordable for families. Additionally, study participants or family members enrolled in WIC received free fruits and vegetables and information promoting fruit and vegetable consumption that could have affected study outcomes (UNCE, 2011). About 72 percent of UNCE’s evaluation study participants were enrolled in WIC (themselves or their children).

The All 4 Kids program placed an equal emphasis on physical activity and on nutrition. Although physical activity was not an outcome of interest for the independent evaluation, UNCE found that children in the intervention group, in contrast to children in the control group, were observed as significantly more likely to improve their movement skills, their balance, and their hopping endurance.

**Table IV-5.— Results for UNCE Self-Evaluation: Outcome Measures Reported by Primary Caregivers**

Outcome <sup>a</sup>	Intervention Means (n = 197)		Control Means (n = 246)		ANCOVA	
	Pre	Post	Pre	Post	F	p
My preschooler eats most fruits (variety)	4.37	4.58	4.36	4.40	3.32	0.07
My preschooler eats most vegetables (variety)	3.51	3.72	3.40	3.51	2.57	0.11
My preschooler eats most fruits and vegetables (combined variety)	7.80	8.31	7.76	7.94	4.66	0.03 <sup>b</sup>
My preschooler eats fruits and vegetables (consumption)	4.30	4.44	4.14	4.33	0.41	0.52
I buy fruits (purchasing)	4.83	4.91	4.77	4.84	2.08	0.15
I buy vegetables (purchasing)	4.70	4.80	4.68	4.76	0.29	0.59
I keep fruit ready to eat (accessibility)	4.54	4.69	4.43	4.64	0.09	0.76
I keep vegetables ready to eat (accessibility)	4.00	4.32	3.97	4.23	0.71	0.40
I keep fruits and vegetables ready to eat (combined accessibility)	8.54	9.03	8.40	8.87	0.45	0.51
My preschooler drinks milk (milk consumption)	4.58	4.70	4.61	4.67	0.53	0.47

<sup>a</sup> For all questions, a five-item Likert scale (1–5) was used with the options of “never,” “now and then,” “sometimes,” “often,” and “always.” For combined outcomes, the scores ranged from 1 to 10.

<sup>b</sup> Positive movement was seen from “sometimes” to “often.”

Source: UNCE Evaluation Report, 2011

Table IV-6 compares the results of the independent evaluation with the UNCE evaluation for nutrition behaviors included in both evaluations and assessed through surveys of parents or caregivers. Although the behaviors were measured using different instruments, one can assess whether the findings of the two evaluations were similar in terms of magnitude and direction. The UNCE evaluation did not find a statistically significant effect on the consumption of fruits and vegetables and the accessibility of fruits and vegetables at home. However, the UNCE evaluation found a statistically significant effect in the proportion of parents who reported their children “often” eat most fruits and vegetables, and parent reports that their child reported eating most fruits approached statistical significance. For the independent evaluation, significant changes were not observed in the variety of fruits and vegetables eaten by the child, average daily number of cups of fruits and vegetables consumed, and accessibility of fruits and vegetables at home. Although small increases were observed in most outcomes, there were corresponding increases in the comparison group. It is possible that completing the baseline survey may have sensitized parents or parents expressed an upward bias (e.g., social desirability) when completing the survey.

Together, the two evaluation studies suggest that the All 4 Kids program had a positive effect on children’s understanding and preference for healthy snacks. However, these gains were not sufficient to translate into statistically significant effects on consumption of fruits and vegetables in the home.

**Table IV-6.— Comparison of Results for the Independent Evaluation and the UNCE Self-Evaluation**

Behavior	Independent Evaluation <sup>a</sup>					UNCE Evaluation <sup>b,c</sup>					
	Intervention Group Means		Comparison Group Means		Estimated Impact	Wald Chi-Square <i>p</i> -value	Intervention Group Means		Control Group Means		<i>p</i> -value
	Pre	Post	Pre	Post			Pre	Post	Pre	Post	
Eat variety of fruits and vegetables <sup>d</sup>	NA	NA	NA	NA	NA	NA	7.80	8.31	7.76	7.94	0.03 <sup>e</sup>
Eat variety of fruits <sup>d</sup>	4.59	4.43	4.58	4.35	0.06	0.7504	4.37	4.58	4.36	4.40	0.07
Eat variety of vegetables <sup>d</sup>	3.33	3.61	3.43	3.59	0.11	0.5850	3.51	3.72	3.40	3.51	0.11
Consumption of fruits and vegetables <sup>f</sup>	2.45	3.01	2.33	2.92	-0.04	0.8451	4.30	4.44	4.14	4.33	0.52
Availability and accessibility of fruits and vegetables <sup>g</sup>	4.01	4.57	4.02	4.57	0.09	0.5408	8.54	9.03	8.40	8.87	0.51

NA = not applicable

<sup>a</sup> Source: Parent Survey, spring wave: February–March 2010 (baseline) and May–June 2010 (follow-up); summer wave: May 2010 (baseline) and August–September 2010 (follow-up). General linear mixed models (SAS PROC MIXED) for continuous impact variables and generalized linear mixed models (SAS PROC GLIMMIX) for dichotomous impact variables were used to evaluate the program impact while accounting for the clustering of students within centers.

<sup>b</sup> Source: UNCE Evaluation Report, 2011. Means and *p*-value from ANCOVA analysis.

<sup>c</sup> Impact not reported.

<sup>d</sup> For the independent evaluation, reported as the number of days in the past week more than one type of fruit or vegetable was consumed. For the UNCE evaluation, reported as the frequency of eating most fruits and vegetables on five-item Likert scale, with a combined score for eating a variety of fruits and vegetables ranging from 1–10.

<sup>e</sup> Positive movement was seen from “sometimes” to “often.”

<sup>f</sup> For the independent evaluation, reported as the average daily number of cups of fruit and vegetables consumed at home. For the UNCE evaluation, reported as the frequency of eating fruits and vegetables on five-item Likert scale.

<sup>g</sup> For the independent evaluation, index score (0–7) based on reported household availability of seven fruits and vegetables. For the UNCE evaluation, reported as the frequency of keeping fruits and vegetables ready to eat on five-item Likert scale, with a combined score for fruits and vegetables ranging from 1 to 10.

## E. Lessons Learned

To understand UNCE's experience evaluating the All 4 Kids program, process information was gathered through a variety of sources. These included: UNCE's evaluation plan prior to the implementation of the intervention; the report of evaluation findings provided by the UNCE principal investigator; and in-depth interviews with the project's evaluation lead and the senior All 4 Kids team.

### 1. Facilitators and Challenges to Implementation of Evaluation as Planned

#### a. Facilitators

##### ▲ Effective systems and processes for scheduling, flow, and staffing of onsite data collection

Because an independent evaluation and a demonstration-led evaluation were being conducted at the same time, the UNCE evaluation team had to develop strong coordination protocols. Coordination of the two evaluations presented a significant logistical effort as UNCE had to develop new systems for data collection. These systems included scheduling and site coordination activities to allow for a sufficient number of data collectors and for smooth transitions for respondents being interviewed by both teams. For example, time slots were given to caregivers and classrooms for conducting the interviews in an orderly fashion. For those who were not able to be interviewed onsite, make-up interviews were scheduled. Carefully coordinated logistics helped to increase response rates and made it easier for those being interviewed to participate.

##### ▲ Team approach and focus on evaluation

The principal investigator and the two co-principal investigators spoke at length regarding the strengths different players brought to the evaluation team. By pooling their expertise—in nutrition, physical activity and movement, and child development—the team was able to construct a comprehensive research design that addressed key objectives.

#### b. Challenges

##### ▲ Lower-than-expected evaluation sample

At follow-up, UNCE completed the required number of completed surveys for observing a minimum detectable effect ( $n = 240$ ) for the control group ( $n = 295$ ) but not the intervention group ( $n = 234$ ). UNCE faced several factors beyond their control that made it difficult to complete the required number of surveys. For example, Acelero Head Start told the All 4 Kids administrators that each classroom would have approximately 20 students. However, initial enrollment in the Head Start intervention classrooms for the spring wave was approximately 40 percent lower than expected. UNCE staff members believe that the economic recession that hit Las Vegas hard during the intervention periods contributed to significantly lower enrollment of children in the spring wave of the study. As a result, additional sites needed to be added for the summer wave.

In addition, during the first day of the summer wave pre-intervention evaluation interviews, Acelero notified the Head Start centers that full-day summer classes would be eliminated at many Head Start centers to save costs, again reducing the number of children available for the intervention and evaluation. These changes affected two of the planned summer intervention sites. According to the All 4 Kids staff members interviewed, the elimination of full-day classes led to the loss of as many as 80 potential families for the summer wave intervention and data collection effort.

### **▲ Data collection challenges at the Head Start centers**

Limited available space at the centers and unexpected center closings affected not only UNCE's implementation of the All 4 Kids demonstration project as noted in chapter II, but also made the onsite parent and caregiver interviewing process more challenging. For example, at some Head Start centers interviews took place in back hallways or even in closets. At one Head Start center, inconvenient available space for the interviews resulted in some parents and caregivers deciding not to participate in the evaluation.

Unexpected temporary closings of centers also posed onsite data collection challenges for UNCE. For example, the UNCE principal investigator received less than one week's notice that one center would be closed and in turn had to make logistical arrangements to complete all the surveys at that center within a very short timeframe. This situation meant that while most of the primary caregiver interviews were completed, none of the children's evaluations for this center were able to be completed. Sewer issues at another center required it to be closed during scheduled interviews. To include these parents and caregivers in the evaluation sample, these interviews were administered by telephone.

## **2. Intended Use of Evaluation Results**

The UNCE investigators plan to share evaluation information more broadly by submitting abstracts to present findings at professional conferences and submitting manuscripts to peer-reviewed journals. In addition, the Head Start program in Las Vegas has been very interested in the evaluation results and has received periodic updates about UNCE's preliminary evaluation results.

UNCE is continuing the All 4 Kids program with SNAP-Ed funding and expanding to other states with a grant from the U.S. Department of Agriculture's National Institute of Food and Agriculture, Agriculture and Food Research Initiative (AFRI). Based on the independent evaluation results, UNCE plans to consider strategies to translate improvements they documented in the childcare setting to the home, including changes to the take-home materials, Family Activity sessions, and other methods to better reach parents and caregivers and help them increase fruit and vegetable offerings at home.

## **3. UNCE Future Evaluation Plans**

All three investigators emphasized the importance of conducting program evaluation, recognizing its critical role in ensuring their ability to improve and implement the All 4 Kids program. Under the AFRI grant noted above, UNCE will conduct a process evaluation aimed at program expansion using online training modules. With SNAP-Ed funding, UNCE is continuing to collect the same data as under the demonstration project and plans to refine the program evaluation tools in the coming months. The project's senior team indicated that as was the case with this evaluation experience, future evaluation findings will be the basis for ongoing program refinements.

## **4. Suggestions for Improving Evaluations**

A well-designed impact evaluation accomplishes several tasks that permit the investigator to draw a reasonable and supportable conclusion about the effect of the program and the likelihood that any changes observed in the sample participants would replicate to the broader target population. No single design can address every potential concern. Some approaches are commonly viewed as preferable. Based on the assessment of UNCE's evaluation of the All 4 Kids program, the following were identified as future opportunities for improved evaluation within the financial and personnel constraints that are typical of SNAP-Ed programs.

**▲ Determine the anticipated size of the program impact on the target audience**

The UNCE evaluation team did not determine how much of an effect the All 4 Kids program would have on program participants before conducting the evaluation. Accordingly, it is difficult to determine whether their program failed to observe changes in dietary behavior as a function of implementation failures or because of statistical and measurement issues. When resources are limited, investigators can examine the published literature and assess the magnitude of programs similar to the intervention under consideration. Systematic reviews, such as the meta-analysis published by Knai and colleagues (2006), can be very useful. This paper provides a range of values for studies similar to the All 4 Kids program. Investigators may take these values, use their best judgment regarding the degree of similarity between the published findings and the intervention under consideration, and make best case/worst case estimations to help in other facets of program planning.

**▲ Match analytic strategies to the characteristics of the evaluation design**

The UNCE evaluation team employed analysis of covariance (ANCOVA) to distinguish groups by pre- and post-survey and study cohort (intervention, control) and identify statistically significant differences. This approach did not account for the complexities of the evaluation design, specifically the clustering of individuals within centers). Accordingly, results of their analyses must be viewed with caution because the level of variation in measured outcomes is likely to be underestimated. Statistical programs are now available within most of the standard analytic software packages that can address these designs. Alternatively, post-hoc corrections can be applied to test statistics. Blitstein and colleagues (2005) describe methods for post-hoc correction.

**▲ Collect additional waves of data for trend and interrupted time-series analyses**

If UNCE does not have the resources to use a quasi-experimental design for future evaluations, an alternative to consider is collecting additional waves of data from participants receiving the intervention for trend and interrupted time-series analyses. In this approach, a string of observations is interrupted by the implementation of an intervention, and the investigator can assess whether this phenomenon altered the slope (change over time) in the outcome of interest. For example, three rounds of data collection are conducted before the intervention, and three rounds of data collection are conducted after the intervention from the same cohort. This design expresses change as a function of time, making it more difficult to construct plausible alternative explanations for changes in the outcome of interest. Contemporaneous measurement of environmental factors such as media campaigns should also be considered. The approach can be particularly effective when repeated implementations of the intervention are possible; this allows the investigator to monitor the rise and fall of primary outcomes associated with the intervention.



For this demonstration project, the University of Nevada Cooperative Extension (UNCE) implemented the All 4 Kids SNAP-Ed program in six Head Start centers in Las Vegas, Nevada. The target audience at these sites was preschool children (aged 3 to 5 years) and their parents and caregivers. During the study period, the program was delivered in two waves, the first from March through April 2010 and the second from June through July 2010. In total during the demonstration project, All 4 Kids reached 403 children and their parents and caregivers at an estimated cost of approximately \$370 per child. This final chapter presents a summary and discussion of the key findings from the independent evaluation, with recommendations for improving program implementation and future evaluations of this program.

### A. Key Process Evaluation Findings: Factors Supporting Implementation

Interviews with UNCE program staff and intervention site staff members as well as the survey and focus groups with parents and caregivers, revealed that Head Start centers were eager to participate in the All 4 Kids program, the program was well received by the intervention sites and parents, and it was relatively easy to implement. The following factors supported effective implementation of All 4 Kids program.

- **Relevance of program activities and messages to the target audience.** The designers and implementers of the All 4 Kids program team uniformly reported that most Head Start directors were very receptive to the program and helpful in reaching out to parents and caregivers. Interviews with the intervention site staff members confirmed that they thought the program was well designed for the children they serve. Teachers reported that the preschoolers responded very positively to the All 4 Kids teachers and enjoyed the music and movement that was an integral part of each lesson. All of the Head Start teachers who were interviewed on-site or completed the mail questionnaires reported reinforcing the All 4 Kids messages in their classroom and at mealtimes and some said they reached out to parents to personally invite them to the Family Activity sessions. They also praised the program’s culturally appropriate materials, use of bilingual staff, and the efforts to engage parents and caregivers—an approach that is consistent with Head Start program practices and culture.
- **Widespread parent and caregiver satisfaction.** Parents and caregivers also reported that the program was very appealing and relevant to them. Respondents to the parent survey reported widespread use and high satisfaction levels with the All 4 Kids program materials sent home to them. While only about one-half of parents attended any of the three Family Activity sessions, 93 percent of those who attended the sessions were highly satisfied with them. Caregivers who participated in the focus group discussions mentioned that they liked how the program was teaching their children and highlighted examples of how their children repeated the healthy eating messages and sang the All 4 Kids CD lyrics at home.
- **Strong focus on quality assurance and improvement.** UNCE has developed a structured approach to training and supervising the direct educators that appears to ensure program fidelity and promote continuous quality improvement. Program supervisors and direct educators stated that the class observations and feedback the educators receive from the program officer, along with the Community Logs they filled out after each class, were an excellent way to communicate and document how the program was being implemented and to identify improvements that might enhance the program’s effectiveness.

## B. Key Process Evaluation Findings: Challenges to Implementation

Because this project was designed around a model of SNAP-Ed that could withstand a rigorous impact evaluation, UNCE had to modify its past approach to implementing All 4 Kids in several ways, including implementing the program over a 2-month period instead of 12 weeks, conducting some of the intervention during the summer months, and increasing the number of sites each direct educator was assigned. These modifications impacted UNCE's ability to implement the interventions in a manner to which it had become accustomed, thus creating some challenges in the implementation scope and logistics.

Other challenges identified that were not specific to the scheduling of this demonstration project and are key for UNCE to address as All 4 Kids is replicated in the future include the following:

- **Maximizing parent and caregiver reach.** The All 4 Kids program team uniformly recognized that reaching parents was a critical component of the program's success. While the majority of parents and caregivers reported using the Family Connections take-home materials, only approximately one-half of the eligible parents and caregivers attended any of the Family Activity sessions and only 17 percent attended all three sessions held at their child's center. UNCE recognizes the importance of finding better ways to reach parents and caregivers in order to impact children's fruit and vegetable consumption in the home.
- **Engaging center directors.** UNCE senior project team members recognized that the variability in the level of center director support impacted their ability to schedule the Family Activity sessions, to provide sufficient outreach and recruitment for these classes, and the level of both teacher and parent engagement at each site. They stressed the need to place greater emphasis on building positive working relationships with the center directors and staff, both before and during program implementation.
- **Reduced program exposure for children and parent engagement during the summer months.** Through the experience of this demonstration project, UNCE affirmed that it is harder to have steady child attendance and consistent parent engagement in a childcare intervention that is conducted during the summer months. In the future they do not plan to offer any All 4 Kids classes to Head Start centers during the summer months.

## C. Key Impact Evaluation Findings

The goal of the impact evaluation was to assess the impact of the All 4 Kids program on children's daily at-home consumption of fruits and vegetables. The impact analysis findings suggest that the program did not have a statistically significant impact on children's daily at-home consumption of fruits and vegetables. Despite small increases in the mean number of cups of fruits and vegetables consumed at home each day, there was little evidence to support the assumption that changes in consumption of fruits or vegetables were related to the program. Because improvements were observed in both the intervention group and the comparison group, the possibility that other factors contributed to these changes (e.g., seasonal trends, other events in the community, and the increased sensitivity of parents and caregivers to their children's eating behavior prompted by their participation in the study) could not be ruled out. The lack of statistically significant findings may also have been influenced by ceiling effects that limited the ability to detect significant change. As reported by parents and caregivers, children's fruit and vegetable consumption in the home at baseline was quite close to USDA's Food Guidance System recommendations for this age group

(2.45 cups for the intervention group and 2.32 cups for the comparison group).<sup>24</sup> This may suggest that there was less room to improve children's diets than initially anticipated. Alternatively, it may be that parents expressed an upward bias (e.g., social desirability) in reporting their children's diet. Either of these would have limited the ability to observe change.

There were not any significant changes in children's other dietary behaviors, parent behaviors, and household variables such as the availability of fruits and vegetables. Although there were small increases in most secondary outcomes, there were corresponding increases in the comparison group. The comparison group did not receive any direct nutrition education from the All 4 Kids staff but did receive a weekly newsletter to keep them engaged in the evaluation study, which could have potentially suppressed the impact of the program, thus decreasing the overall difference in outcomes between the intervention and comparison groups. The increases in the comparison group suggest that completing the baseline survey may have sensitized parents or that parents expressed an upward bias (e.g., social desirability) when completing the survey.

There were promising improvements in two of the secondary outcome measures that approached statistical significance: children helping themselves to or requesting vegetables for a snack and children's reported willingness to try new fruits. However, the program did not appear to influence reinforcing factors, such as parents' offering children vegetables as snacks.

#### **D. Key Findings from the Assessment of UNCE's Self-Evaluation**

The independent evaluators assessed the quality of UNCE's self-evaluation and compared the methods and results of UNCE's self-evaluation with those of the independent evaluation. The UNCE evaluation employed the same quasi-experimental design used for the independent evaluation. The assessment identified the following strengths and weaknesses of the UNCE self-evaluation:

- Strengths of UNCE's evaluation included the use of a viable comparison strategy, the well-planned and implemented data collection procedures, modest attrition between the pre- and post-surveys for the caregiver survey, and little missing data for the impact analysis.
- Weaknesses included the following: the preschooler survey had considerable attrition, which limited the amount of paired data for the impact analysis; the impact instruments for the caregiver survey lacked validity and reliability testing; the data analyses did not account for the clustering of individuals within centers; and the research objectives and hypotheses were not stated in quantifiable terms.

Both the UNCE evaluation and the FNS independent evaluation found a positive impact on children's understanding and preference for healthy snacks. However, these gains were not sufficient to translate into statistically significant effects on their consumption of fruits and vegetables in the home.

#### **E. Recommendations**

The All 4 Kids intervention appears to be a well-designed and well-liked intervention that is appropriate and easy to implement for Head Start childcare settings. It is important to note that the evaluation conducted by UNCE reported a number of positive changes in children's nutrition knowledge, attitudes, and behavior in the childcare setting that were beyond the features being measured by the independent

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<sup>24</sup> According to USDA's Food Guidance System, it is recommended that children aged 2 to 5 years eat about 1 to 2 cups of vegetables each day and 1 to 1.5 cups of fruit each day, depending on the child's gender and activity level (USDA, 2011).

impact evaluation. However, these gains, while important, were not sufficient to translate into statistically significant effects on consumption of fruits and vegetables at home. Increasing the focus on parent and caregiver education and finding ways to enhance relationships with the director and staff at each program site might improve future program implementation efforts. While the UNCE principal investigators clearly have the technical expertise to conduct nutrition program evaluations, their future SNAP-Ed evaluations could benefit from improvements in evaluation design and analysis as described below.

#### ▲ **Key Areas for Program Improvement**

As UNCE continues to implement and refine the All 4 Kids program and assess its impact on preschool children and their families, the following actions should be considered for program improvement.

- **Maximize parent and caregiver reach.** UNCE should consider other ways to design and promote the Family Activity sessions that allow more parents to attend. For example, UNCE might want to schedule more than three events at each center and offer them at different time periods so that parents with different types of scheduling conflicts could attend. Where space is a limiting factor they may want to offer the events to only two classrooms at a time to limit crowding. UNCE could also enlist the center directors' support for making reminder calls before each Family Activity session. UNCE may also want to consider additional ways to reach caregivers in face-to-face education, such as adding classes designed for caregivers only.
- **Improve content of take-home materials directed to parents and caregivers.** UNCE's All 4 Kids project team members have recognized the need to revise the All 4 Kids take-home materials. Upon completion of the evaluation, revisions were underway to better communicate the program's healthy eating messages to parents and caregivers. To help address caregivers' food cost concerns, these revisions could also include materials and information on meal planning, shopping on a limited budget, food storage tips, and how to apply for SNAP, WIC and access emergency food programs. Consistent with the current (2010) Dietary Guidelines for Americans, the curriculum should encourage the use of all forms of fruits and vegetables, including fresh, frozen, canned, and dried (USDA, CNRP 2011). Much of these resources could be attained at little or no cost from other programs at UNCE.
- **Actively engage childcare center staff.** The UNCE management team highlighted the critical role that the childcare staff members have in shaping children's behaviors and in motivating parent engagement. They also acknowledged the varied levels of center staff involvement during the demonstration project. In the future, the principal investigator said the All 4 Kids program will place a greater emphasis on building good working relationships with the directors and teachers at each center before the program begins onsite. If resources allow, UNCE could also consider offering training workshops for Head Start directors and teachers to provide them information and tools to increase children's healthy eating and be role models of healthy eating.

#### ▲ **Suggestions for Improving Evaluations**

For future evaluations, it is suggested that UNCE determine the anticipated size of the program impact on the target audience before the intervention and match the analytic strategies to the characteristics of the evaluation design. These changes would improve the quality of the evaluation and increase UNCE's ability to accurately measure changes attributable to the program. If resources are not available for a quasi-experimental design, UNCE may want to collect additional waves of data from participants receiving the intervention for trend and interrupted time-series analyses.