



United States Department of Agriculture

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*Supplemental Nutrition Assistance Program  
Education and Evaluation Study (Wave II)*

*Iowa Nutrition Network's  
Building and Strengthening Iowa Community  
Support (BASICS) for Nutrition and Physical  
Activity Program*

*Volume I: Report*

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# United States Department of Agriculture

*Food and Nutrition Service, Office of Policy Support*

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## *Supplemental Nutrition Assistance Program Education and Evaluation Study (Wave II)*

### *Iowa Nutrition Network's Building and Strengthening Iowa Community Support (BASICS) for Nutrition and Physical Activity Program Volume I: Report*

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# Executive Summary

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This executive summary presents the background and methods and highlights key findings from one of three case study reports produced for the *Models of SNAP Education and Evaluation, Wave II*. This report is specific to the evaluation of the Supplemental Nutrition Assistance Program-Education (SNAP-Ed) demonstration project for Iowa Nutrition Network (INN) Building and Strengthening Iowa Community Support (BASICS) and the enhanced BASICS Plus, which includes an English-language social marketing component. 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 INN's own evaluation of the BASICS program.

The BASICS program is designed to improve fruit and vegetable and low-fat dairy consumption among elementary school children in schools with at least 50 percent participation in free and reduced-price school lunch. The intervention is designed to help nutrition educators working with FNS programs and in communities deliver science-based nutrition education to low-income children and their parents. The intervention focuses on two key messages of the Dietary Guidelines for Americans and uses a variety of behavior-focused strategies to promote these behaviors: (1) Children will choose fruits and vegetables for snacks; and (2) children will choose milk and milk products at meals and snacks, choosing low-fat or fat-free ones most often.

The BASICS program delivers nutrition and physical activity education through a school-based program. The BASICS Plus program delivers nutrition and physical activity education through a school-based and multichannel nutrition education social marketing program in targeted communities. The school-based intervention consists of 12 30-minute lessons that are specifically designed for third-grade students. The lessons include activities such as food tastings and physical activity demonstrations. Eight lessons are taught by INN-contracted nutrition educators and four lessons are taught by the intervention school classroom teachers. The channels of communication for the BASICS Plus program social marketing campaign include point-of-purchase signage and demonstrations at supermarkets, billboards and bus shelter signage in SNAP-Ed-qualified census tracts, television and radio ads, a family event identified as Family Nights Out held at the participating child's school; materials in schools such as posters and banners; and materials at community organizations such as Women, Infants, and Children (WIC) offices and YMCAs, including posters and window clings.

The INN evaluation relied on data collected from third-grade students. Based on models describing changes over time between the intervention and comparison groups, the INN evaluation found that the BASICS Plus program led to change in student preferences for fruits and vegetables, while the BASICS program did not. Both the BASICS Plus and BASICS programs increased the proportion of students who recognized that low-fat and fat-free milks are healthier choices than whole milk compared with the comparison group. This pattern of finding suggests that the addition of the social marketing component in the BASICS Plus intervention was necessary to achieve primary program effects that were statistically significant. Both the BASICS Plus and BASICS programs demonstrated change over time, within condition among some the program's other measured outcomes.

In contrast, the independent evaluation, which relied on data collected from parents, found statistically significant impacts for intake of fruits and intake of both fruits and vegetables among both the BASICS

Plus program and the BASICS program compared with the comparison group. The independent evaluation identified a few statistically significant differences between the BASICS and the BASICS Plus programs. Differences were limited to drinking more low-fat milk and eating a greater variety of fruit each day among the BASICS Plus group. This pattern of findings suggests that the BASICS program can achieve many of the primary program impacts. The addition of the social marketing component led to statistically significant change in reported vegetable intake as well as a stronger shift to healthier, lower fat milk products over the BASICS program alone.

The process evaluation revealed a high degree of satisfaction with the program by participants, parents, and school personnel. Key informants attributed this to the quality of the curriculum content and design, the hands-on activities and practical program materials, and the commitment of the direct educators to program fidelity and quality through training and continuing education delivered by INN.

## **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 evidence-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>

- 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.
- Balance caloric intake from food and beverages with calories expended.

The SNAP-Ed Plan Guidance also encourages all States to include a component in their SNAP-Ed plans to evaluate the effectiveness of their SNAP-Ed interventions. These can include formative, process, outcome, and impact evaluations. In Federal Fiscal Year (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 process outcomes, such as program use, than they were on participant behavior change (FNS, 2006). Being among the largest Federal funding sources for nutrition education, FNS, States, and local IAs have a significant stake in ensuring that SNAP-Ed meets FNS's goals.

To identify effective models of SNAP-Ed and evaluation and to collect information on the implementation and impacts of SNAP-Ed programs, FNS contracted with Altarum Institute and RTI International to conduct the *Models of SNAP Education and Evaluation, Wave II*, a rigorous independent evaluation of three competitively selected models of SNAP-Ed that show promise for behavior change. The goal of this study is to determine whether the selected projects can serve as good examples of SNAP-Ed delivery by meeting the following criteria:

- ▲ Positively affecting the nutrition and health behaviors of SNAP clients while adhering to FNS Guiding Principles,

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<sup>1</sup> See the SNAP-Ed Plan Guidance at <http://www.nal.usda.gov/fns/Guidance/FY2012SNAP-EdGuidance.pdf> and the SNAP-Ed Connections Web site at <http://snap.nal.usda.gov>.

- ▲ 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-Ed 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 2010, a FNS study review committee competitively selected three SNAP-Ed IAs to participate in the study, including INN's BASICS program. Each of the three agencies implemented its demonstration program between October 2011 and June 2012 and conducted its own evaluation.

## **B. Overview of the BASICS Program**

INN used two related nutrition education programs in conducting the intervention for this study. The first approach, called BASICS, uses direct and indirect education to deliver the program's nutrition education messages. The second approach, called BASICS PLUS, supplements the approach used in BASICS with a social marketing campaign to reinforce the messages. One of the key goals of this study was to determine whether adding the supplemental social marketing campaign to the BASIC program effects client behavior change.

The goal of the INN SNAP-Ed BASICS program is to use the traditional approaches of direct and indirect education to promote nutrition and physical activity education with the intent of increasing the likelihood that SNAP audiences will make healthy food choices consistent with the 2010 Dietary Guidelines for Americans and MyPyramid<sup>2</sup> (USDA Center for Nutrition Policy and Promotion, 2011; USDA, 2011). The BASICS intervention delivers nutrition and physical activity education through school-based direct and indirect educational programs in intervention schools. The school-based intervention consists of 12 30-minute lessons specifically designed for third-grade students. The lessons include activities such as food tastings and physical activity demonstrations. Eight lessons are taught by INN-contracted nutrition educators, and four lessons are taught by the intervention school classroom teachers.

The BASICS Plus program has the same goal and approach for direct and indirect nutrition education, but supplements these delivery modes with a social marketing campaign. It was of interest to the researchers who conducted this study to determine whether the supplemental social marketing campaign adds value to the approach used in the BASICS program by increasing the likelihood of behavior change. The social marketing campaign that is included in BASICS Plus uses channels of communication that include point-of-purchase signage and demonstrations at supermarkets, billboards and bus shelter signage in SNAP-Ed-qualified census tracts, television and radio ads, a family event identified as Family Nights Out held at the participating child's school; materials in schools such as posters and banners; and materials at community organizations such as WIC offices and YMCAs, including posters and window clings. All social marketing efforts in BASICS Plus target SNAP-Ed eligible audiences,<sup>3</sup> reinforcing the BASICS message through these media. The BASICS Plus program included messages about making the switch to 1 percent or

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<sup>2</sup> The USDA MyPyramid food guidance system was in place when the Models of SNAP-Ed and Evaluation, Wave II demonstration projects were written. The USDA MyPlate food guidance system has replaced MyPyramid.

<sup>3</sup> This is defined as SNAP-eligible children (and their family members) who participated in the BASICS curriculum in Des Moines schools.

fat-free milk via the Bodies Change social marketing campaign; these messages were not used in the BASICS program.

The BASICS program includes three primary modes of educational delivery, while the BASICS Plus program adds a fourth component through social marketing as shown in Figure ES-1.

#### Figure ES-1a. BASICS Program Components

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- **Eight direct education lessons delivered in the classroom setting.** BASICS offers eight 30-minute nutrition education and physical activity lessons administered in school classrooms by direct educators.
- **Extended activities delivered in the classroom setting.** Designed to further compliment and reinforce the eight direct education lessons, BASICS offers extended nutrition and physical activity education activities that are administered by classroom teachers throughout the month. These extended nutrition and physical activity activities are the equivalent of four additional lessons.
- **Indirect education provided through take-home materials and activities.** BASICS offers indirect education to reinforce key nutrition education and physical activity messages by providing take-home materials and activities for parents and caregivers and their children. Additionally, a “Healthy pick of the day” promotion was posted on sneeze-guard clings in school cafeterias during lunch.

#### Figure ES-1b. BASICS PLUS Social Marketing Campaign Elements

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- **Point-of-purchase signage and demonstrations at supermarkets.** Signage featuring campaign messages and imagery in milk and produce departments at six SNAP-Ed-qualified retail grocery stores over a period of 7 months—two food demonstrations per month at each store (coordinated with BASICS curriculum classroom tastings).
- **Billboards.** Fourteen billboards in SNAP-Ed qualified low-income census tracts displaying PABS and Bodies Change campaign messages and imagery
- **Bus Shelters.** Signage featuring PABS and Bodies Change campaign messages and imagery displayed on seven bus shelters serving passengers on Des Moines Area Rapid Transit bus lines in SNAP-Ed-qualified low-income census tracts
- **Television.** PABS and Bodies Change spots broadcast on five television stations with viewers in the target demographic.
- **Radio.** PABS and Bodies Change spots broadcast on five television stations with viewers in the target demographic
- **Family Night Out.** One weeknight event at each BASICS Plus school to provide families with hands-on, fun nutrition and physical activity education as well as resources to help them develop healthy habits.
- **Materials in schools.** Signage featuring PABS campaign messages.
- **Materials in the community.** Signage featuring PABS and Bodies Change campaign messages and imagery posted at locations such as WIC offices and YMCAs
- **Free Media.** Two-minute, on-air interview and snack preparation on an evening news show; 4-minute on-air interview on the radio followed by participation in the radio station’s Family Nights Out event at a local mall.

In designing the BASICS program, INN used social cognitive theory as a conceptual framework from which to build their nutrition intervention. The BASICS program is designed to facilitate behavior change by using multiple levels of message delivery, including lessons for children in classroom settings; parent and caregiver take-home materials, activities, and family events; the display of posters and banners in the school environment; and a multichannel social marketing campaign outside of the classroom

environment. The BASICS take-home materials, activities, and assignments correspond to the classroom lessons. Parents and caregivers are encouraged to engage in the suggested activities and complete the homework with their child. In doing so, parents and caregivers are exposed to the program's key messages, which they can reinforce with their children.

While INN felt that the BASICS program was built around a solid theoretical construct, INN wanted to learn whether supplementing the BASICS approach with social marketing added value. The theory behind BASICS Plus, therefore, was that the addition of social marketing could reinforce the messaging from BASICS to increase awareness or be a tool to help the target audience to recognize the message and tie it into the messaging from BASICS, thus increasing interest in the direct and indirect education components being delivered.

## **C. Study Methodology**

### **1. Evaluation Design**

The independent evaluation was designed to examine the implementation and impact of the BASICS and BASICS Plus programs in Iowa. INN initially planned to collect matched data from parents and caregivers of students in the BASICS evaluation. To accommodate the FNS independent evaluation, INN agreed to forgo collecting data from parents and caregivers and instead to focus their evaluation on third-grade students.

Schools in three Iowa school districts (Council Bluffs, Waterloo, and Des Moines) received the programs while schools in a fourth school district (Davenport) served as the no-treatment comparison condition. School districts were deliberately assigned to study conditions (BASICS, BASICS Plus, or comparison) based on existing relationships and prior implementation of the BASICS program; schools in each district were then recruited to participate in the study. Des Moines served as the intervention site for the BASICS Plus program. This site reached 573 students from 28 classrooms in 11 schools. Parents and caregivers were reached with indirect educational programming by receiving take-home materials distributed to their children at school and by the multichannel social marketing campaign. Schools in Council Bluffs and Waterloo served as the BASICS program intervention sites. With seven participating elementary schools in Council Bluffs and four elementary schools in Waterloo, BASICS reached 627 students from 27 classrooms in 11 schools. Parents and caregivers received indirect education by receiving take-home materials that were distributed to their children at school. Davenport served as the comparison site with 11 elementary schools that include 577 students from 20 classrooms. All of the elementary schools had more than 59 percent of children who were eligible to receive free and reduced-price school lunches. The intervention was conducted from November 2011 to May 2012.

### **2. Process Evaluation Methods**

The BASICS 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 program-level staff members and from secondary documents.<sup>4</sup> Once the intervention was implemented, data collection and analysis of information on factors influencing the

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<sup>4</sup> Documents included INN's application to FNS for this study, INN program reports, the BASICS curriculum, and outlines used to train direct educators.

implementation and the lessons learned for program improvement and replicability began. This information was gained from the following sources:

- **In-person and telephone interviews** with State program managers, educators who implemented the BASICS program, direct educator supervisors, principals, and retail store managers.
- **Web-based surveys and telephone interviews with classroom teachers.**
- **Onsite observations of direct education** at five schools. Observations were conducted to assess how well direct educators followed the curriculum for the participant lessons, observed participant engagement levels, and documented any factors that may have supported or impeded program implementation.
- **Onsite observations at supermarkets** and other venues where the BASICS Plus was being implemented.
- **Focus groups and follow-up surveys** with parents or caregivers of students who participated in the intervention.

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 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, as well as agreement and disagreement among respondents.

Another important component of the process evaluation was the assessment of the experience and satisfaction of the parents and caregivers of the students with the intervention.

Information was collected on factors such as the following:

- Perceived goals of the program,
- Ways in which the program helped children to change their nutrition and physical activity behaviors, and
- Potential barriers faced in trying to increase their child's fruit and vegetable and low-fat milk intake.

These data were collected through a follow-up participant survey and focus groups with a subset of participants at three intervention sites where the intervention was being conducted.

Program administrative data were used to assess the program's reach and estimate the amount of exposure that participants had to the BASICS and BASICS Plus programs. The process evaluation findings also describe the resources and costs that INN needed to implement and evaluate the BASICS and BASICS Plus programs and the cost per 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 participant focus groups. Quantitative analysis was conducted on program reach, dosage, cost, and the parent follow-up survey responses.

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

The independent evaluation assessed the impact of the program on the primary measure: Children's average daily at-home consumption of fruits and vegetables. Based on FNS' interest in observing a

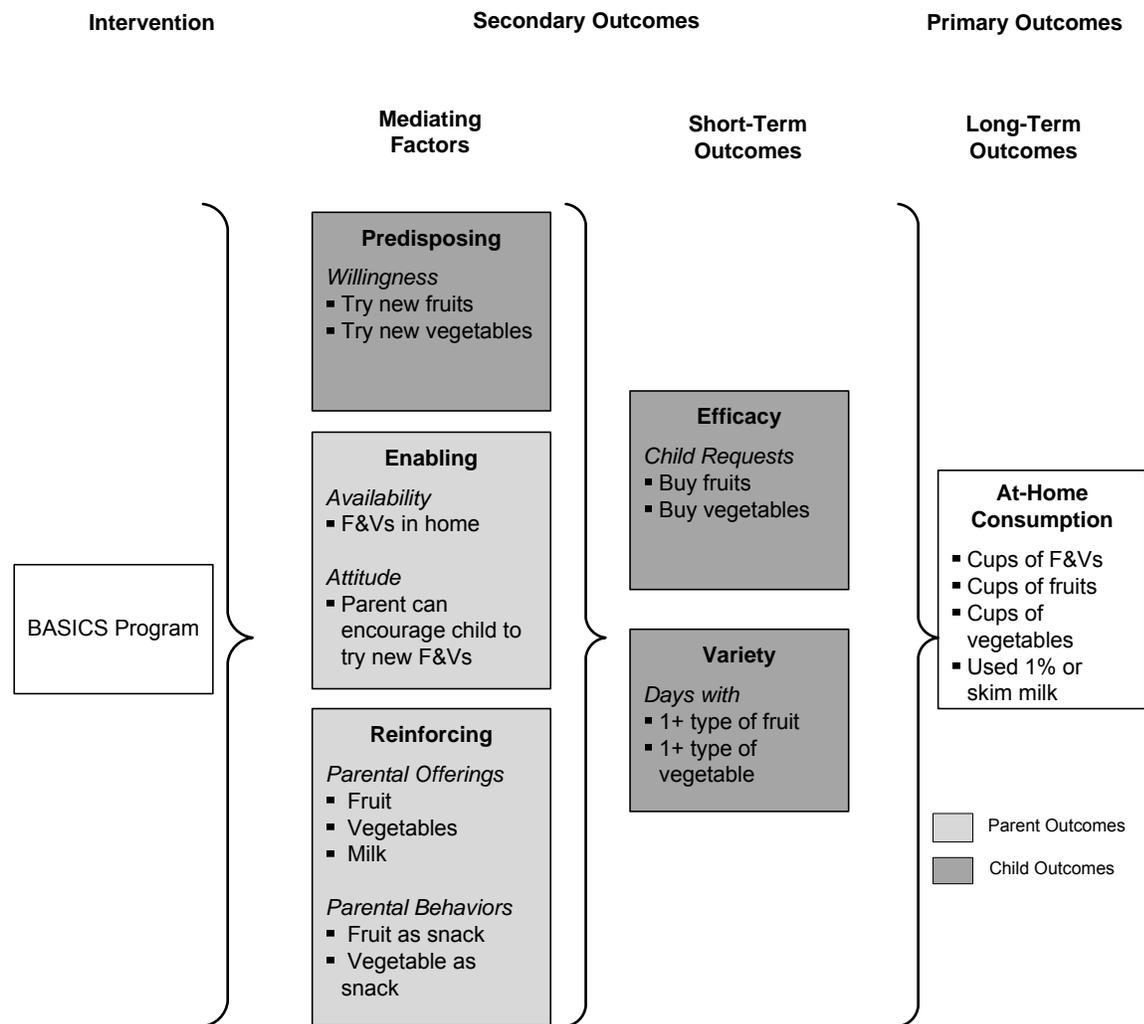
minimum increase in children’s dietary intake of 0.30 standard deviation units, it was hypothesized that children participating in the BASICS program would increase their average daily at-home consumption of fruits and vegetables combined by approximately 0.30 cups per day compared with children not participating in the program.

To better understand the factors affecting behavioral change, the analysis included an examination of secondary outcome measures as well. The framework shown in Figure ES-2 informed the evaluation of the effects of the BASICS 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. In general, 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.

The impact analysis considered the following secondary outcome measures:

- ▲ Variety—eating more than one type of fruit or vegetable each day;
- ▲ Willingness—willingness to try new fruits and vegetables;
- ▲ Choosing healthy foods—asking parents to buy fruits or vegetables;
- ▲ 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 or of milk at dinner;
- ▲ Parental behaviors—eating fruits or vegetables as a snack, drinking 1 percent or fat-free milk, or encouraging the child to try new fruits or vegetables; and
- ▲ Parent beliefs—belief that 1 percent or skim milk is healthier for their child than whole milk.

**Figure ES-2. Conceptual Framework for the BASICS Program (BASICS and BASICS Plus) Impact Evaluation**



Source: 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.

Parents and caregivers were surveyed at baseline and follow-up to collect information on children’s at-home consumption and other dietary behaviors.<sup>5</sup> Mail and telephone surveys were used to collect the baseline data (83 percent response rate among those who agreed to participate) and the follow-up data (77 percent response rate). Data collection at baseline ( $n = 1037$ ) and follow-up ( $n = 782$ ) met the targeted number of completed surveys for a priori sample size estimates. 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 groups with regard to respondent age.

<sup>5</sup> The survey instrument and other survey materials were available in English and Spanish.

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 schools. 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. Three comparisons were modeled: BASICS Plus versus comparison group, BASICS versus comparison group, and BASICS Plus versus BASICS. In each model, covariates included child age, child sex, household size, respondent race and ethnicity, respondent age, and respondent sex.

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

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

### **D. Process Evaluation Findings**

In FY 2012, four direct educators conducted the BASICS program at 22 schools throughout Iowa. The number of children who participated in the BASICS program in Des Moines, Council Bluffs and Waterloo was used as a basis for the cost per participant calculation. Using the BASICS program curriculum expenditures of \$138,197.68<sup>6</sup> and the total number of children reached through direct education ( $n = 1,244$ ), the estimated cost per child for enrollment in the BASICS program was \$111.08.

The number of children who participated in the BASICS Plus program in Des Moines was used as a basis for the cost per participant calculation, with the proviso that the social marketing campaign potentially reached many more SNAP-eligible households in Des Moines than the BASICS Plus target audience. However, there is no way to determine precisely the number of SNAP eligibles reached with the social marketing campaign. By using the total social marketing expenditures of \$206,087.82<sup>7</sup> and the total number of targeted children and their family members potentially reached through the BASICS Plus program in Des Moines ( $n = 3054$ ), the estimated cost per child participant and their family members for the social marketing component was \$67.48.<sup>8</sup>

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

When INN administrators were asked what skills, qualifications, and qualities they thought were critical for direct educators of the BASICS interventions to possess, administrators cited passion, subject matter

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<sup>6</sup> This figure includes the planning, design, and implementation phases.

<sup>7</sup> Includes the planning, design, and implementation phases.

<sup>8</sup> Alternatively, if the social marketing cost per child were based on the number of SNAP-eligible children who participated in the BASICS curriculum in Des Moines schools (not just the BASICS Plus schools in the independent evaluation), the total child reach is estimated at 4,507. The number of family members reached by the BASICS Plus program for the purpose of calculating the per participant cost of the social marketing campaign is based on a household size of 4.84 (Table III-1: Baseline Demographic Characteristics for Parent/Caregiver Respondents and Their Children Who Participated in the BASICS Evaluation—Overall and by Condition). The calculation is thus 4,507 child participants x household size of 4.84, providing an estimated total reach of 21,813. The estimated cost per child participant and their family members for the social marketing component in this scenario is \$9.44.

strength, teaching skills, and flexibility or adaptability. Furthermore, members of the team reported that it was not critical for the direct educators to have an advanced degree, but it was important that they have good organizational skills and feel a sense of ownership in the program.

Onsite observations of BASICS core lessons conducted in the classroom illustrated the subject matter strength, enthusiasm, and organization of the direct educators. The direct educators were able to walk into a classroom completely prepared to teach a 30-minute lesson with a variety of activities and snack samples, engage the children, and conduct the lesson with confidence and enthusiasm. These skills were combined with the ability to keep order in the class. The direct educator was supported by the classroom teacher, but the educator maintained a positive class atmosphere and typically did not need assistance from the classroom teacher.

## **2. Caregiver Satisfaction and Use of Program Materials and Classes**

Parents and caregivers who participated in focus group discussions provided positive feedback about the BASICS program and take-home materials. Parents consistently said that they liked the messages in the curriculum and also found the materials useful in helping their child eat healthier foods.

In all three focus groups, the majority of the parents and caregivers said that their children were now trying new vegetables and fruits at home. They attributed this change not just to what they were preparing at home, but also to the child's exposure to new foods in the BASICS lessons.

Moreover, in the focus group discussions, parents and caregivers expressed a desire to participate in discussions about their children, which highlights a need to discuss what their children are learning in school and provide input about programming.

## **E. Impact Evaluation Findings**

### **1. Baseline Analysis**

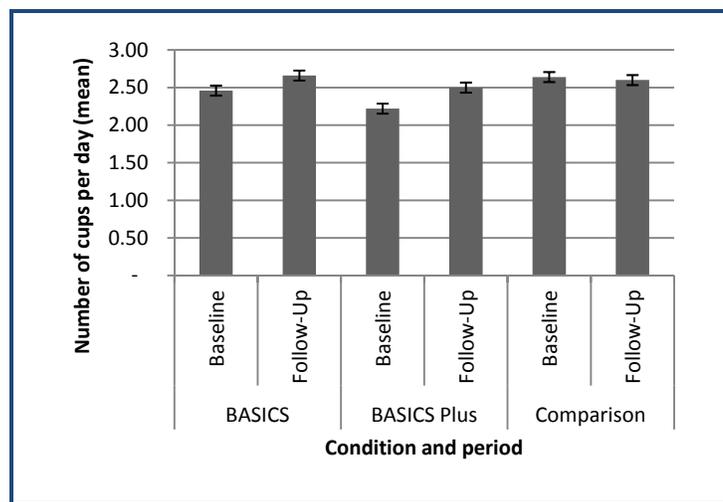
The baseline analysis included 1,037 parent respondents: 342 for the BASICS group, 343 for the BASICS Plus group, and 352 for the comparison group. At baseline, some racial and ethnic differences were evident. Respondents from the BASICS Plus group (Des Moines) were more likely than respondents from the BASICS group (Waterloo and Council Bluffs) or the comparison group (Davenport) to be Asian, while respondents from the comparison group were more likely than respondents from the BASICS group to be Black. Respondents from the BASICS Plus group were more likely than respondents from the BASICS group to be female and more likely to live in a single-parent household. Respondents from the BASICS Plus group and the BASICS group were more likely than respondents from the comparison group to live in multilingual homes. These differences were controlled for in statistical models with the inclusion of covariates.

Additionally, there were differences in baseline levels of some of the program outcomes. Children in the comparison group were more likely than children from either the BASICS Plus group or the BASICS group to have higher reported intakes of fruits and vegetables combined; they were also more likely than children in the BASICS Plus group to have higher reported intake of fruits and vegetables separately. Additionally, parents in the comparison group were more likely than parents from either the BASICS Plus group or the BASICS group to offer their children fruit as a snack and vegetables at dinner. These differences were controlled for in statistical models through the use of difference-in-difference estimation.

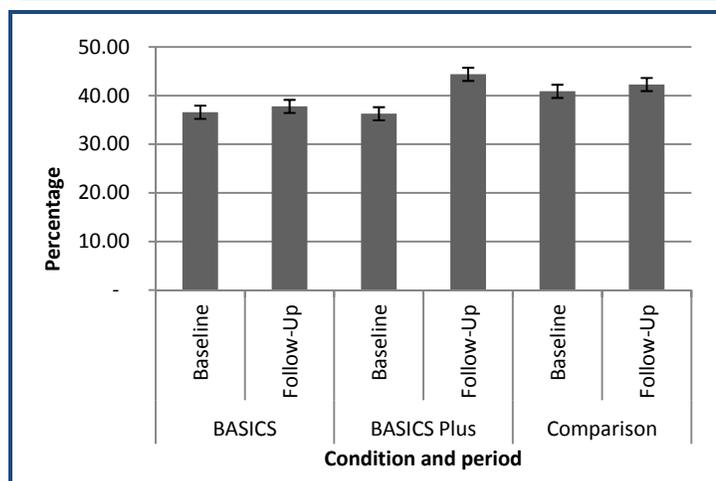
## 2. Primary Impact Results

Based on the results of the impact analysis, the BASICS Plus program had a significant impact on several primary outcomes compared with the comparison group. Significant changes include reported intake of fruits and vegetables combined (0.31 cups,  $p < 0.01$ ), as shown in Figure ES-3; fruit alone (0.17 cups,  $p < 0.01$ ); vegetables alone (0.13 cups,  $p < 0.05$ ); and the likelihood of using 1 percent or skim milk rather than whole milk (odds ratio: 1.32,  $p < 0.05$ ), as shown in Figure ES-4. The BASICS program also had a significant impact on several primary outcomes compared to the comparison group. Significant changes include reported intake of fruits and vegetables combined (0.24 cups,  $p < 0.01$ ) and fruits alone (0.16 cups,  $p < 0.01$ ). The BASICS Plus program had a significant impact on one primary outcome compared to the BASICS program: Children exposed to the BASICS Plus program were more likely than children exposed to the BASICS program to report using 1 percent or skim milk rather than whole milk (odds ratio: 1.34,  $p < 0.05$ ). These results suggest that the BASICS program achieved statistically significant program effects for many primary outcomes compared with the comparison group. The addition of the social marketing component of the BASICS Plus program provides additional measureable effects, most notably related to vegetable consumption and the use of 1 percent or skim milk.

**Figure ES-3. Parent and Caregiver Reports of Children’s Consumption of Fruits and Vegetables**



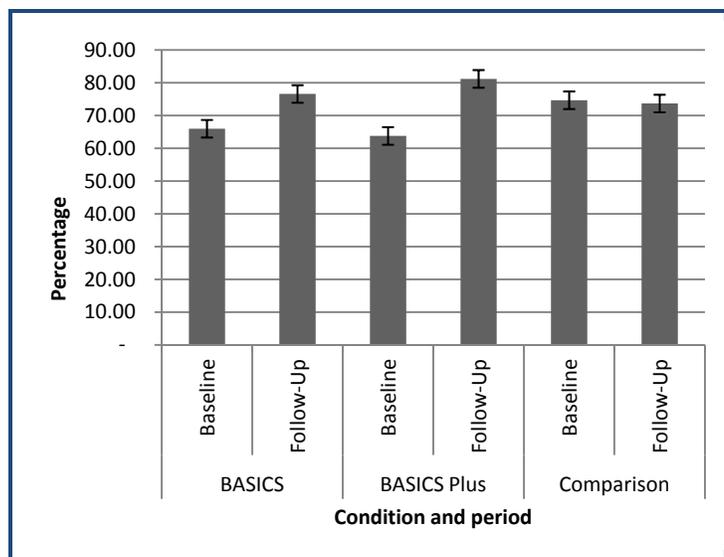
**Figure ES-4. Parent and Caregiver Reports of Children’s Use of 1 Percent or Fat-Free Milk**



### 3. Secondary Impact Results

Several mediating and short-term outcomes were positively affected by the intervention. Compared with the comparison group, the BASICS Plus program increased the number of days on which children ate more than one kind of vegetable, while the BASICS program increased the number of days on which children ate more than one kind of fruit. Additionally, as shown in Figure ES-5, the BASICS Plus and BASICS programs had a significant impact on children's willingness to try a new kind of fruit (odds ratios: 2.58,  $p < 0.01$ ; and 1.79,  $p < 0.01$ , respectively) compared with the comparison group. However, the program did not appear to influence reinforcing factors, such as parents offering children vegetables as snacks.

**Figure ES-5. Parent and Caregiver Reports of Children's Willingness to Try a New Kind of Fruit**



### F. Findings From the Assessment of INN's Self-Evaluation

The INN evaluation collected pre- and post-intervention data from children using the same intervention and comparison groups employed for the independent evaluation. Strengths of INN's evaluation included the use of a viable comparison strategy, well-planned and implemented data collection, modest attrition between the pre- and post-surveys, and little missing data for the impact analysis. Weaknesses included the following: (1) Study hypotheses were not quantified, making it difficult to determine whether null findings are a function of weak program impacts or insufficient sample size; (2) the measures used to assess fruit and vegetable preference are rated as "yes," "no," or "don't recognize" and appear to have poor sensitivity to change; and (3) some of the data analyses that formed the INN self-evaluation did not account for the clustering of individuals within schools.

### G. Recommendations

The findings of this report indicate that the programs developed and implemented by INN can improve nutrition-related outcomes among school-aged children. Data from the INN self-evaluation demonstrate the capacity of the BASICS Plus program to increase preferences for fruits and vegetables, and food preferences have been shown to correlate strongly with dietary intake (Drewnowski & Hann, 1999). Data from the independent evaluation support this finding and indicate the BASICS Plus program can increase children's fruit and vegetable consumption as well as certain predisposing and enabling dietary factors. Additionally, the independent evaluation found that the BASICS program can produce many of the results obtained in the BASICS Plus program. Accordingly, preliminary evidence supports the assertion that the BASICS Plus program is an effective nutrition education program for school children, with the caveat that there is need for additional evidence to assess the added value of the social marketing component of the program. SNAP-Ed IAs with limited resources may find that the BASICS program is sufficient to address the majority of their program's goals.

The results of the evaluation are encouraging and call for replication. Independent replication from at least two different independent studies is typically encouraged to demonstrate efficacy, and replication with different populations is encouraged to demonstrate effectiveness (Flay et al., 2005). This is especially true in the case of a quasi-experimental design, where it is not possible to eliminate all of the plausible alternative explanations for program impacts. Additional evaluation is also needed to better assess the unique contributions of the social marketing component.

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

Overall, input from program staff, direct educators and their supervisors, and parents and caregivers suggests that revisions could further enhance the effectiveness of the BASICS program in reaching its target audiences. The process evaluation findings suggest the following recommendations for program improvements:

- **Maximize classroom teacher role in extending the BASICS lessons.** Classroom teachers play an important role in supporting BASICS curriculum messages by conducting extended lesson activities in the classroom and integrating the information into the school curriculum. In order to achieve a multilayered intervention that includes the classroom and the school environment, it is essential for learning to be reinforced at each step. The majority of classroom teachers was very supportive and engaged in the intervention. While their role was minimized during the direct education by the outside nutrition educator, 69 percent of classroom teachers liked sharing the responsibility of teaching the curriculum with the direct educator through the extended lesson activities. In order to maximize classroom teacher engagement in BASICS, INN administrators should look for ways to gain a commitment from teachers so that they can more effectively support the program.
- **Maximize parent and caregiver engagement in BASICS lessons.** The BASICS curriculum materials reached parents and caregivers with a variety of take-home materials, including the family newsletter with recipes and tips for incorporating fruits and vegetables into the family meals. Other take-home materials included “BE A MILK SUPERSTAR!!” and a Bingo card activity. One-third of both BASICS and BASICS Plus parents and caregivers responded that they completed the “BE A MILK SUPERSTAR!!” worksheet. However, only 22 percent of BASICS parents and caregivers and 19 percent of BASICS Plus parents and caregivers completed seven to eight bingo cards. Children were encouraged to complete the bingo cards with their parents and bring them back to school by offering reinforcement items with nutrition education reinforcement incentive items, including pencil pouches, highlighters, lanyards, and Frisbees. Parents who participated in focus groups felt that the take-home work often gets lost and does not make it home. In order to maximize parent engagement in BASICS programming, INN administrators should solicit input from parents about the most effective ways to engage them in the process.
- **Schedule classes to maximize reach and exposure.** The direct educators work diligently to schedule classes in as many schools that qualify for SNAP-Ed programming as possible. Juggling lesson preparation, travel, school schedules, teaching time, and reporting can be challenging. In order to assist direct educators in their job, INN officials can continue to investigate ways to save time for the educators.
- **Consider the cost of fresh fruits and vegetables.** Although the materials include references and activities that clearly point out the use of fresh, canned, frozen, and dried fruits and vegetables, parents perceive that the BASICS curriculum’s emphasis is on fresh fruits and vegetables. There is a disconnect between what the parents and caregivers understand they should do and how the

information in the materials is framed by INN. INN should consider reviewing nutrition education materials focusing on buying fruits and vegetables, and gain input from parents about how they perceive the materials related to fresh, canned, and frozen fruits and vegetables.

Some of these suggested program improvements would require additional resources and may not be feasible for INN to implement. However, adopting one or more of these recommendations could improve the program's implementation and potentially enhance its desired behavioral impacts.

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

For future evaluations, it is suggested that INN review the measures that it uses to assess program impacts. First, INN could develop measures that are more sensitive to change. The measure used by INN assessed fruit and vegetable preference as a yes/no dichotomy with an opt-out choice for children who did not recognize the item. This response set may underestimate variation, especially for a construct as complex as preferences. Using a response option based on a Likert scale or visual analog scale could offer greater discrimination and better capture program impacts. Second, INN could include measures of dietary behavior as was done in the independent evaluation. BASICS and other SNAP nutrition education programs are designed to improve dietary intake. Although attitudes and intentions are highly correlated and theoretically related to dietary behavior, direct measure of behavior would provide stronger evidence of program success. Third, INN should also conduct sample size estimates that are based on their target population, proposed outcome measure, and anticipated program impacts.

# Chapter I • Introduction

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Nutrition education is an integral component of the Supplemental Nutrition Assistance Program (SNAP) that is 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 will make healthy food choices within a limited budget and choose physically active lifestyles consistent with the current (2010) Dietary Guidelines for Americans (U.S. Department of Agriculture (USDA) Center for Nutrition Policy and Promotion (CNPP), 2011).

The USDA 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 (FNS, 2012). In fiscal year (FY) 2004, 74 percent of SNAP-Ed implementing agencies (IA) reported that they conducted 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, 2004). 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 II)*, is the second of two FNS-initiated independent evaluations designed to identify models of effective SNAP-Ed nutrition education and models for SNAP-Ed impact evaluation. The overarching goal of this evaluation is to determine whether the selected projects can serve as good examples of SNAP-Ed delivery by meeting the following criteria:

- Positively affecting the nutrition and health behaviors of SNAP participants while adhering to FNS SNAP-Ed 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 IAs, 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 outcome or impact evaluations. Exhibit I-1 lists the broad research questions framing the design and measures used in each component of the evaluation.

## 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 (e.g., cups of fruits and vegetables consumed on a typical day)?
- What was the intervention's impact on secondary outcomes (e.g., 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 original evaluation plan?
- 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 II Demonstration Projects**

In FY 2009, FNS issued a request for applications to States to propose models for SNAP education, and to participate in the FNS-funded independent evaluation for Wave II. This request for applications expanded the variety of intervention types and target audiences. Applicants proposed various program and evaluation designs with children and/or women as their primary target audiences. Numerous applications were received, including ongoing SNAP-Education programs, modifications to existing programs, and new programming models. Each application was competitively scored and ranked by an independent technical review panel chaired by FNS. 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 three projects to participate in the study:

- ▲ **The Iowa Nutrition Network's (INN) Building and Strengthening Iowa Community Support for Nutrition and Physical Activity (BASICS) Program;**
- ▲ **The University of Kentucky Cooperative Extension's Literacy, Eating, and Activity for Preschoolers 2 (LEAP2) Program; and**
- ▲ **The University of Michigan Cooperative Extension's Eat Smart, Live Strong (ESLS) Program.**

All three agencies implemented their model SNAP-Education program in FY 2012. All demonstration projects conducted their own evaluations, supported by SNAP-Education administrative funds and non-SNAP-Education funding

resources. Each demonstration project received a \$100,000 incentive to offset expenses directly incurred as a result of their participation in this evaluation project, with facilitating access to SNAP-Ed participants, participation in interviews, record keeping, and providing documents describing the implementer’s SNAP-Ed intervention and evaluation processes.

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

<b>Criterion</b>	<b>Specific Requirements</b>
<b>Quality of intervention plan</b> <i>(35 points)</i>	<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> <i>(10 points)</i>	<ul style="list-style-type: none"> <li>• Intervention will begin and end sometime between October 2011 and June 2012</li> </ul>
<b>Suitability for an FNS evaluation using a rigorous impact evaluation design</b> <i>(30 points)</i>	<ul style="list-style-type: none"> <li>• Can support the random assignment of multiple units (e.g., person, classes) to treatment and control conditions or the quasi-experimental, nonrandom assignment of matched units to both treatment and control groups</li> <li>• If other 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> <i>(15 points)</i>	<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> <i>(10 points)</i>	<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>

The evaluation of INN’s BASICS demonstration project is the focus of this case study report. Similar case study reports have been prepared for the other two demonstration projects. Key evaluation findings and cross-cutting themes from all Wave II demonstration projects are presented in a separate final report.<sup>9</sup>

## **B. Overview of the BASICS Program**

The goal of the INN SNAP-Ed BASICS program is to promote fruit and vegetable consumption, the consumption of low-fat or fat-free milk and milk products, and physical activity with the intent of increasing the likelihood that SNAP audiences will make healthy food choices consistent with the 2010 Dietary Guidelines for Americans and MyPyramid.<sup>10</sup> The BASICS program delivers nutrition and physical activity education through a school-based program; the BASICS Plus program delivers nutrition and physical activity education through a school-based *and* multichannel nutrition education social marketing program in targeted communities. The school-based intervention consists of twelve 30-minute

<sup>9</sup> The individual case studies and integrated final report are published separately and available at <http://www.fns.usda.gov/ora>.

<sup>10</sup> The USDA MyPyramid food guidance system was in place when the Models of SNAP-Ed and Evaluation, Wave II demonstration projects were written. The USDA MyPlate food guidance system has replaced MyPyramid.

lessons that are specifically designed for third-grade students. The lessons include activities such as food tastings and physical activity demonstrations. Eight lessons are taught by INN-contracted nutrition educators, and supplemental activities are taught by the intervention school classroom teachers. BASICS supplemental activities provided to the classroom teachers are the equivalent of four direct education lessons. The suggested schedule of supplemental activities corresponds to the eight lessons taught by the direct educator.

The channels of communication for the BASICS Plus program social marketing campaign follow:

- Point-of-purchase interventions,
- Billboards,
- Bus shelters,
- Television,
- Radio,
- Family Nights Out events,
- Materials in schools,
- Materials in the community, and
- Free media.

BASICS program goals are divided into youth- and parent/caregiver-specific goals:

#### **Youth-Specific Goals<sup>11</sup>**

- Children will choose fruits and vegetables for snacks.
- Children will choose milk and milk products at meals and snacks, choosing low-fat or fat-free ones most often.

#### **Parent- and Caregiver-Specific Goals**

- Parents and caregivers will model positive fruit and vegetable behaviors.
- Parents and caregivers will offer fruits and vegetables to their child at meals and snacks.
- Parents and caregivers will model positive milk behaviors.
- Parents and caregivers will purchase and offer fat-free or low-fat milk and milk products for their family.

The BASICS program is one of several components of the multifaceted INN SNAP-Ed program. INN, coordinated through the Iowa Department of Public Health (IDPH), is one of two IAs responsible for coordinating SNAP-Ed in Iowa. As a statewide nutrition network, INN is currently one of more than 15 nutrition networks established with SNAP-Ed funding. Twenty-two statewide nutrition education networks were established in 1995 and 1996 with the goal of making them self-sustaining, collaborative statewide nutrition education networks of public and private organizations that would use social marketing concepts to provide nutrition education to adults and children who were participating in or eligible for SNAP. SNAP-Ed nutrition networks were intended to foster the development of integrated, multipartner State-level nutrition education networks that could bring together State and local government

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<sup>11</sup> Goals are intended for both at-home and outside-home behavior.

agencies, nonprofit organizations, and representatives of private industry, in order to coordinate the delivery of innovative nutrition education messages that are designed specifically for persons who receive or are potentially eligible for SNAP benefits (FNS, 1999). Core programming specific to INN includes the following:

- The INN School Grant Program;
- Chef Charles, a nutrition education program for older adults at congregate meals;
- Food Pantry Nutrition Education with the Iowa Food Bank Association; and
- A social marketing campaign.

In designing the BASICS program, INN utilized the social cognitive theory as a conceptual framework from which to build their nutrition intervention. The BASICS program is designed to facilitate behavior change by using multiple levels of message delivery, including lessons for children in classroom settings; parent and caregiver take-home materials, activities, and family events; the display of posters and banners in the school environment; and a multichannel social marketing campaign outside of the classroom environment. The BASICS take-home materials, activities, and assignments correspond to the classroom lessons. Parents and caregivers are encouraged to engage in the suggested activities and complete the homework with their child. In doing so, parents and caregivers are exposed to the program's key messages, which they can reinforce with their children.

Des Moines served as the intervention site for the BASICS Plus school-based intervention and social marketing campaign. This BASICS Plus intervention site included 573 students from 28 classrooms in 11 schools. Parents and caregivers were reached with indirect educational programming by receiving take-home materials distributed to their children at school and by the multichannel social marketing campaign.

Council Bluffs and Waterloo served as a BASICS-only comparison site, collecting data from 627 students from 27 classrooms in 11 schools. Parents and caregivers received indirect education by receiving take-home materials distributed to their children at school. Eleven elementary schools in the Davenport school district served as the comparison site with data collected from 577 students in 20 classrooms at 11 schools. All of the elementary schools had more than 59 percent of their children eligible to receive free- and reduced-price school lunch.

### **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 demonstration project's BASICS and BASICS plus interventions. 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 INN's Self-Evaluation, and
- Chapter V: Conclusions and Discussion.

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

# Chapter II • Process Evaluation Methods and Results

This chapter describes the findings of the process evaluation of the INN BASICS and BASICS plus interventions. 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 program administrators, direct educators, intervention site staff, and program participants. The data sources, data collection methods, and analysis approach for the process evaluation are summarized below and detailed in Appendix G.

## A. Process Evaluation Methods

### 1. Overview of Evaluation Design

The BASICS evaluation was designed as a three-armed study: The Council Bluffs and Waterloo school districts served as sites for the BASICS intervention, the Des Moines school district served as the site for the BASICS Plus intervention (the BASICS intervention plus the incorporation of social marketing media placement), and the Davenport school district served as the comparison site. Appendix G contains a graphic of the intervention and comparison sites for this evaluation study.

The broad, process-focused research questions described in Chapter I guided the design of the BASICS evaluation. To address the research questions, it was necessary to gather both quantitative and qualitative data. 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 key stakeholders; direct nutrition education observation; direct observation of the social marketing campaign; and focus groups with parents and caregivers of children who attended the BASICS curriculum core and extended lessons at the demonstration project's intervention sites.

## Key Findings

- **Program Reach and Cost:** In FY 2012, the BASICS Plus and BASICS demonstration projects reached 1,244 third-graders across 55 classrooms and more than 1,244 parents and caregivers through school take-home materials and activities, and materials in the community. The total cost of education via the BASICS curriculum was an estimated \$111.08 per child. The social marketing campaign conducted in Des Moines County reached more than 1,244 children and their families and was estimated to cost \$108,627 per family ( $n = 3,054$ ) or \$67.48 per participant. The BASICS Plus intervention (BASICS and social marketing campaign) is estimated to cost \$178 per participant.
- **Multilevel and Multichannel Intervention:** The BASICS Plus intervention used seven different channels to convey messaging about healthy eating. These channels included signage in schools, classroom take-home materials, TV and radio, billboards, supermarket signage, bus shelters, and other materials in the community. Signage at supermarkets was the one channel that parents and caregivers did not remember seeing.
- **Classroom Teacher Engagement in Extending Lessons:** Classroom teachers have the potential to extend lessons for the BASICS curriculum, but some teachers are not fully engaged. Time and interest are factors in whether classroom teachers implement extended lessons.
- **Collaborative Relationships:** The INN has long-term collaborative relationships with partners, which provides for strong outreach and collaboration at the State and local levels.
- **Parent and Caregiver Satisfaction:** Parent and caregiver focus group discussions and survey results revealed a high level of satisfaction with the BASICS curriculum and materials.
- **Program Fidelity:** The BASICS and BASICS Plus direct education program was implemented with a well-coordinated team, appropriate support and training, and monitored closely to follow implementation plans.

## 2. Data Sources

The secondary data sources 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 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.

The secondary data sources illustrated in Exhibit II-1 describe documents collected for the process evaluation of the INN Demonstration Project.

### Exhibit II-1. Secondary Data Collected for the Process Evaluation of the INN 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 2011 SNAP-Ed Plan</li> </ul>
<b>Implementation documents</b>	<ul style="list-style-type: none"> <li>• BASICS nutrition education lesson plans (eight lessons taught by nutrition educator with corresponding supplemental activities taught by classroom teacher)</li> <li>• Nutrition education materials</li> <li>• Social marketing plans</li> <li>• Social marketing materials and products</li> <li>• Training curriculum and protocols</li> </ul>
<b>Administrative data on program reach and dosage</b>	<ul style="list-style-type: none"> <li>• Planned and actual number of children in the direct education interventions at each site</li> <li>• Activity logs documenting lesson duration and implementation schedule by classroom</li> <li>• Demographic information on participants at each intervention site</li> <li>• Planned and actual number of direct and indirect contacts for social marketing campaign</li> <li>• Documentation of media impressions,<sup>b</sup> signage, duration, implementation schedule by channel, and potential exposure</li> <li>• Sales data at each participating store</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 standardized form for the INN to complete to ensure that cost data were collected consistently across demonstration projects (see the Resource and Expenses Tracking Form in Appendix A).

<sup>b</sup> Media impressions are the number of people who may have seen an article, heard something on the radio or in a podcast, watched something on television, or read on a Web page or blog.

Primary data were collected through questionnaires and interviews with four categories of key informants: INN program-level staff (administrators, evaluators, and direct educators), school staff (principals and classroom teachers), parents and caregivers of children who participated in the intervention, and retail site staff (grocery store managers or on-site dietitians). The timing of data collection from key informants through onsite visits took place approximately one month prior to the start of the intervention (October 2011), and immediately following completion of the intervention (May 2012). Key-informant interviews were conducted during both time periods with all INN staff involved in

the planning, design, implementation, and evaluation of the intervention and the social marketing campaign ( $n = 11$ ).

Another important component of the process evaluation was assessment of the experience and satisfaction of the parents and caregivers with the intervention. Information was collected on factors such as perceived goals of the program, whether the program facilitated changes in the parent and caregiver nutrition behaviors and their children’s nutrition behaviors, potential barriers, and opportunities in trying to increase their fruit and vegetable intake, and exposure to the social marketing campaign. These data were collected through post-intervention focus groups with a subset of parents and caregivers who responded to a recruitment flyer sent to their home.

Descriptive information about the types of respondents and timing of data collection are presented in Exhibit II-2. Descriptive statistics on the demographics of the focus groups are provided in Appendix B.

**Exhibit II-2. Primary Data Collected for the Process Evaluation of the INN Demonstration Project by INN Respondent Types, Data Collection Methods, and Number of Respondents**

Type of Respondent	Data Collection Method	Number of Respondents	
		Pre-intervention	Post-intervention
<b>Program Staff</b>			
Program administrators	Interview	2	2
School food service/project directors	Interview	2	2
Direct educators	Interview	3	3
Program evaluators	Interview	3	3
Fiscal manager	Interview	1	1
<b>Intervention Retail Staff</b>			
Retail store manager	Interview	n/a	5
<b>Intervention School Staff</b>			
School principals or administrative managers	Interview	n/a	6
Classroom teachers	Questionnaire	29	26
Classroom teachers	Interview	n/a	7
<b>Program Participants</b>			
Parents and caregivers of children in the intervention classrooms	Focus group	n/a	3 groups (25 adults)
	Survey (process questions included in parent/caregiver follow-up survey)	n/a	513

n/a= not applicable.

At each site visit to a school, process evaluation team members observed nutrition education lessons being conducted in classrooms. During these observations, the classroom setting, the classroom teacher’s role, student engagement in the nutrition education lessons, and a description of how the 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.

At selected intervention sites, process evaluation team members observed social marketing campaign messaging in a variety of settings, such as signage in supermarkets, billboards along roadways in approved census tracts, and Family Nights Out events in schools. During these observations, the messaging, the location, the environment, and a description of how implementation was consistent with or deviated from the social marketing plan were documented.

### **3. Instrumentation**

Data collectors used a set of standardized secondary data abstraction tools and primary data collection instruments for the evaluation. The wording of questions in each key-informant interview guide and the focus group discussion guide was tailored to the specific characteristics of the BASICS Plus and BASICS programs. All data collectors were trained in 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 the instruments are provided in Appendix A. The parent and caregiver follow-up survey instrument, which was also used for the impact evaluation, is included in Appendix C.

### **4. Analysis Approach**

The evaluation team applied an analysis approach to the case study data that takes into account the range of data and respondent types used in the process evaluation. Key-informant responses to each interview, focus group, 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 among respondents. Direct quotations were also identified where relevant and used to support key findings.

Quantitative process data were primarily used to describe objective aspects of the BASICS and BASICS Plus interventions, 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 and caregivers through the post-intervention parent and caregiver survey were analyzed using SAS 9.3. 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 and caregivers of nutrition education recipients were uploaded as Word documents in QSR NVivo 8 software. An inductive content analysis approach was used (linking text from the transcripts to codes or themes) by a member of Altarum's staff experienced in qualitative analysis. A broad top-level coding scheme and nodes were developed and applied to each transcript, which allowed the evaluation team to systematically organize, process, and summarize information provided by each key-informant group. It also allowed the team to capture the breadth of opinions offered by respondents while identifying common themes and issues. Direct quotations were also identified and used to support the parent and caregiver survey findings and common themes from the focus groups.

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

### **1. Program Development**

IDPH formed INN in 1995 with the goal of delivering SNAP-Ed through a social marketing model. Public health departments were encouraged to apply to become SNAP-Ed Nutrition Networks,<sup>12</sup> because they demonstrated social marketing experience and familiarity with population-based approaches to behavior change. At the time, Federal SNAP-Ed funding reimbursed 50 percent of States' allowable expenditures; in Iowa, the match requirement was largely met through in-kind, public funds contributed by school-based personnel, particularly classroom teachers. This led to the development of the BASICS school-based nutrition education program.

### **2. Theoretical Framework**

The design of the BASICS program is grounded in the social cognitive theory model of behavior change, which specifies a core set of determinants, the mechanism through which they work, and the optimal ways of translating this knowledge into effective health practices (Bandura, 2004). The primary assertion is that an individual's personal characteristics, environment, and behavior are constantly interacting with and influencing each other through a process called reciprocal determinism (Baranowski et al., 2000). Thus, to achieve the desired outcomes of improving dietary habits and increasing physical activity, BASICS and BASICS Plus interventions (1) include both direct and indirect education methods targeted to school children, their parents and caregivers, and other adults who are influential role models for children and (2) shape the policies and practices in the environment.

### **3. Description of curriculum**

The BASICS curriculum was developed by INN in 2005 and has evolved into a SNAP-Ed nutrition education initiative implemented throughout the State.<sup>13</sup> The BASICS curriculum provides nutrition and physical activity education to SNAP participants and eligible children. The goal of BASICS is to provide educational programming that increases the likelihood that SNAP audiences can make healthy food choices consistent with the current Dietary Guidelines for Americans. To meet this goal, INN offers direct and indirect nutrition education in schools, combined with social marketing strategies implemented in the community.

The BASICS intervention comprises two elements: direct education provided in the classroom setting by a nutrition educator and classroom teacher and indirect education provided through take-home materials. The BASICS Plus intervention adds a third element: activities and indirect education provided in the school environment and community environment via social marketing messages and media placement. The channels of communication for the BASICS Plus program social marketing campaign include billboards and bus shelter signage; television and radio advertisements; point-of-purchase signage and demonstrations at supermarkets; posters in schools; Family Nights Out events held at school for students and their parents and caregivers; and materials at community organizations such as Women, Infants, and Children (WIC) offices and YMCAs, including posters and window clings.

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<sup>12</sup> These SNAP-Ed Nutrition Networks were formally Food Stamp Nutrition Education networks.

<sup>13</sup> The BASICS curriculum and social marketing campaign materials are available at <http://www.idph.state.ia.us/pickabettersonack/default.asp>.

This section describes each of the eight core program components applicable to the BASICS interventions, with Exhibit II-3 outlining each of the core lesson activities provided by the nutrition educator as well as the extended activities provided by the classroom teachers. Exhibit II-4 provides a summary of the social marketing campaign components that are part of the BASICS Plus intervention.

*a. Direct education lessons delivered in the classroom setting*

The BASICS curriculum is composed of eight modules, each made up of classroom lessons with complementary messages for the parent/caregiver. The curriculum contains INN Pick a **better** snack™ (PABS) & ACT<sup>14</sup> messaging with a focus on fruit and vegetable consumption and physical activity while also incorporating low-fat or fat-free dairy products.

The core lessons are designed to be delivered by a direct educator approximately once per month. Because of the 7-month implementation period necessitated by the BASICS evaluation, two lessons were delivered during the month of November. Each core module is structured with lesson plans and step-by-step instructions for preparing and implementing the activities for the direct educator. A food-tasting activity is typically included in each lesson to encourage children to try new foods and make the lesson fun. The lesson plans highlight the lesson goals, objectives, and key points. Each core lesson incorporates physical activity, a nutrition activity, and parent and caregiver take-home materials. Direct educators summarize key messages at the close of the lesson to reinforce core lesson objectives. The core lessons are designed to be approximately 30 minutes long.

Classroom teachers were encouraged to stay in the classroom while direct educators taught the eight core lessons so that they could support and build upon them. In order to build on the eight lessons, the BASICS curriculum provides extended lessons for classroom teachers to incorporate into their existing common core curriculum throughout the month. These extended lessons are designed to further complement and reinforce the 8-module core lessons provided by the direct educator. The extended lessons also incorporate common core curriculum education standards for third-grade students. Classroom teachers distributed the supplemental activities over the course of the 7-month implementation period; however, the activities and materials provided to classroom teachers for BASICS extended lessons are designed to serve as the equivalent of four additional BASICS core lessons, making BASICS a 12-lesson curriculum. The cost and reach of the BASICS program is based on the eight core lessons and the supplemental lessons.

Exhibit II-3 summarizes the nutrition education messages and activities for each of the eight core lessons taught by direct educators as well as the extended activities for classroom teachers. Each lesson consists of three main elements: a Jammin' Minute,<sup>15</sup> a discussion and activity addressing the lesson's key nutrition education messages, and a food tasting. A Jammin' Minute is a 1-minute fitness routine that includes five very simple exercises that children and staff can do while standing at a desk or sitting in a chair. The classroom activities conducted by the direct educator in the classroom and food tasting samples are prepared prior to the lesson in order to allow for sufficient time to conduct the lesson.

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<sup>14</sup> "& ACT" represents the importance of daily physical activity. INN partners worked together to develop PABS & ACT for use with multiple partners. Key partners include IDPH, Iowa Food Assistance, the Iowa Department of Education Team Nutrition, Iowa State University Extension and Outreach, Iowans Fit for Life, and the Iowa WIC Program.

<sup>15</sup> Jammin' Minutes is adapted from the Just-A-Minute (JAM) School Program, available at <http://www.healthetips.com/jam-program.php>.

**Exhibit II-3. Summary of INN Nutrition Education Messages and Planned Activities by Lesson**

Key Nutrition Education Messages	Core Activities for Direct Educators	Extended Activities for Classroom Teachers
<b>PABS &amp; ACT Lesson 1: Vary Your Veggies (jicama with salsa dip)</b>		
<ul style="list-style-type: none"> <li>Learn the special characteristics of root vegetables.</li> <li>Learn that vegetables are easy to eat as snacks.</li> <li>Identify MyPlate food groups.</li> <li>Experience the flavor and texture of jicama.</li> </ul>	<ul style="list-style-type: none"> <li>Do a Jammin' Minute.</li> <li>Introduce MyPlate.</li> <li>Introduce jicama.</li> <li>Hold a cryptogram activity.</li> <li>Hold a jicama tasting.</li> <li>Ask for thumbs up, down, or sideways. Students who taste receive an "I tried it" sticker.</li> <li>Describe the bingo card.</li> <li>Distribute bingo cards, pencils, magnets, and family newsletters.</li> </ul>	<ul style="list-style-type: none"> <li>Do a Jammin' Minute.</li> <li>Read a section from <i>The Monster Health Book</i>.</li> <li>On 3 days this month, have students place the items from the lunch menu in the food groups from MyPlate, paying special attention to those foods that represent multiple food groups (e.g., pizza, tacos).</li> </ul>
<b>PABS &amp; ACT Lesson 2: Focus on Fruits (cranberries: juice, dried, and fresh)</b>		
<ul style="list-style-type: none"> <li>Learn that fruits can be eaten in different forms (fresh, juice, frozen, canned, and dried).</li> <li>Identify at least three different forms of fruits and vegetables provided by the school lunch menu.</li> <li>Experience the flavors and textures of cranberries in different forms.</li> </ul>	<ul style="list-style-type: none"> <li>Distribute pencil pouches.</li> <li>Do a Jammin' Minute.</li> <li>Distribute a school lunch worksheet.</li> <li>Hold a rainbow shopping activity.</li> <li>Hold a cranberry tasting.</li> <li>Ask for thumbs up, down, or sideways. Students who taste receive an "I tried it" sticker.</li> <li>Distribute bingo cards and family newsletters.</li> </ul>	<ul style="list-style-type: none"> <li>Do a Jammin' Minute.</li> <li>Read <i>The Grapes of Math</i>.</li> <li>Pose quantitative reasoning problems using fruit and veggie wheels.</li> </ul>
<b>PABS &amp; ACT Lesson 3: Vary Your Veggies (broccoli with hummus)</b>		
<ul style="list-style-type: none"> <li>Learn the health value of dark green vegetables like broccoli.</li> <li>Increase knowledge of how nutrients in broccoli are released in the body during the process of digestion.</li> <li>Experience the flavors and textures of broccoli and hummus.</li> </ul>	<ul style="list-style-type: none"> <li>Distribute lanyards for completed bingo cards.</li> <li>Do a Jammin' Minute.</li> <li>Read <i>The Lima Bean Monster</i>.</li> <li>Hold a broccoli tasting.</li> <li>Ask for thumbs up, down, or sideways. Students who taste receive an "I tried it" sticker.</li> <li>Distribute bingo cards and family newsletters.</li> </ul>	<ul style="list-style-type: none"> <li>Do a Jammin' Minute.</li> <li>Read <i>The Magic School Bus: Inside the Human Body</i> and discuss the digestion poster.</li> <li>Distribute physical activity paper fortune tellers and use them for indoor recess or other "recharge" time 2 days this month.</li> </ul>

#### **PABS & ACT Lesson 4: Focus on Fruits (mango)**

- Understand the basic definition of a fruit.
- Understand why we need to eat fruits rich in vitamin C.
- Identify a variety of fruits that can be eaten for snacks.
- Experience the flavor and texture of a fresh mango.
- Provide highlighters for every student.
- Do a Jammin' Minute.
- Discuss the "What is a fruit?" poster and have students guess fruit riddles.
- Demonstrate how a mango is cut.
- Distribute mangoes while students work on a mango mania worksheet. Remind students that the content on the back goes home.
- Ask for thumbs up, down, or sideways. Students who taste receive an "I tried it" sticker.
- Distribute bingo cards and family newsletters.
- Do a Jammin' Minute.
- Read A Fruit is a Suitcase for Seed.
- Hold a pair-and-share activity.

#### **PABS & ACT Lesson 5: Vary Your Veggies (peppers—three color varieties)**

- Learn why it is important to eat vegetables.
- Identify a variety of vegetables that can be eaten for snacks.
- Identify at least two colors of bell peppers.
- Experience the flavors and textures of differently colored bell peppers.
- Provide backpacks for completing Bingo cards.
- Do a Jammin' Minute.
- Discuss the "What is a vegetable?" poster.
- Do a veggie riddle activity.
- Demonstrate how peppers are cut and distribute them while students work on a pepper and cucumber crossword.
- Have students taste peppers, comparing the flavors of different colors.
- Ask for thumbs up, down, or sideways. Students who taste receive an "I tried it" sticker.
- Distribute bingo cards and family newsletters. Remind students to take home the back of their crossword.
- Do a Jammin' Minute.
- Complete the Steps to a Healthier You goal-setting sheet.
- Read The Vegetables We Eat.

### **PABS & ACT Lesson 6: Focus on Fruits (yogurt with fruit and cereal topping)**

- Increase students' knowledge and awareness of the information provided on a nutrition facts label for milk.
- Discuss health benefits from eating dairy foods.
- Examine the fat content of different milk varieties (whole, 2%, 1%, and fat-free).
- Learn how to identify low-fat milk (1% or fat-free).
- Learn how many cups of milk kids in third grade need to consume each day.
- Provide Frisbees for completed Bingo cards.
- Do a Jammin' Minute.
- Discuss the variety of milk available, using talking points.
- Discuss how to read a label, using talking points.
- Distribute a worksheet.
- Demonstrate the butter fat content of different kinds of milk, using talking points.
- Prepare the tasting while students work on the Power Panther worksheet. Students come up to the front to make their "sundae."
- Ask for thumbs up, down, or sideways. Students receive a "Be Strong" sticker.
- Distribute and explain the milk tracker.
- Distribute bingo cards and family newsletters. Remind students what goes home this month and what to bring back.
- Do a Jammin' Minute.
- Do an ad creation activity.

### **PABS & ACT Lesson 7: Vary Your Veggies (asparagus and spinach with ranch yogurt dip)**

- Compare amounts of calcium in a variety of foods kids eats.
- Identify at least two calcium-rich foods.
- Learn why 3<sup>rd</sup>-graders need more calcium than most adults.
- Learn that vegetables can come from different parts of the plant.
- Experience the flavor of vegetable dip made with yogurt. Experience the flavors and textures of spring vegetables (asparagus and spinach).
- Provide color-changing cups for returned milk trackers and a bingo incentive.
- Do a Jammin' Minute.
- Explain calcium needs by age and demonstrate with packing peanuts as part of the "Calcium Is Right" activity.
- Distribute the tasting.
- Ask for thumbs up, down, or sideways. Students who taste receive an "I tried it" sticker (two this month!).
- Distribute calcium counts to take home, family newsletters, and bingo cards.
- Do a Jammin' Minute.
- Read The Milk Makers.
- Complete goal-setting extend the activity lesson.

## PABS & ACT Lesson 8: Focus on Fruits (strawberries and rhubarb)

- Identify parts of plants that we can eat.
- Discuss the life cycle of seeds.
- Discuss different ways to access fresh produce (grocery store, farmers' market, and garden).
- Identify different ways to eat strawberries and rhubarb.
- Experience the flavors and textures of strawberries and rhubarb.
- Provide beach balls for completed bingo cards.
- Do a Jammin' Minute.
- Read *From Seed to Plant* and discuss the Parts of the Plant handout.
- Distribute the tasting.
- Ask for thumbs up, down, or sideways. Students who taste receive an "I tried it" sticker.
- Distribute family newsletters and bingo cards. Remind students that the Parts of the Plant handout should go home.
- Do a Jammin' Minute.
- Issue the *Story of Our Year* writing assignment: Write a story about the foods that students tasted during the school year. Which were their favorite foods, and did they ask someone in their family to purchase or prepare something that they tasted?

<sup>a</sup> Pick a Better SNACK™ (PABS) & ACT materials focus on fruit and vegetable consumption and physical activity while incorporating low-fat or fat-free dairy products.

### ***b. Indirect education to parents and caregivers through take-home materials and activities***

Each month, BASICS educational materials were sent home in student backpacks. These educational materials are designed to extend the nutrition and physical activity messages learned in the classroom into the home and help parents and caregivers try new foods, purchase foods at affordable prices, and find ways to work with their children to promote healthy eating and physical activity. The program provides monthly family newsletters that include recipes, activities, and other suggestions for extending each lesson topic to the home. Key-informant interviews with direct educators revealed that some schools also print content from the family newsletters on the back of their lunch menu to increase exposure to BASICS messages. Additional handouts are sent home with the children, such as recipe cards, bingo cards, and fruit and vegetable fact sheets. The bingo card includes three snack ideas for each fruit and vegetable, along with serving size information and tips on selection and storage. The card gives 12 suggestions for seasonally appropriate physical activities that can be done at school or at home. A "bingo" is accomplished when the student completes one row of the card vertically, horizontally, or diagonally. The back of the bingo card includes a family meal recipe, along with mealtime conversation starters and Eat Smart. Play Hard.™<sup>16</sup> messages that encourage 60 minutes of play every day. Parents and caregivers can use many of these handouts at the grocery store. Parent and caregiver handouts have been translated and are widely available for distribution in Spanish.

### ***c. Description of the social marketing campaign***

The social marketing components of the BASICS Plus program were informed by a number of previous interventions carried out in 2003 and 2008–2009. In March and April 2003, INN conducted a pilot media intervention with low-income populations in two Iowa cities. The campaign was used in schools and in

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<sup>16</sup> U.S. Department of Agriculture, Food and Nutrition Service. *Eat Smart. Play Hard.* Retrieved from <http://www.fns.usda.gov/eatsmartplayhardhealthylifestyle/>.

WIC offices in these two Iowa cities. Campaign signage (posters and banners) were placed in school hallways, classrooms and lunch rooms. Messages were also embedded into classroom materials such as lessons, newsletters, and bingo cards. WIC clinics displayed PABS posters and occasionally distributed bookmarks or flyers with campaign messages. INN stated that WIC was included in this pilot media intervention because there is significant overlap with SNAP eligibles in these two Iowa cities and many families of children under the age of 5 also have an elementary school-age child. A marketing firm worked with INN to execute a media buy for billboards, bus signs, radio, and local newspaper advertisements based on research for households with at least one child and a household income of less than \$35,000. The firm also assisted with media events at grocery stores. Surveys were conducted in SNAP offices in both cities to determine whether the campaign was effective in reaching the target audience. Data from this pilot helped identify which channels may be most effective for reaching low-income Iowans applying for Iowa Food Assistance.<sup>17</sup>

In 2008 and 2009, INN conducted a retail pilot using PABS & ACT materials. Sixteen SNAP-Ed-eligible high-volume grocery stores throughout the Des Moines area participated by displaying point-of-sale signage on fruit, vegetable, and low-fat or fat-free milk consumption and supporting bimonthly food demonstrations. More than 8,000 individuals engaged in 96 food demonstrations and received nutrition education materials. In August 2008, the pilot was evaluated using intercept interviews outside each store.

In 2011, using the lessons learned from this pilot, the PABS & ACT marketing materials evolved into the social marketing campaign used in the BASICS Plus intervention. The social marketing campaign includes seven components: point-of-purchase signage and demonstrations at supermarkets; billboards and bus shelter signage in SNAP-Ed-qualified census tracts; television and radio ads; a family event identified as Family Nights Out held at the participating child’s school; posters in schools; materials at community organizations such as WIC offices and YMCAs, including posters and window clings; and additional media, such as short radio and television interviews through free media. “Free media” refers to free media provided by the television or radio station. Free media was “earned” by buying radio and television advertising time and serves as a bonus for the buyer. In addition to the PABS & ACT messaging,<sup>18</sup> the social marketing campaign includes Bodies Change messaging that encourages families to make the switch from whole to low-fat milk products as their children’s bodies change and grow with the slogan, “Their bodies change. So should their milk.” Exhibit II-4 describes each social marketing components and the number of delivery sites per component. An eighth component, signage at gas stations in SNAP-Ed census tracts was planned but not executed.

### Social Marketing Messages

#### Pick a better snack™

- Pick a better snack. (How easy is that?)
- Wash. Bite. (How easy is that?)
- Wash. Eat. (How easy is that?)
- Peel. Eat. (How easy is that?)
- Scoop. Eat. (How easy is that?)
- Dip. Eat. (How easy is that?)
- Slice. Eat. (How easy is that?)
- Cook. Eat. (How easy is that?)
- Zero to snack in 1 second. (How easy is that?)
- The original snack pack. (How easy is that?)
- Ready-to-serve snacks. (How easy is that?)

#### Bodies Change

- Their bodies change. So should their milk.
- Fat-free or 1% for everybody 2 and over.
- Same nutrients. Less fat.

<sup>17</sup> SNAP in Iowa is called Iowa Food Assistance.

<sup>18</sup> While physical fitness messaging and activities are part of PABS & ACT materials, behavior change related to physical activity was not a focus of the independent evaluation.

## Exhibit II-4. Summary of Social Marketing Campaign Components

Component	Description
<b>Point-of-purchase intervention</b>	Signage featuring campaign messages and imagery in milk and produce departments at six SNAP-Ed-qualified retail grocery stores over a period of 7 months; two food demonstrations per month at each store (coordinated with BASICS curriculum classroom tastings)
<b>Billboards</b>	Fourteen billboards in SNAP-Ed qualified low-income census tracts displaying PABS and Bodies Change campaign messages and imagery
<b>Bus shelters</b>	Signage featuring PABS and Bodies Change campaign messages and imagery displayed on seven bus shelters serving passengers on Des Moines Area Rapid Transit bus lines in SNAP-Ed-qualified low-income census tracts
<b>Television</b>	PABS and Bodies Change spots broadcast on five television stations with viewers in the target demographic
<b>Radio</b>	PABS and Bodies Change spots broadcast on three radio stations with listeners in the target demographic
<b>Family Nights Out</b>	One weeknight event at each BASICS Plus school to provide families with hands-on, fun nutrition and physical activity education as well as resources to help them develop healthy habits
<b>Materials in schools</b>	Signage featuring PABS campaign messages
<b>Materials in the community</b>	Signage featuring PABS and Bodies Change campaign messages and imagery posted at locations such as WIC offices and YMCAs
<b>Free media</b>	A 2-minute, on-air interview and snack preparation on an evening news show; a 4-minute on-air interview on the radio followed by participation in the radio station's Family Nights Out event at a local mall

## C. How the BASICS Program Is Implemented

### 1. Program Management and Oversight

BASICS program management and oversight are provided by INN. INN comprises four administrative staff members who bring more than 40 years of experience in nutrition education and program administration. INN is administered by IDPH, and the IDPH Bureau Chief is ultimately responsible for the fiscal and organizational integrity of INN. The INN program coordinator and contract manager are responsible for the operation of the program, quality assurance, and oversight of the subcontracting agencies who directly administer the program, and training of the direct educators who carry out the program. The division of roles and responsibilities among the program administrators, district supervisors, direct educators, and program evaluators is shown in Exhibit II-5.

## Exhibit II-5. Summary of INN Project Staff Roles and Responsibilities

Position	Summary Responsibilities	Program Administration	Design and Development	Planning	Implementation	Evaluation Design and Planning	Data Collection	Data Tabulations
<b>Program administrators</b>	General administration of program; assistance in design, development, and program planning; and provision of program oversight during implementation and evaluation phases of the project	x	x	x	x	x	x	x
<b>Local project Directors</b>	Oversight of district BASICS program, contractual and financial responsibilities to INN for program, and oversight of direct educator's activities	x			x		x	
<b>Local Direct Educators</b>	Provision of direct education nutrition education in the classroom			x	x		x	
<b>Program Evaluators</b>	Design and implementation of the BASICS curriculum evaluation, analysis of evaluation data, and report of evaluation findings					x	x	x

### 2. Partnerships

SNAP-Ed funding is awarded to BASICS subcontractors for staff salaries, teaching resources, food samples, travel, and other expenses needed to carry out this school-based, nutrition education program. School districts are vital partners for implementation of the BASICS program. They are embedded in the community serving SNAP participant populations, and are a trusted source of information for the families whom they serve.

#### a. *BASICS school-based intervention*

As reported in key-informant interviews, INN administrators, direct educators, and their supervisors described partners who were instrumental in the implementation of both types of BASICS programs:

- IDPH provided staff support for an evaluation of the BASICS interventions. Working with the INN administrators and ISU faculty, IDPH collaborated on the evaluation.
- Both ISU and the University of Iowa collaborated with the INN on the impact and process evaluation of the BASICS interventions. Contracted with by the INN administration for this project and past evaluation studies, both universities have been supportive of this nutrition education intervention.
- School district nutrition services serve as contractors for implementation of BASICS in selected counties. The district supervisor provides financial and program oversight for the intervention and the direct educator(s) provides the direct education and intervention program reporting.

- In other counties, county public health department services are contractors for BASICS. Typically, the health department administrator provides financial and program oversight for the intervention and the direct educator(s) provides the direct education and intervention reporting.
- District superintendents and principals in participating elementary schools collaborated with the INN administration in the initial planning and support of BASICS interventions.
- Elementary schools in Waterloo and Council Bluffs received the BASICS intervention. Schools in Des Moines received the BASICS Plus intervention. These schools collaborated with the INN to implement the interventions.

INN administrators described existing partnerships with school officials and classroom teachers as very positive in the recruitment of schools for the new school year. Recruitment of schools where there was no relationship with school officials and classroom teachers took time, patience, and close adherence to the school chain of command. School district nutrition directors who served as contractors had a recruitment advantage, as they were already an integral part of the school system.

#### ***b. BASICS Plus social marketing media***

Other community partnerships were instrumental in implementing the social marketing campaign for the BASICS Plus intervention:

- Retail outlet managers, assistant managers, and store dietitians (if employed by the store) collaborated with the INN to implement the social marketing campaign in stores. Collaboration entailed placement of signage as well as arrangement for demonstrations. Some supermarkets provided more assistance and support, such as preparing produce for the demonstration or making intercom announcements to shoppers about the fruit and vegetable demonstration taking place in the supermarket.
- One additional supermarket that was not involved in other aspects of the social marketing campaign volunteered to sponsor and staff the Family Nights Out events, which included healthy dinner items for participating families.
- FoodCorps<sup>19</sup> volunteers assisted with staffing at the Family Nights Out events.
- Iowa Department of Education volunteers provided general assistance and assisted at the Family Nights Out events.
- Iowa State University undergraduate dietetics students were hired to conduct the in-store demonstrations.
- Television and radio stations served as the two media channels for the social marketing campaign, and collaborated with the INN to provide bonus or free media time.
- Purveyors of outdoor advertising collaborated with the INN for billboard and bus shelter space for the social marketing campaign.

Interviews with INN administrators described other partners who were involved in the social marketing campaign, but to a lesser degree:

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<sup>19</sup> Retrieved from <https://foodcorps.org/>.

- The Midwest Dairy Council contributed to the creation of the Bodies Change campaign and contributed funding for television and radio advertisements.
- WIC clinics provided Bodies Change materials to their clients and made a financial contribution to the Bodies Change signage in supermarkets.
- The Wellmark Foundation (Blue Cross & Blue Shield) provided a grant to INN for placement of television and radio messages.
- Iowa Childhood Obesity Prevention funding made a financial contribution, which covered some costs for marketing and signage.

### **3. Training**

#### ***a. Direct educators and their training***

Each subcontracting agency employs direct educators who are responsible for recruiting SNAP-Ed-eligible schools to participate in BASICS interventions, implementing the BASICS core lessons at individual schools, and completing the administrative and reporting functions required by INN. In this study, three subcontractors employed and supervised four direct educators to teach in 22 schools between the two BASICS intervention arms. In FY 2012, there were a total of 0.15 full-time-equivalent (FTE) direct educators who implemented the BASICS core lessons in 37 classrooms in Des Moines, Council Bluffs, and Waterloo.

INN contractors do not require direct educators to be registered dietitians but rather to have an interest in teaching nutrition in the community and a background in education or health sciences. Based on key-informant interviews with direct educators, the four<sup>20</sup> lead direct educators had varied backgrounds and experience before they joined the BASICS program, each with three or more years of prior experience providing nutrition and health education for children and families in community-based settings. These nutrition professionals serve as the liaisons for the State IA (INN) at participating school districts.

When a direct educator is hired for this program, she or he participates in annual training facilitated by INN administrators, together with experienced INN direct educators. The training is designed to communicate program goals, objectives, and structure; the rationale for the program's links to the SNAP-Ed program and schools; and its administrative and documentation requirements. A large segment of the training is dedicated to the BASICS curriculum as well as opportunities for the trainees to practice teaching the lessons from the curriculum. The training also provides skill building on how to recruit SNAP-Ed-eligible schools and the importance of working very closely with contract agency supervisors and staff.

Ongoing training and technical assistance are also an integral part of the program's efforts to promote continuous quality improvement. Direct educators are required to participate in training sessions and regular meetings coordinated by the INN. These meetings provide opportunities for continued training and information sharing among the direct educators about their experiences and challenges in program delivery, as well as ideas about how to address challenges that arise in their work. Topics covered during these sessions include how to engage students, how to work with multicultural groups, and effective early childhood teaching strategies.

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<sup>20</sup> During the course of implementation of the intervention, one direct educator left for maternity leave.

Four direct educators delivered the BASICS core lessons for this demonstration project. In order to prepare the direct educators for implementation of the BASICS core lessons, the INN administrators held an educator training in the fall of 2010. This training session was designed to be a hands-on workshop. The workshop was comprised of five key elements: review and revision of BASICS core lessons, educator demonstration of BASICS core lessons, review and demonstration of the outcome evaluation instruments, formal review of outcome and process evaluation procedures, and review of the evaluation study approach and methodologies.

By the winter of 2010, two of the lead educators were piloting the core lesson activities in order to ensure that they could effectively be taught within the lesson time frame of 30 minutes and in the classroom setting. The direct educator in Waterloo could not pilot lesson activities, as she was preparing for maternity leave. Direct educators conducted an independent study of the BASICS curriculum and practiced with the core lessons for approximately 40 hours prior to administering the first intervention lesson. INN staff and educators participated in periodic conference calls and sent frequent e-mail communication during the spring of 2011 to ensure agreement on core elements for the lessons that would be taught by educators and classroom teachers. This had to be accomplished by early summer to allow the INN staff time to select worksheets, order books, and print copies. In Des Moines, social marketing activities had to be coordinated with the core lessons as well.

Direct educators requested that INN administrators compile the nutrition education materials for each month and deliver them directly to the educators. The purpose of this requirement was to save direct educator time and ensure program fidelity. The direct educators were responsible for preparing for the core lessons, teaching the core lessons in the classroom and reporting on core lesson activities. Direct educators were also responsible for reporting on the extended lesson activities delivered by classroom teachers. Each month, direct educators would enter data collected from classroom teachers into a Web-based survey. At the end of the intervention period, the survey output was downloaded in an Excel formatted document for easy tabulation of results on the number of teachers who were able to complete each extended lesson activity.

During the course of the implementation, INN administrators provided technical assistance to direct educators based on individual needs. Prior to the start of a new month, conference calls were held with the direct educators and, typically, two INN administrators.

#### ***b. Classroom teachers and their training***

Twenty-eight classroom teachers who participated in the BASICS interventions implemented the four BASICS extended lesson activities. Classroom teachers were provided lesson plans with materials and detailed instructions on how to implement each extended lesson activity. The direct educator reviewed the extended lessons with the classroom teachers and provided technical assistance during the course of the intervention. Some classroom teachers sat in on INN technical assistance conference calls with their direct educators to enhance understanding and buy-in.

In order to prepare classroom teachers for the study, INN hosted a Webinar in September 2011. This Webinar reviewed the goals and objectives of the Models of SNAP-Education and Evaluation Wave II study, study methods, and how the study would be implemented at the classroom level. The webinar was recorded and available at a later date to those teachers who could not attend.

#### **4. Recruitment of Elementary Schools**

The INN initiated recruitment of SNAP-Ed-eligible elementary schools in summer 2010, prior to submitting their demonstration project application to FNS. At this time, INN staff contacted school superintendents and principals and asked if they would be willing to participate. To the extent possible, the INN reached out to schools with which they had some personal or professional connection, because they knew that this would help facilitate recruitment. Twenty-eight schools were recruited. Once the INN was notified of their selection as a demonstration project in fall 2010, INN staff again contacted administrators to confirm their willingness to participate. In December 2010, the INN direct nutrition educators conducted in-person introductory sessions with school administrators and confirmed and finalized the participation of each.

#### **5. Recruitment of Partners for Social Marketing Campaign**

Over the last 10 years, the INN has developed a significant network of partners for their PABS & ACT social marketing campaigns. Statewide, INN has more than 150 partners<sup>21</sup> who assist and support them in the execution of their network goals. SNAP-Ed nutrition networks were intended to foster the development of integrated, multipartner State-level nutrition education networks that could bring together State and local government agencies, nonprofit organizations, and representatives of private industry, in order to coordinate the delivery of innovative nutrition education messages designed specifically for persons receiving or potentially eligible for SNAP benefits (FNS, 1999). Partnerships for INN were built on prior relationships and with those who had a longstanding history of collaboration. New and more diverse partners are incorporated into the network based on programming needs and the expressed needs of the target audience. As INN has evolved, more formal relationships among partners have been developed among nutrition education programs, food retailers, and State and local agencies.

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

While the direct educators work directly for subcontracting IAs, the State INN program staff play an important role in overseeing the quality of their work. Each month, the direct educators submitted work plans and class attendance data electronically for each BASICS classroom reached. Direct educators also collected and submitted work plans and class attendance for the extended lessons taught by classroom teachers. As previously mentioned, INN administrators compiled the nutrition education materials for the evaluation project and delivered to them directly to the educators. This was a quality control measure implemented for the SNAP-Ed Wave II study. Prior to SNAP-Ed Wave II study implementation, direct educators printed materials off the INN Web site themselves or had them printed by INN's clearinghouse. Additionally, each month, lesson data and class attendance data were reviewed by the process evaluation specialist and corrected, if necessary, with input from the direct educator.

State INN administrators conduct onsite nutrition education observations on a periodic basis. These quality control visits focus on program implementation, student receptivity to the lesson, and administration of the evaluation instruments. The State administrative team documented several key measures related to program fidelity, including the frequency and duration of lessons as implemented, the number of students present, the display of indirect educational materials in the school setting, and the presence of teachers in the classroom during implementation of the lessons.

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<sup>21</sup> INN administrative data.

## **7. Program Reach**

BASICS interventions were implemented between November 2011 and May 2012. During this period, a total of 55 third-grade classrooms, with a mean size of 23 students across 22 schools, participated in the BASICS interventions. Based on classroom enrollment approximately 2 months prior to implementation, BASICS interventions had the potential to reach 1,244 children (Table II-1).

In Council Bluffs and Waterloo, 27 third-grade classrooms, with a mean size of 23 students across 11 schools, received the BASICS intervention of core lessons and extended lessons. Based on classroom enrollment approximately 2 months prior to implementation, the program had the potential to reach 613 children (Table II-1).

In Des Moines, 28 third-grade classrooms, with a mean size of 23 students across 11 schools, received the BASICS Plus intervention of core lessons, extended lessons, and the social marketing campaign. Based on classroom enrollment approximately 2 months prior to implementation, the BASICS Plus intervention had the potential to reach 631 children (Table II-1).

**Table II-1. INN BASICS Curriculum Program Reach**

Elementary Schools	Number of Classrooms Where Intervention Took Place	Total Number of Children Participating in Intervention <sup>a</sup>	Mean Size (Number of Children) of Intervention Classrooms
<b>BASICS Plus</b>			
Cattell	3	57	19
Wright	2	36	18
Morris	2	56	28
Carver	3	57	19
Brubaker	2	54	27
Lovejoy	2	42	21
Studebaker	3	71	24
Findley	2	50	25
Windsor	3	66	22
Jackson	3	67	22
Park Avenue	3	75	25
<b>BASICS Plus Total</b>	<b>28</b>	<b>631</b>	<b>23</b>
<b>BASICS</b>			
Fred Becker	2	44	22
Irving	3	67	22
Lowell	2	48	24
Highland	3	59	20
Bloomer	2	45	23
Carter Lake	4	60	15
Edison	3	71	24
Franklin	2	61	31
Longfellow	2	57	29
Roosevelt	2	48	24
Rue	2	53	27
<b>BASICS Total</b>	<b>27</b>	<b>613</b>	<b>23</b>
<b>OVERALL TOTAL</b>	<b>55</b>	<b>1,244</b>	<b>23</b>

<sup>a</sup> Children reached or participating in BASICS are defined in this evaluation as those who participated in at least one BASICS lesson taught by the BASICS direct educators. Participation was based on student enrollment for each intervention classroom.

Source: INN administrative data.

School selection and assignment were based on factors such as prior implementation of the BASICS curriculum in the participating school districts, current availability of nutrition educators, and opportunities for implementation of the social marketing component of the intervention. Specifically, Davenport was selected for the comparison condition based on the fact that INN had not worked in this region, while Waterloo and Council Bluffs were selected for the BASICS program because the social marketing campaign had not been aired there. These steps limited the chance of program cross-over.

During the 2011–2012 school year, the BASICS Plus intervention took place in Des Moines, the BASICS intervention took place in Waterloo and Council Bluffs, and Davenport served as the control condition. Sample size estimation indicated the need for 11 schools in each condition. Within each condition, selection was guided by the following factors:

- ▲ Exclusion of year-round schools;
- ▲ Exclusion (in Des Moines, Waterloo, and Council Bluffs) of schools not participating in the BASICS program in 2011–2012; and
- ▲ A minimum of 53 third-grade students, based on data collection assumptions that include a 65 percent consent rate, an 80 percent response rate at pretest, an 80 percent response rate at posttest, and a need for an average completion rate (pretest/posttest surveys) of 22 per school.

There was a need for the last criterion to be relaxed in Davenport. The smallest school included 46 third-grade students, but the average in Davenport is still above the average expected minimum. The INN provided lists of available schools that included the anticipated number of third-grade students at each school, whether the school would be participating in BASICS in the 2011–2012 school year (Des Moines, Waterloo, and Council Bluffs only), and whether the schools followed traditional schedules or operated on a year-round calendar.

After applying exclusion criteria, 11 schools were retained in Davenport, and 11 from Waterloo and Council Bluffs and 17 schools in Des Moines. Because exactly the minimum number of schools in Davenport, Waterloo, and Council Bluffs were retained, these schools were accepted and make up the control (Davenport) and BASICS (Waterloo and Council Bluffs) conditions. Eleven of the 17 available in Des Moines (BASICS Plus) were randomly selected using a random number generator. The schools with the 11 lowest numbers were retained for the study.

Following school recruitment and confirmation of participation, a sample of 28 classrooms in Des Moines elementary schools were randomly selected for the BASICS Plus intervention. From this sample, the intervention reached 631 children in 28 classrooms. The second intervention sample of 10 classrooms in Waterloo and 17 classrooms in Council Bluffs was randomly selected as BASICS intervention sites, reaching 613 children in 27 classrooms. Total children reached by BASICS Plus and BASICS was 1,244, with a mean of 23 children per classroom and a total of 55 classrooms (Table II-2).

**Table II-2. INN Program Reach at 22 Intervention Schools Participating in the Evaluation by Intervention Type**

Intervention Location (number of schools)	Child Reach		
	Number of Participating Classrooms	Number of Child Participants <sup>a</sup>	Mean Number of Child Participants per Classroom
BASICS Plus ( <i>n</i> = 11)	28	631	23
BASICS ( <i>n</i> = 11)	27	613	23
Overall total ( <i>n</i> = 22)	55	1,244	23

<sup>a</sup> Child participants are defined as those who attended at least one INN class.

Source: INN administrative data 2011.

The social marketing campaign incorporated into the BASICS Plus intervention was conducted using both direct and indirect approaches. Point-of-purchase education was conducted at six grocery stores in Des Moines and included nutrition education signage and in-store demonstrations. Dietetic students from Iowa State University conducted two in-store demonstrations per month at each store, and distributed samples of featured fruits and vegetables, as well as nutrition education materials supporting the key program themes and campaign messages. Demonstrations were held during the first two weeks of the month on one weekday evening and one weekend morning or afternoon per store. Signage was placed in both the produce and dairy sections of the store, as the INN social marketing campaign also included the promotion of low- and non-fat dairy products. Fourteen billboards located in low-income census tract areas featured campaign messaging and imagery. Billboards were placed in waves from March 1 to May 1, 2012. Seven bus shelters serving SNAP participants and eligibles displayed social marketing messaging and imagery for passengers on the Des Moines Area Rapid Transit bus lines. Television ads were played during two periods in March and April. Ranging from 15 to 30 seconds, the ads conveyed a variety of campaign messages. Based on Nielsen ratings and Scarborough data, television ads were played on highly rated networks for women aged 18–34 with a household income of less than \$30,000 per year. Radio ads featuring the key campaign themes ran on three radio stations averaging 36 spots per week. Radio ads were played on the two top-rated stations for women aged 18–34 and aired during parts of the day that low-income mothers are most apt to listen to, based on Arbitron and Scarborough data. All social marketing materials, including radio and television advertisements, were in English.

The Family Nights Out events were designed to bring children and their parents and caregivers together to learn about healthy eating and physical activity at the child’s school. In all, 11 Family Nights Out events were held at the BASICS Plus schools. The parents and caregivers and their children rotated through five interactive education stations to learn about nutrition and physical activity. Stations included sample snacks and exercises for both parents and caregivers and their children. The evening ended with a dinner, provided and staffed by a local grocery store chain.

Of note, the schools participating in the BASICS program were located in Waterloo, 2 hours northeast of Des Moines; and Council Bluffs, 2 hours west of Des Moines. INN administrators reported that the comparison group children or their parents were unlikely to encounter elements of the social media campaign.

Table II-3 describes each social marketing component, placement, timeframe, and estimated reach. A more comprehensive description of the social marketing campaign can be found in Appendix B.

**Table II-3. INN Social Marketing Campaign Estimated Reach by Component**

Component	Placement Timeframe	Estimated Reach
<b>Point-of-purchase intervention</b>	November 1, 2011–May 15, 2012	<ul style="list-style-type: none"> <li>10,764 individuals received food tasting</li> </ul>
<b>Billboards</b>	March 1–May 1, 2012	<ul style="list-style-type: none"> <li>279,744 impressions<sup>a</sup> among women age 18-34</li> </ul>
<b>Bus shelters</b>	March 1–May 1, 2012	<ul style="list-style-type: none"> <li>n/a<sup>b</sup></li> </ul>
<b>Television</b>	March 15–19, 2012; April 2–16, 2012	<ul style="list-style-type: none"> <li>PABS<sup>c</sup>: 302,493 impressions among women ages 18–34</li> <li>Bodies Change: 193,696 impressions among women ages 18–34</li> <li>100% added value achieved as additional unpaid ads ran during off-peak hours</li> </ul>
<b>Radio</b>	April 1–May 7, 2012	<ul style="list-style-type: none"> <li>PABS: 243,476 impressions among women ages 18–34</li> <li>Bodies Change: 243,476 impressions among women ages 18–34</li> <li>100% added value achieved as additional unpaid ads ran during off-peak hours</li> </ul>
<b>Family Nights Out</b>	March 6–April 12, 2012	<ul style="list-style-type: none"> <li>382 children and 213 adults</li> </ul>
<b>Free media</b>	May 2012	<ul style="list-style-type: none"> <li>73,098 persons age 2 and older reached during television news segment</li> <li>4,000 persons age 12 and older reached during on-air radio interview</li> <li>300 persons reached during Family Nights Out event at mall (promoted by local radio station)</li> </ul>

<sup>a</sup> Media Impressions are the number of people who may have seen an article, heard something on the radio or in a podcast, watched something on television, or read something on a Web page or blog. n/a = not available.

<sup>b</sup> Impressions not available. Approximately 15,000 people ride Des Moines area regional transit buses per day. Source: INN administrative data.

## 8. Program Dosage and Exposure

### a. Children's exposure to classes

In addition to knowing the program's reach, it is important to determine the exposure level that participants have to the program. In this section, analysis of available data on children's exposure to the program classes is presented. Class exposure is defined as the number of classes each person attended and the number of minutes spent in the classes. Program exposure in Table II-4 is presented in total number of minutes children were exposed to the intervention by school at the classroom level. Analysis of direct educator implemented BASICS Plus and BASICS intervention data show that on average, children received a total of 240 minutes of nutrition education through the BASICS Plus core lessons, and 248 minutes of nutrition education through the BASICS core lessons. As previously described, each of the eight BASICS Plus and BASICS core lessons were designed to be implemented in approximately 30 minutes.

In some cases, classroom exposure to the lessons was less than 30 minutes. Direct educator documentation of lesson exposure revealed some of the following reasons for exposure of less than the intended amount of lesson time: Students came in late from recess, the classroom teacher had scheduling conflicts, the direct educator was late to the classroom, and the class had an emergency.

**Table II-4. Average Exposure to Education Provided by Direct Educator**

Intervention Location (number of schools)	Average Minutes Per Lesson								
	Lesson 1	Lesson 2	Lesson 3	Lesson 4	Lesson 5	Lesson 6	Lesson 7	Lesson 8	All Lessons
BASICS Plus (n = 28)	30	30	29	30	30	30	30	31	30
BASICS (n = 27)	31	31	30	30	30	34	29	30	31
Overall total (n = 55)	31	31	30	30	30	32	30	31	31

Extended lessons provided by classroom teachers in both BASICS Plus and BASICS interventions ranged from 0 to 120 minutes, with a mean of 50 minutes. Analysis of intervention data show that on average, children received a total of 351 minutes of nutrition education through the BASICS Plus intervention and 376 minutes of nutrition education through the BASICS intervention, as shown in Table II-5.

Teacher time for extended lessons is self-reported and may not accurately reflect actual time spent on the extended lesson activities. Chief among reporting issues is the ability to recall, accurately, the number of minutes spent on lessons at the end of the month.

**Table II-5. Average Exposure to INN Extended Lessons by Classroom Teacher**

Intervention Location (number of classrooms)	Average Minutes Spent Per Month							
	November <sup>a</sup>	December	January	February	March	April	May	All Months
BASICS Plus (28)	62	49	49	49	51	57	34	49
BASICS (27)	80	52	52	47	49	55	41	54
Overall total (55)	71	51	51	48	50	56	38	52

<sup>a</sup> During November, the classroom teachers integrated activities from lessons 1 and 2 into their curriculum. The amount of time spent on activities for those two lessons was collected as a cumulative number in their November report.

Source: INN administrative data.

Analysis of combined exposure to direct educator and classroom teacher implemented BASICS Plus and BASICS activities show that on average, children received 591 minutes of nutrition education through the BASICS Plus intervention and 621 minutes of nutrition education through the BASICS intervention. This means that children participating in the BASICS Plus intervention received, on average, 49 minutes, and children participating in the BASICS intervention received on average 52 minutes of education per PABS & ACT topic.<sup>22</sup>

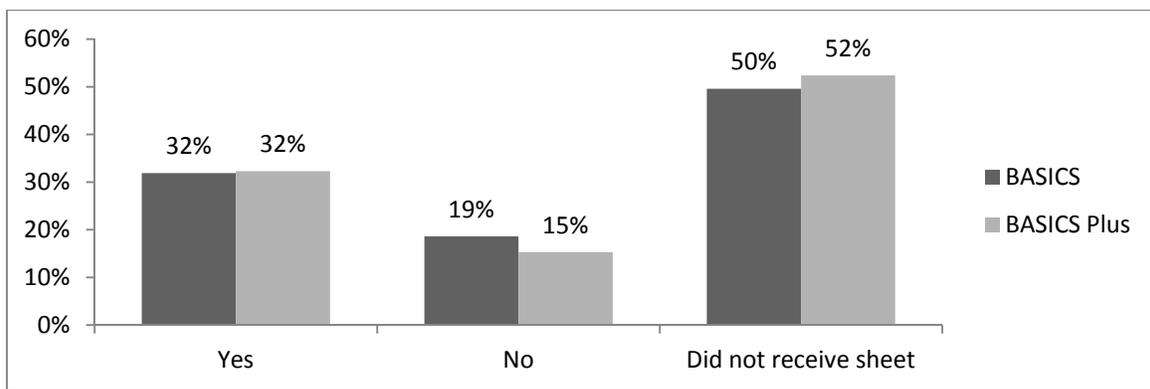
<sup>22</sup> For each intervention group, the total number of minutes of nutrition education received was divided by 12 lessons (8 direct education lessons presented by the nutrition educator plus supplemental activities presented by the classroom teacher, equivalent to 4 direct education lessons).

**b. Parent and caregiver exposure to take-home materials and activities**

Data on parent and caregiver use of the BASICS take-home materials reflect limited exposure to the program’s messages through take-home materials. Figures II-1 through II-6 depict whether parents and caregivers received and read or used the BASICS materials that were distributed monthly through their children from school.

The “BE A MILK SUPERSTAR!!” worksheet was sent home with participating students. Parents and caregivers were encouraged to use the sheet with their child to track each time a family member consumed a milk product. Nearly one-third of parents and caregivers in both the BASICS and Basics Plus interventions responded that they completed the worksheet, less than 20 percent of both intervention groups said that they did not, and 50 percent said that they did not receive the worksheet (Figure II-1). Parents and caregivers who participated in focus groups throughout the intervention districts felt that take-home work often gets lost.

**Figure II-1. Completed “BE A MILK SUPERSTAR!!” Worksheet With Child<sup>a</sup>**



<sup>a</sup> BASICS *N* = 248; BASICS Plus *N* = 248.

Source: Parent and Caregiver Follow-Up Survey, data collected in May–July 2012; respondents are parents and caregivers of children participating in the evaluation study.

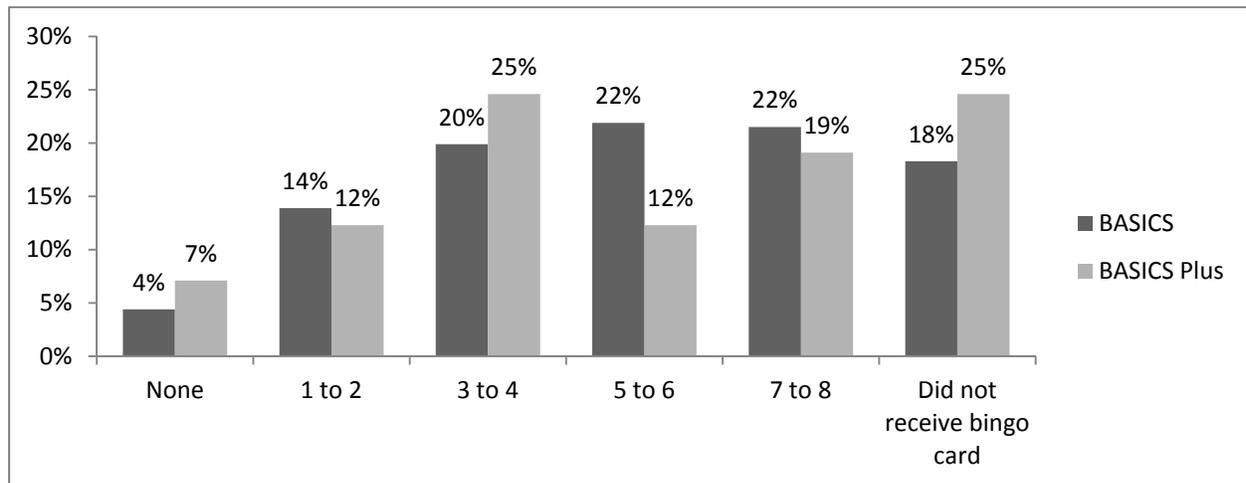
A bingo card was sent home with participating students after each monthly lesson. Children were encouraged to eat the fruits or vegetables pictured and to do the activities pictured to try to get “bingo.” Data on parent and caregiver use of the bingo cards reflect a much higher exposure to the program’s messages through this take-home activity (Figure II-2). Fully 22 percent of BASICS parents and caregivers and 19 percent of BASICS Plus parents and caregivers completed seven to eight bingo cards, representing the eight BASICS core lessons for the school year. Twenty-two percent of BASICS parents and caregivers and 12 percent of the BASICS Plus parents and caregivers played or used five to six of the bingo cards. Thirty-eight percent of BASICS parents and caregivers played or used four or fewer, while 44 percent of the BASICS Plus parents and caregivers did.

Children were encouraged to complete the bingo cards with their parents and caregivers and bring them back to school by rewarding them with a variety of nutrition education reinforcement incentive items. For some of the lessons, every student in the class received an incentive prize for participation. Because both lesson 1 and lesson 2 occurred during the first month, it was not possible for students to return lessons 1 and 2 bingo card in November, since it takes an entire month to complete a bingo card. Because lesson 4 occurred in January, it was determined that each student would receive an incentive prize to celebrate the New Year. For every other lesson, only students who returned their completed bingo cards received the

nutrition education reinforcement incentive item. Nutrition education reinforcement incentive items for each lesson were as follows:

- Lesson 1: pencils and magnets for every student,
- Lesson 2: pencil pouches for every student,
- Lesson 3: lanyards for completed bingo card,
- Lesson 4: highlighters for every student,
- Lesson 5: backpacks for completed bingo card,
- Lesson 6: Frisbees for completed bingo card,
- Lesson 7: color changing cups for returned milk tracker or bingo card, and
- Lesson 8: beach balls for completed bingo card.

**Figure II-2. Number of Bingo Cards Played or Used to Get Child to Eat Fruits and Vegetables (Mean = 4.4<sup>a</sup>)<sup>b</sup>**



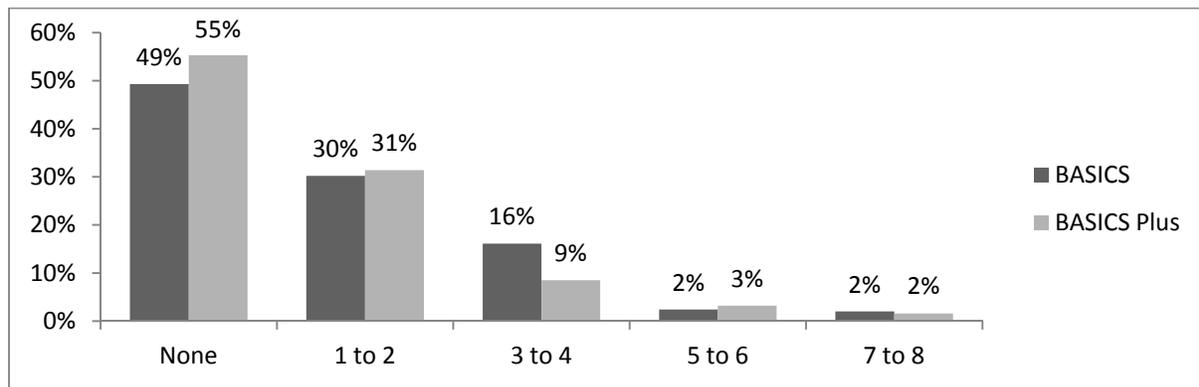
<sup>a</sup> Means were calculated for respondents who received the bingo cards.

<sup>b</sup> BASICS *N* = 251; BASICS Plus *N* = 252.

Source: Parent and Caregiver Follow-Up Survey, data collected in May–July 2012; respondents are parents and caregivers of children participating in the evaluation study.

The back of the bingo cards included recipes and other information on healthy eating and exercise. Figure II-3 illustrates the percentages of parents and caregivers who used the recipe on the back of the bingo card. The majority of parents and caregivers did not use the bingo cards to make recipes. Thirty percent of BASICS parents and caregivers and 31 percent of BASICS Plus parents and caregivers reported using at least one recipe. Sixteen percent of BASICS parents and caregivers and 9 percent of BASICS Plus parents and caregivers made meals with three or four of the recipes provided. Less than 5 percent each of BASICS and BASICS Plus parents and caregivers reported using five or more bingo card recipes.

**Figure II-3. Number of Bingo Cards Used to Make Recipes (Mean = 1.2<sup>a</sup>)<sup>b</sup>**



<sup>a</sup> Means were calculated for respondents who received the bingo cards.

<sup>b</sup> BASICS *N* = 205; BASICS Plus *N* = 188.

Source: Parent and Caregiver Follow-Up Survey, data collected in May–July 2012; respondents are parents and caregivers of children participating in the evaluation study.

Several parents and caregivers mentioned that their children brought the bingo cards home and enjoyed completing the activities. Parents and caregivers also noted that students came home with nutrition education reinforcement incentive items for completing their bingo card.

*“They [children] teach me, actually, because they’re interested in what the program says. That bingo sheet just brought attention to eating healthy. It’s like I’ve been trying to get them to eat certain stuff forever, and they wouldn’t do it, but now they’re more willing to do it.”*

—parent and caregiver focus group participant

*“What does my daughter like best about the program? It’s the bingo card.”*

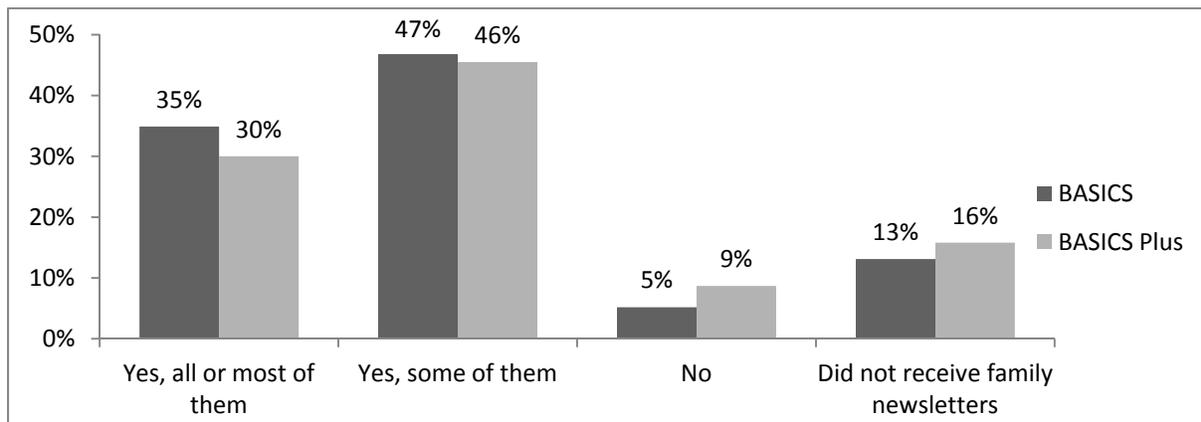
—parent and caregiver focus group participant

*“She’s been bringing home like prizes she’s earned, like a zipper pouch and then a backpack.”*

—parent and caregiver focus group participant

As illustrated in Figure II-4, parents and caregivers were asked to report on whether they read the family newsletters, which were distributed monthly via their children participating in BASICS interventions. Thirty-five percent of BASICS parents and caregivers and 30 percent of BASICS Plus parents and caregivers reported reading all family newsletters, while 47 percent of BASICS parents and caregivers and 46 percent of BASICS Plus parents and caregivers reported reading some of them. Five percent of BASICS parents and caregivers and 9 percent of BASICS Plus parents and caregivers reported reading none of them, while 13 percent of BASICS parents and caregivers and 16 percent of BASICS Plus parents and caregivers reported not receiving the family newsletters.

**Figure II-4. Percentage of Parents and Caregivers Who Reported Reading Family Newsletters<sup>a</sup>**

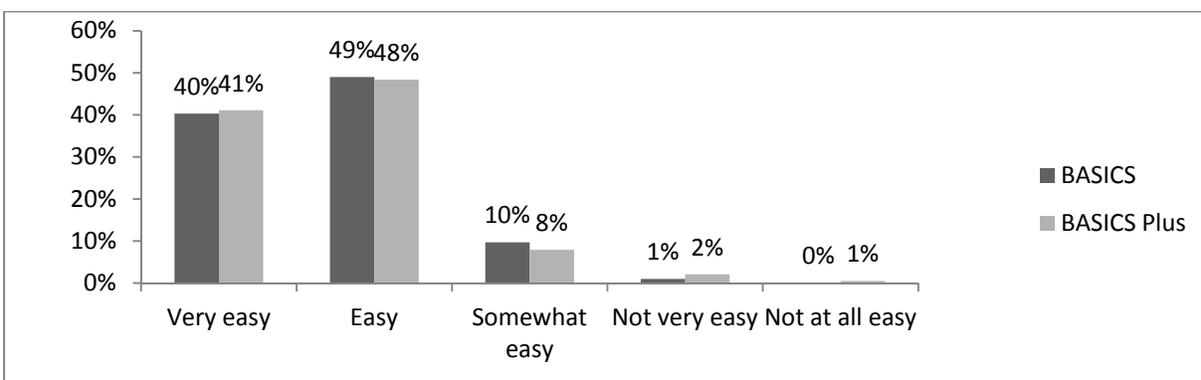


<sup>a</sup> BASICS *N* = 252; BASICS Plus *N* = 253.

Source: Parent and Caregiver Follow-Up Survey, data collected in May–July 2012; respondents are parents and caregivers of children participating in the evaluation study.

As depicted in Figure II-5, parents and caregivers were asked to report on the degree to which they understood the content of the family newsletters and other materials distributed on healthy eating. The majority of parents and caregivers felt that the material was easy to understand. Eighty-nine percent of BASICS and BASICS Plus parents and caregivers reported that the materials were easy or very easy to understand. Ten percent of BASICS parents and caregivers and 8 percent of BASICS Plus parents and caregivers felt that the materials were somewhat easy to understand. One percent of BASICS parents and caregivers responded that the materials were not very easy to understand, while 3 percent of BASICS Plus parents and caregivers reported that they were not very easy or not at all easy.

**Figure II-5. Parents' and Caregivers' Level of Understanding of the Family Newsletter and Other Materials on Healthy Eating<sup>a</sup>**



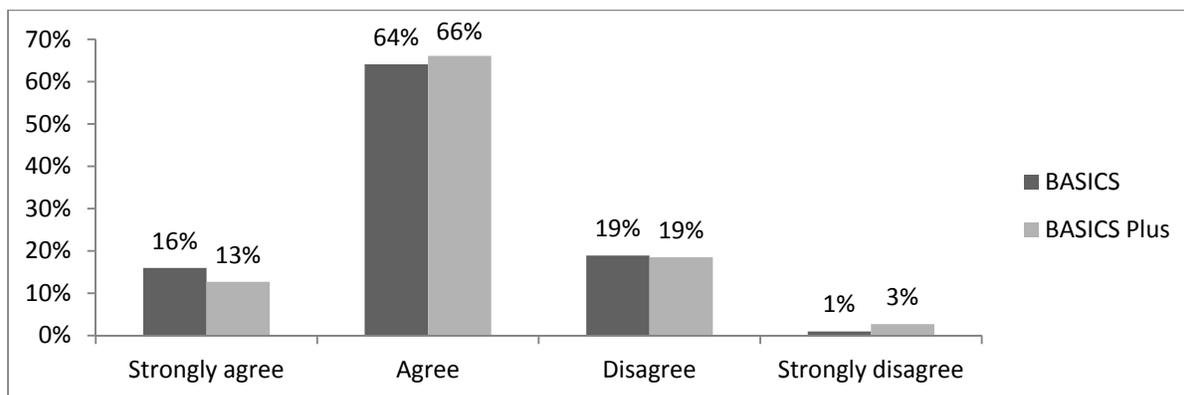
<sup>a</sup> BASICS *N* = 206; BASICS Plus *N* = 190.

Source: Parent and Caregiver Follow-Up Survey, data collected in May–July 2012; respondents are parents and caregivers of children participating in the evaluation study.

As depicted in Figure II-6, parents and caregivers were asked whether they used the information from the Family Newsletters and other materials on healthy eating to help their child eat healthier foods. The majority of parents and caregivers reported that they did use the information provided. Sixty-four percent of BASICS parents and caregivers and 66 percent of BASICS Plus parents and caregivers agreed, while 16 percent of BASICS parents and caregivers and 13 percent of BASICS Plus parents and caregivers

strongly agreed. In both groups, less than a quarter of parents and caregivers reported that they did not use the information.

**Figure II-6. Parents' and Caregivers' Level of Agreement With the Statement, "I used the information from the family Family Newsletters and other materials on healthy eating to help my child eat healthier foods"<sup>a</sup>**

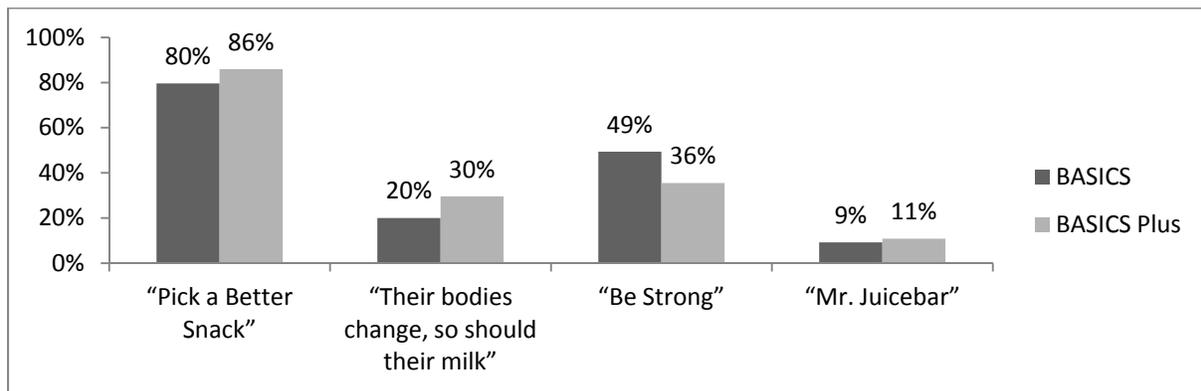


<sup>a</sup> BASICS *N* = 206; BASICS Plus *N* = 189.

Source: Parent and Caregiver Follow-Up Survey, data collected in May–July 2012; respondents are parents and caregivers of children participating in the evaluation study.

Figure II-7 highlights parents and caregivers' awareness of various nutrition education messages. Parents and caregivers were asked whether they were aware of four nutrition education campaign messages: PABS, Bodies Change, Be Strong, and Mr. Juicebar. PABS messages may have been seen in BASICS curriculum materials. The Bodies Change messaging was confined to the city of Des Moines via the social marketing campaign. Be Strong messages are used in INN's Power Panther stickers and posters to promote consumption of milk and other dairy products. Power Panther stickers and posters are generally used in elementary schools but were not part of the BASICS program intervention. Mr. Juicebar was included in the survey as a distracter and is not a real program. In both groups, more than 80 percent of parents and caregivers were aware of the PABS campaign. A far smaller number of parents and caregivers were aware of the Bodies Change campaign. Twenty percent of BASICS and 30 percent of BASICS Plus parents and caregivers were aware of this campaign. Forty-nine percent of BASICS and 36 percent of BASICS Plus parents and caregivers were aware of Be Strong messaging. While it is not a real program, about 10 percent of parents and caregivers in both groups reported awareness of the Mr. Juicebar campaign. PABS messages have been used in direct nutrition education and social marketing media placement for several years across the State, while Bodies Change was a brand new campaign debuted as part of the research study. This may explain why awareness for PABS is so high even in the BASICS communities.

**Figure II-7. Parents' and Caregivers' Awareness of Campaigns<sup>a, b</sup>**



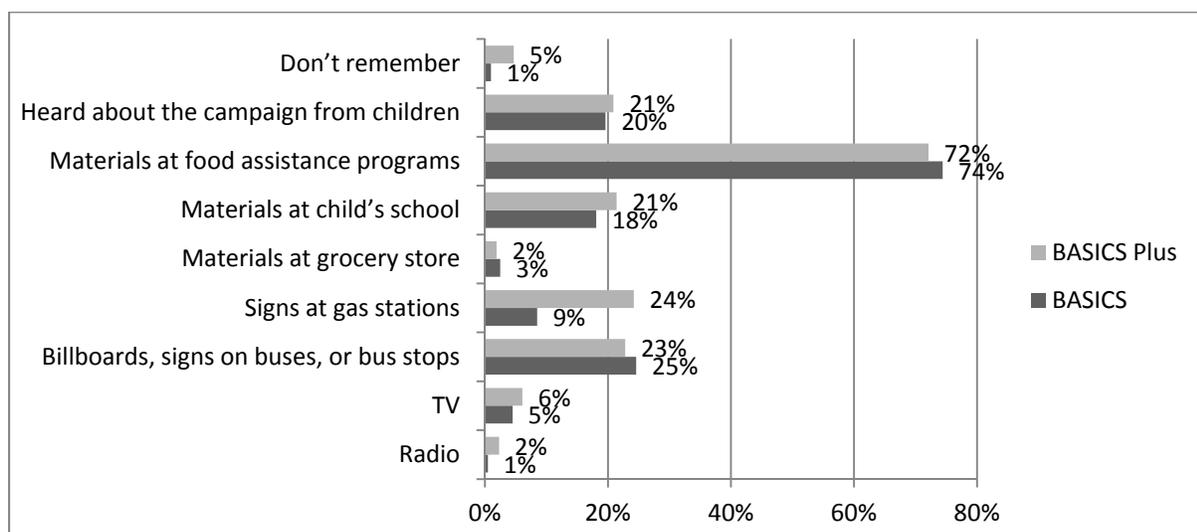
<sup>a</sup> BASICS *N* = 250; BASICS Plus *N* = 250.

<sup>b</sup> Mr. Juicebar is not a real program; it was included as a distracter.

Source: Parent and Caregiver Follow-Up Survey, data collected in May–July 2012; respondents are parents and caregivers of children participating in the evaluation study.

Figures II-8 and II-9 describe ways in which parents and caregivers saw, read, or heard the campaign messages. When asked how participants saw, read, or heard about the PABS campaign, 72 percent of BASICS parents and caregivers and 74 percent of BASICS Plus parents and caregivers reported seeing a poster, brochure, or other materials at food assistance programs such as food pantries or WIC offices. About 25 percent of parents and caregivers in both groups saw billboards or signs for the PABS campaign on buses or at bus stops. In both groups, about 20 percent heard about the PABS campaign from their children and another 20 percent saw a poster, a brochure, or another material at their child’s school. Smaller percentages of parents and caregivers in both groups saw a poster, a brochure, or another material on the PABS campaign at a grocery store or heard about the campaign via television or radio. While INN was unable to implement signs at gas stations, 24 percent of BASICS plus participants responded that they had seen PABS signage at gas stations.

**Figure II-8. Ways in Which Participants Saw, Read, or Heard About the PABS Campaign<sup>a</sup>**

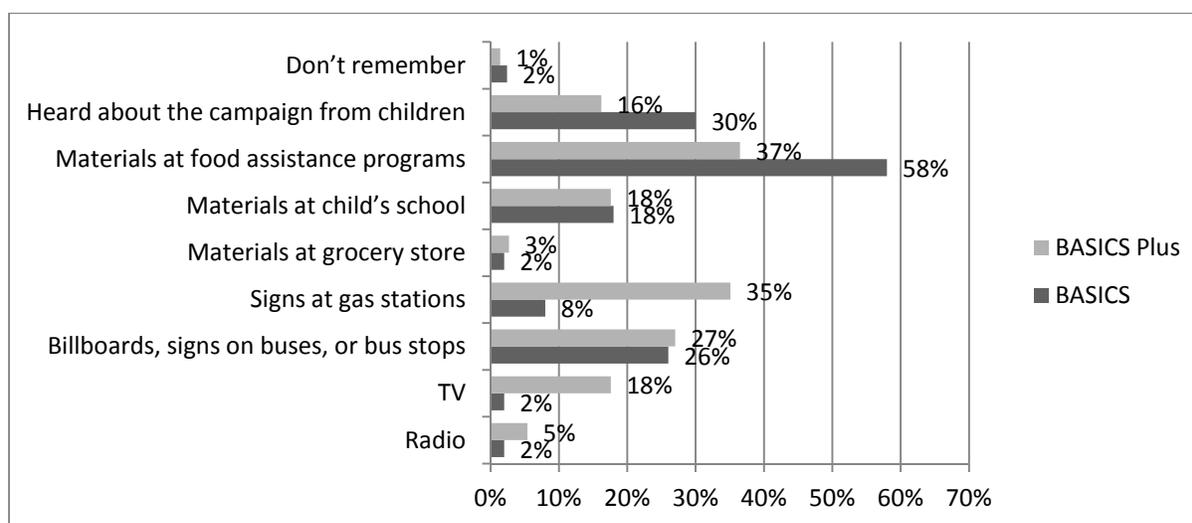


<sup>a</sup> BASICS *N* = 199; BASICS Plus *N* = 215.

Source: Parent and Caregiver Follow-Up Survey, data collected in May–July 2012; respondents are parents and caregivers of children participating in the evaluation study.

As depicted in Figure II-9, when asked how participants saw, read, or heard about the Bodies Change campaign, 58 percent of BASICS parents and caregivers and 37 percent of BASICS Plus parents and caregivers reported hearing about the campaign through a poster, a brochure, or another material at food assistance programs such as food pantries or WIC. About a quarter of parents and caregivers in both groups reported seeing billboards or signs for the Bodies Change campaign on buses or at bus stops. A third of BASICS parents and caregivers heard about the Bodies Change campaign from their children, while only 16 percent of BASICS Plus parents and caregivers did. Eighteen percent of parents and caregivers in both groups saw a poster, a brochure, or another material at their child’s school. Thirty-five percent of BASICS Plus parents and caregivers reported seeing signs for the Bodies Change campaign at gas stations, 18 percent heard about the campaign on TV, and 5 percent heard about the campaign on the radio. Less than 5 percent of parents and caregivers saw posters, brochures, or other campaign materials at the grocery store.

**Figure II-9. Ways in Which Participants Saw, Read, or Heard About the “Their bodies change, so should their milk” Campaign<sup>a</sup>**



<sup>a</sup> BASICS *N* = 50; BASICS Plus *N* = 74.

Source: Parent and Caregiver Follow-Up Survey, data collected in May–July 2012; respondents are parents and caregivers of children participating in the evaluation study.

### ***c. Exposure in the school environment***

Observations of direct education sessions conducted at both BASICS Plus and BASICS schools provided the opportunity to observe implementation of the curriculum and the school environment in which it was administered. These observations, as well as data collected from BASICS administrators, offered insights into exposure in the school environment. By far, the nutrition education intervention most prevalent in the school environment was the FNS Fresh Fruit and Vegetable Program (FFVP).<sup>23</sup> FFVP provides free fresh fruits and vegetables in participating elementary schools. The goal of FFVP is to introduce school children to a variety of produce that they may otherwise might not had the opportunity to sample. Participating schools must meet criteria based on poverty indicators.

<sup>23</sup> FNS. *Fresh Fruit and Vegetable Program*. Retrieved from <http://www.fns.usda.gov/cnd/ffvp/>.

Several other nutrition programs were implemented in the school environment, but to a lesser degree. Examples of other nutrition education programs in the environment were ISU Cooperative Extension programming, Fuel Up to Play 60 from the Midwest Dairy Council, and an afterschool program that included a nutrition component.

Each intervention school received PABS & ACT items to post in their building to provide supporting messages in the school environment. These items included the following:

- A PABS & ACT poster set (nine posters). Posters included “Wash. Bite. Peel. Eat.” messages and
- PABS & ACT banners provided to FFVP schools by the Iowa Department of Education and hung in the cafeteria.

## 9. Resources and Costs of Program Implementation

This section discusses the cost of developing and implementing the BASICS curriculum and social marketing campaign and a breakout of the reported cost centers. It also includes an analysis of the costs as they related to the number of children served. The detailed budget tables that the INN provided for this evaluation, including a breakout of non-Federal and Federal funding for each budget category, are included in Appendix B. Costs associated with the INN self-evaluation are presented separately in Chapter IV.

### a. Costs for program design

Costs included in this section are those that are associated with the development of the BASICS curriculum and social marketing campaign, which includes both direct and indirect costs. All funding used to support program development was from Federal sources. The total program cost for implementation was \$144,518.41.

Contracts were the most substantial cost center in terms of resources needed to design the BASICS program, accounting for 62 percent of the direct costs.

The BASICS curriculum and social marketing campaigns had many pre-existing elements. However, some adaptation and new development was necessary. The resources needed for design of the BASICS curriculum and social marketing materials fall into five primary cost categories: salary and benefits; contracts, grants, and agreements; noncapital equipment and supplies; travel; and indirect costs. These expenditures are described below.

**Salary and benefits.** This expense includes the salaries or hourly wages for the SNAP-Ed IA and partner staff that supported BASICS implementation directly or administratively. As shown in Section 2.1 of Appendix B, the staffing costs for BASICS implementation include the following:

<u>Position</u>	<u>Number of FTEs</u>
Program administrator	0.18
Social marketing coordinator	0.11
Administrative assistant	0.0158
Fiscal manager	0.0125
Direct educator, Des Moines	0.0225
Direct educator, Council Bluffs	0.0163
Direct educator, Council Bluffs	0.00019
Direct educator, Waterloo	0.0233
<b>Total</b>	<b>0.38059</b>

**Contracts, grants, and agreements.** Contract costs included the costs associated with the marketing firm that assisted with development of the social marketing campaign, as well as costs associated with three subcontractors who employed and supervised four direct educators to teach the BASICS curriculum.

**Noncapital equipment and supplies.** No expenses were reported for this line item.

**Travel.** The program travel expenditures include the costs for INN staff and subcontractors to travel in order to work on the design and development of the BASICS program.

Tables II-6 and II-7 illustrate the actual expenditures that the INN reported as the costs of BASICS intervention planning and design (including the social marketing campaign) in Federal FY 2011.

**Table II-6. Summary of INN Costs for Planning and Design of the INN BASICS Curriculum (Federal FY 2011)**

Budget Category	Expenditures	Percentage of Total Costs
Salary and benefits	19,544.78	41.5%
Contracts, grants, and agreements	3,874.71	8.3%
Materials	16,300.00	34.6%
Noncapital equipment and supplies	0	0%
Travel	2,216.77	4.7%
<b>Total direct costs</b>	<b>41,936.26</b>	<b>89.1%</b>
Indirect costs	5,120.73 <sup>a</sup>	10.9%
<b>Total</b>	<b>47,056.99</b>	<b>100%</b>

<sup>a</sup> Indirect costs are applied to IDPH staff salaries and benefits.

Source: Cost data provided by INN (see the completed Resource and Expense Tracking Form in Appendix B).

**Table II-7. Summary of INN Costs for Planning and Design of the INN Social Marketing Campaign (Federal FY 2011)**

Budget Category	Expenditures	Percentage of Total Costs
Salary and benefits	8,854.45	9.1%
Contracts, grants, and agreements	86,287.11	88.5%
Materials	0	0%
Noncapital equipment and supplies	0	0%
Travel	0	0%
<b>Total direct costs</b>	<b>95,141.56</b>	<b>97.6%</b>
Indirect costs	2,319.87 <sup>a</sup>	2.4%
<b>Total</b>	<b>97,461.41</b>	<b>100%</b>

<sup>a</sup> Indirect costs are applied to IDPH staff salaries and benefits.

Source: Cost data provided by INN (see the completed Resource and Expense Tracking Form in Appendix B).

***b. Costs for program implementation***

Costs included in this section are those that are associated with the implementation of the BASICS and BASICS Plus interventions, which includes both direct and indirect costs.

- Total program cost for implementation: \$199,766.98

- Sources of funding by type:
  - Non-Federal funds \$43,319.05
  - Federal funds \$156,447.93

Contracts were the most substantial cost center in terms of resources needed to implement the BASICS program and social marketing campaign, accounting for 86.2 percent of the direct costs.

The resources needed for BASICS and BASICS Plus implementation fall into five primary cost categories: salary and benefits; consulting, grants, and agreements; noncapital equipment and supplies; travel; and indirect costs.

- **Salary and benefits.** This expense includes the salaries or hourly wages for the IA and partner staff that supported BASICS and BASICS Plus implementation directly or administratively. As shown in Section 2.1 of Appendix B, the staffing costs for the BASICS and BASICS Plus interventions include the following:

<u>Position</u>	<u>Number of FTEs</u>
Program administrator	0.07
Social marketing coordinator	0.154
Administrative assistant	0.040
Fiscal manager	0.0101
Direct educator, Des Moines	0.620
Direct educator, Council Bluffs	0.0394
Direct educator, Council Bluffs	0.0156
Direct educator, Waterloo	0.0509
<b>Total</b>	<b>1.000</b>

- **Noncapital equipment and supplies.** No expenditures were reported in this line item.
- **Travel.** The program travel expenditures include the costs for IA staff and subcontractors to travel to and from BASICS sites and social marketing locations and to meet with partners in order to implement the program.

Tables II-8 and II-9 illustrate the actual expenditures INN reports as the costs of BASICS program and the social marketing campaign implementation in Federal FY 2012.

**Table II-8. Summary of INN Costs for Implementation of the INN BASICS Curriculum (Federal FY 2012)**

<b>Budget Category</b>	<b>Expenditures</b>	<b>Percentage of Total Costs</b>
Salary and benefits	9,373	10.3%
Contracts, grants, and agreements	79,312	87%
Noncapital equipment and supplies	0	0
Travel	0	0
<b>Total direct costs</b>	<b>88,684.90</b>	<b>97.3%</b>
Indirect costs	2,455.79 <sup>a</sup>	2.7%
<b>Total</b>	<b>91,140.69</b>	<b>100%</b>

<sup>a</sup> Indirect costs are applied to IDPH staff salaries and benefits.

Source: Cost data provided by INN (see the completed Resource and Expense Tracking Form in Appendix B).

**Table II-9. Summary of INN Costs for Implementation of the INN Social Marketing Campaign (Federal FY 2012)**

Budget Category	Expenditures	Percentage of Total Costs
Salary and benefits	12,423	11.4%
Contracts, grants, and agreements	92,949	85.6%
Noncapital equipment and supplies	0	0
Travel	0	0
<b>Total direct costs</b>	<b>105,372</b>	<b>97%</b>
Indirect costs	3,254.71 <sup>a</sup>	3.0%
<b>Total</b>	<b>108,626.71</b>	<b>100%</b>

<sup>a</sup> Indirect costs are applied to IDPH staff salaries and benefits.

Source: Cost data provided by INN (see the completed Resource and Expense Tracking Form in Appendix B).

### *c. Per-participant program cost*

Calculating costs per program participant presents some challenges. Depending on the type of intervention, costs per program participant can be calculated based on the number of clients who receive a single intervention dose; complete the entire intervention; are enrolled at a site where interventions are being conducted regardless of their receipt of education or materials; or live, work, and shop in an environment where messages are delivered via a multichannel approach. In addition, estimating costs associated with indirect education of parents and caregivers through the distribution and use of take-home materials and/or a social marketing campaign is not clear-cut, making it difficult to develop costs per program participant.

The number of children who participated in the BASICS program in Des Moines, Council Bluffs, and Waterloo was used as a basis for the cost per participant calculation. Using the BASICS program curriculum expenditures of \$138,197.68<sup>24</sup> and the total number of children reached through direct education ( $n = 1,244$ ), the estimated cost per child was calculated to be \$111.08.

To break costs down more precisely, the cost of planning and design of the BASICS curriculum was \$47,056.99. If divided by the number of children reached through direct education ( $n = 1,244$ ), the estimated cost per child for the planning and design was \$37.83. The cost of the implementation of the BASICS program was \$91,104.69. If divided by the number of children reached through direct education ( $n = 1,244$ ), the estimated cost per child for the implementation was \$73.25.

The number of children ( $n = 631$ ) and their family members who were targeted by the BASICS Plus program in Des Moines was used as a basis for the cost per participant calculation,<sup>25</sup> with the proviso that the social marketing campaign potentially reached many more SNAP-eligible households in Des Moines than the BASICS Plus target audience. However, there is no way to determine precisely the number of SNAP eligibles reached with the social marketing campaign. Using the total social marketing

<sup>24</sup> Includes the planning, design, and implementation phases.

<sup>25</sup> The number of family members reached by the BASICS Plus program for the purpose of calculating the per-participant cost of the social marketing campaign is based on a household size of 4.84 (Table III-1: Baseline Demographic Characteristics for Parent and Caregiver Respondents and Their Children Who Participated in the BASICS Evaluation—Overall and by Condition). The calculation is thus 631 BASICS Plus child participants x household size of 4.84, providing an estimated total reach of 3,054.

expenditures of \$206,087.82<sup>26</sup> and the total number of targeted children and their family members potentially reached through the BASICS Plus program in Des Moines ( $n = 3054$ ), the estimated cost per child participant and their family members for the social marketing component was \$67.48.<sup>27</sup>

In order to calculate the cost per participant for BASICS Plus (BASICS direct education and social marketing), the total cost of BASICS Plus is estimated to be \$111.08 (cost per participant for BASICS direct education) plus \$67.48 (cost per participant for social marketing), or \$178.56.

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

Overall, program administrators, direct educators, classroom teachers, principals, and parents and caregivers of children engaged in BASICS or BASICS Plus interventions reported a high degree of satisfaction with the program, saying that they liked the content and approach. Furthermore, the flexibility and enthusiasm of the intervention team members, as well as their devotion to program quality and in-depth understanding of the target audience, were instrumental in gaining school and partner cooperation and ensuring satisfaction with the program.

At the same time, interviews with the program implementers, focus groups with parents and caregivers, and observation of the direct education identified challenges to the implementation of this program in schools, particularly in reaching and engaging parents and caregivers, and to the implementation of the social marketing campaign. The most common reported facilitators and challenges to BASICS curriculum implementation are listed in Exhibit II-6 and described in greater detail below. Opportunities for improving the program to address the challenges identified are also discussed. Quotes from key informants are included to highlight their perspective.

### **Exhibit II-6. Key Facilitators and Challenges to BASICS Curriculum Implementation**

#### **Facilitators:**

- Subject matter strength and enthusiasm of direct educators
- Consistent messaging in the classroom and environment
- Strong community partnerships resulting in successful recruitment of schools
- High-degree of parent and caregiver satisfaction with lessons and program materials
- Approach to nutrition education delivery well received by key stakeholder groups
- Emphasis on continuous quality improvement and training

#### **Challenges:**

- Maximizing classroom teacher role in extending the BASICS lessons
- Maximizing parent and caregiver engagement in BASICS lessons
- Scheduling classes to maximize reach and exposure
- Cost of fresh fruits and vegetables for participating families

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<sup>26</sup> Includes the planning, design, and implementation phases.

<sup>27</sup> Alternatively, if the social marketing cost per child were based on the number of SNAP-eligible children who participated in the BASICS curriculum in Des Moines schools (not just the BASICS Plus schools in the independent evaluation), the total child reach is estimated at 4,507. The number of family members reached by the BASICS Plus program for the purpose of calculating the per-participant cost of the social marketing campaign is based on a household size of 4.84 (Table III-1: Baseline Demographic Characteristics for Parent and Caregiver Respondents and Their Children Who Participated in the BASICS Evaluation—Overall and by Condition). The calculation is thus 4,507 child participants x household size of 4.84, providing an estimated total reach of 21,813. The estimated cost per child participant and their family members for the social marketing component in this scenario is \$9.44.

## 1. Facilitators of Program Implementation to BASICS Curriculum Implementation

### a. Subject matter strength and enthusiasm of direct educators

When INN administrators were asked what skills, qualifications, and qualities that they thought were critical for direct educators of the BASICS interventions to possess, direct nutrition educators cited passion, subject matter strength, teaching skills, and flexibility or adaptability. Furthermore, members of the team reported that it was not critical for the direct educators to have an advanced degree, but it was important that they have good organizational skills and feel a sense of ownership in the program.

Observations of BASICS core lessons conducted in the classroom illustrated the subject matter strength, enthusiasm, and organization of the direct educators. The direct educators were able to walk into a classroom completely prepared to teach a 30-minute lesson with a variety of activities and snack samples, engage the children, and conduct the lesson with confidence and enthusiasm. These skills were combined with the ability to keep order in the class. The direct educator was supported by the classroom teacher, but the educator maintained a positive class atmosphere and typically did not need assistance from the classroom teacher.

*"[The direct educator] does a phenomenal job. That's been a key buy-in piece for us. I know more about how teachers feel about the program, because I get such a positive response about [the direct educator] and her delivery and the kids. They think she is a great deliverer of the program. She makes it really exciting for kids. When kids see her in the hallway, they associate her with excitement and enthusiasm and a new fruit they've never tried before."*

—school principal

### b. Consistent Messaging in the Classroom and Environment

The BASICS curriculum is designed to provide strong and cohesive messaging in the classroom by the direct educator and the classroom teacher, as well as in the overall school environment. The 8 lessons taught by the direct educator are enhanced and supported by the classroom teacher with the equivalent of four more lessons, for a total of 12 lessons delivered to the students. The lessons taught by the classroom teacher are designed to extend the eight BASICS core lessons and be integrated into the classroom curriculum according to the school curriculum standards. The messages conveyed in the classroom, are further enhanced in the school environment by social marketing items posted in the school: the PABS & ACT poster set and the PABS & ACT cafeteria promotion featuring campaign posters, banners, and clings for sneeze guards.

*"The challenge in schools is making sure they [the signage] all get placed."*

—INN administrator

As expressed by this INN administrator, the mechanisms in place for consistent messaging in the classroom and school environment involve a great deal of communication and organization. The materials must be available to the direct educator, who needs to work with school officials and the food service department to ensure placement of the materials. Negotiating how long the materials can be placed is an additional element for all to decide.

**c. Strong Community Partnerships Resulting in Successful Recruitment of Schools**

Recruitment of schools was a critical step in implementing the BASICS interventions. Since the administration and coordination of a school-based program requires considerable capacity at the local level, INN staff invest time and resources in the recruitment and retention of community-based partners that can both manage the complex fiscal requirements and deliver effective programming.

*“This investment has been fruitful; many of the current contractors have been part of BASICS for a decade.”*

—INN administrator

The INN administrators reported that their investment in partnerships, as well as the quality and relevance of the nutrition education approaches and materials were what contributed to strong community partnerships and successful recruitment of schools for the BASICS interventions. The direct educators, their supervisors, and school officials corroborated these perceptions in key-informant interviews.

**d. High Degree of Parent and Caregiver Satisfaction With Lessons and Program Materials**

Parents and caregivers who participated in focus group discussions provided positive feedback about the intervention curriculum and take-home materials. They consistently said that they liked the messages in the curriculum and also found the materials useful in helping their child eat healthier foods.

*“My daughter came home and told me about the program the other day and said they had asparagus, and she really liked it, so she asked me to get asparagus at the store yesterday.”*

—parent and caregiver focus group participant

*“I like it that the kids are trying new fruits and vegetables.”*

—parent and caregiver focus group participant

In all three focus groups, the majority of the parents and caregivers said that their children were now trying new vegetables and fruits at home. They attributed this change not just to what they were preparing at home but also to the child’s exposure to new foods in the BASICS and BASICS Plus interventions. Below are parent and caregiver focus group descriptions of the positive changes resulting from the healthy eating messages of the interventions:

*“For me, it’s amazing. My kids want to eat healthy.”*

—parent and caregiver focus group participant

*“I go to the store, and she’ll go, ‘Grandma, I want some of this fruit (or vegetable).’”*

—parent and caregiver focus group participant

It should be noted that a majority of focus group participants understood BASICS core messages and the goals.

*"[The goal was] to cut down on what you see us older people with blood pressure, diabetes—all those problems. They talk about obesity in the schools and stuff, but what the kids are eating in the cafeteria is not good. I think it's good that they're getting a nutrition kick going in school."*

—parent and caregiver focus group participant

Interestingly, parents and caregivers expressed a desire to participate in a discussion group about their children or grandchildren, such as the discussion in the focus group.

*"They should have a meeting like this once a month."*

—parent and caregiver focus group participant

This highlights parents and caregivers' need to discuss what their children are learning in school, provide input about programming, and learn from each other.

#### ***e. Approach to Nutrition Education Delivery Well-Received by Key Stakeholder Groups***

When asked what factors contributed most to promoting quality and successful implementation of the program, the majority of key informants—including direct educators, classroom teachers, and school officials—said that the design and format of the BASICS curriculum make its implementation easy and effective.

*"Good model. I liked both the nutrition educator and classroom teacher involvement."*

—school principal

Several of the direct educators teaching the BASICS curriculum at the intervention sites also noted that they found it easy to implement, because the objectives and core lessons are laid out simply and the lesson messages reinforce one another. The direct educators added that the curriculum's well-crafted messages and teaching aids enabled them to successfully teach the core lessons to the allotted amount of time and enabled them to engage the children using varied teaching methods and aids.

*"I think the supplies that were needed, they gave us already. The directions were easy to follow."*

—classroom teacher

*"The lessons were motivating to the kids. It tied into different health objectives that we had and some artful learning that we did. I liked the consistent language with the PABS program. I liked the visual images. The Jammin' Minutes was good and important, in that it was easy to implement and add onto, and the student really enjoyed that. It was easy to use in the classroom setting."*

—classroom teacher

## ***f. Emphasis on Continuous Quality Improvement and Training***

Key-informant interviews with school officials, classroom teachers, and direct educators confirmed that there is a strong commitment from INN administrators to promote quality delivery of the curriculum. The INN administrators reported that they provide training and technical assistance to meet the expressed needs of the direct educators and seek their input on program improvement. Their program design, implementation, and evaluation planning convey a commitment to ensuring program quality and fidelity while allowing the direct educators the flexibility and independence to use their own creativity, professional nutrition expertise, and teaching skills most effectively.

The majority of the direct educators offered positive feedback on the format of the training and the technical assistance they received when they joined the program, as well as the format and content of the ongoing in-service trainings. Additionally, direct educators appreciated the structured opportunities during staff meetings for networking and sharing lessons learned with their professional colleagues. Direct educators have a varied background and several mentioned that the one-on-one feedback and training that they receive from the INN administrators reinforced the high-level skills they practice while providing new ideas that they can use to improve other skills that need improvement for effective implementation of the BASICS curriculum.

### **Teacher Extension of Lessons**

One classroom teacher was observed displaying a high level of engagement in classroom activities. During the lesson directed by the nutrition educator, the classroom teacher recorded a video of the nutrition educator cutting the mango so that the class could replay the lesson in the future. After the mango was cut, the classroom teacher kept the mango seed to use in the class's upcoming lesson on plants. While the students were completing a worksheet that asked, "What is the Cornhusker State?", the classroom teacher pulled down a large map and helped the students locate Nebraska.

## **2. Challenges of Program Implementation to BASICS Curriculum Implementation**

### ***a. Maximizing Classroom Teacher Role in Extending the BASICS Lessons***

Classroom teachers play an important role in supporting BASICS curriculum messages by conducting extended lesson activities in the classroom and integrating the information into the school curriculum. In order to achieve a multilayered intervention that includes the classroom, the school environment, and the greater environment, it is essential for learning to be reinforced at each step. The majority of classroom teachers was very supportive and engaged in the interventions, but not all teachers were committed to this model.

*"Does it matter that I didn't teach the lessons? The nutrition gal comes around and teaches them. I didn't do the lessons; there is no time."*

—classroom teacher

When direct educators were asked about the support of classroom teachers for the BASICS interventions, the direct educator below expressed some of the challenges:

*"The reaction was varied. Some teachers were not friendly or committed, and they also didn't spend much time implementing the materials in the four lessons."*

—direct educator

This classroom teacher’s response to the process evaluation survey highlights the issue of teacher support of the program. Reinforcement of information in the eight lessons and integration of the supplemental activities into the curriculum were not seen as important to the promotion of behavior change by some teachers. Additionally, school officials and classroom teachers reported that there is little time for anything else to be added to the curriculum.

| *“It would have been nice to have more time for integration into the science curriculum.”*

—classroom teacher

Yet there were other reasons classroom teachers were not engaged in the role of extending the BASICS curriculum activities:

| *“Cooperation from teachers improved over time. Teacher absences due to maternity leave and the frequent use of substitute teachers in some classrooms were barriers to successful completion of lesson components.”*

—INN administrator

The process evaluation survey of classroom teachers highlighted how most teachers feel about the BASICS model of the direct educator and classroom teacher dividing the teaching responsibilities. Sixty-nine percent of classroom teachers liked sharing the responsibility of teaching the curriculum with the direct educator.

#### ▲ Opportunities for improvement

In-depth interviews of classroom teachers who liked and disliked sharing the responsibility of teaching the BASICS curriculum would assist INN in understanding why some are more invested in the process than others. These data would inform INN administrators and provide the opportunity to modify the model to accommodate differing levels of commitment. Input from direct educators would also be essential, as they would have valuable insights into ways to improve the model. The next step would require the development and pilot testing of two to three different direct educator or classroom teacher models, followed by a process evaluation of these models to determine the most effective models for classroom teachers.

#### ***b. Maximizing Parent and Caregiver Engagement in BASICS Lessons***

The BASICS curriculum materials were designed to reach parents and caregivers with a variety of take-home materials, including a family newsletter with recipes and tips for incorporating fruits and vegetables into the family meals.

Focus group and parent survey input provided key insights into the challenges of engaging parents and caregivers in the BASICS lessons. Chief among the challenges is ensuring that take-home materials are actually taken home from school, and that the parent/caregiver sees them. Parents and caregivers who participated in focus groups across the intervention districts felt that the take-home work often gets lost and does not make it home.

| *“The only thing I have ever physically seen is the bingo cards.”*

—parent and caregiver focus group participant

Another challenge is the volume of materials to send home with the child.

*“Sometimes when I get the monthly newsletter from the school, it literally just goes in the garbage. I don’t even look at it, because it’s so much information packed in, and half of it’s not even relevant to my kid, so it gets thrown away.”*

*—parent and caregiver focus group participant*

Common across all BASICS programs in Des Moines, Waterloo, and Council Bluffs was the interest expressed by students in the bingo card take-home activity.

*“So it’s [the bingo card] like this competition to make sure she got it in before all her friends did the first thing in the morning and she will literally race in there to try. It’ll be a competition between her and, I can’t even think of one of the little girls in her class, and which one races to the teacher first to turn in their bingo card once they got their bingo card.”*

*—parent and caregiver focus group participant*

Parents and caregivers reported that the bingo card was the most popular nutrition education take-home material. This may be because children were encouraged to complete the bingo cards with their parents and caregivers and bring them back to school by offering nutrition education reinforcement incentive items, including pencil pouches, highlighters, lanyards, and Frisbees. Each bingo card also contained a healthy recipe on the back. The majority of parents and caregivers did not use the recipes (see Fig 11-3).

#### **▲ Opportunities for improvement**

Clearly, the BASICS materials are suitably designed for SNAP participants and eligibles. They are easy to understand, are interesting, and contain messages that are important to the target audience. Nevertheless, INN has two key challenges in the engagement of parents and caregivers: ensuring that the materials go home and ensuring that materials and activities are completed by the parents and caregivers and their children.

Developing a system to ensure that the materials come home with the child may be something on which the direct educator and the classroom teachers could work together. It may be as simple as asking the children at the end of the lesson to place the materials in their backpacks, or the classroom teacher could devise a way to ensure that the materials go home with the children. By working together, these educators could figure out the best way for materials to get to parents and caregivers.

Feedback from the focus groups and surveys completed by parents and caregivers highlights the fact that incentives help motivate children and their parents and caregivers to read the information on the materials, complete the activities, and bring the materials back to school. The bingo cards are an example of materials that were reviewed, completed, and brought back to school. The INN may want to review their take-home materials and incentive program. Findings indicate that a limited number of take-home materials should be sent home and with the requirement to return them to school, using a reward as an incentive.

#### ***c. Scheduling Classes to Maximize Reach and Exposure***

The direct educators work hard to schedule classes in as many schools that qualify for SNAP-Ed programming as possible. Juggling preparation, travel, school schedules, teaching time, and reporting can be challenging, as evidenced by this information from a direct educator:

*"I contact schools in the fall to get the principal's OK. Then I start contacting teachers and do the schedule, which is by far the most difficult part of the process. We have 210 classrooms this year signed up. There are 27 schools that qualify, so dividing that up and working directly with the teachers to decide when the lessons are going to be—I usually have them choose a day and a time and then come about every 6 weeks to do the direct education. Most of the time, we do six lessons a year. Sometimes I'll do a little bit more than that, up to eight lessons, depending on the schedule. I go into the classroom and teach the lessons. I usually do about half the classrooms, about 100 classrooms that I personally go to, so it's a pretty big chunk of time—between four and eight classrooms most days. I try to have at least an afternoon if not a full day of planning. It does not always work out like that."*

—direct educator

Direct educators reported in key-informant interviews that BASICS curriculum teaching materials, organized lesson by lesson and sent to their offices by the INN administration were helpful in saving time so that their focus could be on teaching. This could be an approach that INN administrators take to assist direct educators after the study has concluded.

#### ▲ Opportunities for improvement

The direct educators who teach the BASICS curriculum are extremely efficient and committed to their job. They build in enough flexibility to reach a large number of classrooms six to eight times per year. Their workload may highlight the need for a part-time assistant to help them recruit, implement, and evaluate the curriculum. This part-time assistant could also help them with the labor-intensive preparation for classes. In addition, a part-time assistant could eventually help the direct educator expand the number of classes taught, and receive training to help out with the direct education.

#### ***d. Cost of Fresh Fruits and Vegetables***

In focus group discussions, some parents and caregivers stated that while they very much liked the goals of the program, the cost of fresh fruits and vegetables on a very limited budget was a major barrier to offering these foods to their children.

*"I guess you could go for the cheaper fruit or vegetable, like apples that you can cut up. That's what I'd do if I was in a bind."*

—parent and caregiver focus group participant

*"For us, money is really tight. Fruit, healthy food, is really expensive; and when we get it, it disappears so fast. I have to make it stretch. So we tend to get less healthy stuff and more beans and rice than fresh fruit."*

—parent and caregiver focus group participant

Although the materials include references and activities that clearly point out the use of fresh, canned, frozen, and dried fruits and vegetables, parents and caregivers feel that the BASICS curriculum's emphasis is on fresh fruits and vegetables. There is a disconnect between what the parents and caregivers understand they should do, and how the information in the materials is framed by the INN.

#### ▲ Opportunities for improvement

Although the BASICS family newsletter and other take-home materials include information on how to plan and shop for meals with fruits and vegetables on a limited budget, focus group input clearly highlights that more could be done to address parent and caregiver concerns about the cost of purchasing

fruits and vegetables. Parents and caregivers indicated that they assumed that the promotion of fruits and vegetables meant fresh fruits and vegetables, which are more costly:

*"If I can afford the fresh fruits and vegetables, I'll buy them; but if I can't, I go with the cans or frozen. The cans or frozen just last longer."*

—parent and caregiver focus group participant

*"It might be nice to be able to get some coupons print off for families to actually try [produce] at certain stores."*

—parent and caregiver focus group participant

*"There is a big challenge. I see now that in the WIC program, people are able to get fruits and vegetables and stuff now. I think that helps."*

—parent and caregiver focus group participant

Consistent with the current (2010) Dietary Guidelines for Americans, program materials and direct educators could encourage the use of all forms of fruits and vegetables, including fresh, frozen, canned, and dried (CNPP, 2011). To help parents and caregivers stretch their shopping dollar, the family newsletter and other parent and caregiver take-home materials could be revised to ensure that several recipes include the alternative forms of fruits or vegetables, other than fresh.

Other foods used in programming should reflect the limited budget with which participants deal on a daily basis:

*"I like hummus, but I don't really share it [with my children], because it's expensive."*

—parent and caregiver focus group participant

A thorough review of the foods used in tastings should be done to determine whether SNAP participants and eligible families can afford these foods.

## **Exhibit II-7. Key Facilitators and Challenges to BASICS Social Marketing Campaign Implementation**

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### **Facilitators:**

- Organized, multifaceted approach to social marketing
- Strong community partnerships
- Consistent messaging in the classroom and environment

### **Challenges:**

- Identifying which delivery channel has the most effective reach for the target audience
  - Tracking point-of-purchase signage to ensure partners followed specified guidelines
  - Per-participant cost of social marketing campaign
- 

## **3. Facilitators of BASICS Plus Implementation**

### ***a. Organized, Multifaceted Approach to Social Marketing***

The social marketing campaign incorporated into the BASICS Plus intervention included seven major elements: point-of-purchase signage and demonstrations at supermarkets; billboards and bus shelter signage in SNAP-Ed-qualified census tracts; television and radio ads; a family event identified as Family

Nights Out, held at the participating child’s school; materials in schools, such as posters and banners; and materials at community organizations such as WIC offices and YMCAs, including posters and window clings. These elements provided broad coverage of the target audience environment for the delivery of key messages. Appendix B contains a detailed description of the social marketing campaign.

*“We have Pick a **better** snack™ . . . . It shows up in direct education materials and also things you really think of when it comes to marketing, like billboards. It’s meant to be a really flexible campaign that we can use in a lot of different venues. It’s not so specific that you’d feel restricted in how you could use it. It’s designed to reach kids but it’s designed to reach parents, specifically mothers. We did a lot of updating this year to make Pick a **better** snack™ be a little more in line with what moms were telling us they wanted to see in the campaign around food and nutrition.”*

—social marketing manager

Complementing the BASICS core and extended lessons and materials, the social marketing campaign reinforced key messages that children learned in the classroom and to which parents and caregivers indirectly were exposed at home. The social marketing campaign afforded broad reach and exposure; repetition of messaging; and a multilevel, layered approach. This approach reached a variety of SNAP participants and eligibles at different cognitive and sensory levels.

### ***b. Strong Community Partnerships***

Recruitment of community partners was a critical component in implementation of the social marketing campaign. INN was charged with cultivating a network of State and local community partners and now, as a mature network, has a broad array of strong partnerships. These partnerships include both public and private entities and range from State and local government agencies and organizations to supermarkets, universities, colleges, and volunteer organizations such as FoodCorps. These partners provide access to the SNAP-Ed target audience, volunteers to assist in carrying out program elements, and nutrition education that complements INN messaging. In return, partners are able to provide valuable the nutrition education offered by INN for their SNAP audiences. This reciprocal arrangement results in a mutually satisfactory partnership.

*“The social marketing piece has been about building relationships and partnerships and building a lot of trust with people I personally had not worked with before, like the retail stores and school principals . . . . A lot of it is that [the principals] like and trust [the direct educator]. We had also prepared for a lot of things to go wrong with retail demonstration and that nothing went wrong is really owed to [the demonstrators] and the relationships they built at those stores.”*

—INN administrator

One example of a highly effective community partnership is the Family Nights Out events. In organizing these events at schools, the positive relationship between school officials and the direct educator facilitated a successful series of events. In fact, this positive and trusting relationship resulted in the principals deciding that no school personnel, such as a janitor, was needed to be present to monitor the event at the school.

*“I thought the Family Nights Out event was great. I attended, as did two of my teachers who participated in the BASICS program.”*

—school principal

At the start, INN had some concerns about being able to find and train a rotating group of volunteers in order to sufficiently cover staffing needs at the Family Nights Out events. Partnerships within the community, however, yielded six volunteers from various nutrition-related community organizations working at all 11 Family Nights Out events.

The Family Nights Out schedule for the 11 schools was condensed into a 5-week period, which was a more limited timeframe than INN originally anticipated. In scheduling Family Nights Out events, INN presented school principals with a variety of dates from which to select. School principals who participated in key-informant interviews said that they appreciated this option and noted that this was helpful, because each school has a different schedule with regard to sports, recitals, and other afterschool or evening events. Having several date options facilitated scheduling for Family Nights Out events.

Another example of strong partnerships included partnering with supermarkets. A variety of supermarkets were agreeable to the placement of BASICS Plus signage, in-store demonstrations staffed by INN volunteers and the distribution of materials. This collaboration is key to reaching a wide audience at a time when they are making important food purchase decisions. Some of the supermarkets employed registered dietitians, and these staff were extremely receptive and helpful in conducting the demonstrations and placing the signage in their stores.

*"I like the materials, because they are clear, simple, and colorful. They have a quick message, and the logo is vivid. I think they are a very effective tool."*

—retail store dietitian

As a social marketing delivery channel, supermarkets are extremely busy, and it can be difficult to convince a supermarket to participate in an outside nutrition education program. Nevertheless, INN found that many were willing to participate and enjoyed the experience.

*"We have about 60,000 customers each week. It's very busy, but I like this healthy eating campaign. I think it's a good idea."*

—assistant store manager, supermarket

The college students who were demonstrators for the social marketing component of BASICS also built a positive relationship with store managers. Store managers recognized that student demonstrators were self-sufficient, organized, professional, and customer service oriented.

*"I thought it was great that each month, they knew what they were doing. They would get the table, set up the product—it was nice that it was done with someone else outside that wasn't an employee. It was nice that they were educated in that field and knew about the product. I think it helps to have someone specialized, because they know how to talk about the benefits of that fruit or vegetable and some of the recipes, so I definitely think it was a benefit to have someone with that type of knowledge."*

—retail store manager

### **c. Consistent Messaging in the Classroom and Environment**

In using a multifaceted approach to messaging, INN provided consistent nutrition education messages in the classroom, in the school environment, and in the community. One of the events held by INN for the BASICS Plus program in Des Moines was called Family Nights Out. Figures II-10 through II-12 illustrate parent and caregiver involvement in the Family Nights Out event held at each of the 11 BASICS Plus

schools. Ninety-seven parents and caregivers (38 percent) in Des Moines reported attending a Family Nights Out event at their child’s school.

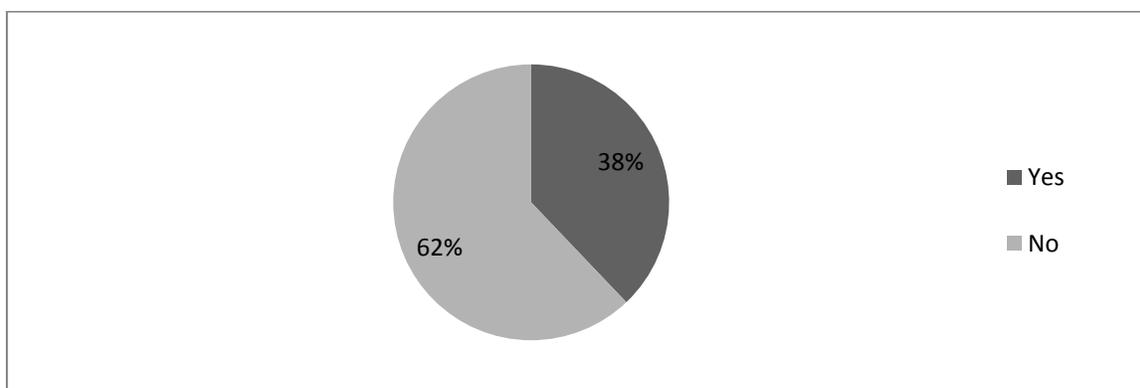
*“Her school had a something for the third-graders and their families a few weeks ago. It was in the gym . . . They had different games, books—or you draw your own meal and talk about it. We got exercising in one corner; and we have different types of snacks for the kids, like with hummus on it; and we had dinner.”*

—parent and caregiver focus group participant

*“They had food and activities and stuff like that; it was real good.”*

—parent and caregiver focus group participant

**Figure II-10. Percentage of Parents and Caregivers Who Reported Attending a Family Nights Out Event (BASICS Plus)**



*N* = 256.

Source: Parent and Caregiver Follow-Up Survey, data collected in May–July 2012; respondents are parents and caregivers of children participating in the evaluation study.

The majority of BASICS Plus parents and caregivers who did not attend the event (62 percent) responded that it was offered at a time that was not convenient for them. Thirty-one percent reported that they did not know about the event. While the event was held at all 11 BASICS Plus schools, 8 percent of parents and caregivers reported that the event was not held at their child’s school. Other reasons for not attending included having to work, being sick or taking care of a sick relative, not thinking that the event would be useful, and not liking this type of event.

*“Make it on a weekend so they can get there . . . Saturday would be good.”*

—parent and caregiver focus group participant

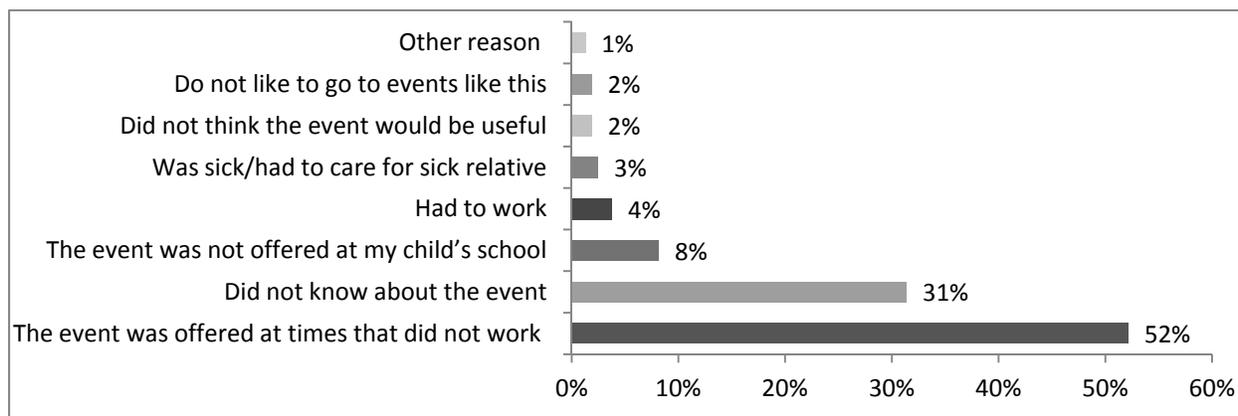
*“The reason why I didn’t go was because I was exhausted.”*

—parent and caregiver focus group participant

*“A lot of parents are working late.”*

—parent and caregiver focus group participant

**Figure II-11. Reason for Nonparticipation in the Family Nights Out Event<sup>a</sup> (BASICS Plus)<sup>b</sup>**



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

<sup>b</sup> N = 159.

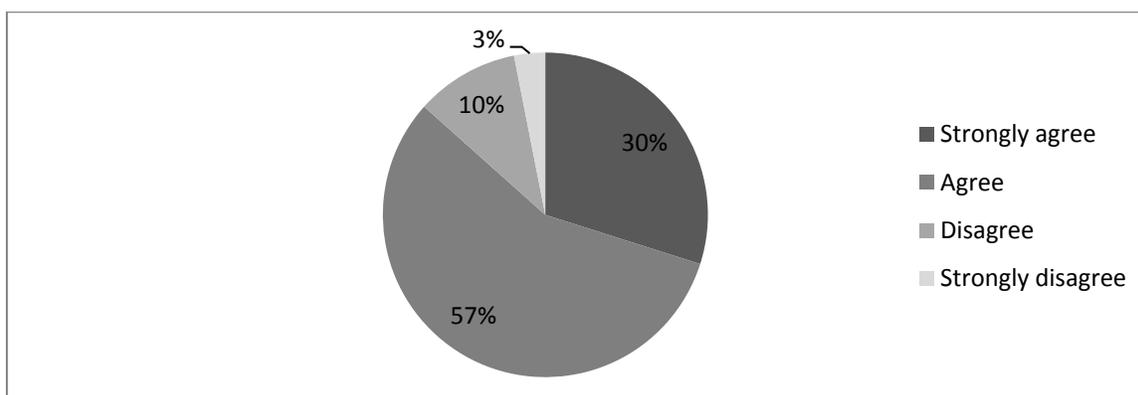
Source: Parent and Caregiver Follow-Up Survey, data collected in May–July 2012; respondents are parents and caregivers of children participating in the evaluation study.

Of those who did attend the Family Nights Out event, 87 percent used the information obtained at the event to help their child eat healthier foods. After their child tried a tortilla wrap at the event, one parent or caregiver said the following:

*"I have to buy stuff [hummus and vegetables] for tortilla wraps now, because she likes them."*

—parent and caregiver focus group participant

**Figure II-12. Parents' Level of Agreement With the Statement, "I used the information I learned from the Family Nights Out event to help my child eat healthier foods" (BASICS Plus)**



N = 97.

Source: Parent and Caregiver Follow-Up Survey, data collected in May–July 2012; respondents are parents and caregivers of children participating in the evaluation study.

Based on input from parents and caregivers, Family Nights Out can be a successful approach reaching and engaging parents in BASICS messages.

#### 4. Challenges to BASICS Plus Implementation

##### *a. Identifying which delivery channel has the most effective reach for the target audience*

The social marketing campaign used in the BASICS Plus intervention included seven major elements: take-home nutrition education materials for parents and caregivers via students, media via television and radio, billboards and bus shelter signage, supermarket signage and demonstrations, and Family Nights Out events for parents and caregivers and their children. Each element required staff time, SNAP-Ed funding, and other funding to execute. The store signage in particular required negotiating with supermarkets, designing the store signage, working with store managers to determine placement in the stores, placing the signage, tracking the signage to determine whether it had been taken down, and finally having the signage taken down at the completion of the project.

The target audience for the social marketing campaign was determined by census tracts documenting SNAP eligibles. Previous research in the form of focus groups indicated that billboards would be successful with the target audience, and it was possible to guarantee that SNAP-Ed criteria were met. Data from the television and radio stations illustrated that a large percentage of that target audience could be reached through these venues, specifically women ages 18–44 who are most likely to be parents and caregivers of young children. However, because there was no guarantee that non-SNAP participants would be reached, funding for those outlets came from a non-Federal source.

The BASICS Plus parent and caregiver focus group input provided important insights into which elements of the social marketing campaign were seen by parents and caregivers in the environment. Observations conducted at supermarkets confirmed that signage was visible to customers. However, parents and caregivers in the BASICS Plus focus group ( $n = 9$ ) did not recall seeing any social marketing signage in local supermarkets, even though there were six participating supermarkets with very visible signage.

*“Sam’s Club gives out samples of their fruits every once in a while, but that’s, you know, one of the things they do. I don’t think they’re connected to the [BASICS] campaign.”*

—parent and caregiver focus group participant

Billboards, on the other hand, were seen by parents and caregivers who participated in focus groups in Des Moines.

*“I’ve seen them on billboards, but I haven’t seen them in the stores.”*

—parent and caregiver focus group participant

*“Yep, peel and eat, and I think there’s one [billboard] on my side of town. I’ve only seen a couple of them, maybe two or three.”*

—parent and caregiver focus group participant

##### **▲ Opportunities for improvement**

Conduct formative research with the target audience to determine which channels are most effective at reaching parents and caregivers and at promoting behavior change in the consumption of fruits and vegetables. This information will allow the INN to strategically expend SNAP-Ed funding for social marketing while reaching the target audience in the most effective way.

Since the parents and caregivers remembered social marketing messages in other social marketing channels, the INN should consider ways to increase visibility of signage in supermarkets. The in-store demonstrations, on the other hand, may help retain a presence in supermarkets and continue to reach the target audience with face-to-face promotion of fruits and vegetables.

The INN should continue to monitor target audience recall of social marketing elements, conduct focus group discussions on a periodic basis to determine how social marketing campaigns should be structured, and work with supermarkets to monitor changes in fruit and vegetable purchases pre- and post-intervention.

In order to calculate the per participant cost of the BASICS curriculum and the social marketing campaign, the number of children ( $n = 631$ ) and their family members who were targeted by the BASICS Plus program in Des Moines was used as a basis for the cost-per-participant calculation,<sup>28</sup> with the proviso that the social marketing campaign potentially reached many more SNAP eligible households in Des Moines than the BASICS Plus target audience. However, there is no way to determine precisely the number of SNAP eligibles reached with the social marketing campaign. Using the total social marketing expenditures of \$206,087.82<sup>29</sup> and the total number of targeted children and their family members potentially reached through the BASICS Plus program in Des Moines ( $n = 3,054$ ), the estimated cost per child participant and family members for the social marketing component was \$67.48.<sup>30</sup>

***b. Tracking point-of-purchase signage to ensure that partners followed specified guidelines***

INN student demonstrators tracked supermarket signage during the first 2 weeks of each month of the in-store demonstrations to determine whether partners were following specified guidelines. Their tracking revealed that two retail stores took nutrition education signage down.

“Two stores took signage down in their holiday cleaning, and one of these stores accidentally threw the signage away.”

—INN administrator

Signage was down for 2–2.5 weeks, and was replaced in time for the next month’s demonstrations.

The INN administrator also mentioned another holiday cleaning issue:

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<sup>28</sup> The number of family members reached by the BASICS Plus program for the purpose of calculating the per participant cost of the social marketing campaign is based on a household size of 4.84 (Table III-1: Baseline Demographic Characteristics for Parent and Caregiver Respondents and Their Children Who Participated in the BASICS Evaluation—Overall and by Condition). The calculation is thus 631 BASICS Plus child participants x household size of 4.84, providing an estimated total reach of 3,054.

<sup>29</sup> This price includes the planning, design, and implementation phases.

<sup>30</sup> Alternatively, if the social marketing cost per child were based on the number of SNAP-eligible children who participated in the BASICS curriculum in Des Moines schools (not just the BASICS Plus schools in the independent evaluation), the total child reach would be estimated at 4,507. The number of family members reached by the BASICS Plus program for the purpose of calculating the per-participant cost of the social marketing campaign is based on a household size of 4.84 (Table III-1: Baseline Demographic Characteristics for Parent and Caregiver Respondents and Their Children Who Participated in the BASICS Evaluation—Overall and by Condition). The calculation is thus 4,507 child participants x household size of 4.84, providing an estimated total reach of 21,813. The estimated cost per child participant and family members for the social marketing component in this scenario is \$9.44.

*“Floor signage was worn out after the first 2 months, so the stores took it off for 2 months and then replaced it for the final 3 months.”*

—INN administrator

This was an unexpected problem with the floor signage. It was assumed that the floor signage would last longer than 2 months, but since it did not, the store removed it.

INN also found that opportunities for signage in supermarkets were viewed differently by customers. The door clings in the dairy case for the low-fat or fat-free milk campaign were very obvious, but a banner hanging from the ceiling was not. Another store moved their hanging ceiling signs out of the produce area and placed them over the aisle of cash registers instead. This was a store manager decision and not the decision of INN.

#### ▲ Opportunities for improvement

A retail intervention that spans several months (especially over the holidays) may experience some of these issues. This points to a key issue when tracking signage. Even if instructions for the social marketing campaign signage are very detailed and reviewed with the store manager, the intervention as planned may not take place. Depending on the supermarket, there are many different employees working a variety of hours who must understand what the plans are for this particular social marketing campaign. Weekly checking of the signage may prevent a long gap in signage if it is taken down by the supermarket.

Data on social marketing campaign signage placed in BASICS Plus school cafeterias was not tracked. However, during Family Nights Out events, INN did observe signage in a few of the BASICS Plus schools.

INN had planned on placing social marketing campaign signage on gas station pump toppers and place signage in local businesses such as coffee shops or hair salons, but these added activities were not implemented for a number of reasons.

*“Gas stations were very particular about the types of signage allowed, most often only agreeing to contracts with companies who sold products inside their convenience stores.”*

—INN administrator

According to key-informant interviews, INN had not worked with small businesses before for their social marketing campaign. They found that placing signage in coffee shops and hair salons would require more time and effort than originally thought. The added time and effort involved the development of a relationship with these businesses and cultivation of a partnership.

Funds originally designated for gas station signage were transferred to the purchase of two additional billboards, increasing the number of planned billboards from 12 to 14. Rather than posting signage at small businesses, signage was placed in organizations that are natural partners such as food pantries community centers and YMCAs.

# Chapter III • Impact Evaluation Methods and Results

## A. Conceptual Framework for the Impact Evaluation

To provide an integrative understanding of the impacts of this demonstration project, the analysis was guided by a conceptual framework that arrays the potential program effects. The framework enabled the evaluation of the effects of the BASICS and BASICS Plus programs 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 and use of 1 percent or skim milk. The secondary outcomes capture, in greater detail, the complexity of the behavior change process. The framework suggests that changes seen among the secondary outcomes should be associated with a stronger likelihood of observing changes in fruit and vegetable consumption and use of 1 percent or skim milk.

The framework presented in Figure III-1 is adapted from Green et al. (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 or caregiver offering fruits and vegetables as options for snacks or at dinner.

These mediating factors could affect diet-related behaviors that include the following short-term outcomes: (1) the child asking the parent or caregiver to buy certain fruits or vegetables and (2) the daily variety of fruits and vegetables eaten by the child. These short-term outcomes are directly related to lessons in the BASICS 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. Changes in these short-term outcomes might in turn influence at-home consumption of fruits and vegetables.

### Key Findings

The BASICS program produced significant and meaningful changes in a variety of outcomes related to children's dietary behaviors. The social marketing component of the BASICS Plus program provided additional measureable effects, most notably related to the use of 1 percent or skim milk.

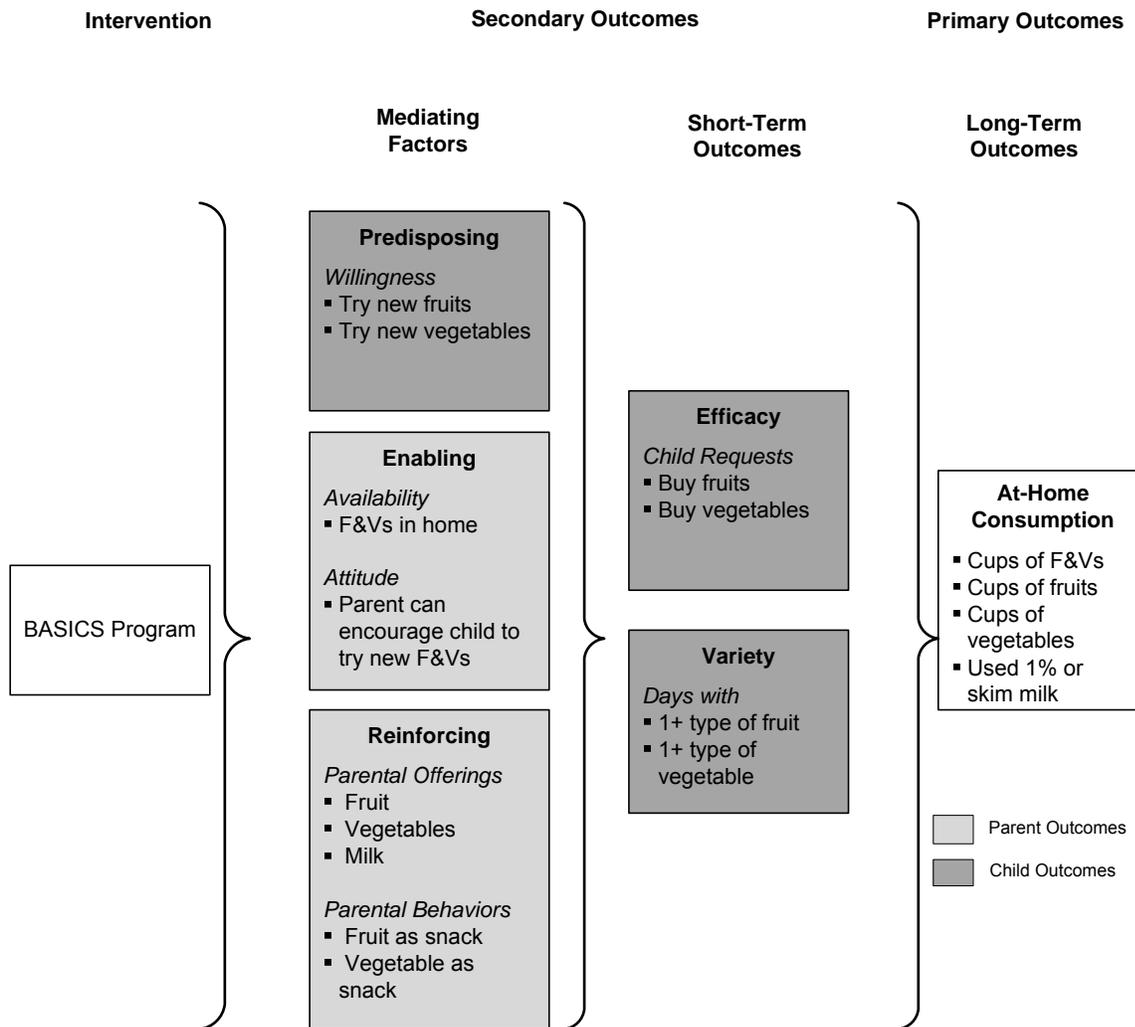
#### Primary Impacts:

Both the BASICS and the BASICS Plus programs had statistically significant impacts on children's average daily at-home consumption of fruits and vegetables combined compared with the comparison group. The BASICS Plus programs had statistically significant impacts on children's use of 1 percent or skim milk compared with both the BASICS program and the comparison group.

#### Secondary Impacts:

Children exposed to the BASICS Plus program were more likely to try new vegetables compared with children not exposed to the program.

**Figure III-1. Conceptual Framework for the BASICS Program Impact Evaluation**



Source: 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 BASICS 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 BASICS program.

## B. Methodology

### 1. Evaluation Design and Sample Selection

The BASICS program evaluation was designed to examine the implementation and impact of the program on third-grade students attending eligible schools in three Iowa school districts (Council Bluffs, Waterloo, and Des Moines) and a comparison group (Davenport school district) using a quasi-experimental research design. This design was chosen because a social marketing campaign is inherently ecological and poses risk of contamination when applied using random assignment of schools to study conditions. Accordingly, INN

purposively assigned school districts to treatment conditions and recruited schools in each district to participate in the study. Purposeful assignment was, in part, based on previous implementation to reduce any potential for contamination or treatment cross-over. Eleven schools were recruited from the combined list of eligible schools from the Council Bluffs and Waterloo school districts to receive the single-channel intervention (school-based BASICS curriculum), 11 were recruited from the Des Moines school district to receive the multichannel intervention (school-based BASICS curriculum and the PABS social marketing campaign), and 11 were recruited from the Davenport school district to serve as the comparison condition.

Sample size was estimated following commonly accepted evaluation practices (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 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 11 schools in each study condition, completed baseline and follow-up information would be needed from 242 parents and caregivers in each treatment condition. 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 BASICS (single-channel) and the BASICS Plus (multichannel) interventions. 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 and use of 1 percent or skim milk as reported by their parents and caregivers. 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 or use of 1 percent or skim milk. The secondary outcome measures are grouped into two categories: (1) child's other dietary behaviors and (2) parent and caregiver behavior and household variables. These categories are aligned with the BASICS program's two sets of goals: increasing youth preference and parent and caregiver support for healthy diet choice.

## **3. Instrument Development and Testing**

To develop the impact evaluation instruments for the baseline and follow-up surveys, the independent evaluators reviewed INN's application and the program curriculum and talked with the INN project staff to identify the primary and secondary outcome measures for the BASICS and the BASICS Plus interventions. Existing instruments as compiled for the literature review conducted for SNAP Wave I (FNS Office of Research and Analysis, 2012; Altarum Institute & 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.

## Exhibit III-1. Primary and Secondary Outcome Measures for the BASICS Program Impact Evaluation

<b>Primary outcomes: child's dietary intake at home</b>
Cups of fruits and vegetables consumed on typical day <sup>a</sup>
Cups of fruits consumed on typical day
Cups of vegetables consumed on typical day
Use of 1% or skim milk (as beverage or used on cereal) during past week
<b>Secondary outcomes: child's other dietary behaviors at home</b>
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
Willingness to try new kind of fruit
Willingness to try new kind of vegetable
Frequency at which child asked parent to buy certain fruits during past month <sup>b</sup>
Frequency at which child asked parent to buy certain vegetables during past month <sup>b</sup>
<b>Secondary outcomes: parent behavior and household variables</b>
Availability of fruits and vegetables at home during past week <sup>c</sup>
Number of days on which parent gave fruit as snack during past week
Number of days on which parent gave fruit at dinner during past week
Number of days on which parent gave vegetables as snack during past week
Number of days on which parent gave vegetables at dinner during past week
Number of days on which parent gave milk at dinner during past week
Number of days on which parent ate fruit for snack
Number of days on which parent ate vegetable for snack
Parent/caregiver can encourage child to try new fruits or vegetables <sup>d</sup>
Parent/caregiver usually drinks 1% or skim milk <sup>e</sup>
Parent/caregiver believes that 1% or skim milk is healthier for their child than whole milk <sup>f</sup>

<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, where 0 = "never" or "seldom" and 1 = "sometimes," "most of the time," or "almost always."

<sup>c</sup> Calculated an index score (0–10) based on the number of the following fruits and vegetables available in the home during the past week: bananas, apples, grapes, raisins, pears, celery, carrots, cucumbers, broccoli, and zucchini.

<sup>d</sup> Response categories were converted to a dichotomous variable, where 0 = "strongly disagree," "disagree," or "agree" and 1 = "strongly agree."

<sup>e</sup> Response categories were converted to a dichotomous variable, where 0 = "strongly disagree" or "disagree" and 1 = "strongly agree" or "agree."

<sup>f</sup> Dichotomous variable that indicates the proportion of respondents who selected this statement to describe how they feel about the milk that they give their third-grade child.

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.

**Exhibit III-2. Summary of Instruments Used to Develop Impact Instruments for the BASICS 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 on a typical 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
Child used 1% or skim milk	NHANES 2005–2006 (CDC, 2007)	General population	Interviewer-administered	Not reported	Not reported	Not reported
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)	4 <sup>th</sup> -, 7 <sup>th</sup> -, and 9 <sup>th</sup> -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/caregivers of 4 <sup>th</sup> - and 6 <sup>th</sup> -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/caregiver) to report on his or her child’s consumption of fruits and vegetables.

For the primary outcome measures, 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 caregiver) to report on his or her child's consumption of fruits and vegetables. Respondents were instructed not to include meals eaten at school so that they were reporting only on observed consumption behavior.

To test and refine the instruments, cognitive interviews were conducted with nine parents and caregivers. Additionally, three cognitive interviews were conducted with Spanish-speaking individuals to test the Spanish language version of the instrument. 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). The questions were between fourth- and eighth-grade reading levels. 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. The instrument and survey materials were available in English and Spanish. To maximize the response rate for the survey, a multimodal survey approach was used. Working with the schools in the study, packets with information on the study were sent home with students. The survey was mailed to parents and caregivers who consented to participate in the study. Nonrespondents to the mail survey were contacted by telephone.

At baseline, 342 participants in the BASICS group (85 percent response rate among those agreeing to participate), 343 participants in the BASICS Plus group (81 percent response rate), and 352 participants in the comparison group (84 percent response rate) completed the survey. At follow-up, 254 participants in the BASICS group (74 percent response rate), 252 participants in the BASICS Plus group (73 percent response rate), and 276 participants in the comparison group (78 percent response rate) completed the survey, thus meeting the required sample size of 242 participants per group at follow-up.

#### **5. Impact Analysis Procedures**

To prepare the dataset for the impact analysis, the survey dataset was examined, and some exclusions were made. To avoid clustering within families, a post hoc examination of the survey data was conducted to identify households with more than one child attending a study school in the third grade. In such cases, a random selection process was used to select the index child for inclusion in the analysis dataset. This resulted in excluding 12 baseline responses and nine follow-up responses.

The independent evaluation assessed the impacts of the BASICS and BASICS Plus programs on children's daily at-home consumption of fruits and vegetables and use of 1 percent or skim milk. This was accomplished by first comparing each program to a no-treatment comparison group and then comparing the two programs to each other. The impact evaluation included repeated measures on individual respondents who are nested within schools and schools that are nested in a study condition (BASICS, BASICS Plus, 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 schools. 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 3.8 percent to 6.5 percent of responses. Appendix H 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.

Before conducting the impact analyses, the potential impact of attrition from the evaluation study (individuals who did not complete the follow-up survey) 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. 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.

In addition to the primary and secondary impact analyses, a series of post hoc analyses assessed the potential influence of the USDA Fresh Fruit and Vegetable program (FFVP). FFVP is designed to introduce school children to different types of produce outside the normal timeframe for the National School Lunch and School Breakfast Programs by providing children in participating schools with a variety of free fresh fruits and vegetables throughout the school day (FNS, 2010). The program is seen as an important catalyst for change in efforts to combat childhood obesity by helping children learn more healthful eating habits. Because FFVP emulates certain aspects of the BASICS program, additional analyses examined FFVP participation as a factor potentially contributing to the primary outcomes.

The first set of post hoc analyses included all schools in the evaluation of the BASICS and BASICS plus programs. The aim of these analyses was to examine whether FFVP participation influenced the reported impacts of the BASICS and BASICS plus interventions on fruit and vegetable consumption. The second set of post hoc analyses compared FFVP schools and non-FFVP schools within study conditions. The aim of these analyses was to examine whether FFVP influenced change over time in fruit and vegetable consumption within study conditions. Additional information on the post hoc analyses is provided in Section D.

## **C. Impact Analysis Results**

This section describes the baseline demographic characteristics of parents and caregivers 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 in all analyses.

### **1. Baseline Data**

The baseline analysis included 1,037 parent/caregivers respondents: 342 for the BASICS group (parents and caregivers of children attending 11 schools), 343 for the BASICS Plus group (parents and caregivers of children attending 11 schools), and 352 for the comparison group (parents and caregivers of children attending 11 schools).

### ***a. Comparison of demographics by study condition***

Table III-1 shows the baseline demographic characteristics for parent and caregiver respondents and their children who participated in the BASICS evaluation study overall and by study condition. Additional information on the study sample is presented in Appendix E, Table E-1. At baseline, there were no statistically significant differences in the measured characteristics of children (e.g., age, sex); however, there were some differences in respondent (parent or caregiver) and household characteristics.

Comparing the BASICS Plus group and the comparison group, statistically significant differences were observed for the following demographics:

- Age: The BASICS Plus group had more respondents older than 45 than the comparison group (10.2 percent vs. 6.0 percent,  $p < 0.05$ ).
- Race: The BASICS Plus group had more Asian respondents than the comparison group (5.5 percent vs. 1.4 percent,  $p < 0.05$ ).
- Language spoken at home: The BASICS Plus group included fewer households that speak “English all of the time” than the comparison group (77.8 percent vs. 94.8 percent,  $p < 0.01$ ). Conversely, more households reported speaking “English some of the time and . . . another language some of the time” in the BASICS Plus group than in the comparison group (19.5 percent vs. 5.0 percent,  $p < 0.01$ ).

Comparing the BASICS group and the comparison group, statistically significant differences were observed for the following demographics:

- Race: The BASICS group had fewer Black respondents than the comparison group (8.3 percent vs. 23.0 percent,  $p < 0.01$ ). The BASICS group also had more Native Hawaiian or Pacific Islander respondents than the comparison group (1.6 percent vs. 0 percent,  $p < 0.01$ ) and more White respondents (86.5 percent vs. 69.3 percent,  $p < 0.01$ ).
- Language spoken at home: Fewer households reported speaking “English all of the time” in the BASICS group than in the comparison group (82.5 percent vs. 94.8 percent,  $p < 0.05$ ). Conversely, more households reported speaking “English some of the time and . . . another language some of the time” in the BASICS group than in the comparison group (13.5 percent vs. 5.0 percent,  $p < 0.05$ ).

Comparing the BASICS Plus and the BASICS groups, statistically significant differences were observed for the following demographics:

- Respondent gender: The BASICS Plus group had fewer male respondents than the BASICS group (5.4 percent vs. 9.2 percent,  $p < 0.05$ ).
- Respondent race: The BASICS Plus group had more Asian respondents than the BASICS group (5.5 percent vs. 0.4 percent,  $p < 0.01$ ). The BASICS Plus group also had fewer Native Hawaiian or other Pacific Islander respondents than the BASICS group (0.3 percent vs. 1.6 percent,  $p < 0.05$ ).
- Percentage of single-adult households: The BASICS Plus group had more single-adult households than the BASICS group (27.0 percent vs. 20.4 percent,  $p < 0.05$ ).

In summary, there were differences in some demographic characteristics among respondents in the three study conditions in terms of racial/ethnic composition and the primary language spoken in the home.

**Table III-1. Baseline Demographic Characteristics for Parent and Caregiver Respondents and Their Children Who Participated in the BASICS Evaluation—Overall and by Condition**

Characteristic	Overall (SE)	BASICS (SE)	BASICS Plus (SE)	Comparison Group (SE)	Difference		
					BASICS Plus vs. Comparison	BASICS vs. Comparison	BASICS Plus vs. BASICS
Child demographics							
Sex, % male	49.30 (1.31)	50.96 (2.32)	50.72 (2.31)	46.41 (2.25)	4.31	4.55	-0.24
Age	8.57 (0.01)	8.55 (0.02)	8.55 (0.02)	8.60 (0.02)	-0.04	-0.05	0.00
Parent/caregiver <sup>a</sup> /household demographics							
Respondent age, %							
18 to 34	58.61 (1.76)	60.53 (3.10)	57.87 (3.13)	57.39 (3.09)	0.48	3.14	-2.66
35 to 44	33.53 (1.62)	31.97 (2.76)	31.99 (2.79)	36.57 (2.75)	-4.58	-4.60	0.02
45 or older	7.82 (0.84)	7.21 (1.32)	10.21 (1.32)	5.99 (1.30)	4.22*	1.22	3.00
Respondent sex, % male	7.05 (0.74)	9.22 (1.20)	5.42 (1.19)	6.64 (1.17)	-1.22	2.58	-3.80*
Respondent is Hispanic or Latino, %	14.62 (1.40)	16.88 (2.34)	16.41 (2.35)	10.67 (2.33)	5.74	6.20	-0.47
Respondent race, %							
American Indian or Alaska Native	0.92 (0.27)	0.96 (0.49)	1.26 (0.48)	0.59 (0.46)	0.67	0.37	0.30
Asian	2.39 (0.72)	0.35 (1.10)	5.48 (1.10)	1.40 (1.07)	4.08*	-1.05	5.13**
Black or African American	15.03 (2.18)	8.31 (3.37)	13.35 (3.37)	23.02 (3.32)	-9.67	-14.71**	5.04
Native Hawaiian or other Pacific Islander	0.61 (0.24)	1.58 (0.35)	0.29 (0.35)	0.00 (0.32)	0.29	1.58**	-1.29*
White	76.80 (2.62)	86.54 (4.08)	74.95 (4.09)	69.30 (4.02)	5.65	17.25**	-11.60
More than one race <sup>b</sup>	4.09 (0.73)	1.96 (1.25)	4.74 (1.25)	5.44 (1.20)	-0.71	-3.48	2.77
Size of household	4.93 (0.07)	5.03 (0.12)	4.84 (0.12)	4.92 (0.12)	-0.08	0.11	-0.19
Single-adult household, %	23.85 (1.23)	20.35 (2.17)	27.00 (2.17)	24.10 (2.14)	2.90	-3.75	6.65*
Language spoken by family at home, %							
Speak English all of the time	85.07 (2.31)	82.50 (3.42)	77.79 (3.43)	94.76 (3.41)	-16.97**	-12.26*	-4.71
Speak English some of the time and speak another language some of the time	12.62 (1.94)	13.53 (2.88)	19.45 (2.89)	4.98 (2.87)	14.48**	8.55*	5.93
Speak another language all of the time	2.41 (0.56)	4.11 (0.85)	2.95 (0.86)	0.29 (0.85)	2.66*	3.82**	-1.16

(continued)

**Table III-1. Baseline Demographic Characteristics for Parent and Caregiver Respondents and Their Children Who Participated in the BASICS Evaluation—Overall and by Condition (continued)**

Characteristic	Overall (SE)	BASICS (SE)	BASICS Plus (SE)	Comparison Group (SE)	Difference		
					BASICS Plus vs. Comparison	BASICS vs. Comparison	BASICS Plus vs. BASICS
Member of household currently receives SNAP benefits, %	51.83 (2.34)	47.52 (3.93)	49.82 (3.96)	58.01 (3.92)	-8.19	-10.49	2.30
Member of household currently receives WIC benefits, %	18.57 (1.24)	19.01 (2.12)	15.43 (2.14)	21.17 (2.11)	-5.74	-2.16	-3.58
Ate dinner as family <sup>c</sup>	5.10 (0.06)	5.12 (0.11)	5.00 (0.11)	5.18 (0.11)	-0.18	-0.07	-0.12
Child ate dinner with TV on <sup>c</sup>	2.57 (0.09)	2.65 (0.15)	2.71 (0.15)	2.35 (0.15)	0.35	0.30	0.06
School-provided food, %							
Received breakfast and lunch	42.18 (2.38)	39.56 (4.16)	40.34 (4.17)	46.60 (4.13)	-6.26	-7.04	0.78
Received lunch only <sup>d</sup>	35.96 (2.53)	39.56 (4.45)	35.96 (4.47)	32.35 (4.43)	3.61	7.21	-3.60
Received breakfast and/or snacks only	5.86 (0.75)	4.83 (1.28)	7.80 (1.27)	4.95 (1.25)	2.85	-0.12	2.97
Received no food from school	15.65 (1.32)	15.77 (2.39)	15.43 (2.39)	15.79 (2.37)	-0.36	-0.02	-0.34
Perceived nutrition environment <sup>e</sup>	12.86 (0.08)	12.82 (0.15)	12.82 (0.15)	12.95 (0.14)	-0.13	-0.13	0.00
Number of respondents, %	1,037	342	343	352			
Number of schools	33	11	11	11			

\* Indicates statistical significance if the *p*-value is less than or equal to 0.05.

\*\* Indicates statistical significance if the *p*-value is less than or equal to 0.01.

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

<sup>d</sup> Some in this category also reported receiving school-provided snacks.

<sup>e</sup> Index score (4–16) derived from four items that asked participants to describe their access to fresh fruits and vegetables in the area that they live. Each item had a 4-point Likert scale. A higher score indicates perceived greater access to fresh fruits and vegetables.

Notes: Standard errors (SE) and *t*-statistic used to test the null hypothesis of no difference between the specified study conditions were derived from model-based comparisons adjusted for clustering of students within schools.

Source: Parent and Caregiver Baseline Survey, data collected September–October 2011; respondents are parents and caregivers of children participating in the evaluation study.

Respondents from the BASICS Plus group (Des Moines) were more likely than respondents from the BASICS group (Waterloo and Council Bluffs) to be female and more likely to live in a single-adult household. Respondents from the BASICS Plus group (Des Moines) and the BASICS group (Waterloo and Council Bluffs) were more likely than respondents from the comparison group (Davenport) to live in multilingual homes. The inclusion of covariates representing these demographic characteristics in all analytic models controls for their potential influence on reported impacts.

### ***b. Comparison of outcome measures by study condition***

Appendix E, Table E-2 shows the baseline outcome measures overall and by study condition.<sup>31</sup>

Comparing the BASICS Plus group and comparison group at baseline, statistically significant differences were observed for the following outcome measures:

- Children in the BASICS Plus group consumed fewer fruits and vegetables combined than children in the comparison group (2.3 cups vs. 2.7 cups,  $p < 0.01$ ) at baseline. Similarly, children in the BASICS Plus group consumed fewer cups of fruits (1.2 cups vs. 1.4 cups,  $p < 0.01$ ) and fewer cups of vegetables (1.1 cups vs. 1.3 cups,  $p < 0.01$ ) than children in the comparison group at baseline.
- Children in the BASICS Plus group ate a variety of fruits and a variety of vegetables fewer days per week (3.2 vs. 3.7 days per week,  $p < 0.01$ ; and 3.3 vs. 3.9 days per week,  $p < 0.01$ , respectively), were less willing to try new fruits (63.3 percent vs. 74.1 percent,  $p < 0.01$ ), and made fewer requests to buy certain fruits than children in the comparison group (2.3 vs. 2.5 index points on a scale from 0 to 4,  $p < 0.05$ ) at baseline.
- Parents and caregivers in the BASICS Plus group offered their children fruit for a snack and a vegetable at dinner less frequently than parents and caregivers in the comparison group at baseline (2.8 vs. 3.3 days per week,  $p < 0.05$ ; and 4.2 vs. 5.0 days per week,  $p < 0.01$ , respectively).
- Parents and caregivers in the BASICS Plus group offered their children milk at dinner more frequently than parents and caregivers in the comparison group at baseline (3.9 vs. 3.4 days per week,  $p < 0.05$ ).

Comparing the BASICS group and comparison group at baseline, statistically significant differences were observed for the following outcome measures:

- Children in the BASICS group consumed less fruits and vegetables combined than children in the comparison group (2.4 cups vs. 2.7 cups,  $p < 0.05$ ) at baseline.
- Children in the BASICS group ate a variety of fruits and a variety of vegetables fewer days per week (3.2 vs. 3.7 days per week,  $p < 0.01$ , and 3.4 vs. 3.9 days per week,  $p < 0.05$ , respectively) and were less willing to try new fruits (66.4 percent vs. 74.1 percent,  $p < 0.05$ ) than children in the comparison group.
- Parents and caregivers in the BASICS group offered their children fruit for a snack and a vegetable at dinner less frequently than parents and caregivers in the comparison group at baseline (2.8 vs. 3.3 days per week,  $p < 0.05$ ; and 4.3 vs. 5.0 days per week,  $p < 0.01$ , respectively).

Comparing the BASICS Plus group and BASICS group, no statistically significant differences were observed for the primary outcome measure of average daily at-home consumption of fruits and vegetables or any of the secondary outcome measures.

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<sup>31</sup> Appendix E, Tables E-3 and E-4 provide the unadjusted baseline means and posttest means for the 254 BASICS group participants, 252 BASICS Plus group participants, and 352 comparison group participants who completed the baseline and follow-up surveys.

In summary, differences were observed between the comparison and the two intervention groups for some outcome measures. Children in the comparison group were more likely than children from either the BASICS Plus group or the BASICS group to have higher reported intake of fruits and vegetables combined; they were also more likely than children in the BASICS Plus group to have higher reported intake of fruits and vegetables, separately. Children from the comparison group were also more likely than children from the BASICS Plus group or the BASICS group to request that their parents and caregivers buy fruits, more willing to try new fruits, and likely to eat a variety of fruits and vegetables on more days of the week. Similarly, parents and caregivers in the comparison group were more likely than parents and caregivers from either the BASICS Plus group or the BASICS group to offer their children fruit as a snack and vegetables at dinner. The use of a difference-in-difference model controls for these baseline differences in the impact models.

### ***c. Primary outcome measures***

For the primary outcome measure, the baseline mean daily reported at-home consumption of fruits and vegetables combined was 2.26 cups (1.20 for fruits and 1.06 for vegetables) for the BASICS Plus group, 2.42 cups (1.26 for fruits and 1.17 for vegetables) for the BASICS group, and 2.69 cups (1.40 for fruits and 1.29 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 school or childcare. As a point of reference, the USDA Food Guidance System recommends that children more than 5 years of age eat about 1–2 cups of vegetables each day and 1–1.5 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 BASICS evaluation by condition.

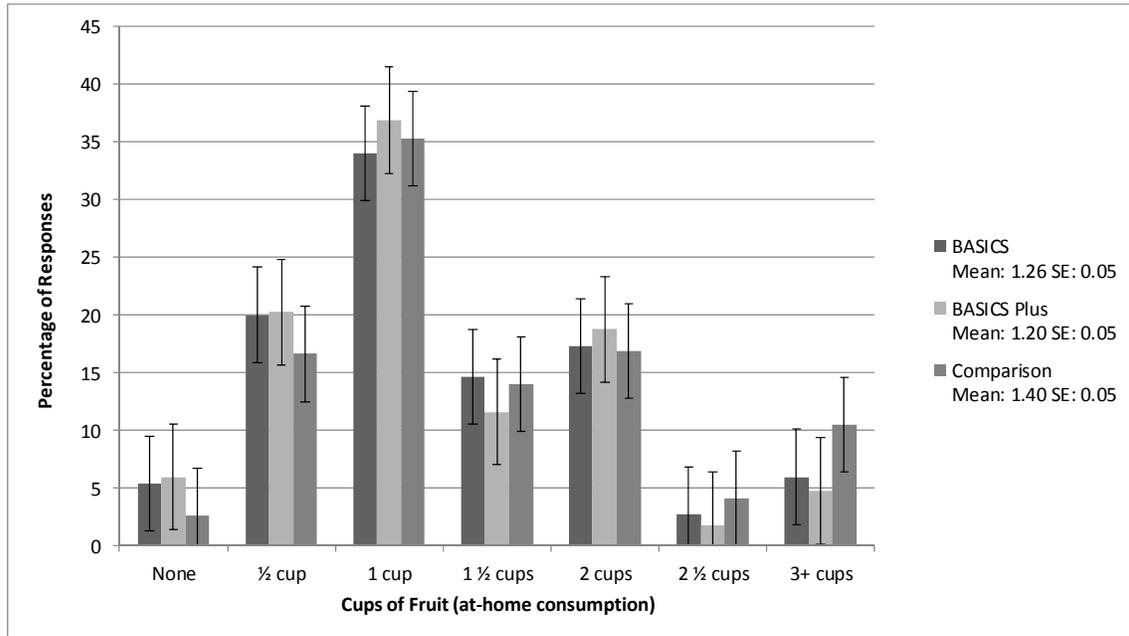
At baseline, the proportion of participants who reported their child used 1 percent or skim milk during the past week was 35.9 percent for the BASICS Plus group, 37.9 percent for the BASICS group, and 39.9 percent for the comparison group.

### ***d. Overall secondary outcome measures***

With regard to the secondary outcome measures, this study found the following at baseline for all study participants (BASICS, BASICS Plus, and comparison groups) (see Appendix E, Table E-2):

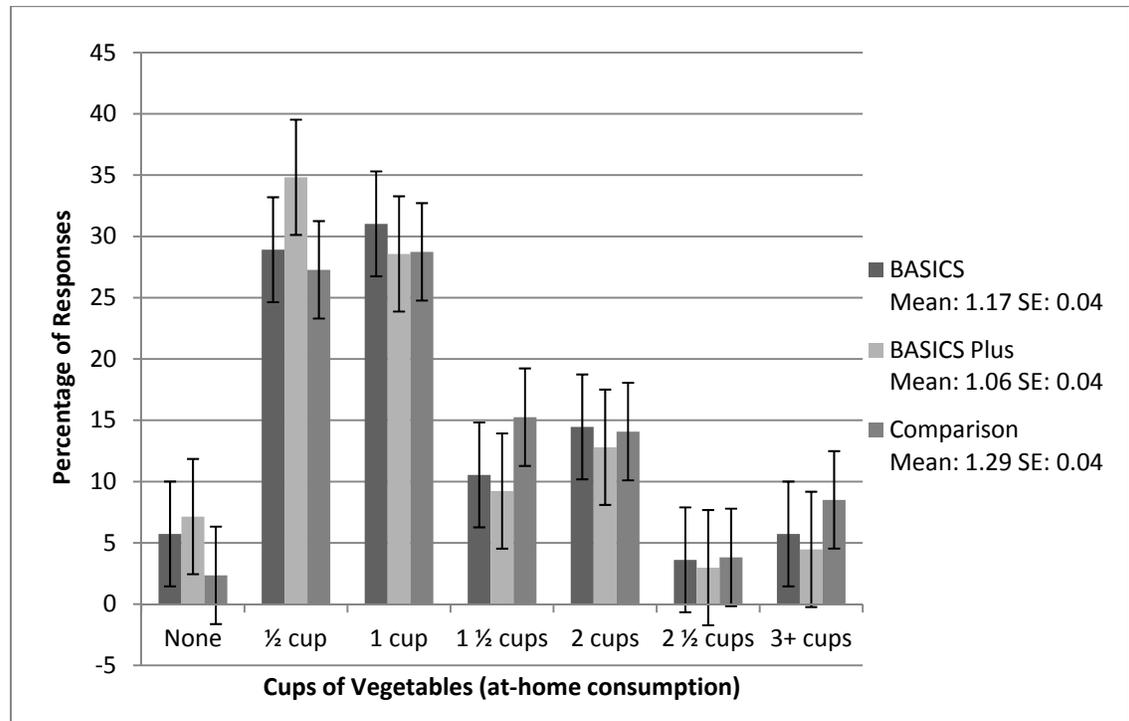
- Children ate more than one type of fruit each day about 3 days during the past week and more than one type of vegetable each day about 3.5 days during the past week.
- Sixty-eight percent of parents and caregivers reported that their children are willing to try new fruits, and 48 percent of parents and caregivers reported that their children are willing to try new vegetables.
- The at-home availability of 10 fruits and vegetables was 5.54 (index score: 0–10).
- Parents and caregivers offered fruit for a snack about 3 days during the past week and offered vegetables for a snack about 1.5 days during the past week.
- At dinner, parents and caregivers offered fruit about 2 days during the past week and vegetables about 4.5 days during the past week.
- Parents and caregivers ate fruit as a snack about 3 days during the past week and ate vegetables as a snack about 2 days during the past week.

**Figure III-2. Baseline Distribution of Cups of Fruit Consumed by Children Who Participated in the BASICS Evaluation—by Condition**



Source: Parent and Caregiver Baseline Survey, data collected September–October 2011.

**Figure III-3. Baseline Distribution of Cups of Vegetables Consumed by Children Who Participated in the BASICS Evaluation—by Condition**



Source: Parent and Caregiver Baseline Survey, data collected September–October 2011.

## 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-5 provides the results of this analysis. Respondents in the oldest age group (45 years or older) were nearly 3.5 times more likely than individuals in the youngest age group (18–34) to complete the follow-up survey, and respondents between the ages of 35 and 44 were more than twice as likely as individuals in the youngest age group to complete the follow-up survey.

## 3. Child Primary Impact Results

Tables III-2, III-3, and III-4 show the model-adjusted means at baseline and follow-up and the estimated impact on the primary outcomes for the three comparisons. For each of the intervention groups, parents and caregivers reported increases in cups of fruits and vegetables combined, cups of fruits, and cups of vegetables consumed by their children between baseline and follow-up. Parents and caregivers in the comparison group, by contrast, reported decreases in cups of fruits and vegetables combined, cups of fruits, and cups of vegetables.

As shown in Table III-2, compared with the comparison group, the BASICS Plus program had a significant impact on several primary outcomes, including the following:

- Cups of fruits and vegetables: The BASICS Plus program increased consumption of fruits and vegetables by 0.31 cups ( $p < 0.01$ ).
- Cups of fruits: The BASICS Plus program increased consumption of fruits by 0.17 cups ( $p < 0.05$ ).
- Cups of vegetables: The BASICS Plus program increased consumption of vegetables by 0.13 cups ( $p < 0.05$ ).
- Using 1 percent or skim milk: The BASICS Plus program increased the likelihood that children would use 1 percent or skim milk rather than whole milk (odds ratio: 1.32,  $p < 0.05$ ).

As shown in Table III-3, compared with the comparison group, the BASICS program had a significant impact on several primary outcomes, including the following:

- Cups of fruits and vegetables: The BASICS program increased consumption of fruits and vegetables by 0.24 cups ( $p < 0.05$ ).
- Cups of fruits: The BASICS program increased consumption of fruits by 0.16 cups ( $p < 0.05$ ).

As shown in Table III-4, compared with the BASICS program, the BASICS Plus program had a significant impact on the following:

- Using 1 percent or skim milk: The BASICS Plus program increased the likelihood that children would use 1 percent or skim milk rather than whole milk (odds ratio: 1.34,  $p < 0.05$ ).

**Table III-2. Child’s Dietary Intake: Primary Impacts for the Evaluation of the BASICS Program, BASICS Plus vs. Comparison Group**

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
	BASICS Plus	Comparison Group	BASICS Plus	Comparison Group		
Cups of fruits and vegetables	2.22 (0.07)	2.64 (0.07)	2.50 (0.08)	2.60 (0.08)	0.31** (0.10, 0.53)	0.0054
Cups of fruits	1.19 (0.04)	1.38 (0.04)	1.34 (0.05)	1.36 (0.05)	0.17* (0.02, 0.32)	0.0267
Cups of vegetables	1.04 (0.04)	1.26 (0.04)	1.16 (0.04)	1.24 (0.04)	0.13* (0.03, 0.24)	0.0157
Used 1% or skim milk <sup>b</sup>	36.31 (3.79)	40.93 (3.90)	44.42 (4.17)	42.37 (4.07)	1.32* (1.0, 1.74)	0.0493
Number of respondents	343	352	252	276		
Number of schools	11	11	11	11		

\* Indicates statistical significance if the *p*-value is less than or equal to 0.05.

\*\* Indicates statistical significance if the *p*-value is less than or equal to 0.01.

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

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

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 schools. Covariates in the model included child and respondent sex, child and respondent age, respondent race and/or ethnicity, and household size. Missing data ranged from 3.8% to 6.5%. SE = standard error. CI = confidence interval.

Source: Parent and Caregiver Baseline Survey, data collected September–October 2011 and May–July 2012 (Follow-Up); respondents are parents and caregivers of children participating in the evaluation study.

**Table III-3. Child’s Dietary Intake: Primary Impacts for the Evaluation of the BASICS Program, BASICS vs. Comparison Group**

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
	BASICS	Comparison Group	BASICS	Comparison Group		
Cups of fruits and vegetables	2.46 (0.07)	2.64 (0.07)	2.66 (0.08)	2.60 (0.08)	0.24* (0.03, 0.45)	0.0274
Cups of fruits	1.28 (0.04)	1.38 (0.04)	1.42 (0.05)	1.36 (0.05)	0.16* (0.01, 0.31)	0.0402
Cups of vegetables	1.18 (0.04)	1.26 (0.04)	1.24 (0.04)	1.24 (0.04)	0.07 (-0.03, 0.18)	0.1592
Used 1% or skim milk <sup>b</sup>	36.68 (3.78)	40.93 (3.90)	37.80 (3.98)	42.37 (4.07)	0.99 (0.75, 1.30)	0.9337
Number of respondents	342	352	254	276		
Number of schools	11	11	11	11		

\* Indicates statistical significance if the *p*-value is less than or equal to 0.05.

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

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

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 schools. Covariates in the model included child and respondent sex, child and respondent age, respondent race and/or ethnicity, and household size. Missing data ranged from 3.8% to 6.5%. SE = standard error. CI = confidence interval.

Source: Parent and Caregiver Baseline Survey, data collected September–October 2011 and May–July 2012 (Follow-Up); respondents are parents and caregivers of children participating in the evaluation study.

**Table III-4. Child’s Dietary Intake: Primary Impacts for the Evaluation of the BASICS Program, BASICS Plus vs. BASICS Group**

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
	BASICS Plus	BASICS	BASICS Plus	BASICS		
Cups of fruits and vegetables	2.22 (0.07)	2.46 (0.07)	2.50 (0.08)	2.66 (0.08)	0.07 (−0.15, 0.29)	0.5038
Cups of fruits	1.19 (0.04)	1.28 (0.04)	1.34 (0.05)	1.42 (0.05)	0.01 (−0.14, 0.17)	0.8478
Cups of vegetables	1.04 (0.04)	1.18 (0.04)	1.16 (0.04)	1.24 (0.04)	0.06 (−0.05, 0.17)	0.2934
Used 1% or skim milk <sup>b</sup>	36.31 (3.79)	36.68 (3.78)	44.42 (4.17)	37.80 (3.98)	1.34* (1.01, 1.77)	0.0450
Number of respondents	343	342	252	254		
Number of schools	11	11	11	11		

\* Indicates statistical significance if the *p*-value is less than or equal to 0.05.

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

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

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 schools. Covariates in the model included child and respondent sex, child and respondent age, respondent race and/or ethnicity, and household size. Missing data ranged from 3.8% to 6.5%. SE = standard error. CI = confidence interval.

Source: Parent and Caregiver Baseline Survey, data collected September–October 2011 and May–July 2012 (Follow-Up); respondents are parents and caregivers of children participating in the evaluation study.

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

Tables III-5, III-6, and III-7 show the model-adjusted means at baseline and follow-up and the estimated impact on children's other dietary behaviors for the three comparisons. Compared with the comparison group, the BASICS Plus and BASICS programs had significant impacts on children's willingness to try a new kind of fruit (odds ratios: 2.85,  $p < 0.01$ ; and 1.79,  $p < 0.01$ , respectively). Additionally, compared with the BASICS group, the BASICS Plus program increased children's willingness to try a new kind of fruit (odds ratio: 1.45,  $p < 0.05$ ). Compared with the comparison group, the BASICS Plus program increased the number of days children ate more than one kind of vegetable (0.41 days,  $p < 0.05$ ). Compared with the comparison group, the BASICS program increased the number of days children ate more than one kind of fruit (0.47 days,  $p < 0.05$ ).

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

Tables III-8, III-9, and III-10 show the model-adjusted means at baseline and follow-up and the estimated impact on parent and caregiver behavior and household variables for the three comparisons. Because there were small increases between baseline and follow-up in most of the parent and caregiver behavior and household variables in the BASICS, BASICS Plus, and comparison groups, the results did not support a conclusion that the BASICS or BASICS Plus program had a statistically significant impact on these outcomes.

#### **6. Impact Summary**

In summary, both the BASICS Plus program and the BASICS program significantly increased intake of fruits and vegetables combined and fruits compared with the comparison group. Both the BASICS Plus program and the BASICS program also led to significant increases in the number of days per week that children ate a variety of fruits compared with the comparison group. The BASICS Plus program was also associated with a higher reported intake of vegetables, an increased likelihood of using 1 percent or skim milk, and eating a variety of vegetables more days per week compared with the comparison group.

### **D. Post Hoc Analysis Methods and Results**

Post hoc analyses examined the potential influence of FFVP on the observed primary outcomes of the BASICS programs. First, the potential influence of FFVP was examined across study conditions. Second, FFVP was examined within BASICS program condition. It is important to note that post hoc analyses were unplanned and, accordingly, may be underpowered. Readers are encouraged to exercise caution when interpreting null effects of post hoc models. Additionally, it is important to bear in mind that these findings do not reflect on FFVP and should not be construed as evidence of its effectiveness.

#### **1. Post Hoc Analysis of BASICS Stratified by FFVP Participation**

The first set of post hoc analyses was conducted across all schools included in the evaluation of the BASICS program. The aim of these analyses was to examine whether FFVP participation influenced the results of the BASICS impact evaluation. For these analyses, FFVP participation served as a stratification factor and models were run separately for non-FFVP ( $n = 16$ ) and FFVP ( $n = 17$ ) schools across study conditions. Appendix E, Tables E-6 through E-7 present the results of these analyses. In general, these models suggest that change was greater among schools not participating in FFVP.

For children at schools not enrolled in FFVP, the BASICS program increased fruit consumption compared with the comparison group by 0.22 cups ( $p < 0.05$ ). The BASICS Plus program increased combined fruit and vegetable consumption by 0.37 cups ( $p < 0.05$ ) and vegetable consumption by 0.18 cups ( $p < 0.01$ ) compared with the comparison group among children at schools not participating in FFVP. Among students at schools enrolled in FFVP, neither the BASICS Plus program nor the BASICS program had a significant impact on the consumption of fruits and vegetables compared with the comparison group.

**Table III-5. Child's Other Dietary Behaviors: Secondary Impacts for the Evaluation of the BASICS Program, BASICS Plus vs. Comparison Group**

Measure	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
	BASICS Plus	Comparison Group	BASICS Plus	Comparison Group		
Ate variety of fruits <sup>b</sup>	3.19 (0.12)	3.61 (0.12)	3.47 (0.13)	3.61 (0.13)	0.28 (-0.14, 0.7)	0.1890
Ate variety of vegetables <sup>b</sup>	3.31 (0.13)	3.86 (0.13)	3.55 (0.15)	3.69 (0.14)	0.41* (0.07, 0.75)	0.0204
Willingness to try new fruits <sup>c</sup>	63.87 (2.27)	74.76 (2.09)	81.21 (2.28)	73.71 (2.44)	2.85** (1.82, 3.65)	<0.0001
Willingness to try new vegetables <sup>c</sup>	47.21 (3.15)	51.30 (3.12)	53.92 (3.45)	48.05 (3.37)	1.49 (0.94, 2.35)	0.0845
Asked parent/caregiver to buy certain fruit <sup>d</sup>	2.30 (0.07)	2.48 (0.06)	2.32 (0.07)	2.56 (0.07)	-0.06 (-0.25, 0.13)	0.5401
Asked parent/caregiver to buy certain vegetable <sup>d</sup>	1.48 (0.07)	1.57 (0.07)	1.62 (0.08)	1.81 (0.08)	-0.10 (-0.27, 0.08)	0.2646
Number of respondents	343	352	252	276		
Number of schools	11	11	11	11		

\* Indicates statistical significance if the *p*-value is less than or equal to 0.05.

\*\* Indicates statistical significance if the *p*-value is less than or equal to 0.01.

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

Impacts provided as odds ratios for dichotomous outcomes.

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

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

<sup>d</sup> Response categories converted to continuous variable, with 0 = never and 4 = 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 schools. Covariates in the model included child and respondent sex, child and respondent age, respondent race and/or ethnicity, and household size. Missing data ranged from 3.8% to 6.5%. SE = standard error. CI = confidence interval.

Source: Parent and Caregiver Baseline Survey, data collected September–October 2011 and May–July 2012 (Follow-Up); respondents are parents and caregivers of children participating in the evaluation study.

**Table III-6. Child's Other Dietary Behaviors: Secondary Impacts for the Evaluation of the BASICS Program, BASICS vs. Comparison Group**

Measure	Model-Adjusted Baseline Means (SE)		Model-Adjusted Follow-Up Means (SE)		Estimated Impact (95% CI) <sup>a</sup>	Wald Chi-Square $\rho$ -Value
	BASICS	Comparison Group	BASICS	Comparison Group		
Ate variety of fruits <sup>b</sup>	3.23 (0.12)	3.61 (0.12)	3.72 (0.13)	3.61 (0.13)	0.47* (0.06, 0.89)	0.0267
Ate variety of vegetables <sup>b</sup>	3.51 (0.13)	3.86 (0.13)	3.58 (0.15)	3.69 (0.14)	0.24 (-0.10, 0.59)	0.1561
Willingness to try new fruits <sup>c</sup>	66.05 (2.29)	74.76 (2.09)	76.69 (2.43)	73.71 (2.44)	1.79** (1.28, 2.49)	0.0013
Willingness to try new vegetables <sup>c</sup>	45.12 (3.11)	51.30 (3.12)	47.76 (3.43)	48.05 (3.37)	1.27 (0.80, 1.99)	0.2970
Asked parent/caregiver to buy certain fruit <sup>d</sup>	2.35 (0.06)	2.48 (0.06)	2.50 (0.07)	2.56 (0.07)	0.07 (-0.11, 0.26)	0.4290
Asked parent/caregiver to buy certain vegetable <sup>d</sup>	1.58 (0.07)	1.57 (0.07)	1.71 (0.08)	1.81 (0.08)	-0.11 (-0.28, 0.07)	0.2224
Number of respondents	342	352	254	276		
Number of schools	11	11	11	11		

\* Indicates statistical significance if the p-value is less than or equal to 0.05.

\*\* Indicates statistical significance if the p-value is less than or equal to 0.01.

<sup>a</sup> Program impact (with 95% confidence limits) estimated via difference-in-difference models comparing change across time in the BASICS versus Comparison groups. Impacts provided as odds ratios for dichotomous outcomes.

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

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

<sup>d</sup> Response categories converted to continuous variable, with 0 = never and 4 = 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 schools. Covariates in the model included child and respondent sex, child and respondent age, respondent race and/or ethnicity, and household size. Missing data ranged from 3.8% to 6.5%. SE = standard error. CI = confidence interval.

Source: Parent and Caregiver Baseline Survey, data collected September–October 2011 and May–July 2012 (Follow-Up); respondents are parents and caregivers of children participating in the evaluation study.

**Table III-7. Child’s Other Dietary Behaviors: Secondary Impacts for the Evaluation of the BASICS Program, BASICS Plus vs. BASICS Group**

Measure	Model-Adjusted Baseline Means (SE)		Model-Adjusted Follow-Up Means (SE)		Estimated Impact (95% CI) <sup>a</sup>	Wald Chi-Square $p$ -Value
	BASICS Plus	BASICS	BASICS Plus	BASICS		
Ate variety of fruits <sup>b</sup>	3.19 (0.12)	3.23 (0.12)	3.47 (0.13)	3.72 (0.13)	-0.20 (-0.62, 0.23)	0.3473
Ate variety of vegetables <sup>b</sup>	3.31 (0.13)	3.51 (0.13)	3.55 (0.15)	3.58 (0.15)	0.17 (-0.18, 0.52)	0.3348
Willingness to try new fruits <sup>c</sup>	63.87 (2.27)	66.05 (2.29)	81.21 (2.28)	76.69 (2.43)	1.45* (1.01, 2.06)	0.0429
Willingness to try new vegetables <sup>c</sup>	47.21 (3.15)	45.12 (3.11)	53.92 (3.45)	47.76 (3.43)	1.18 (0.74, 1.86)	0.4754
Asked parent/caregiver to buy certain fruit <sup>d</sup>	2.30 (0.07)	2.35 (0.06)	2.32 (0.07)	2.50 (0.07)	-0.13 (-0.32, 0.06)	0.1731
Asked parent/caregiver to buy certain vegetable <sup>d</sup>	1.48 (0.07)	1.58 (0.07)	1.62 (0.08)	1.71 (0.08)	0.01 (-0.17, 0.19)	0.9190
Number of respondents	343	342	252	254		
Number of schools	11	11	11	11		

\*Indicates statistical significance if the p-value is less than or equal to 0.05.

<sup>a</sup> Program impact (with 95% confidence limits) estimated via difference-in-difference models comparing change across time in the BASICS Plus versus BASICS groups.

Impacts provided as odds ratios for dichotomous outcomes.

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

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

<sup>d</sup> Response categories converted to continuous variable, with 0 = never and 4 = 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 schools. Covariates in the model included child and respondent sex, child and respondent age, race and/or ethnicity, and household size. Missing data ranged from 3.8% to 6.5%. SE = standard error. CI = confidence interval.

Source: Parent and Caregiver Baseline Survey, data collected September–October 2011 and May–July 2012 (Follow-Up); respondents are parents and caregivers of children participating in the evaluation study.

**Table III-8. Parent and Caregiver Behavior and Household Variables: Secondary Impacts for the Evaluation of the BASICS Program, BASICS Plus vs. Comparison Group**

Measure	Model-Adjusted Baseline Means (SE)		Model-Adjusted Follow-Up Means (SE)		Estimated Impact (95% CI) <sup>a</sup>	Wald Chi-Square p-Value
	BASICS Plus	Comparison Group	BASICS Plus	Comparison Group		
Availability of fruits and vegetables <sup>b</sup>	5.47 (0.12)	5.71 (0.12)	5.66 (0.13)	5.69 (0.13)	0.21 (-0.10, 0.53)	0.1804
Parent/caregiver offered fruit for a snack <sup>c</sup>	2.74 (0.14)	3.23 (0.14)	3.11 (0.15)	3.59 (0.15)	0.01 (-0.46, 0.48)	0.9732
Parent/caregiver offered fruit at dinner <sup>c</sup>	1.94 (0.15)	2.04 (0.15)	2.26 (0.16)	2.26 (0.16)	0.10 (-0.32, 0.51)	0.6406
Parent/caregiver offered vegetable for a snack <sup>c</sup>	1.37 (0.12)	1.64 (0.11)	1.63 (0.13)	1.75 (0.12)	0.15 (-0.12, 0.43)	0.2543
Parent/caregiver offered vegetable at dinner <sup>c</sup>	4.21 (0.12)	4.91 (0.12)	4.28 (0.13)	5.07 (0.13)	-0.09 (-0.44, 0.26)	0.5935
Parent/caregiver offered milk at dinner <sup>c</sup>	3.89 (0.12)	3.55 (0.12)	3.93 (0.14)	3.77 (0.13)	-0.17 (-0.51, 0.16)	0.2980
Parent/caregiver ate fruit for a snack <sup>c</sup>	2.78 (0.12)	3.14 (0.12)	3.10 (0.13)	3.20 (0.13)	0.26 (-0.09, 0.60)	0.1418
Parent/caregiver ate vegetable for a snack <sup>c</sup>	1.83 (0.12)	2.06 (0.12)	2.18 (0.14)	2.25 (0.13)	0.16 (-0.21, 0.52)	0.3845
Parent/caregiver can encourage child to try new fruits or vegetables <sup>d</sup>	35.10 (2.89)	35.37 (2.84)	42.71 (3.38)	36.48 (3.15)	1.31 (0.92, 1.88)	0.1305
Parent/caregiver usually drinks 1% or skim milk <sup>e</sup>	54.34 (3.52)	53.66 (3.46)	57.75 (3.69)	51.97 (3.65)	1.23 (0.91, 1.66)	0.1677
Parent/caregiver believes that 1% or skim milk is healthier for their child than whole milk <sup>f</sup>	59.65 (3.34)	53.68 (3.38)	62.96 (3.54)	54.87 (3.56)	1.10 (0.76, 1.59)	0.6155
Number of respondents	343	352	252	276		
Number of schools	11	11	11	11		

<sup>a</sup> Program impact (with 95% confidence limits) estimated via difference-in-difference models comparing change across time in the BASICS Plus versus comparison groups. Impacts provided as odds ratios for dichotomous outcomes.

<sup>b</sup> Index score (0–10) based on reported household availability of 10 fruits and vegetables.

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

<sup>d</sup> Dichotomous variable indicates the proportion responding “strongly agree.”

<sup>e</sup> Dichotomous variable indicates the proportion responding “strongly agree” or “agree.”

<sup>f</sup> Dichotomous variable indicates the proportion of respondents who selected this statement to describe how they feel about the milk they give their third-grade child.

Notes: Model-adjusted means vary slightly across comparisons. Generalized linear mixed models (SAS PROC MIXED) were used to evaluate the program impact while accounting for the clustering of students within schools. Covariates in the model included child and respondent sex, child and respondent age, respondent race and/or ethnicity, and household size. Missing data ranged from 3.8% to 6.5%. SE = standard error. CI = confidence interval.

Source: Parent and Caregiver Baseline Survey, data collected September–October 2011 and May–July 2012 (Follow-Up); respondents are parents and caregivers of children participating in the evaluation study.

**Table III-9. Parent and Caregiver Behavior and Household Variables: Secondary Impacts for the Evaluation of the BASICS Program, BASICS vs. Comparison Group**

Measure	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
	BASICS	Comparison Group	BASICS	Comparison Group		
Availability of fruits and vegetables <sup>b</sup>	5.43 (0.12)	5.71 (0.12)	5.70 (0.13)	5.69 (0.13)	0.29 (-0.02, 0.60)	0.0668
Parent/caregiver offered fruit for a snack <sup>c</sup>	2.79 (0.14)	3.23 (0.14)	3.27 (0.15)	3.59 (0.15)	0.12 (-0.35, 0.59)	0.5996
Parent/caregiver offered fruit at dinner <sup>c</sup>	1.83 (0.15)	2.04 (0.15)	2.17 (0.16)	2.26 (0.16)	0.12 (-0.29, 0.53)	0.5428
Parent/caregiver offered vegetable for a snack <sup>c</sup>	1.48 (0.12)	1.64 (0.11)	1.76 (0.12)	1.75 (0.12)	0.16 (-0.11, 0.44)	0.2234
Parent/caregiver offered vegetable at dinner <sup>c</sup>	4.26 (0.12)	4.91 (0.12)	4.44 (0.13)	5.07 (0.13)	0.02 (-0.33, 0.37)	0.9147
Parent/caregiver offered milk at dinner <sup>c</sup>	3.55 (0.12)	3.55 (0.12)	3.50 (0.14)	3.77 (0.13)	-0.26 (-0.6, 0.07)	0.1169
Parent/caregiver ate fruit for a snack <sup>c</sup>	2.91 (0.12)	3.14 (0.12)	3.17 (0.13)	3.20 (0.13)	0.20 (-0.14, 0.54)	0.2408
Parent/caregiver ate vegetable for a snack <sup>c</sup>	1.94 (0.12)	2.06 (0.12)	2.20 (0.14)	2.25 (0.13)	0.06 (-0.3, 0.42)	0.7372
Parent/caregiver can encourage child to try new fruits or vegetables <sup>d</sup>	37.54 (2.91)	35.37 (2.84)	38.79 (3.29)	36.48 (3.15)	1.00 (0.7, 1.43)	0.9784
Parent usually drinks 1% or skim milk <sup>e</sup>	50.01 (3.50)	53.66 (3.46)	51.02 (3.72)	51.97 (3.65)	1.11 (0.83, 1.50)	0.4588
Parent believes that 1% or skim milk is healthier for their child than whole milk <sup>f</sup>	49.81 (3.37)	53.68 (3.38)	52.46 (3.66)	54.87 (3.56)	1.06 (0.74, 1.52)	0.7451
Number of respondents	342	352	254	276		
Number of schools	11	11	11	11		

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

Impacts provided as odds ratios for dichotomous outcomes.

<sup>b</sup> Index score (0–10) based on reported household availability of 10 fruits and vegetables.

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

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

<sup>e</sup> Dichotomous variable indicates the proportion responding strongly agree or agree.

<sup>f</sup> Dichotomous variable indicates the proportion of respondents who selected this statement to describe how they feel about the milk they give their third-grade child.

Notes: Model-adjusted means vary slightly across comparisons. Generalized linear mixed models (SAS PROC MIXED) were used to evaluate the program impact while accounting for the clustering of students within schools. Covariates in the model included child and respondent sex, child and respondent age, respondent race and/or ethnicity, and household size. Missing data ranged from 3.8% to 6.5%. SE = standard error. CI = confidence interval.

Source: Parent and Caregiver Baseline Survey, data collected September–October 2011 and May–July 2012 (Follow-Up); respondents are parents and caregivers of children participating in the evaluation study.

**Table III-10. Parent and Caregiver Behavior and Household Variables: Secondary Impacts for the Evaluation of the BASICS Program, BASICS Plus vs. BASICS Group**

Measure	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
	BASICS Plus	BASICS	BASICS Plus	BASICS		
Availability of fruits and vegetables <sup>b</sup>	5.47 (0.12)	5.43 (0.12)	5.66 (0.13)	5.70 (0.13)	-0.08 (-0.40, 0.24)	0.6145
Parent/caregiver offered fruit for a snack <sup>c</sup>	2.74 (0.14)	2.79 (0.14)	3.11 (0.15)	3.27 (0.15)	-0.11 (-0.59, 0.36)	0.6268
Parent/caregiver offered fruit at dinner <sup>c</sup>	1.94 (0.15)	1.83 (0.15)	2.26 (0.16)	2.17 (0.16)	-0.03 (-0.44, 0.39)	0.8889
Parent/caregiver offered vegetable for a snack <sup>c</sup>	1.37 (0.12)	1.48 (0.12)	1.63 (0.13)	1.76 (0.12)	-0.01 (-0.29, 0.27)	0.9396
Parent/caregiver offered vegetable at dinner <sup>c</sup>	4.21 (0.12)	4.26 (0.12)	4.28 (0.13)	4.44 (0.13)	-0.11 (-0.47, 0.25)	0.5300
Parent/caregiver offered milk at dinner <sup>c</sup>	3.89 (0.12)	3.55 (0.12)	3.93 (0.14)	3.50 (0.14)	0.09 (-0.25, 0.43)	0.5981
Parent/caregiver ate fruit for a snack <sup>c</sup>	2.78 (0.12)	2.91 (0.12)	3.10 (0.13)	3.17 (0.13)	0.05 (-0.30, 0.41)	0.7542
Parent/caregiver ate vegetable for a snack <sup>c</sup>	1.83 (0.12)	1.94 (0.12)	2.18 (0.14)	2.20 (0.14)	0.10 (-0.27, 0.47)	0.5944
Parent/caregiver can encourage child to try new fruits or vegetables <sup>d</sup>	35.10 (2.89)	37.54 (2.91)	42.71 (3.38)	38.79 (3.29)	1.31 (0.91, 1.88)	0.1437
Parent/caregiver usually drinks 1% or skim milk <sup>e</sup>	54.34 (3.52)	50.01 (3.50)	57.75 (3.69)	51.02 (3.72)	1.10 (0.81, 1.50)	0.5152
Parent/caregiver believes that 1% or skim milk is healthier for their child than whole milk <sup>f</sup>	59.65 (3.34)	49.81 (3.37)	62.96 (3.54)	52.46 (3.66)	1.03 (0.71, 1.50)	0.8548
Number of respondents	343	342	252	254		
Number of schools	11	11	11	11		

<sup>a</sup> Program impact (with 95% confidence limits) estimated via difference-in-difference models comparing change across time in the BASICS Plus versus BASICS groups.

Impacts provided as odds ratios for dichotomous outcomes.

<sup>b</sup> Index score (0–10) based on reported household availability of 10 fruits and vegetables.

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

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

<sup>e</sup> Dichotomous variable indicates the proportion responding strongly agree or agree.

<sup>f</sup> Dichotomous variable indicates the proportion of respondents who selected this statement to describe how they feel about the milk they give their third-grade child.

Notes: Model-adjusted means vary slightly across comparisons. Generalized linear mixed models (SAS PROC MIXED) were used to evaluate the program impact while accounting for the clustering of students within schools. Covariates in the model included child and respondent sex, child and respondent age, respondent race and/or ethnicity, and household size. Missing data ranged from 3.8% to 6.5%. SE = standard error. CI = confidence interval.

Source: Parent and Caregiver Baseline Survey, data collected September–October 2011 and May–July 2012 (Follow-Up); respondents are parents and caregivers of children participating in the evaluation study.

## **2. Post Hoc Analysis of FFVP Impact by Study Condition**

The second set of post hoc analyses compared children enrolled at schools participating in FFVP and children enrolled at schools not participating in FFVP within study conditions. The aim of these analyses was to examine whether FFVP influenced change over time within study conditions. For these analyses, schools were stratified by study condition, and FFVP participation served as a treatment indicator. Appendix E includes Tables E-8 through E-10, which present the results of these analyses for BASICS Plus, BASICS, and comparison groups, respectively. These models also suggest that change was greater among non-FFVP schools, but differences were not statistically significant.

## **3. Post Hoc Analysis Summary**

In summary, these analyses do not offer evidence to support the conclusion that reported findings are confounded by FFVP. Although there may have been synergistic influences between the FFVP and BASICS and BASIC plus programs, FFVP was fairly equally distributed across the three study conditions, and there is no evidence that it was more effective in one condition than another. Additionally, effects among children enrolled at schools participating in FFVP were not larger than effects observed among children enrolled at schools not participating in FFVP. This argues against the interpretation that rejection of primary study hypotheses was due to the presence of FFVP.

## Chapter IV • Assessment of INN's Self-Evaluation

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### A. Methodology

Determining the effectiveness of the evaluation conducted by INN 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 INN. Qualitative methods were used to gather in-depth information as well as perspectives of key players in the evaluation (e.g., the principal investigator, the program manager). Exhibit IV-1 describes the data sources used for the assessment, and Appendix F provides copies of the forms and instruments used in the assessment.

The assessment of INN's evaluation of the BASICS and BASICS plus program included a detailed description of their evaluation methodology, including management, staffing, and costs of the evaluation; an assessment of the quality of the INN evaluation, including strengths and weaknesses; a comparison of the INN study design and results with the FNS independent evaluation; and an assessment of lessons learned based on the quality assessment, cost analysis, and reported factors affecting evaluation implementation. Appendix I provides additional information on the methodology for assessing the INN self-evaluation.

### Key Findings

- The INN evaluation employed the same quasi-experimental design used for the independent evaluation.
- Strengths of their design include the use of a viable comparison strategy, data collection that was well-planned and -implemented, modest attrition between the pre- and post-surveys, and few missing data for the impact analysis.
- Weaknesses included the fact that outcome measures may not be sensitive to change, the data analyses did not account for the clustering of individuals within schools, and the research objectives and hypotheses were not stated in quantifiable terms.
- The INN self-evaluation found that the social marketing component of the BASICS Plus intervention was necessary to achieve program effects; findings of the independent evaluation suggest that the BASICS program is sufficient to produce program effects. Different conclusions may be a function of differences in evaluations aims.

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

Data Source	Description and Use
<b>INN’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 the INN 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 1–5 scale. The form was completed using information from INN’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 INN’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 INN, documented the resources used and costs incurred to evaluate the BASICS and BASICS plus interventions. 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>INN’s evaluation report</b>	The independent evaluators provided INN 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 INN’s evaluation and to compare INN’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 program administrators, social marketing coordinator, evaluation managers, direct educators, and their supervisors, before and after the evaluation was conducted. The findings from these interviews informed all aspects of the assessment of INN’s self-evaluation, in particular, the assessment of the management of the evaluation and lessons learned from conducting the evaluation.

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

This section describes the methodology employed by INN to evaluate the BASICS interventions and provides information on the management, staffing, and costs of the evaluation. This description is based on information provided in INN’s demonstration project application (INN, 2009) and its evaluation report (INN, 2012).

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

The goal of INN’s BASICS program is to provide educational programs that increase the likelihood that low-resource audiences can make healthy food choices consistent with the Dietary Guidelines for Americans. For the demonstration project, INN proposed to expand INN’s school-based programming to include a multichannel (curriculum and social marketing) approach to extend the reach of the program beyond the school to the community through radio, newspaper, outdoor signage, and community events. The goal of using multiple channels is to increase the intensity of the intervention for parents and

caregivers who receive SNAP benefits. This study involved two treatment interventions (that currently receive the school-based BASICS curriculum), one that received SNAP-Ed through a school-based curriculum and another through a school-based curriculum plus a multichannel social marketing intervention. These interventions were compared with each other and to a comparison group that did not receive the school-based BASICS curriculum during the project period.

INN hypothesized that third-graders exposed to the BASICS curriculum would report greater increases in acceptance and consumption of fruits and vegetables and low-fat milk after participating in the intervention compared with those who did not participate in the program. INN also hypothesized that nutrition education augmented by a social marketing campaign (multichannel approach) would yield more positive changes than one limited to the BASICS curriculum (single-channel approach). The INN self-evaluation included outcome measures for children participating in the program. Exhibit IV-1 identifies the objectives for the INN self-evaluation.

## **2. Research Design and Sample Selection**

The INN study design was developed in parallel with the independent evaluation. The INN design included a quasi-experimental, three-arm design with data collected from third-grade students attending eligible schools in four Iowa school districts (Council Bluffs, Waterloo, Des Moines, and Davenport). Within this design, Council Bluffs and Waterloo were selected to receive the single-channel intervention, (referred to as BASICS), Des Moines was selected to receive the multichannel intervention (BASICS Plus), and Davenport was selected to serve as the comparison group.

The study design included 11 schools in each condition with complete pre-intervention and post-intervention data collection from 22 students per school. Within schools, two or three classrooms, depending on average class size, were randomly selected for participation. INN initially planned to collect matched data from parents and caregivers of students in the BASICS evaluation. To accommodate the FNS independent evaluation, INN agreed to forgo collecting data from parents and caregivers and instead to focus their evaluation on third-grade students.

## **3. Instrument Development and Testing**

The instrument used by INN for the student data collection has been used in previous evaluations of the BASICS intervention. At the time the instrument was developed, the INN evaluation team conducted a thorough review of survey items and matched them to theoretical constructs that were believed to be important in influencing youths' eating behaviors. They conducted a series of cognitive tests with third-grade students at local boys and girls clubs to test the draft instrument, which was subsequently revised to reduce respondent confusion or bias. The revised version was sent to three BASICS nutrition educators who administered the survey to children similar in age to the target group but ineligible for the study. In addition to assessing question comprehension, educators timed the students to ensure that the survey burden was reasonable. Data assessing reliability provided by INN indicated that survey items demonstrated statistically significant test-retest correlation across the intervention period. The magnitude of correlation over time ranged from 0.09 (recognition of the "choose my plate" logo) to 0.63 (preference for avocado).

## Exhibit IV-2. Objectives for the INN BASICS Program

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### Fruit and Vegetables

At the end of the intervention period, children exposed to the BASICS curriculum will report an increase in the following variables related to fruit and vegetable consumption:

- The number of children in the multichannel group who report that they “almost always” like to eat fruits for snacks will have a statistically significant increase from pre to post compared with the single-channel group and with the comparison group.
- The number of children in the multichannel group who report that they “almost always” like to eat vegetables for snacks will have a statistically significant increase from pre to post compared with the single-channel group and with the comparison group.
- The number of children in the multichannel group who report that they are “very sure” that they can fix fruit snacks at home will have a statistically significant increase from pre to post compared with the single-channel group and with the comparison group.
- The number of children in the multichannel group who report that they are “very sure” that they can fix vegetable snacks at home will have a statistically significant increase from pre to post compared with the single-channel group and with the comparison group.
- The number of children in the multichannel group who report “I like this [fruit or vegetable] a lot” will have a statistically significant increase from pre to post compared with the single-channel group and with the comparison group.

### Milk Consumption

At the end of the intervention period, children exposed to the BASICS curriculum will report an increase in the following variables related to milk consumption:

- The number of children in the multichannel intervention group who correctly identify low-fat and fat-free milk products as healthier for them will have a statistically significant increase from pre to post compared with the single-channel group and with the comparison group.
- The number of children in the multichannel intervention group who are “sure” that they can choose milk, yogurt, or cheese for snacks will have a statistically significant increase from pre to post compared with the single-channel group and with the comparison group.
- The number of children in the multichannel intervention group who indicate that they “almost always” like to drink white milk will have a statistically significant increase from pre to post compared with the single-channel group and with the comparison group.
- The number of children in the multichannel intervention group who indicate that they “almost always” like to eat yogurt will have a statistically significant increase from pre to post compared with the single-channel group and with the comparison group.

Source: INN Application, 2009.

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## 4. Survey Administration Procedures and Response

To assess change in the outcomes of interest, INN conducted data collection before the implementation of the BASICS and BASICS Plus interventions and again following the completion of the curriculum delivery. During the baseline period, surveys were delivered to teachers on October 21, 2011; data collection occurred during the week of October 24, 2011, to October 28, 2011. At follow-up, surveys were delivered to teachers on May 11, 2012; data collection occurred during the week of May 14, 2012, to May 18, 2012. INN followed a careful and well-detailed procedure to ensure full disclosure of activities and protection of individual rights. The procedure included the following steps:

- Obtaining approval from the Institutional Review Board at Iowa State University;
- Notifying school district superintendents;

- Inviting principals, school coordinators, teachers, and nutrition educators to attend a Webinar training that provided background on the research study and instructions for the consent process and survey administration procedures; and
- Securing parent and caregiver consent and child assent.

Classroom teachers collected survey data for INN. Teachers received written step-by-step instructions on how students should proceed through the survey, administered in a group setting within the classroom. The instructions included not only the directions for filling out the survey, but also directions explaining what to do if a student did not fill out a survey for reasons such as the student moved from the classroom, refused to fill out the survey, or was sick during administration of surveys. Teachers were instructed to write the reason that a survey was not filled out by an eligible student directly on the survey. In addition, teachers were also reminded that if a student was sick the day of administration but came back during the rest of the week, the student could still fill out the survey. In addition, teachers were told that any child who needed help filling out the survey because of a disability could receive help. These points were also included in the training Webinar conducted by INN. Table IV-1 shows the number of completed pre- and post-surveys for the student surveys. INN obtained a total of 1,045 matched (pre- and post-intervention) surveys.

**Table IV-1. Number of Completed Student Surveys for the INN Self-Evaluation**

	Pre-intervention	Post-intervention (matched)
BASICS	372	343 (339)
BASICS Plus	415	377 (375)
Comparison group	380	349 (331)
Total	1,167	1,069 (1,045)

Source: INN Evaluation Report, 2012.

## 5. Data Analysis Procedures

INN assessed the effect of the BASICS and BASICS plus interventions by comparing pre and post results within each arm of the study using within-subjects paired *t*-tests. Fixed-effects, between-subjects analysis of variance was employed to compare pre-post differences across the three arms, using *F*-tests to assess overall differences in changes among the three arms. These tests do not appropriately account for the clustering of students within schools. INN employed the Bonferroni adjustment to account for multiple comparisons. The adjustment was provided for each item separately to obtain conservative differences-in-differences estimates between conditions (BASICS Plus vs. BASICS, BASICS Plus vs. Comparison, and BASICS vs. Comparison) with 95 percent confidence intervals. INN did not control for family-wise error, even though multiple single-item tests were conducted and could be construed as constituting a family of tests (e.g., separate tests assess likeability of numerous vegetables).

INN examined the pre-to-post intervention distribution of participant gender and found no significant difference. Based on this finding, it was determined that no adjustment of attrition was needed. Item nonresponse was reported as minimal; no formal steps to account for missing data were taken.

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

The evaluation team was comprised of the program administrator, social marketing coordinator, evaluation managers, and the direct educators whose respective roles were described in Chapter II. The INN program administrator provided oversight for the implementation of the evaluation at the programmatic level.

Table IV-2 illustrates the actual expenditures INN reported as the costs required to conduct their BASICS self-evaluation—a total of \$76,595.85—with all of the direct costs attributed to staff salaries and contracts. Appendix B includes the detailed budget tables INN provided for this evaluation, including a breakout of non-Federal and Federal funding for each budget category.

**Table IV-2. Summary of INN Costs for Evaluation of the BASICS Program (Federal FY 2012)**

Budget Category	Expenditures	Percentage of Total Costs
Salary and benefits	\$6,198.00	8.1%
Contracts	\$68,773.00	89.8%
Travel	0	0%
<b>Total direct costs</b>	<b>\$74,971.87</b>	<b>97.9%</b>
Indirect costs <sup>a</sup>	\$1,623.98	2.1%
<b>Total</b>	<b>\$76,595.85</b>	<b>100</b>

<sup>a</sup> Indirect costs apply only to salary and benefits.

Source: Cost data provided by INN (see completed Resource and Expense Tracking Form in Appendix B).

- **Salary and benefits.** This expense includes the salaries or hourly wages for the following IA staff who supported the INN evaluation of the BASICS program directly or administratively:

<u>Position</u>	<u>Number of FTEs</u>
Program administrator	0.0406
Program manager	0.0264
IDPH fiscal manager	0.0028
<u>Direct educators</u>	<u>0.0585</u>
<b>Total</b>	<b>0.1283</b>

Table IV-3 highlights the actual expenditures INN reported as the costs required to conduct their social marketing campaign self-evaluation—a total of \$9,526.47—with all of the direct costs attributed to staff salaries and contracts. Appendix B includes the detailed budget tables INN provided for this evaluation, including a breakout of non-Federal and Federal funding for each budget category.

**Table IV-3. Summary of INN Costs for Evaluation of the Social Marketing Campaign (Federal FY 2012)**

<b>Budget Category</b>	<b>Expenditures</b>	<b>Percentage of Total Costs</b>
Salary and benefits	\$1,851	20.5%
Contracts	\$7,190	79.5%
Travel	0	0
<b>Total direct costs</b>	<b>\$9,041.40</b>	<b>97.9%</b>
Indirect costs <sup>a</sup>	\$485.07	0.051%
<b>Total</b>	<b>\$9,526.47</b>	<b>100</b>

<sup>a</sup> Indirect costs apply only to salary and benefits.

Source: Cost data provided by INN (see completed Resource and Expense Tracking Form in Appendix B).

- **Salary and benefits.** This expense includes the salaries or hourly wages for the following IA staff who supported the INN evaluation of the social marketing campaign directly or administratively:

<b>Position</b>	<b>Number of FTEs</b>
Social marketing coordinator	0.0230
<b>Total</b>	<b>0.0230</b>

### C. Assessment of the Quality of INN’s Self-Evaluation

Although FNS’s 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.

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 database (see <http://nrepp.samhsa.gov/> for additional information). The evaluation review form, provided in Appendix F, includes eight evaluation components and requires a reviewer to assign a numerical score ranging from 1 to 5 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 = 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 = showing a general understanding of its role in the evaluation, but key details have been overlooked or not thoroughly reported. It needs moderate revision to be considered acceptable.
- 4 = appropriate for the evaluation, technically correct, and described well enough to show a general understanding of its role in the overall evaluation. Evidence shows that it will be or has been implemented properly, but minor details may be missing or unclear.
- 5 = appropriate for the program being evaluated and presented in a way that shows that 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-4 provides the results of the completed review form.

**Table IV-4. Assessment Scores for the INN 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	3
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 I provides a description of the criteria used to assess each evaluation component.

The strengths and weaknesses of INN’s evaluation are summarized in Exhibit IV-3. Based on the assessment, the strengths of INN’s evaluation included the following: the use of a viable comparison strategy, a well-planned and -implemented data collection, only modest attrition between the pre- and post-surveys for the student survey, and very few missing data. Weaknesses included the following: Study hypotheses were not quantified, making it difficult to determine whether null findings are a function of weak program impacts or insufficient sample size; the measures used to assess program impact appear to have poor sensitivity to change; and the data analyses did not account for the clustering of individuals within schools. Additional information on the weaknesses and a discussion on why these weaknesses are a concern are provided in Section D, which compares the INN evaluation methodology with that of the independent evaluation.

**Exhibit IV-3. Summary of Strengths and Weaknesses of INN’s Self-Evaluation**

**Strengths**

- The INN self-evaluation employed a quasi-experimental design that included two intervention conditions and a comparison condition. Study conditions were allocated to counties. This design is highly appropriate given the need to ensure buy-in of participating school systems as well as the need to avoid spillover effects that may have occurred under other randomization schemes due to the ecological delivery of the social marketing campaign.
- Data collection activities were well thought out and reflect INN’s history of working with school districts in Iowa. INN made sure to involve and educate key stakeholders and decisionmakers.
- The outcome measures used to assess behavior change map onto the research objectives and hypotheses and include intermediate factors (e.g., the child can differentiate between healthy and unhealthy options, child reports efficacy to select health snacks).

- There was modest attrition and nonresponse between the pre- and post-surveys for the student survey (approximately 9.5% for each of the intervention groups and approximately 13 percent for the comparison group).
- Missing data were minimal for the impact analysis.

#### Weaknesses

- Research objectives and hypotheses aimed to find statistically significant levels of improvement but did not specify a desired or expected amount of behavior change.
- The items used to assess program impacts include three-level response categories that may not be sensitive to change.
- The data analyses reviewed for this report did not take into account the complexity of the evaluation design; that is, the clustering of individuals within schools. Thus, the standard errors are likely to be underestimated, and reported *p*-values may overestimate significance.
- INN did not conduct independent power analyses based on the characteristics of the measures obtained in the student data collection.

### D. Comparison of Evaluation Methods and Results for the INN and Independent Evaluations

Exhibit IV-4 compares the study design for the INN self-evaluation and the independent impact evaluation of the BASICS program. The first row compares and contrasts the comparison strategy for the two evaluations. The INN evaluation and the independent evaluation used the same research design and sampling strategy. The design is from the family of quasi-experimental approaches and the comparison group is called “nonequivalent” to reflect the fact that it was not developed through a process of random assignment. The study design included two treatment conditions (a standard intervention and an enhanced version thereof) and a comparison condition. The design allowed for three planned comparisons of program effects.

The second row of Exhibit IV-4 compares and contrasts sampling strategy or required sample sizes and the primary outcome measures of the two evaluations. The independent evaluation conducted *a priori* sample size estimation that specified schools as the unit of analysis (level of independence) and included data from individuals nested within schools. Those estimations indicated that the analyses would yield a type II error rate of 0.20 (80 percent statistical power) with two condition comparisons that included 11 schools in each condition and 242 complete observation per school. INN did not conduct their own sample size estimations; instead, they emulated the same samples estimated for the independent evaluation. Had INN employed a primary outcome measure that was similar to the one used in the independent evaluation, this could have been viewed as sufficient. However, the independent evaluation employed a continuous outcome measure to assess increased consumption of fruits and vegetables with an expectation of observing an increase of 0.30 cups. In contrast, INN employed a dichotomous outcome measure to assess changes in student’s preferences of fruits and vegetables; these items were used to construct a preference index that was reported as a proportion. Other factors held constant, measures with a normal distribution (continuous measures) provide greater statistical power than those with a binomial distribution (dichotomous measures). Accordingly, the INN evaluation may have been underpowered.

The third row of Exhibit IV-4 compares the primary outcome measures of the two evaluations. The independent evaluation surveyed parents and caregivers about their third-grade child’s at-home fruit and vegetable consumption and related dietary attitudes and behaviors. The primary outcome, fruit and vegetable consumption, was assessed with a continuous measure ranging from 0 to 3 cups and included a visual analog to cue parents and caregivers’ recall. The primary outcomes for INN consist of a summary index of fruit and vegetable preference, with sub-indices for fruit preference and vegetable preference. The indices were constructed by calculating the mean preference rating across all included items where

the student indicated either liking or disliking the presented food. This approach was followed to overcome the missing data problem that arose from the response option “?”, which indicated that the child did not recognize the fruit or vegetable. The INN survey also included secondary outcomes that assessed mediating factors in the process of dietary change (e.g., self-efficacy, knowledge). These variables are similar to the mediating factors in the evaluation framework for the independent evaluation. This section highlights the following scales and items from the INN survey:

- Fruit and vegetable preference index (scale range: 0.00–1.00),
- Fruit preference index (scale range: 0.00–1.00),
- Vegetable preference index (scale range: 0.00–1.00),
- Child reports that s/he likes fruit as a snack (item response range: 1–3),
- Child reports that s/he likes vegetables as a snack (item response range: 1–3),
- Child reports that s/he likes trying new fruits (item response range: 1–3),
- Child reports that s/he likes trying new vegetables (item response range: 1–3),
- Child reports s/he is able to eat fruit as a snack at home (item response range: 1–3),
- Child reports s/he is able to eat vegetables as a snack at home (item response range: 1–3),
- Child reports s/he is able to drink milk as a snack at home (item response range: 1–3),
- Child accurately identifies low-fat or skim milk as the healthy choice (item response range: 1–2).

The fourth row of Exhibit IV-4 compares and contrasts data collection methods. As previously noted, INN initially proposed collecting child and parent or caregiver data; INN yielded parent and caregiver data collection to the independent evaluation and focused their efforts on school-based data collection among third-grade students. Both evaluations collected data prior to program implementation to establish a baseline and again following the conclusion of programmatic activities to assess program effects. Data collection was coordinated between INN and the independent contractor’s team so that at the conclusion of the independent evaluation there would be an opportunity to match parent or caregiver and child data for additional analyses.

The fifth and sixth rows of Exhibit IV-4 compare and contrast the impact estimate and data analysis procedures. Both evaluations employed two-condition comparisons with repeated measures to assess change among the three study groups. Impact estimates provide evidence of (1) the benefits of the standard intervention (BASIC) relative to the no-treatment condition (comparison group), (2) the enhanced intervention (BASIC Plus) relative to the no-treatment condition (comparison group), and (3) the standard intervention (BASIC) relative to the enhanced intervention (BASIC Plus). The analysis conducted for the independent evaluation accounts for the nesting of individual-level observations. When analyses are conducted on data from respondents who are embedded in predefined social units (e.g., schools), 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 schools may have similar family economics or shared values, and they certainly have shared experiences that are unique to the school (e.g., cafeteria, 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, Hannan, & Baker, 1996; Murray, 1998). By specifying schools as the between-subjects factor and employing a mixed modeling approach, one can account for potential correlation among individuals within the same school and provide *p*-values from tests of program impacts that are accurate. Data analyses provided by INN

included descriptive statistics detailing study participants; Pearson chi-square tests showed no statistically significant differences among the study conditions in terms of gender. No other comparative tests were available based on the INN data collection. In contrast to the independent evaluation, the impact analyses provided by INN specified children as the unit of analysis and made no adjustments to account for correlated data at the school level; thus, the *p*-values reported in their evaluation may be inflated. While the INN evaluation plan did not include an assessment of the potential contribution of FFVP as the independent evaluation did, it is questionable whether such an assessment was warranted. FFVP teaches students about the importance of good nutrition and promotes fruit and vegetable consumption but is not designed to change the intermediate, social-cognitive outcomes such as preference and self-efficacy that were targeted by the INN survey.

**Exhibit IV-4. Comparison of Study Designs for the INN and Independent Evaluations**

Study Design Characteristics	INN Evaluation	Independent Evaluation
Comparison strategy	Quasi-experimental research design with 11 schools in each of three conditions.	Quasi-experimental research design with 11 schools in each of three conditions.
Sampling strategy and required sample size	Third-grade students attending schools in four counties. Power analysis was not conducted; INN emulated sample sizes estimated by the independent evaluation.	Parents and caregivers of third-grade students attending schools in four counties. Power analysis specified 11 schools in each condition with 242 complete (pre- and post-intervention) surveys per school.
Primary outcome measure(s)	Children will report stronger preferences for fruits and vegetables, increased willingness to try new fruits and vegetables, and increased ability to select healthy snacks (including milk) at home (student survey).	Increase in average daily at-home consumption of fruits and vegetables combined by approximately 0.30 cups.
Data collection	Pre- and post-intervention surveys administered in person by teachers.	Pre- and post-surveys were mailed to participants, and nonrespondents were contacted by telephone.
Impact estimate	Pre- and post-test change between BASICS and BASICS Plus groups, between BASICS and comparison group, and between BASICS Plus and comparison groups.	Pre- and post-test change between BASICS and BASICS Plus groups, between BASICS and comparison group, and between BASICS Plus and comparison groups.
Data analysis	Fixed-effects between-subjects analysis of variance was employed to compare post-pre differences across the three arms, using F-tests to assess overall differences among the three arms and Bonferroni multiple comparisons to provide conservative estimates.	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 the post-intervention survey and those who did not.

Tables IV-5 and IV-6 provide the results of INN’s self-evaluation. Table IV-5 shows the pre-intervention and post-intervention means and standard errors for each study condition, as well as the *t*-statistic and *p*-value to estimate the change within the condition. Significant pre-intervention to post-intervention changes were observed among the three study groups for the items assessing the fruit index and knowledge of healthy milk choice. Significant pre-intervention to post-intervention changes were also

observed among the BASICS Plus group and the BASICS group for the vegetable index, the combined fruit and vegetable index, and liking vegetables as a snack. The latter finding, however, was not in the predicted direction, with children reporting less liking of vegetables as a snack at follow-up.

Table IV-6 summarizes program impacts from the INN self-evaluation as the differences between study conditions. In this table, the first column identifies the outcome variable. The next three columns provide the difference-in-difference point estimate and the 95 percent confidence interval around those estimates. Where the confidence interval does not include 0.00, the estimate is statistically different from 0. The last column reports the omnibus *F*-statistic and *p*-value for each outcome variable. The results of the INN evaluation indicate small but statistically significant impacts on preferences for fruits, vegetables, and fruits and vegetables combined among students in the BASIC Plus group compared to students in the comparison group. The INN evaluation did not show any significant impacts on preferences for fruits and vegetables among students in the BASICS group compared to students in the comparison group or between students in the BASICS Plus group and students in the BASICS group. The results of the INN evaluation also indicate significant increases in knowledge of the benefits of low-fat milk products among students in the BASICS and BASICS Plus groups compared to the comparison group. Neither the BASICS Plus or the BASICS programs demonstrated measurable change among the other program mediators or outcomes. In summary, the INN evaluation found that the BASICS Plus program led to change in student preferences for fruits and vegetables, while the BASICS program did not. This pattern of finding suggests that the addition of the social marketing component in the BASICS Plus intervention was necessary to achieve program effects at a level large enough to note observable differences from the comparison group.

The independent evaluation (findings reported in Chapter 3) found statistically significant impacts on fruit, vegetable, and combined fruit and vegetable consumption comparing students in the BASICS Plus group to students in the comparison group and on fruit and combined fruit and vegetable consumption among students in the BASICS group compared to students in the comparison group. The independent evaluation identified few statistically significant differences between the BASICS and BASICS Plus conditions, and these were limited to use of low-fat milk and variety of fruit eaten. This pattern of findings suggests that the BASICS program is sufficient to achieve most of the primary program impacts, but that the addition of the social marketing component provided some benefit over the impact from the BASICS program alone.

It is important to consider the comparisons detailed above when attempting to reconcile the different conclusions obtained by the two evaluations. Specifically, the INN evaluation collected data in a school-based setting from children participating in the BASICS program, while the independent evaluation collected data from the parents and caregivers of these children; additionally, the primary outcomes of the INN evaluation were preferences for fruits and vegetables, while the independent evaluation went further and assessed the at-home dietary intake of fruits and vegetables. Differences in results may also be related to the different types of measures used by the two evaluations. Because of these differences, the reader is urged to consider the complementary nature of the two evaluations.

**Table IV-5. Results for INN Self-Evaluation: Study Condition Means and Change Over Time**

Outcome	BASICS Plus			BASICS			Comparison		
	Pre Mean (SE)	Post Mean (SE)	<i>t</i> ( <i>p</i> -value)	Pre Mean (SE)	Post Mean (SE)	<i>t</i> ( <i>p</i> -value)	Pre Mean (SE)	Post Mean (SE)	<i>t</i> ( <i>p</i> -value)
Fruit and vegetable preference index	0.63 (0.01)	0.67 (0.01)	4.81 (0.01)**	0.64 (0.01)	0.66 (0.01)	3.06 (0.01)**	0.65 (0.01)	0.66 (0.01)	1.12 (0.26)
Fruit preference index	0.79 (0.01)	0.84 (.01)	5.105 (0.01)**	0.82 (0.01)	0.85 (0.01)	3.13 (0.01)**	0.84 (0.01)	0.86 (0.01)	2.01 (0.05)*
Vegetable preference index	0.52 (0.01)	0.57 (0.01)	4.59 (0.01)**	0.52 (0.01)	0.55 (0.01)	2.55 (0.01)**	0.52 (0.01)	0.53 (0.01)	0.80 (0.43)
Like fruit for snack	2.48 (0.03)	2.51 (0.03)	0.69 (0.49)	2.49 (0.03)	2.49 (0.03)	0.33 (0.76)	2.52 (0.29)	2.56 (0.29)	-0.52 (0.61)
Like vegetable for snack	1.88 (0.04)	1.78 (0.04)	-2.75 (0.01)**	1.84 (0.04)	1.72 (0.04)	-2.46 (0.01)**	1.84 (0.04)	1.82 (0.04)	-0.15 (0.88)
Try new fruit	2.50 (0.03)	2.54 (0.03)	1.65 (0.10)	2.64 (0.03)	2.60 (0.03)	-0.82 (0.41)	2.57 (0.03)	2.52 (0.04)	-0.85 (0.40)
Try new vegetable	2.08 (0.04)	2.03 (0.04)	-0.73 (0.47)	2.13 (0.04)	2.04 (0.04)	-1.74 (0.08)	2.03 (0.04)	1.97 (0.04)	-1.63 (0.10)
Eat fruit at home (self-efficacy)	2.67 (0.03)	2.71 (0.03)	1.04 (0.30)	2.68 (0.03)	2.70 (0.03)	1.06 (0.29)	2.69 (0.03)	2.73 (0.03)	0.87 (0.37)
Eat vegetables at home (self-efficacy)	2.13 (0.04)	2.19 (0.04)	1.39 (0.17)	2.10 (0.04)	2.14 (0.04)	0.85 (0.40)	2.18 (0.04)	2.26 (0.04)	1.59 (0.11)
Choose milk at home (self-efficacy)	2.59 (0.03)	2.61 (0.04)	0.87 (0.39)	2.59 (0.04)	2.55 (0.04)	-0.60 (0.55)	2.51 (0.04)	2.53 (0.04)	0.83 (0.41)
Milk Knowledge	0.60 (0.03)	0.78 (0.02)	5.05 (0.01)**	0.68 (0.03)	0.75 (0.02)	2.11 (0.04)*	0.66 (0.03)	0.61 (0.03)	-2.29 (0.02)*

\* Indicates statistical significance if the *p*-value is less than or equal to 0.05.

\*\* Indicates statistical significance if the *p*-value is less than or equal to 0.01.

Notes: SE = standard error; *t* and *p*-value for estimating the change over time.

Source: INN Evaluation Report, 2012.

**Table IV-6. Results for the INN Self-Evaluation: Between-Condition Program Impacts**

<b>Outcome</b>	<b>BASICS Plus vs. BASICS Impact Estimate (95% confidence interval)</b>	<b>BASICS Plus vs. Comparison Impact Estimate (95% confidence interval)</b>	<b>BASICS vs. Comparison Impact Estimate (95% confidence interval)</b>	<b>Omnibus <i>F</i>-statistic (<i>p</i>-value)</b>
Fruit and vegetable preference index	0.02 (−0.02, 0.05)	0.04 (0.00, 0.07)*	0.02 (−0.02, 0.06)	3.32 (0.04)*
Fruit preference index	0.02 (−0.01, 0.06)	0.03 (0.00, 0.07)*	0.01 (−0.02, 0.05)	3.09 (0.05)*
Vegetable preference index	0.02 (−0.02, 0.07)	0.05 (0.00, 0.09)*	0.02 (−0.02, 0.07)	3.91 (0.04)*
Like fruit for snack	0.01 (−0.11, 0.14)	0.01 (−0.12, 0.13)	−0.01 (−0.14, 0.12)	0.03 (0.97)
Like vegetable for snack	0.00 (−0.14, 0.15)	−0.11 (−0.25, 0.04)	−0.11 (−0.26, 0.04)	1.97 (0.14)
Try new fruit	0.10 (−0.04, 0.24)	0.10 (−0.04, 0.24)	0.00 (−0.14, 0.15)	2.07 (0.13)
Try new vegetable	0.05 (−0.12, 0.22)	0.04 (−0.12, 0.21)	−0.01 (−0.18, 0.17)	0.32 (0.73)
Eat fruit at home (self-efficacy)	−0.01 (−0.13, 0.11)	0.00 (−0.12, 0.13)	0.01 (−0.11, 0.14)	0.03 (0.98)
Eat vegetables at home (self-efficacy)	0.02 (−0.14, 0.19)	−0.02 (−0.19, 0.15)	−0.04 (−0.22, 0.13)	0.19 (0.83)
Choose dairy milk at home (self-efficacy)	0.00 (−0.09, 0.22)	0.00 (−0.16, 0.15)	−0.07 (−0.23, 0.09)	0.68 (0.51)
Milk knowledge	0.08 (−0.02, 0.19)	0.23 (0.12, 0.34)*	0.14 (0.03, 0.25)*	12.96 (0.01)**

\* Indicates statistical significance if the *p*-value is less than or equal to 0.05.

\*\* Indicates statistical significance if the *p*-value is less than or equal to 0.01.

Source: INN Evaluation Report, 2012.

## E. Lessons Learned

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

Both the INN program administrator and evaluation manager emphasized the importance of conducting program evaluation and have a history of evaluating the BASICS program. At the same time, both identified facilitators and several critical challenges they have faced in implementing such an evaluation, particularly because the evaluation includes a two-pronged effort: school-based youth and social marketing. The most commonly reported facilitators and challenges are described below.

#### ▲ Facilitators

##### *a. Training was high quality and effective, ensuring consistent data collection*

The program administrator reported that the steps taken to provide high-quality data collector training for direct educators and classroom teachers was effective in accomplishing their data collection goals. Based on observations of the data collectors' administration of the pre- and post-surveys, she stated that the training that they received helped to ensure that the data were collected consistently and appropriately. She specifically cited the emphasis placed on administering the surveys in a manner that would reduce response bias to the greatest extent possible (e.g., paying close attention to intonation while reading survey questions).

*"[The training] Webinar worked out well. The good thing about a Webinar is that teachers could go back to the information at any time."*

—evaluation manager

The evaluation manager stated that the process was very well-organized by the program administrator, which afforded a smooth evaluation process.

##### *b. The evaluators were involved at the early stages and planning of implementation*

The program administrator emphasized the importance of involving the evaluation managers during the early planning stages of program implementation. Specifically, she indicated that program development and program evaluation could not be developed separately because of their obvious overlap. She indicated that the evaluation needed to be high quality and useful but also practical in terms of program implementation.

*"[They] had strong protocols and people that realized that protocols were there for a reason. IDPH staff and evaluators have worked together for several years. That helps."*

—evaluation manager

Program evaluators from the University of Iowa and Iowa State University, as well as IDPH, worked with the program administrator. This team has developed a synergy that facilitates the effective execution of evaluation activities for INN.

#### ▲ Challenges

##### *c. Changes in classroom personnel*

Teacher absences due to maternity leave and the frequent use of substitute teachers in some classrooms were barriers to successful completion of extended lessons and evaluation activities, according to the

program administrator and evaluation managers. Since INN has no control over maternity leaves and substitute teachers filling in for the classroom teachers, there may be a role that the direct educators can play in ensuring that the extended lesson materials are covered and evaluation activities are conducted as planned.

***d. Challenges related to evaluating children***

The evaluation managers acknowledged that although there are challenges in evaluating children, the team opted for an in-class design, as it was most practical from a programmatic perspective. The evaluation managers specifically noted the potential for positive response bias when evaluating children. One of the evaluation managers thought that the children were sometimes answering questions the way they thought the direct educator or classroom teacher wanted them to answer.

***e. Minimal control over evaluation activities in the classroom***

The evaluation managers noted that the greatest challenge to implementing an evaluation in the school setting is the limited control that evaluators have over implementation of the evaluation in the classroom. They noted the importance of maintaining rapport with the schools and, subsequently, the need to be flexible with regard to scheduling class time for this activity. However, despite concerns related to the timing of pre- and post-survey administration, process information provided by INN indicates that the team was generally able to administer the surveys as planned—the same number of days from the start and completion of the intervention in each of the schools.

***f. Limited control over data entry***

The data were entered by a company contracted by INN. The evaluation manager reported that the company had some issues and did not get the data back in a timely manner. Some of the data were double entered, and one of the evaluation managers worked directly with the data entry business to rectify the problem.

*“If the data entry is in house, you know what’s going on—can check in on what’s happening.”*

—evaluation manager

The evaluation manager really likes to have the data at her location to be able to understand how it has been cleaned and entered. In her past experience, she has signed off and dated every editing change in the data.

*“You want to make sure that everyone is doing things in the same way and that it meets the criteria that have been established.”*

—evaluation manager

**2. Intended Use of Evaluation Results**

Both the program administrator and evaluation manager indicated that they have given a great deal of thought to utilizing the current data from the BASICS program, and they are working on the best analysis approach for these data. They also indicated that they plan to share this information more broadly by presenting key findings to professional groups, submitting abstracts to present findings at professional conferences, and submitting manuscripts to peer-reviewed journals. INN presented data from the BASICS program at the Iowa Academy of Nutrition and Dietetics Annual Conference in November 2012. INN is also planning to submit manuscripts of its study findings to peer reviewed journals.

INN is also planning to submit manuscripts of its study findings to peer reviewed journals.

### **3. INN's Future Evaluation Plans**

Both the program administrator and the evaluation manager recognize that evaluation is critical to ensuring that they can continue to improve the BASICS program. For this reason, they plan to continue evaluating the program and modifying the evaluation methodology as necessary based on their findings.

To address some of the challenges noted by key informants, the program administrator and evaluation manager identified several ways in which they plan to modify or enhance the evaluation of the BASICS program:

- Plan to improve evaluation of the BASICS classroom teacher extended lessons. While they collect data about BASICS materials covered and dose, the evaluation team expressed a need to better understand how classroom teachers incorporate BASICS into their curriculum. There appears to be a great deal of variability in intensity and dose of the extended lessons taught in the classroom. The program administrator stated that clarifying expectations of the classroom teachers (e.g., intensity, dose) will strengthen the impact of BASICS.
- The evaluation team, composed of INN administrators and evaluation managers, plans to compare BASICS evaluation data from the last 3 years to examine common themes and challenges. This analysis will assist with strategic planning around program content, implementation, and evaluation.
- Moreover, INN plans to maintain those aspects of the evaluation process that worked well (e.g., data collector training) and try to limit the amount of class time spent on evaluation, rather than on nutrition education, without compromising the quality of the evaluation.

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

A well-designed impact evaluation accomplishes several tasks. It permits 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 the INN, this study identified the following as future opportunities for improved evaluation within the financial and personnel constraints of SNAP-Ed programs.

#### **Conduct a priori sample size estimation matched to the study participants and the anticipated measure of program effects**

INN statisticians consulted with the Altarum and RTI team members who conducted a priori sample size calculations for the independent evaluation and used the same sampling plan that was employed by the independent evaluation. However, sample size calculations should be conducted using information that is specific to the measure being used to assess change and the population being sampled. The estimated sample size for the independent evaluation was developed to determine the number of parent and caregiver respondents needed to observe a minimum change of 0.30 cups of fruit and vegetables combined in their child's in-home consumption. Accordingly, the identified sample size may not have been appropriate to provide the same level of assurance (statistical power) when evaluating the program's impacts on children's self-reported preferences for fruits and vegetables.

### **Express evaluation objectives that specify the desired or expected amount of behavior change based previous experience or relevant literature**

INN did not express evaluation objective in quantifiable terms. 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. INN could have examined measures from prior program implementations to determine how much change in fruit and vegetable preference was realistic and achievable; alternatively, they could have examined the published literature and assess the magnitude of change in programs similar to the intervention under consideration. Systematic reviews, such as the meta-analyses published by Knai, Pomerleau, Lock & Mckee (2006) and Thomson & Ravia (2011), can be very useful. These papers provide a range of values for studies similar to the BASICS program. The review by Snyder and colleagues (Snyder, Hamilton, Mitchell & Kiwanyka-Tondo, 2004) provides insight in the potential effects of the social marketing component of the BASICS Plus interventions. 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- and worst-case estimations to help in other facets of program planning.

### **Consider response option categories that are more sensitive to change**

Fruit and vegetables preference items in the INN survey provided students with a response option set that included a smiley face (if you like to eat it), a frowny face (if you do not like to eat it), and a question mark (if you do not know what it is). Two problems with this response option set are of note. First, the use of the question mark is equivalent to a response of “do not know” and was treated by INN analysts as missing data. The presence of missing data is a nuisance for the assessment of single items and is minimal when missing data is minimal. The presence of missing data is more problematic for analysts attempting to develop multi-item scales, since varying degrees of “missingness” across items can lead to the creation of biased measures. Second, the dichotomous response option may not be appropriately sensitive to change. Sensitivity refers to the ability of the measure to detect variation associated with the measured outcome. A continuous response set may have allowed the INN evaluation to detect more nuanced changes in children’s preferences.

### **Employ statistical analyses that are matched to the study design**

The INN evaluation team employed a Repeated Measures Analysis of Variance approach to estimate program impacts. This approach did not account for the complexities of the evaluation design (e.g., clustering of children within schools). Accordingly, results of their analyses should 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 that adjust for clustering by appropriately inflating the standard error can be applied to test statistics. Blitstein, Hannan, Murray, & Shadish (2005) describe methods for post hoc correction.

## Chapter V • Conclusions and Discussion

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INN developed the BASICS curriculum more than a decade ago, and it has evolved into a statewide SNAP-Ed nutrition education initiative implemented throughout Iowa. The BASICS curriculum offers nutrition and physical activity education to SNAP participants and eligible children. The goal of BASICS is to provide educational programming that increases the likelihood that SNAP audiences can make healthy food choices consistent with the Dietary Guidelines for Americans. To meet this goal, the INN offers direct and indirect nutrition education in schools, combined with social marketing strategies employed in the community. The BASICS program was comprised of three primary modes of educational delivery, while the BASICS Plus program adds a fourth component through social marketing.

The implementation period of both BASICS and BASICS Plus took place from November 2011 to May 2012, reaching 1204 students from 55 classrooms in 22 schools. Parents and caregivers were reached with indirect educational programming by receiving take-home materials distributed to their children at school and by the multichannel social marketing campaign. The independent evaluation was designed to examine the implementation and impact of the BASICS Plus program, delivered in Des Moines, as compared to the BASICS intervention, delivered in Council Bluffs and Waterloo, and included comparison of both interventions to a no treatment group. This final chapter presents a summary and discussion of the key findings.

### A. Key Process Evaluation Findings: Factors Supporting Implementation —BASICS Curriculum

Direct educators reported that the BASICS curriculum was relatively easy and straightforward to implement. Independent evaluators and several key informants identified factors that contributed to the success of the implementation:

- ▲ **Strong subject matter background and enthusiasm of direct educators.** As observed by the independent evaluators, the direct educators were exceptionally qualified for their position and enthusiastic about the subject matter and interaction with the students. They had varying levels of educational background but a consistent commitment to the program. Moreover, the direct educators provided input into the BASICS curriculum before implementing it, giving them a higher level of commitment to the program in general.
- ▲ **Multilayered messaging and message quality.** Strong, cohesive messages provided in the classroom by the direct educator were combined with the enhanced lessons taught by the classroom teacher and further supplemented by consistent messaging in the school environment. This multilayered approach assisted with the communication of key messages in the BASICS curriculum. Repetition, both verbal and visual, was the strategy employed by INN to reinforce key messages.
- ▲ **Quality control and training.** Implementation of the BASICS curriculum was enhanced by the training and technical assistance provided for direct educators by INN. This training and technical assistance is based on the expressed needs of direct educators and conducted in a variety of ways (e.g., face-to-face training, Webinars, e-mail, phone). INN allows for flexibility and creativity in the implementation process, yet provides enough structure to maintain quality control and fidelity.

## B. Key Process Evaluation Findings: Challenges to Implementation— BASICS Curriculum

Nutrition observations in the classroom by independent evaluators and key-informant interviews identified some challenges to the implementation of the BASICS curriculum as planned:

- ▲ **Role of classroom teacher in extending the BASICS lessons.** There was some variation in how classroom teachers implemented the BASICS extended lessons. This variation included exposure to the lessons that ranged from 0 to 120 minutes, materials used in the lessons, and ways in which the lessons were incorporated into the standardized curriculum. The classroom teacher survey highlighted the fact that some teachers had more of a commitment to the program than others. The survey also revealed that the majority of teachers had limited time to fulfill expectations outside of their curriculum. Teachers who were able to take the time and had a commitment to the extended lessons were creative in their approach to integration of the lessons into their own curriculum.
- ▲ **Engagement of parents and caregivers in the intervention.** The BASICS team noted that effectively reaching parents and caregivers was both critical to the program’s success and difficult to achieve. This is perhaps evidenced by the low rates of parents and caregivers who read all of the family newsletters, as well as the low percentage of parents and caregivers who completed the “BE A MILK SUPERSTAR!!” and the bingo card take-home activities. One contributing factor to this low percentage is that parents and caregivers said that they did not see the educational materials that were intended to be brought home by the students. However, parents and caregivers noted that they were pleased that their children were involved in the BASICS program and felt that their children had expressed understanding and enthusiasm for the messages in the lessons.
- ▲ **External factors that inhibit potential for behavior change.** In focus group interviews, parents and caregivers noted two barriers to improving their children’s nutrition-related behaviors: cost and time constraints related to shopping for and preparing healthy food items.

## C. Key Process Evaluation Findings: Factors Supporting Implementation —Social Marketing Campaign

The INN has both a depth of experience and strong organizational skills with which to implement a multilayered approach to messaging in the community environment. Observations in supermarkets and in the community environment, as well as key-informant interviews provided insights into factors that supported the implementation of the social marketing campaign:

- ▲ **Strong community partnerships.** The INN has cultivated an effective network of partners in accordance with their mission as a nutrition network. These partnerships include both public and private partners who assist with the implementation of their programming. These partnerships also contribute significantly to the ability to provide consistent messaging in the school and community environment. Children and family members hear and see consistent messages in this multilayered approach to nutrition education.
- ▲ **Organized multilayered approach to social marketing.** The social marketing campaign included point-of-purchase signage and demonstrations at supermarkets; billboards and bus shelter signage in SNAP-Ed-qualified census tracts; television and radio ads; a family event identified as Family Nights Out held at the participating child’s school; materials in schools, such

as posters and banners; and materials at community organizations such as WIC offices and YMCAs, including posters and window clings. The experience and skills of the INN team supported the implementation of a complex and multifaceted social marketing campaign to support the BASICS Plus curriculum.

## **D. Key Process Evaluation Findings: Challenges to Implementation— Social Marketing Campaign**

Observations in participating supermarkets and in the community environment by independent evaluators and interviews with key informants identified some challenges to the implementation of the social marketing campaign as planned:

- ▲ **Lack of formative evaluation related to use of delivery channels.** Focus group interviews with parents and caregivers underscored the need for formative research to determine the most appropriate delivery channels for the social marketing campaign. Although many parents and caregivers remember seeing the campaign messages on billboards, they did not recall seeing any social marketing signage in local supermarkets, even though there were six participating supermarkets with very visible signage. Supermarkets also proved to be more problematic for a variety of reasons, including difficulty in obtaining permission to post signage from some store managers or supermarket headquarters; gaining permission to post of signage; tracking signage to ensure that it had not been taken down by store staff or, in the case of floor slicks, that they had not worn off before the campaign was over; taking the signage down at the end of the campaign; and overall staff time to implement the social marketing campaign in supermarkets. However, it remains unknown whether stores experienced increased sales associated with the signage associated with the social marketing campaign. Subsequent recall may not indicate the effectiveness of a point-of-purchase intervention.
- ▲ **Per participant cost of social marketing campaign.** The per-participant cost of the social marketing campaign was approximately \$67.48.<sup>32</sup> This cost represents the cost of social marketing separate from the cost of implementation of the BASICS curriculum. This per-participant cost is based on the social marketing campaign reaching BASICS program children and their families in Des Moines county (the location of the BASICS Plus intervention) for a total of 3,054 participants.<sup>33</sup>

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<sup>32</sup> The number of family members reached by the BASICS Plus program for the purpose of calculating the per-participant cost of the social marketing campaign is based on a household size of 4.84 (Table III-1: Baseline Demographic Characteristics for Parent and Caregiver Respondents and Their Children Who Participated in the BASICS Evaluation—Overall and by Condition). The calculation is thus 631 BASICS Plus child participants x household size of 4.84, providing an estimated total reach of 3,054.

<sup>33</sup> Alternatively, if the social marketing cost per child were based on the number of SNAP-eligible children who participated in the BASICS curriculum in Des Moines schools (not just the BASICS Plus schools in the independent evaluation), the total child reach is estimated at 4,507. The number of family members reached by the BASICS Plus program for the purpose of calculating the per-participant cost of the social marketing campaign is based on a household size of 4.84 (Table III-1: Baseline Demographic Characteristics for Parent and Caregiver Respondents and Their Children Who Participated in the BASICS Evaluation—Overall and by Condition). The calculation is thus 4,507 child participants x household size of 4.84, providing an estimated total reach of 21,813. The estimated cost per child participant and their family members for the social marketing component in this scenario is \$9.44.

- ▲ In spite of a larger potential reach, the total cost for the social marketing campaign, including planning, design, and implementation was \$206,087.82. This emphasizes the need for careful formative research on the target audience to determine the most effective (and most cost-effective) means of conveying messages to the target audience. Identifying the most likely channels that will reach low-income participants will, in the end, save program dollars.

## **E. Key Impact Evaluation Findings**

The goal of the independent evaluation was to assess the impacts of the BASICS and BASICS Plus programs on children's daily at-home consumption of fruits and vegetables. This was accomplished by first comparing each program to a no-treatment comparison group and then by comparing the two programs to each other. The impact analyses found that both programs had statistically significant impacts on children's daily at-home consumption of fruits and vegetables and related dietary behaviors relative to the no-treatment comparison group based on parent and caregiver reports. Findings suggest that both the BASICS and the BASICS Plus program led to higher consumption of fruits and vegetables (combined) and fruits relative to consumption levels reported among the comparison group. Similarly, both the BASICS and the BASICS Plus program led children to eat a variety of fruits more days of the week than children in the comparison group. The BASICS Plus program also led to higher consumption of vegetables, a greater likelihood of using 1 percent or skim milk, and eating a variety of vegetables more days per week relative to the comparison group. There were no significant differences in parent and caregiver behaviors or household variables such as the availability of fruits and vegetables between either the BASICS program and the comparison group or the BASICS Plus program and the comparison group.

The impact analysis also compared the BASICS program to the BASICS Plus program. The aim of this analysis was to determine whether the social marketing component of the BASICS Plus program provided significant added benefit. Findings of the impact analysis suggest that the BASICS Plus program had a statistically significant effect on the likelihood of using 1 percent or skim milk and on children's willingness to try new fruits relative to the BASICS program. No other measured outcomes differed at a statistically significant level between the BASICS and BASICS Plus program.

In summary, these findings suggest that the implementation of the BASICS program produced significant and meaningful changes in a variety of outcomes related to children's dietary behaviors and that the social marketing component of the BASICS Plus program provided some additional measureable effects, most notably related to vegetable consumption and the use of 1 percent or skim milk.

## **F. Key Findings from the Assessment of the INN's Self-Evaluation**

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

- ▲ Strengths of the INN'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, and few missing data for the impact analysis.
- ▲ Weaknesses included research objectives that were not stated in quantifiable terms (i.e., not expressed in a way that could be used to determine sample size), response options that may not

have been sufficiently sensitive to change, and data analyses that did not fully account for the complexity of the research design.

The INN evaluation found a positive impact on children's preferences for fruits and vegetables and the FNS independent evaluation found a positive impact on children's at-home consumption of fruits and vegetables. Despite the differences in measured outcomes, both evaluations led to the conclusion that the interventions implemented by INN are valuable for improving the quality of children's diets.

## **G. Recommendations**

When comparing the two sets of results presented in this report, it is important to consider that the differences in their conclusions may be due to the unique aims, target populations, and measures employed in each evaluation. Overall, the evaluation study findings suggest that the BASICS program developed and implemented by INN can improve nutrition-related outcomes among third-grade children. Data from the INN self-evaluation demonstrate the capacity of the BASICS Plus program to increase preferences for fruits and vegetables and food preferences have been shown to correlate strongly with dietary intake (Drewnowski & Hann, 1999). Data from the independent evaluation support this finding and indicate that the BASICS Plus program can increase children's fruit and vegetable consumption as well as some predisposing and enabling dietary factors. Additionally, the independent evaluation found that the BASICS program can produce many of the results obtained in the BASICS Plus program. The BASICS Plus program does provide additional benefits related to vegetable consumption and it increased the likelihood of children's using low-fat or skim milk. Accordingly, the BASICS Plus program can serve as a model of effective nutrition intervention for school children, with the caveat that there is a need for additional research assessing the value of the social marketing component of the program. IAs with limited resources may find that the BASICS program is sufficient to address the majority of their program's goals.

The results of the evaluation are encouraging and call for replication of the BASICS program. Independent replication from at least two different independent studies is typically encouraged to demonstrate efficacy and replication with different populations is encouraged to demonstrate effectiveness (Flay et al., 2005). This is especially true in the case of a quasi-experimental design, where it is not possible to eliminate all plausible alternative explanations for program impacts. For example, selection, history, or regression artifacts (Shadish, Cook, & Campbell, 2002) could have contributed to the measured impacts. Additional evaluation is also needed to better assess the unique contributions of the social marketing component.

## **H. Key Areas for Program Improvement**

While the independent evaluation found the BASICS and BASICS Plus programs had a significant positive impact on children's dietary behaviors and predisposing and enabling factors, to replicate this program in other States, SNAP-Ed IAs should consider the following actions for program improvement:

- ▲ Elicit input from classroom teachers to determine the most practical ways to gain commitment and adherence to integration of the BASICS extended lessons into the curriculum. Since the classroom teachers are key to the extended lesson component of the BASICS curriculum, gathering input from teachers about how to elicit more engagement will be crucial to effective implementation. Classroom teachers who effectively integrate the extended lessons into their classroom curriculum could serve as models for other teachers who struggle with how to do this. The INN could provide several models that teachers could choose from to meet the individual

needs of teachers. These models could provide assistance to states who may replicate the BASICS program into their SNAP-Education programs.

- ▲ **Conduct formative research to determine key delivery channels for the social marketing campaign.** Formative research can more effectively target the intended audience as well as saving resources by eliminating activities that will not effectively reach that audience. A multilevel social marketing campaign can be expensive and difficult to manage, especially if it includes some channels that are not necessary. Delivering messages to target audiences based on formative research will provide for a more effective and focused campaign that can complement other activities in the program.
- ▲ **Strategically examine the cost of the social marketing campaign.** Once formative research has been conducted and the most important elements of the campaign have been determined, program administrators can strategically examine the cost of the social marketing campaign. Are the most effective delivery channels being used? Are there channels that could be used that are less expensive than others yet just as effective? What time of year are certain types of channels most successful at engaging the participant? Program administrators must fine tune social marketing campaigns on a regular basis to determine whether they are on track with their target populations.

## I. Suggestions for improving evaluations

For future evaluations, it is suggested that INN review the measures that it uses to assess program impacts. First, INN could develop measures that are more sensitive to change. Using a response option based on a Likert scale or visual analog scale could offer greater discrimination and better capture program impacts. Second, INN could include measures of dietary behavior among students. BASICS and other SNAP nutrition education programs are designed to improve dietary intake. While attitudes and intentions are highly correlated and theoretically related to dietary behavior, direct measures of behavior would provide stronger evidence of program success. INN should also conduct sample size estimations based on their target population and anticipated program impacts. The data in this report, for example, provide reasonable benchmarks for program effects. The means and standard deviations presented herein can be used to determine sample sizes for future evaluation work.