Network for a Healthy California

Impact/Outcome Evaluation Project

(Statewide Aggregated Data)

FFY 2011

10/31/11

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Section B: State Nutrition Education Final Report Summary FFY 11

Section B. Final Report Summary for Evaluations.
Provide the information requested below for any significant evaluation efforts (costing greater than $400,000) that were completed during the previous year.

In FFY 2004, and pre-dating the current federal requirements, the *Network* asked contractors receiving over $500,000 in Federal Share to conduct outcome or impact evaluation to proactively demonstrate fiscal responsibility. The term "outcome" refers to evaluation conducted to assess change among individuals exposed to an intervention. The term "impact" refers to evaluation conducted to assess change in a group exposed to an intervention and a group not exposed to the intervention or an alternative intervention. Twelve contractors participated in the first year and in FFY 05 the *Network* lowered the participation threshold to $350,000 in Federal Share which resulted in a peak participation of 48 in FFY 07 and most recently to 42 in FFY 11. The 42 contractors in FFY 11 represented over $52 million in Federal funds, just over half of the *Network*'s federal funding. The total cost of the evaluations conducted by these 42 contractors was approximately $500,169 with a maximum of $148,421 for any single contractor. well below the USDA's reporting requirement for impact evaluation. In FFY 2008 USDA guidance specified "If any proposed SNAP-Ed evaluation activity exceeds $400,000 in a State in any year, it is highly recommended that the State agency include an impact assessment that meets the criteria described in the FNS Principles of Sound Impact Evaluation found at: www.fns.usda.gov/oane/menu/Published/NutritionEducation/Files/EvaluationPrinciples.pdf

1. Name of Project or Social Marketing Campaign
If multiple projects or campaigns were part of a single impact evaluation, please list them all.

ABC USD	School/District
Alameda County Health Care Services Agency	Local Health Department
Alameda County Office of Education (Coalition)	County Office of Education
Alhambra USD	School/District
Alisal Union School District	School/District
Berkeley USD	School/District
California State University, Chico Research Foundation - SCNAC	College/University
Compton USD	School/District
Contra Costa County Health Services	Local Health Department
Del Norte USD	School/District

East Los Angeles College	College/University
El Monte City School District	School/District
Fresno County Office of Education	County Office of Education
Hawthorne School District	School/District
Health Education Council	Local Food and Nutrition Education Project (non-profit)
Humboldt County Office of Education	County Office of Education
Huntington Beach Union High School District	School/District
Long Beach Unified School District	School/District
Long Beach, City of, Department of Public Health	Local Health Department
Los Angeles County Office of Education	County Office of Education
Los Angeles Trade-Technical College	College/University
Los Angeles Unified School District	School/District
Marin County, Dept. of Health and Human Services	Local Health Department
Merced Office of Education	County Office of Education
Monrovia Unified School District	School/District
Monterey County Health Department	Local Health Department
Montebello Unified School District	School/District
Newport-Mesa Unified School District	School/District
Orange County Health Care Agency	Local Health Department
Orange County Superintendent of Schools - Coalition	County Office of Education
Pasadena Unified School District	School/District
Riverside, County of, Health Care Services Agency	First 5 Children and Families Commission
San Bernardino County Superintendent of Schools	County Office of Education
San Francisco Unified School District	School/District
Santa Ana Unified School District	School/District
Shasta County Health and Human Services Agency, Public Health Branch	Local Health Department
Shasta County Office of Education	County Office of Education
Tulare County Office of Education	County Office of Education
Ukiah Unified School District	School/District
University of California, Cooperative Extension of Alameda County	University of California Cooperative Extension
Ventura Unified School District	School/District

2. Key Evaluation Impact(s)
Identify each impact being assessed by the evaluations. For example are SNAP-Ed participants more likely than non-participants to report they intend to increase their fruit and vegetable intake? Or do a greater proportion of SNAP-Ed participants choose low-fat (1% or skim) milk in the school cafeteria compared to non-participants?

The primary outcome for the impact evaluation project was fruit and vegetable consumption. The secondary outcomes were factors that influence it including those listed in Table 1.

Table 1: Impacts Assessed by the Evaluation and Number of Contractors Measuring Each	
1. Fruit and vegetable consumption (42)	6. Physical Activity (30)
2. Other food/beverage consumption (37)	7. Food Security (8)
3. Other dietary habits (37)	8. Self-rating of dietary habits (8)
4. Perceived parental consumption (30)	
5. Access to fruit and vegetables (30)	

3. Evaluation participants.
Describe the population being evaluated and its size. For example, all (1200) kindergarten students at public schools in one school district.

Forty-two contractors, in seven channels, collected data from a total of 10,232 individuals (Table 2). Most of the contractors provided nutrition education in schools whether or not they were in the school channel (Table 3). Overwhelmingly, both adult and youth contractors worked in schools, with most of this work occurring during the school day. The sample was 83% elementary and middle school-age youth, 6% high school-age youth, and 11% adults.

Table 2: Number of Matched Surveys, Intervention and Control, for All Contractors			
Channel of Impact/Outcome Evaluation Contractor	Number of Matched Surveys-Intervention	Number of Matched Surveys-Control	Total
School/District (19)	3,979	344	4,323
College/University (3)	865	372	1,237
County Office of Education (9)	2,322	262	2,584
Local Health Department (8)	982	45	1,027
First 5 Children and Families Commission (1)	331	0	331
University of California Cooperative Extension (1)	51	0	51
Local Food and Nutrition Education Projects (1)	679	0	679
Total (42)	9,209	1,023	10,232

Table 3: Number of Contractors Using Intervention/Control Sites				
	Youth Intervention Sites	Youth Control Sites	Adult Intervention Sites	Adult Control Sites
At School - School Day	30	11	10	3
At School - After School	4	0	4	2
At School - School Day and After School	4	0	0	0
Shelters	0	0	1	1
Public Housing	0	0	1	1
Individual Homes	0	0	1	0
Head Start	0	0	1	0
Emergency Food Assistance Sites	0	0	1	0
Community Health Centers	1	0	0	0
Other	3	0	0	0

4. Assignment to intervention and control or comparison conditions

a. **Describe the unit of assignment to intervention and control groups.**

For example, an intervention focused on kindergarten students may assign school districts, individual schools, classrooms, or individual student to intervention and control groups.

Most frequently, the site (e.g. the particular school setting) was the unit of assignment. Impact was assessed by measuring change in individuals that had a pre-test and a post-test.

b. Describe how assignment to intervention and control groups was carried out.

Be explicit about whether or not assignment was random. For example, ten kindergarten classrooms were randomly assigned to intervention and control groups.

Thirty-nine contractors recruited participants using **convenience sampling** methods. Three contractors endeavored to select schools or classrooms **randomly**.

c. Describe how many units and individuals were in the intervention and control groups at the start of the intervention.

A total of 10,232 individuals participated in the 42 evaluations. Of these, 9,209 received the contractor-specific intervention and 1,023 were in a control group selected by the contractor. Table 4 shows the individuals by age group.

- Intervention: 9,209 (90%)
- Control: 1,023 (10%)

Table 4: Individuals By Age And Condition Of Assignment

Age Category	Intervention Group Participants	Control Group Participants	Total
Youth, 8-13 years	7,703	779	8,482
High School, 14-17 years	407	199	606
Adult 18+ years	1,099	45	1,144
Total	9,209	1,023	10,232

5. Impact Measure(s)

For each evaluation impact, describe the measure(s) used. Descriptions should indicate if the focus is on knowledge, skills, attitudes, intention to act, behavior or something else. Each measure should also be characterized in terms of its nutritional focus, e.g. low fat food preparation, number of whole grain servings consumed, ability to accurately read food labels. Finally indicate if impact data were collected through observation, self-report, or another method.

Table 5 shows the tools used to measure the change in fruit and vegetable consumption, the number of contractors that used the tool and the number that showed a statistically significant difference.

Table 5. Measures of Fruit and Vegetable Consumption and Physical Activity for Adults, Teens, and Youth

Measures of Fruit and Vegetable Consumption for Adults[*] (author)	**Number of Contractors Using the Tool (Number with Significant Results for Fruit & Vegetables Combined)**
• *Food Behavior Checklist* (*FBC*)[1,2,3] and *Fruit and Vegetable Checklist* (*FVC*)[4]	12(7)
Measures of Fruit and Vegetable Consumption for Youth	
• *Network High School Survey* (i.e.*Youth Risk Behavior Survey* (*YRBS*)[6,7,8,9,10]	3(0)
• *Network Youth Survey* (i.e. *SPAN*, but coded differently)[5,6,7,8,9]	29(9)

a. Describe the points at which data were collected from intervention and control group participants.

For example, these points may include pre-test or baseline, midway through the intervention, post-test as intervention ends or follow-up some weeks or months after the intervention ends.

For most contractors, the pre-test took place before the beginning of intervention and post-tests took place after the last intervention session. The span of time between pre-test and post-test varied widely between contractors. For some it was just four weeks and for others, mostly schools, it was a full 9 months.

[*] The number of contractors in Table 4 adds up to 44 because one contractor's (Health Education Council) results were not aggregated due to use of a different survey and thus, are not reflected here; Del Norte USD, Marin County Health and Human Services, and Monrovia USD conducted impact/outcome evaluation with 2 age groups each.

6. Results

Compare intervention and control groups at each measurement point, by individual measure. Report the number of intervention and the number of control group participants measured at each point. Describe any tests of statistical significance and the results.

Fruit and Vegetable Consumption-Adults

The *Food Behavior Checklist* (*FBC*) and *Fruit and Vegetable Checklist* (*FVC*) were used to measure adult consumption of fruit and vegetables of 12 contractors. Both the FBC and the FVC use identical questions to measure fruit and vegetable behavior. These surveys were validated with low-income populations in California making them a strong measure of consumption for this evaluation. In FFY 11, contractors only used the *FBC* and *FVC* measuring consumption in cups. Contractors provided data using the *FBC* and *FVC* from 1,144 individuals in intervention and control. Results showed that 1,099 individuals receiving an intervention reported an increase of 0.54 cups of total fruits and vegetables as compared to an increase of 0.21 cups in 45 control subjects (Table 6). The increase in each fruit and vegetables alone, and total consumption of fruits and vegetables combined were statistically significant for the intervention group ($p<0.001$). Because contractors were asked to focus on increasing intervention sample sizes in FFY 11, control samples decreased, thus making the control an ineffective comparison group.

Table 6. *FBC* and *FVC* Combined Results in Cups, Intervention and Control

	N	Pre-test	Post-test	Difference	p-value
Intervention					
Total Consumption	1,099	2.47	3.01	0.54	0.000
Fruit	1,099	1.27	1.53	0.26	0.000
Vegetable	1,099	1.20	1.49	0.29	0.000
Control					
Total Consumption	45	2.43	2.64	0.21	0.300
Fruit	45	1.26	1.34	0.08	0.405
Vegetable	45	1.18	1.28	0.10	0.304

Fruit and Vegetable Consumption-Youth

A total of 29 contractors collected fruit and vegetable consumption data from 6,858 youth using the *Network Youth Survey*. Three contractors collected fruit and vegetable consumption data from 407 youth using the *Network High School Survey*. The *Network Youth Survey* utilizes fruit and vegetable questions from the *School Physical Activity and Nutrition Project* (*SPAN*). Results from the *Network*

Youth Survey show that youth receiving an intervention had a 0.27 increase in times per day they ate fruits and vegetables (p<0.001) (Table 7). Increases in fruit alone and vegetables alone were also significant (p<0.001). Juice did not show a significant increase (p=0.392). Results for youth in the control group (n=779) showed a significant decrease in total fruits and vegetables and vegetables alone (p=0.030 and p=0.011). Though not significant, fruit and juice consumption also decreased for this group.

Table 7. *Network Youth Survey* Combined Results, Intervention and Control

	N	Pre-test	Post-test	Difference	p-value
Intervention					
Total Consumption	6,858	5.00	5.27	0.27	0.000
Fruit	6,903	1.89	2.07	0.18	0.000
Vegetable	6,864	1.77	1.85	0.08	0.000
Juice	6,858	1.33	1.35	0.02	0.392
Control					
Total Consumption	779	5.13	4.85	-0.28	0.030
Fruit	781	1.98	1.88	-0.10	0.124
Vegetable	779	1.86	1.70	-0.16	0.011
Juice	781	1.31	1.24	-0.04	0.507

Fruit and Vegetable Consumption-High School

*T*he *Network High School Survey* utilizes six fruit and vegetable consumption questions from the *Youth Risk Behavior Survey* (*YRBS*). Data from high school students receiving the intervention (n=407) show that fruit, vegetable, and juice consumption were not significantly impacted (p=0.888, p=0.881, and p=0.303). In fact, fruit and vegetables alone showed very small declines. Among the control group (n=199), results were very similar. Fruits and vegetables alone decreased, leading to an overall non-significant decrease in consumption of 0.03 times/yesterday (Table 8).

Table 8. *Network High School Survey* Combined Results, Intervention and Control					
	N	**Pre-test**	**Post-test**	**Difference**	**p-value**
Intervention					
Total Consumption	407	8.77	8.82	0.05	0.851
Fruit	409	2.42	2.41	-0.01	0.888
Vegetable	407	4.32	4.30	-0.02	0.881
Juice	410	2.01	2.11	0.10	0.303
Control					
Total Consumption	199	8.26	8.23	-0.03	0.897
Fruit	199	2.27	2.21	-0.06	0.629
Vegetable	199	4.06	3.87	-0.19	0.322
Juice	199	1.94	2.14	0.20	0.145

One contractor, Health Education Council, used the *School Physical Activity and Nutrition Project* (*SPAN*) questionnaire with a different set of response choices than were used on the *Network Youth Survey*. Because they were the only contractor to use this instrument in FFY 11, their results cannot be combined with other contractors. Their sample of 679 intervention participants showed a total fruit and vegetable increase of 0.09 times/yesterday, however this was not significant (p=0.524).

Social, Environmental, and Behavioral Factors

Some contractors measured changes in cognitive, social and environmental factors using different modular surveys offered in the *Network* Compendium of Surveys. The *Network Youth Survey*, *Network High School Survey* and the *Food Behavior Checklist* offered questions about food and beverage consumption, other than fruits and vegetables, and food preparation practices. Contractors could pick and choose the sets of questions that matched their interventions and administer a survey with those questions. FFY 11 was the first year almost all contractors utilized one of four surveys: *Network Youth Survey*, *Network High School Survey*, *Food Behavior Checklist* and *Fruit and Vegetable Checklist*. Due to this standardization, fewer contractors opted to utilize optional modules measuring these factors, and as a result, data for knowledge, self-efficacy, outcome expectations, norms, and socialization-encouragement could not be aggregated.

Social Factors

In FFY 11, the only social factor contractors consistently measured was perceived parent consumption (Table 9). Twenty-eight contractors used the 2-item parent consumption factors that were part of the *Network Youth Survey* and *Network High School Survey*. For youth, results showed modest increases in

perceived parent fruit and vegetable consumption for both the intervention and control groups, but none of the increases were significant.

Table 9. Changes Observed in Parent Consumption- Youth					
	N	**Pre-test**	**Post-test**	**Difference**	**p-value**
Intervention					
How often do your parents eat fruit?	4,782	2.18	2.18	0.00	0.822
How often do your parents eat vegetables?	5,018	2.18	2.21	0.03	0.067
Control					
How often do your parents eat fruit?	589	2.31	2.34	0.03	0.502
How often do your parents eat vegetables?	618	2.34	2.39	0.05	0.232

Table 10. Changes Observed in Parent Consumption- High School					
	N	**Pre-test**	**Post-test**	**Difference**	**p-value**
Intervention					
How often do your parents eat fruit?	330	2.03	2.09	0.06	0.171
How often do your parents eat vegetables?	344	2.22	2.23	0.01	0.845
Control					
How often do your parents eat fruit?	152	2.01	2.08	0.07	0.255
How often do your parents eat vegetables?	156	2.12	2.21	0.09	0.162

Access to Fruit and Vegetables

A total of 6,654 youth and 397 high school intervention students answered questions about access to fruit, and 6,429 youth and 384 high school students answered questions about access to vegetables. The questions were: At your *home* do you have fruits / vegetables to eat? The four response categories ranged from *never* to *always*, with an '*I don't know'* option, with scores ranging from 0-2. For youth, access to both fruits and vegetables showed 0.04 point increase, with fruit being the most available at post-test (Table 11). This change was small, however it was statistically significant for both fruits and vegetables (p=0.000). Though youth in the control group also saw a 0.04 increase for access to fruit, this change was not significant (p=.055). For high school students receiving intervention, no change was observed for access to fruit and a 0.01 decrease was observed for access to vegetables (p=.789 and p=.927) (Table 12). High school students in the control group saw small improvements, 0.02 for fruits and vegetables, though not significant (p=.565 and p=.607).

Table 11. Changes Observed in Access to Fruits and Vegetables- Youth					
	N	**Pre-test**	**Post-test**	**Difference**	**p-value**
Intervention					
At your home, do you have fruit to eat?	6,654	1.70	1.74	0.04	0.000
At your home, do you have vegetables to eat?	6,429	1.63	1.67	0.04	0.000
Control					
At your home, do you have fruit to eat?	754	1.69	1.73	0.04	0.055
At your home, do you have vegetables to eat?	737	1.65	1.70	0.05	0.104

Table 12. Changes Observed in Access to Fruits and Vegetables-High School					
	N	**Pre-test**	**Post-test**	**Difference**	**p-value**
Intervention					
At your home, do you have fruit to eat?	397	1.71	1.71	0.00	0.789
At your home, do you have vegetables to eat?	384	1.73	1.72	-0.01	0.927
Control					
At your home, do you have fruit to eat?	196	1.67	1.69	0.02	0.565
At your home, do you have vegetables to eat?	193	1.64	1.66	0.02	0.607

Physical Activity

The 2-item physical activity survey from the *Network Youth Survey* and *Network High School Survey* asked: 'Check the days you exercised or took part in physical activity that made your heart beat fast and made you breathe hard for at least 60 minutes' and 'Check the days you play outdoors for at least 30 minutes'. Response categories ranged from 0-7. At pre-test, youth respondents receiving interventions reported being physically active for 60 minutes 3.34 days this past week, and 3.81 days at post-test (p=.000) (Table 13). The same youth reported an increase in playing outdoors for 0.45 more days at post-test (p=.000). Increases for in youth in the control group were even higher at 0.78 days for days physically active for 60 minutes and 0.95 days for playing outdoor for 30 minutes (p=.000 and p=.000). High school students in both the control and intervention groups did not see significant changes for either measure of physical activity (Table 14).

Table 13. Changes Reported in Days with Physical Activity- Youth					
	N	Pre-test	Post-test	Difference	p-value
Intervention					
Physical Activity ≥ 60 Minutes	6,662	3.34	3.81	0.47	0.000
Play Outdoors ≥ 30 Minutes	6,660	3.16	3.61	0.45	0.000
Control					
Physical Activity ≥ 60 Minutes	780	3.13	3.91	0.78	0.000
Play Outdoors ≥ 30 Minutes	775	2.82	3.77	0.95	0.000

Table 14. Changes Reported in Days with Physical Activity- High School					
	N	Pre-test	Post-test	Difference	p-value
Intervention					
Physical Activity ≥ 60 Minutes	409	3.46	3.49	0.03	0.764
Play Outdoors ≥ 30 Minutes	409	2.62	2.64	0.02	0.842
Control					
Physical Activity ≥ 60 Minutes	199	3.44	3.57	0.13	0.379
Play Outdoors ≥ 30 Minutes	199	2.93	2.62	-0.31	0.080

Consumption of Other Foods, Food Security, and Eating Habits- Adults
The *FBC* measures dietary practices other than consumption of fruits and vegetables, and adults receiving intervention showed improvement in many of these areas. Adults reported drinking significantly more milk and significantly less soda and fruit drinks, sports drinks, and punch (p=.000) (Table 15). Results showed more adults were removing the skin from chicken and using food labels at post-test (p=.000). Intervention participants also rated their overall eating habits 0.80 of a point higher on a 1-10 scale at post-test (p=.000). No significant changes were observed among adults in the control group.

Table 15. Changes Observed in Other FBC Measures- Adults					
	N	Pre-test	Post-test	Difference	p-value
Intervention					
Drink Fruit Drinks, Sports Drinks, Punch	622	1.97	1.80	-0.17	0.000
Drink Soda	723	1.85	1.60	-0.25	0.000
Drink Milk	621	2.83	2.97	0.14	0.000
Drink or Use Milk on Cereal Past Week	622	1.10	1.09	-0.01	0.553
Take Skin off Chicken	621	3.13	3.30	0.17	0.000
Eat Fish Past Week	621	1.37	1.31	-0.06	0.022
Use Food Labels	717	2.41	2.86	0.45	0.000
Run Out of Food by End of Month	615	2.09	2.13	0.04	0.389
Rate Eating Habits	596	5.70	6.50	0.80	0.000
Control					
Drink Fruit Drinks, Sports Drinks, Punch	45	2.36	2.24	-0.12	0.229
Drink Soda	45	2.18	1.96	-0.22	0.105
Drink Milk	45	2.82	2.89	0.07	0.473
Drink or Use Milk on Cereal Past Week	45	1.11	1.07	-0.04	0.160
Take Skin off Chicken	45	2.51	2.40	-0.11	0.404
Eat Fish Past Week	45	1.47	1.42	-0.05	0.486
Use Food Labels	45	1.84	2.07	0.23	0.105
Run Out of Food by End of Month	45	1.89	1.89	0.00	1.000
Rate Eating Habits	44	5.84	6.34	0.50	0.051

Consumption of Other Foods and Trying New Foods- Youth and High School
The *Network Youth Survey* and the *Network High School Survey* also surveyed consumption of foods other than fruits and vegetables, breakfast, and whether or not students like to try new foods. Both youth and high school students in intervention groups reported eating more yogurt, cottage cheese, and string cheese (p=.000 and p=.013) (Table 16 and 17). Intervention youth ate sweets and drank soda 0.05 and 0.03 times less yesterday at post-test (p=.000 and p=.027). Youth control participants reported drinking water significantly more often at post-test (p=.000). The *Network Youth Survey* and *Network High School Survey* make the statement, 'I like to try new foods'. Answer choices included, 'almost always or always', 'sometimes', and 'almost never or never'. Both youth and high school intervention participants and high school control participants saw positive increases in liking to try new foods (p=.000, p=.024 and p=.042).

Table 16. Changes Observed in Consumption of Other Foods and Trying New Foods- Youth					
	N	**Pre-test**	**Post-test**	**Difference**	**p-value**
Intervention					
Milk	6,884	1.51	1.53	0.02	0.066
Yogurt, Cottage Cheese, String Cheese	6,674	0.68	0.74	0.06	0.000
Hot or Cold Cereal	6,672	0.80	0.81	0.01	0.544
French Fries or Chips	6,672	0.72	0.72	0.00	0.972
Water	5,585	2.82	2.78	-0.04	0.056
Punch, Sports Drinks, Fruit-Flavored Drinks	6,671	0.99	1.00	0.01	0.574
Soda	6,669	0.65	0.62	-0.03	0.027
Sweets (Baked Goods)	6,667	0.77	0.72	-0.05	0.000
Ate Breakfast	6,655	0.82	0.82	0.00	0.714
Like to Try New Foods	6,648	1.21	1.26	0.05	0.000
Control					
Milk	781	1.55	1.55	0.00	1.000
Yogurt, Cottage Cheese, String Cheese	781	0.69	0.65	-0.04	0.247
Hot or Cold Cereal	781	0.82	0.69	-0.13	0.000
French Fries or Chips	781	0.74	0.73	-0.01	0.750
Water	734	2.94	3.63	0.69	0.000
Punch, Sports Drinks, Fruit-Flavored Drinks	781	0.96	0.89	-0.07	0.072
Soda	779	0.56	0.50	-0.06	0.092
Sweets (Baked Goods)	777	0.73	0.67	-0.06	0.102
Ate Breakfast	778	0.58	0.60	0.02	0.173
Like to Try New Foods	778	1.05	1.06	0.01	0.656

Table 17. Changes Observed in Consumption of Other Foods and Trying New Foods - High School					
	N	Pre-test	Post-test	Difference	p-value
Intervention					
Milk	410	1.21	1.29	0.08	0.159
Yogurt, Cottage Cheese, String Cheese	410	0.45	0.59	0.14	0.013
Hot or Cold Cereal	410	0.54	0.56	0.02	0.631
French Fries or Chips	410	0.67	0.62	-0.05	0.274
Water	414	3.45	3.42	-0.03	0.722
Punch, Sports Drinks, Fruit-Flavored Drinks	414	0.89	0.81	-0.08	0.136
Soda	409	0.66	0.63	-0.03	0.666
Sweets (Baked Goods)	409	0.68	0.60	-0.08	0.095
Ate Breakfast	409	0.64	0.67	0.03	0.337
Like to Try New Foods	409	1.27	1.39	0.12	0.024
Control					
Milk	199	1.21	1.23	0.02	0.698
Yogurt, Cottage Cheese, String Cheese	199	0.52	0.56	0.04	0.548
Hot or Cold Cereal	199	0.53	0.57	0.04	0.463
French Fries or Chips	199	0.60	0.55	-0.05	0.474
Water	202	3.53	3.13	-0.40	0.000
Punch, Sports Drinks, Fruit-Flavored Drinks	202	0.86	0.78	-0.08	0.263
Soda	199	0.66	0.60	-0.06	0.325
Sweets (Baked Goods)	199	0.71	0.59	-0.12	0.083
Ate Breakfast	199	0.66	0.71	0.05	0.192
Like to Try New Foods	199	1.26	1.47	0.21	0.042

Summary

In sum, data were collected from 10,232 individuals by 42 contractors in seven intervention channels. Contractors working with adults measured fruit and vegetable and other food and beverage consumption, food security, and self-rating of eating habits. Contractors working with youth and teens measured fruit and vegetables consumption and other food and beverage consumption, physical activity, perceived parent consumption, and access to fruits and vegetables.

The results show that contractors increased fruit and vegetable consumption significantly in the youth and adult populations, but not among teens. Combined results from the *FBC* and *FVC* showed adults increased consumption by 0.54 cups per day. The *Network Youth Survey* showed an increase of 0.27 times yesterday. Results from the *Network High School Survey* show that fruits and vegetables slightly decreased, while only juice increased, leading to a total

increase in consumption of 0.05 times yesterday. In FFY 11, we saw control group sizes decline. This is due in part to *Network* encouragement of contractors to increase intervention sample sizes. It is anticipated that contractors are more comfortable with collecting larger sample sizes in FFY 12, and as a result, *Network* staff will encourage contractors to increase control sample sizes once again.

The interventions implemented could reasonably be expected to change only some of the factors that were measured. For the youth population, the results showed statistically significant change for access to fruits and vegetables, physical activity, consumption of yogurt, cheese, and sweets, and trying new foods. Among high school students, there were positive findings for yogurt and cheese consumption, and trying new foods. Adults significantly decreased sugar-sweetened beverage consumption and increased milk consumption. Some of these findings may be attributed to use of supplemental materials. Half of contractors said they specifically emphasized a reduction in sugar-sweetened beverages through ReThink Your Drink materials and twelve said they used Dairy Council resources. Though some contractors cite concerns over seasonality affecting physical activity results, twenty-six contractors identified physical activity as a specific focus of their education, and six youth contractors reported supplementing their nutrition education with SPARK or Coordinated Approach to Child Health (CATCH) in FFY 11.

While very positive, these results do not capture the full impact of *Network*-funded nutrition education. The changes reported here resulted from varied interventions implemented in settings where contractors have little control over conditions that influence fruit and vegetable consumption. Advertising, availability of high quality fruit and vegetables in schools and homes, and policies that favor the consumption of calorie dense foods are among those that limit the impact of the nutrition education delivered by *Network*-funded contractors. In FFY 12 when changes in the school meal program help reinforce nutrition education, we anticipate seeing yet more positive change.

7. Reference

Provide a contact for additional details and a reference to any other report of the evaluation.

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References

1. Townsend MS, Kaiser LL, Allen LH, Joy AB, Murphy SP. Selecting items for a food behavior checklist for a limited resource audience. Journal for Nutrition Education and Behavior. 2003;35:69-82.
2. Murphy S, Kaiser LL, Townsend MS, Allen L. Evaluation of Validity of Items in a Food Behavior Checklist. J Am Diet Assoc. 2001;101:751-756, 761.
3. Banna JC, Becerra LE, Kaiser LL, Townsend MS. Using Qualitative Methods to Improve Questionnaires for Spanish Speakers: Assessing Face Validity of a Food Behavior Checklist. J AM Diet Assoc. 2010;110:80-90.
4. Townsend MS, Sylva K, Martin A, Metz D, Wooten-Swanson P. Improving readability of an evaluation tool for low-literate clients using visual information processing theories. J Nutrition Education & Behavior. 2008;40:181-186.
5. Thiagarajah K, Fly AD, Hoelscher DM, Bai Y, Lo K, Leone A, Shertzer JA. Validating the food behavior questions from the elementary school SPAN questionnaire. J Nutr Ed Behav. 2006; 38/ 4; S55
6. Penkilo M, George G, Hoelscher DM. Reproducibility of the School Based Nutrition Monitoring Questionnaire among Fourth Grade Students in Texas. J Nutr Ed Behav. 2008: 40/1; 20-27
7. Hoelscher,D.M., Day, R.S., Kelder, S.H. & Ward, J.L. (2003) Reproducibility and validity of the secondary level School-Based Nutrition Monitoring student questionnaire. Journal of American Dietetic Association, 103(2),186-94.
8. Vereecken AC, Damme WV, Maes L. Measuring Attitudes, Self-Efficacy, and Social and Environmental Influences on Fruit and Vegetable Consumption of 11- and 12-Year-Old Children: Reliability and Validity. J. Am Dietetic Association. 2005; 105(2) 257-261.
9. Hearn DH, Baranowski T, Baranowski J, Doyle C, Smith M, Lin LS, Resnicow K. Environmental Influences on Dietary Behavior Among Children: Availability and Accessibility of Fruits and Vegetables Enable Consumption. Journal of Health Education 1998; 29(1): 26-32.
10. Centers for Disease Control and Prevention. 2002. Behavior Risk Factor Surveillance System Core Section 4: Fruits and Vegetables. [Online] Available: http://www.cdc.gov/brfss/questionnaires/pdf-ques/2002brfss.pdf.