



Final Report of the FFY 2007 Impact Evaluation

6/10/2008

Andy Fourney, DrPH
Evaluation Specialist
Cancer Prevention and Nutrition Section
Research and Evaluation Unit

Andrew Bellow
Research Associate II
Cancer Prevention and Nutrition Section
Research and Evaluation Unit
andrew.bellow@cdph.ca.gov

Funded by the U.S. Department of Agriculture Food Stamp Program, an equal opportunity provider and employer, through the *California Nutrition Network for Healthy, Active Families*.

The Research and Evaluation Unit of the Cancer Prevention and Nutrition Section (CPNS) of the California Department of Public Health would like to thank the committed staff from the following contractors that contributed data to this project. We are also grateful to the Program Managers of the Community Development team of CPNS for their collaboration in this project.

- ABC Unified School District
- Alameda County Health Care Services Agency - Nutrition Services
- Alameda County Office of Education (Coalition) Hayward USD
- Alhambra Unified School District
 - Alisal Union School District
 - Berkeley Unified School District
 - California State University, Chico Research Foundation
 - Compton Unified School District
- Contra Costa County Health Services
 - Del Norte Unified School District
 - East Los Angeles College
 - El Monte City School District
 - Fresno County Office of Education
 - Hawthorne School District
- Humboldt County Office of Education
- Huntington Beach Union High School District
 - Kern Co Dept Public Health
 - Kernville Union School District
 - Long Beach Unified School District
 - Long Beach, City of, Department of Public Health
 - Los Angeles County Office of Education
- Los Angeles Trade-Technical College
- Los Angeles Unified School District
- Marin County, Dept. of Health and Human Services
 - Merced Office of Education
- Monrovia Unified School District
- Monterey County Health Department
- Mount Diablo Unified School District
- Newport-Mesa Unified School District
 - Orange County Health Care Agency
 - Orange County Superintendent of Schools - ACCESS
 - Orange County Superintendent of Schools - Coalition
 - Orange Unified School District
 - Pasadena Unified School District
- Riverside County Health Care Services Agency
 - Sacramento County Department of Health & Human Services - Clinic Services
 - San Bernardino, County of, Department of Public Health
- San Francisco Unified School District
 - San Francisco, City and County Department of Public Health
 - Santa Ana Unified School District
 - Santa Barbara County Public Health Department
 - Shasta County Health and Human Services Agency, Public Health Branch
 - Shasta County Office of Education
 - Tulare County Office of Education
 - Tulare, County of, Health and Human Services Agency
 - Ukiah Unified School District
- University of California, The Regents of the, Cooperative Extension of Alameda County (Child and Youth Nutrition Program)
- Ventura Unified School District

Introduction

The *Network for a Healthy California (Network)* is the largest Food Stamp Nutrition Education program in the United States. Funded by USDA, it strives to increase fruit and vegetable consumption, physical activity, full use of food stamps by eligible individuals, and increase chronic disease prevention. The desired long-term outcome of these efforts is reduced obesity, BMI levels, related morbidity and mortality, and improved health outcomes. To achieve these outcomes the *Network* uses social marketing strategies grounded in a social ecological approach and contracts with agencies and institutions (contractors) throughout the state to provide nutrition education to food stamp eligible populations.

In FFY 2004, contractors began evaluating the immediate impact of their programs to ascertain if *Network*-funded nutrition education programs lead to changes in fruit and vegetable consumption and/or physical activity, and related factors.

During the first year of impact evaluation, 12 contractors participated. The second year, FFY 05, that number doubled, and it nearly doubled again (n=46) in FFY 06. This report describes the evaluation undertaken by 48 contractors in FFY 07. Their Federal budgets ranged from \$190,395 to \$7,776,431, with an average share of just over \$1 million. Combined, these 48 contractors represented 49% of the total Federal Share received by the *Network* from USDA..

Evaluation Framework

This impact/outcome evaluation harmonizes with the Institute of Medicine's evaluation framework¹ and with the Office of Analysis, Nutrition and Education's (OANE) definitions of impact and outcome evaluation. Change in cognitive factors, like knowledge, and change in behavior are outcome measures per OANE and impact evaluation is conducted to determine if changes can be attributed to the nutrition education activities². This type of attribution is commonly established through the use of control or comparison groups. However, it is difficult for the *Network* since many eligible populations have already received some nutrition education or because it would not be ethical to withhold nutrition education.

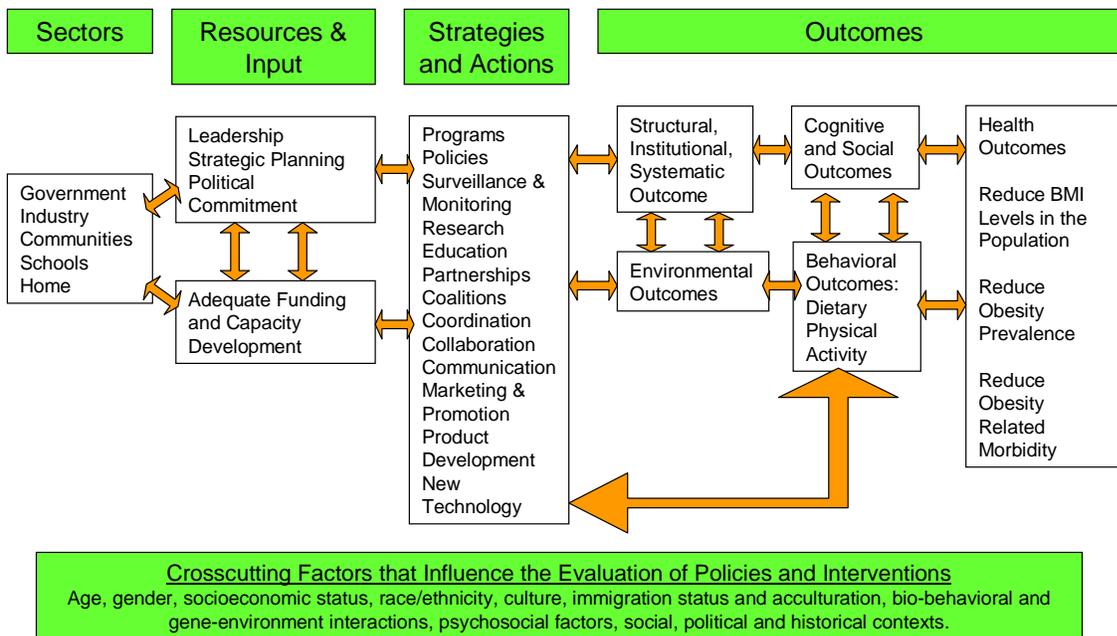
Figure 1 shows the desired outcomes of nutrition education efforts as they relate to Childhood Obesity¹. While some of these go beyond the *Network*'s scope of work, like those at the extreme right of the model, many overlap with the *Network*'s efforts. The *Network*'s contractors target fruit and vegetable consumption and physical activity behaviors. They also target related cognitive outcomes like knowledge, self-efficacy, outcome expectations, food preferences and social indicators like attitudes and norms. Environmental outcomes, like access and availability, influence these behaviors but are not targeted directly by *Network* contractors due to funding restrictions. The same restrictions inhibit efforts to change important factors related to systemic elements like the development, revision or implementation of policies; structural components like the way fruit and vegetable consumption opportunities are organized and delivered, and institutional determinants like norms, organizational culture, institution-wide policies and practices and environmental factors, i.e., an office gym or a school fruit stand. The model shows that change in these areas influence one another. So interventions that target behavior may also influence the availability of fruit and vegetables in the environment. Such interventions may also

impact school wellness policies or the processes through which fruit and vegetables are delivered.

The outcome/impact evaluation projects themselves sought to capture change in behaviors and related cognitive and social outcomes through quantitative data collection. We will see that qualitative data revealed change in the upstream determinants as well.

Figure 1.

Institute of Medicine's Obesity Evaluation Framework



Methods

Participants

The Semi-Annual Activity Report data for 2007 indicates that, for the 48 projects participating in FFY 07 impact evaluation, a total of direct education 43,466 classes were held, creating over 1.8 million impressions in FFY 07. The actual outcome/impact evaluation for this year included data from 8,566 unique individuals. (Appendix A).

Design

Most (43) contractors used a pre-test – post-test design. Table 1 shows the age and channel of adults and children who completed a pre-test and post-test. Five of them collected data from 315 individuals in a

comparison condition. Table 2 shows the number of participants by condition of assignment. The five that included a comparison group are denoted as the 1st–5th contractors and the other 43 are denoted as 6th – 48th. Most (155) comparison surveys were in the school channel followed by Cooperative Extension (109), Local Health Departments (32) and County Offices of Education (19).

Table 1: Individuals by Age and Channel		
Channel	Age Category	Intervention Group Participants
School/District (19)	6-8	395
	9-11	2,715
	12-17	893
	18+	38
Total Channel Participants		4041
College/University (3)	6-8	36
	9-11	302
	12-17	297
Total Channel Participants		635
County Office of Education (8)	6-8	0
	9-11	0
	12-17	16
	18+	3
Total Channel Participants		19
Local Health Department (13)	6-8	162
	9-11	681
	12-17	214
	18+	511
Total Channel Participants		1568
University of California Cooperative Extension (1)	3-5	343
		343
Total Participants		7,926

Pre-test was administered before the beginning of intervention and post-tests after the last intervention session. One contractor did a follow up implementation of their survey six weeks after the post-test.

Contractor	# Intervention participants	# Comparison participants
1 st	234	109
2 nd	142	48
3 rd	119	107
4 th	55	32
5 th	52	19
6 th – 48 th	7009	0
Total	7611	315

Impact Measure(s) (surveys)

Measurement of impact has primarily been assessed with surveys since the beginning of the project. The *Network* has asked contractors to use validated tools and not to develop surveys. However, this has become a challenge because there are not enough validated tools in the literature to measure the multiple factors targeted by the nutrition education interventions for children, teens, and adults served by the contractors. They have noted that the ones offered by the *Network* are too long, are too complicated for the participant’s literacy level, include questions that are not addressed by the intervention, have questions with too many response categories, and, among other issues. The lack of tools that have been shown to have acceptable internal and external validity and adequate reliability threatens the validity of the impact evaluation when the measures don’t match the intervention.

When adequate tools do not exist there are alternatives. It is possible to use existing data that have been collection from previous evaluations to validate variations of the existing tools. Alternative methods, like assessing change in production records, could be used to eliminate the need for surveys. Mixed methods could be used to triangulate data that could capture change in consumption.

Despite these challenges, all but five contractors used a survey comprised of one or more of the following validated scales. Two evaluated change using standardized observational methods.

For elementary – middle school age students

- Day in the Life Questionnaire for elementary students (Edmunds and Ziebland, 2002³)
- Five a Day Power Play! Survey (Baranowski, et al., 2000^{4,5,6})
- Hawthorne Knowledge Survey (Russell, 2004⁷)
- Peer Norms Survey (Reynolds, et al., 2002⁸)
- Family Norms Survey (Reynolds, et al., 2002¹⁶)
- Self Efficacy for Eating, Asking and Preparing Survey (Reynolds, et al., 2002¹⁶)
- Self Efficacy for Eating Fruits and Vegetables (Baranowski, et al., 2000¹⁷)
- Self Efficacy for Asking and Shopping (Baranowski, et al. 2000¹⁷)
- Availability Survey (Hearn, et al., 1998⁹)

- Preferences Survey (Domel et al., 1993¹⁰)
- Knowledge Survey (adapted from Reynolds et al., 2002¹¹ and Hoelscher et al., 2004¹²)
- Outcome Expectations Survey (Reynolds, et al., 2002¹⁶)
- Outcome Expectations Survey (Baranowski, et al., 2000¹³)
- Fruit and Vegetable Consumption question from the California Healthy Kids Survey¹⁴

For Middle School

- Physical Activity Survey (questions taken from the Youth Risk Behavior Surveillance, 2000)^{7,15}
- Fruit and Vegetable Consumption Survey (questions taken from the Youth Risk Behavior Surveillance CDC 2000¹⁶)

For adult populations

- Food Behavior Checklist (Townsend, 2003^{17,18}) with instruction guide¹⁹ (Townsend, 2006)
- Fruit and Vegetable Checklist (Townsend, et al., 2006²⁰) with instruction guide (Townsend et al., 2007²¹)
- Fruit and Vegetable Consumption Survey (questions taken from the Behavioral Risk Factor Surveillance Survey^{22,23})

Qualitative data were collected from final evaluation reports submitted in July 2007 that captured upstream changes. The contractors were asked to:

“Describe the best moment you had as a nutrition educator this year. Think about a moment when you knew your nutrition education had made a difference in someone’s life or give an example of a time when you were proud to be a nutrition educator.”

Data were analyzed using QDA Miner (Provalis Research) using the Constant Comparative Method²⁴. Briefly, this method involves comparing comments across respondents then organizing similar comments into discrete groups. It then involved organizing the groups into categories. These categories were structured using the Institute of Medicine’s obesity evaluation framework. Specifically, it included categories related to fruit and vegetable consumption, social and cognitive factors, environmental elements, and systemic, institutional, and structural forces. It also captured unique strategies, such as puppetry, music, parent-student gardens, and additional resources like partnerships with community retail stores that contributed to change in outcomes.

Results

Behavioral, Cognitive, and Social Outcomes

Results for 15 contractors that used the Harvest of the Month Survey

A group of 15 contractors used a standardized survey, referred to as the Harvest of the Month (HOTM) survey, to measure the behavioral outcome of interest: fruit and vegetable consumption. This survey, in Appendix B, also measured cognitive outcomes related to self-efficacy, knowledge and preferences. The data from these surveys were aggregated and analyzed together. Table 4 below shows the results for the 15 contractors that used the same survey excluding preferences. Results for this factor were analyzed separately.

The 1st column of the table lists the factor that was measured and the number of questions used to measure that factor. The 2nd column shows the number of individuals that provided an answer to that set of questions at the pre-test and post-test. Numbers are not the same for all factors because some respondents did not answer all the questions at pre-test and post-test. The 3rd, 4th, and 5th columns show the mean scores at pre-test, at post-test and the difference between them, respectively. The last column shows the p-value, which is considered statistically significant* if less than .05.

Three consumption questions, taken from the California Healthy Kids Survey, measured number of times respondents ate fruit, vegetables and juice in the last 24 hours. Response categories for each question ranged from 0 – “5 or more” and were coded 0-5. The pre-test score for consumption means respondents ate fruit or vegetables or drank juice 7.33 times before the intervention. This increased more than ½ time per day to 7.91 times per day.

The self-efficacy questions had five response categories ranging from “I disagree very much” to “I agree very much”. Responses were coded 1-5. Hence, scores could range from 2-10 for scales with 2 items or 5-25 for the scale that had five questions. The total self-efficacy score ranges from 13-65. Higher scores indicated higher levels of confidence for the behaviors in question: eating fruit, vegetables, or drinking juice at breakfast, lunch at school, lunch at home, snacks or dinner.

There were five knowledge questions. They were coded 0 for incorrect and 1 for correct so the scores ranged from 0-5 where higher scores represented greater knowledge.

Table 4: Summary of impact evaluation results for 15 contractors that used a standardized survey based on Harvest of the Month, FFY 07					
	N	Pre-test mean	Post-test mean	Difference	p-value
Consumption (3 items)	2,018	7.33	7.91	0.582	<0.001
SE for Eating F&V with	1,977	8.10	8.52	0.420	<0.001

* In this report, significant is used to refer to statistically significant and refers to p<.05)

Breakfast (2 items)					
SE for Eating F&V with School Lunch (2 items)	2,060	8.15	8.30	0.152	0.004
SE for Eating F&V with Lunch at Home (2 items)	2,032	7.65	7.77	0.119	0.048
SE for Eating F&V with a snack (5 items)	1,964	17.34	17.69	0.350	0.021
SE for Eating F&V with Dinner (2 items)	2,020	7.83	8.04	0.210	<0.001
Total self-efficacy (13 items)	1,674	49.43	50.73	1.300	<0.001
Knowledge (5 items)	2456	2.35	2.83	0.479	<0.001

Results for all contractors

Fruit and Vegetable Consumption Behavior

When considering all the contractors, 36 out of 48 measured consumption. Table 5 shows the surveys that were used. Fruit and vegetable consumption was the primary outcome of these evaluations. Change in factors that influence this behavior was the secondary outcome.

In addition to the 15 contractors that used the standardized HOTM survey, eight more used the consumption questions from the California Healthy Kids Survey. Three of those eight contractors reported a significant increase ($p < .05$).

Three contractors used the Day in the Life Questionnaire with primary grade children to measure number of times fruit and vegetables were eaten the day prior to the survey. One contractor showed a significant increase at breakfast, lunch, morning snack, recess snack, and trip home snack. Overall, consumption for this contractor increased from 2.74 times at pre-test to 6.19

Table 5: Survey used to measure consumption and number of contractors that used it[†]

	# of contractors that used this survey	# of projects showing increased FV consumption
CA Healthy Kids Survey Questions	23	7
Day in the Life Questionnaire	3	2
Youth Risk Behavior Survey	3	1
Food Behavior Checklist	1	1
Fruit and Vegetable Checklist	2	2
BRFSS	1	1
Other	3	2
Total	36	16

times at post-test. A third contractor administered only three questions from the DILQ that showed a significant increase in number of times fruit and vegetables were consumed as snacks on the trip home and at dinner. The third contractor reported no significant change.

[†] Other includes three contractors that used various measures like: Did you eat any fruits or vegetables for lunch yesterday (yes/no)? or fruit stand sales as a proxy for consumption.

Three contractors administered the 6-item Youth Risk Behavior Surveillance to assess the frequency of fruit and vegetable consumption. Two showed no significant changes. Another reported a significant increase in consumption of fruit and vegetables in an intervention group, but no significant change in a comparison group.

One contractor used the 16-item Food Behavior Checklist, and two used the 7-item Fruit and Vegetable Checklist. Both surveys contain the same seven questions that measure aspects of fruit and vegetable consumption. All three showed a significant increase in the number of times fruits were eaten each day and the number of times vegetables were eaten each day, plus the frequency of eating more than one kind of fruit each day. One contractor also showed a significant increase in the frequency of eating fruit and vegetables as snacks and eating more than one kind of vegetable each day.

One contractor used the 6-item fruit and vegetable section of the Behavioral Risk Factor Surveillance Survey to measure consumption among adults. Results showed a significant increase in the frequency of eating fruit, green salad, and carrots.

Three contractors used various measures like sales from a fruit stand, consumption questions with dichotomous response categories (yes/no), or number of cups to assess change. All were statistically significant.

In summary, 36 contractors measured consumption. Of these, 17 showed a statistically significant increase while the other 19 did not.

Cognitive and Social Factors

Change in cognitive and social factors that influence fruit and vegetable consumption was the secondary outcome of success. Table 6 shows the factors that were measured; the number of contractors that measured each one, the number of contractors that found a significant difference, and the number that did not find a significant difference at the intervention sites. Some contractors assessed the difference in pre-test means and post-test means for each question rather than creating a summary score.

Table 6: Factors Measured, Number of Contractors that Measured the Factor, Number of Contractors that Found a Significant Difference and Number that did not Find a Significant Difference 2006-07			
Factors	# contractors that measured the factor	# contractors with a significant increase	# contractors with non-significant findings
Preferences	30	Analyzed separately	
Knowledge	29	16	13
Self-efficacy	27	11	16
Outcome Expectations	5	5	0
Availability	3	0	3
Norms	2	2	0
Physical Activity Behavior	2	2	0

Please note: some contractors did not calculate an aggregate or summary score so the sum of the last two columns may not equal the first.

Knowledge

Of the 29 contractors that measured knowledge, 16 reported a statistically significant increase. Over half (16) used the same set of questions that addressed benefits of fruit and vegetable consumption, nutrient content, and whether or not produce was California grown. Results from these 16 showed a pre-test mean of 2.35 and post-test mean of 2.85. The change in knowledge of 0.48 was significant ($p < .05$). Twelve of those 16 used the HOTM survey. Of the 14 contractors that did not use the standard set of questions, 4 found a significant increase in knowledge.

Self-Efficacy

Self-efficacy is a determinant of behavior from Social Cognitive Theory that refers to a person's confidence in his or her ability to perform a behavior in a specific situation²⁵. Contractors measured two dimensions of self-efficacy. The first was for eating fruit and vegetables by meal and the second was for eating, asking, and preparing fruit and vegetables.

Of the 22 contractors that measured self-efficacy for eating fruits and vegetables by meal, half found a significant increase in at least one dimension. Table 7 shows the number of contractors that found a significant increase self-efficacy by meal.

Dimension of self-efficacy	Number of contractors that found a significant increase
Eating FVS at breakfast	5
Eating FVS at school lunch	5
Eating FVS at lunch at home	4
Eating FVS for a snack	3
Eating FVS at dinner	3
Total for all meals	6

Three contractors measured student's self-efficacy for asking their parents to buy fruits and vegetables for preparing fruits and vegetables. None of them reported a significant increase.

However, qualitative data revealed that students had more confidence in food preparation skills, and more confidence to select nutritious meals at lunch.

Preference and Familiarity

Preferences were measured on a 3-point scale. Response categories and codes were 2 = I don't like it, 3 = I like it a little and 4 = I like it a lot, in response to the question: "How much do you like the following items?"

"...younger children gained confidence in their food preparation skills, such as cutting and slicing fruits."
- *Network* coordinator

Contractors were allowed to choose the produce items they featured. Decisions were made based on availability of nutrition education materials, produce, cost, and cultural compatibility, among other factors. Table 8 shows the number of contractors that featured the item and the number of contractors that showed a significant difference. For example, here it can be seen that five contractors featured acorn squash and one showed a significant difference.

Table 8: Number of contractors that featured the fruit or vegetable and the number that showed a significant difference (p<.05)

Item Featured	Total that measured	Total with sig change	Item Featured	Total that measured	Total with sig change	Item Featured	Total that measured	Total with sig change
Acorn Squash	5	1	Grapefruit	1	0	Persimmons	9	1
Apple	2	1	Green Beans	1	0	Plums	3	0
Asparagus	9	2	Mandarins	9	2	Potatoes	1	0
Avocado	8	3	Melons	6	0	Pumpkins	1	1
Beets	1	0	Mushrooms	1	0	Raisins	2	0
Broccoli	2	0	Nectarines	5	1	Salad Greens	1	0
Cabbage	13	5	Onions	1	0	Spinach	3	0
Cantaloupe	1	1	Orange	1	1	Strawberry	2	2
Carrots	3	0	Peaches	2	1	Sweet Potatoes	1	0
Cherries	1	1	Peas	6	2	Tangerine	2	2
Dried Plums	6	2	Peppers	1	1	Tomatoes	6	3
						Winter Squash	2	1

Since contractors featured different items and a different number of items a comparison of preference scores across contractors is limited. Here they are reported by item. Table 9 shows the preference scores for one contractor. The pre-test mean for apples was 3.81 and at post-test it was 3.92. The difference was statistically significant so the p-value appears in red font. Appendix C provides these data for all contractors that measured preferences.

Produce	N	Pretest Mean	Posttest Mean	Dif	P-Value
Apple	102	3.81	3.92	0.11	0.016
Cabbage	81	2.83	3.10	0.27	0.006
Peaches	100	3.72	3.76	0.04	0.495
Persimmons	31	3.26	3.68	0.42	0.030
Winter Squash	38	2.95	3.34	0.39	0.007

Table 10 shows familiarity scores. This was assessed by allowing students to choose an “I don’t know what it is” response to the preference question (how much do you like the following items?) Responses were coded as 0 for

“do not know what this is” or 1 for those who checked one of the other responses. The results from ABC USD for apple show that 100% of the students knew what an apple was at pre-test and the same proportion knew what an apple is at post-test. On the other hand results from this same school showed that only 31.1% knew what a persimmon was at pre-test but 91.3% knew what it was at post-test.

High preference scores, like those reported for apple above, indicate that student’s preferences are between “I like [the item]” or “like it a lot”.

These are considered high.

Familiarity scores like those for apple clearly indicate that there is no room for improvement using that measure.

This information can help guide the decision about the items to feature or the questions to ask on a survey. If a contractor wants to use HOTM materials and knows the preferences and familiarity scores are high for the featured items then measuring something other than preferences would be a better use of survey space. Or nutrition educators might use this information to feature items with low preference scores to maximize the opportunity for improvement.

Produce	N	Pretest %	Posttest %	Dif	P-Value
Apple	102	100.0%	100.0%	0.0%	n/a
Cabbage	100	83.0%	98.0%	15.0%	0.001
Peaches	100	100.0%	100.0%	0.0%	n/a
Persimmons	103	31.1%	91.3%	60.2%	0.000
Tangerine	100	86.0%	97.0%	11.0%	0.007
Winter Squash	101	41.6%	90.1%	48.5%	0.000

Outcome expectations

Five contractors measured health outcome expectations for eating fruits and vegetables. Questions addressed the belief that fruits and vegetables would make the participant smarter, see better, or think better in class. All five contractors reported a significant increase.

Availability

Two contractors measured the respondent’s perception of the availability of fruit and vegetables. Changes were not significant for either contractor.

Norms

One contractor measured social norms to indicate whether the children’s friends like to eat fruits and vegetables and be physically active everyday. The analysis showed an increase in social norms for eating fruits and vegetables but not for physical activity. Another contractor measured peer norms for the belief that eating fruits and vegetables every day is a good thing to do. The contractor found a significant increase in peer norms.

Almost half (17) of the 38 contractors that submitted qualitative data shared a story about enthusiasm that parents or students expressed as a result of participating in or the changes that were inspired by the nutrition education.

Physical Activity

Two contractors measured change in physical activity. One measured the number of days per week that the participants reported being physically active and found a significant increase in physical activity. The other contractor measured the number of steps per day of participants and also found a significant increase.



Social Ecological Model

Environmental, Structural, Institutional and Systemic Levels

Changes at the societal, community and organization layers of the Social-Ecological Model, shown below, are represented by changes in the environmental, structural, institutional and systemic levels of the IOM framework. These changes were not measured directly as part of the impact evaluation but were reported in some of the qualitative data. It's also important to recognize that all but one of the Health Departments participating in the impact evaluation[‡] are also participating in the CX³ project, a community planning model designed to identify community indicators and assets that will shape

neighborhoods to improve nutrition, physical activity and obesity prevention.

Institutional level changes occur at the organizational level of the SEM. In the IOM framework, these include shifts in organizational norms, policies, or procedures. An example of this was reflected in the story from one contractor who explained that teachers voluntarily made classroom parties. She explained that for St. Patrick's Day, the instructor sent teachers a list with suggestions for green fruits and vegetables they include in their classroom party instead of chips, cookies, candy, etc. The coordinator reported that the lead teacher received numerous e-mails and pictures from teachers who loved the idea. They were also surprised how much the students enjoyed planning a healthy party and eating broccoli, spinach salad, kiwis, sugar snap peas, etc. healthy.

Few contractors directly measured environmental level changes due to funding restrictions. However, changes to create health-promoting environments in a school or community were reflected through stories that revealed increases in availability and accessibility. One contractor in the Bay area explained that students enjoyed preparing salads and cooking dishes with fruits and vegetables that they planted, cultivated, and harvested from the school garden." One southern CA contractor wrote enthusiastically about the farm stands they implemented on a pilot test basis in an after school setting where dedicated students sold locally grown produce including apples, oranges, persimmons, strawberries, tangerines, and bananas. Initially whole fruits were sold but later it was cut and garnished, , which lead to a dramatic increase in sales. For example, students enjoyed the persimmon sunrise (cut persimmon with a strawberry in the middle), and banana boats (one sliced banana with a scoop of peanut butter topped with a few sprinkles of granola). Money raised from the Farm Stand went towards the 6th grade camp and other educational activities. Finally, in one Bay Area school the student nutrition educators participated in PTA meetings, providing updates on their work and plans and promoting interest

[‡] Santa Barbara County Public Health Department ● Alameda County Health Care Services Agency - Nutrition Services ● Kern Co Dept Public Health ● Tulare, County of, Health and Human Services Agency ● Shasta County Health and Human Services Agency, Public Health Branch ● San Bernardino, County of, Department of Public Health ● Sacramento County Department of Health & Human Services - Clinic Services ● Contra Costa County Health Services ● Orange County Health Care Agency ● Monterey County Health Department ● Marin County, Dept. of Health and Human Services ● Long Beach, City of, Department of Public Health

in nutrition education. After one such meeting the PTA agreed to provide funding to cultivate school gardens and conduct whole school events, such as family workdays, which resulted in parents expressing interest in participating and helping in activities.

Structural changes include the development, implementation or revisions of policies, laws, or resources. These can manifest as changes at the classroom level, like those reflected in the story by one teacher who made a commitment to stop using candy as a reward.

Systemic changes occur when the delivery of and organization of food and physical activity environments or health systems are modified. In a prior evaluation, one school in the LA region sold vegetables and fruit at fund raising activities to change one delivery mode of healthy foods.

In 2006-07, The CA Department of Education awarded over 3,800 schools throughout CA School Garden Grant. A total of 86 schools served by the districts funded by the *Network* had a grant for a school garden. Fifty-four (63%) of these 86 schools contributed data to the impact evaluation. These were from 18 school districts and five health departments. These 23 contractors measured different factors or used different surveys to measure the same factors so it's difficult to assess the relationship between having have a school garden and change in an indicator. For example, 14 of the 23 contractors measured preferences, two found a significant difference in preferences for fruit, one in preferences for both fruit and vegetables, five did not find a significant difference and the others did not measure change in this indicator or did not report a summary score that would allow their results to be compared to others. The 2007-08 data collection system and refined data entry templates may help overcome some of these limitations.

Strategies and Actions

Contractors used diverse nutrition education activities to change behavior. This section describes the specific strategies and actions used to change behavior and dose delivered where data are available.

The FFY 07 final reports submitted by the 48 contractors that participated in the impact evaluation included a question about the nutrition education strategies they used. The question was:

What intervention and strategies were implemented to change the factors?

Please describe the specific activities or strategies that were used to effect the change, i.e., taste tests, newsletters for educators and parents, integrated nutrition education, posters, menu slicks, etc. Please describe the content of each class or sessions if applicable.

Some contractors described their strategies in great detail and others provided little information. The answers were analyzed to identify tangible activities that were used to change behavior even though the response categories were not standardized but. Table 11 shows some of the strategies in descending order of frequency. A more complete list stratified by age and use of HOTM is in Appendix D.

The strategies in the table can be clustered together as HOTM-related activities and those not related to HOTM. The first eight items are distinct elements of the HOTM toolkit except nutrition education posting/materials. This description in the answers to this question was too general to determine if they were HOTM materials. The Educator and Family Newsletters are specific to HOTM as are the HOTM lessons. The taste tests and cooking classes are part of the educator newsletter and there are instructions in the Educator Newsletter that guide the integration of nutrition education into content standards. The other elements are not distinctly related to the HOTM Toolkit.

Activity	Total Number
Taste Tests	37
Integrated Nutrition Education	25
HOTM lessons	20
Educator Newsletters	17
Nut Ed Postings/Materials	14
Family Newsletters	13
Cooking Classes	11
Physical Activity	10
Posters	7
Teacher Trainings	5
Menu Slicks	5
Garden Nutrition Education	5
Special Events	5
Nutrition Advisory Council	4
Salad Bar	4

Given that so many of the elements used were related to HOTM it is worth exploring this more. There are two other studies that are germane here.

2006 HOTM Process Evaluation:

A process evaluation of HOTM in 2006 (Russell and English Associates, 2007²⁶) provided information about the extent to which some of the elements were used. The general conclusion of this study was that the implementation of HOTM appeared to be a success. Four schools were included in this process evaluation.

The study showed that at pre-test the teachers reported teaching a total of 97 minutes of nutrition each semester and teaching 488 minutes of nutrition education at post-test. The taste tests were reported to be a favorite and a successful part of the HOTM Toolkit in this study. The teachers ranked the taste tests as the strongest element of the toolkit followed by the educator newsletter, poster, family newsletter, and finally media coverage.

Although the educator newsletter was well received and ranked as the second strongest of the five elements above, the study revealed that many sections were rarely used like Adventurous Activities, Cafeteria Connections, and Cooking in Class. The most used sections were taste testing, Fruity Facts and Home Grown Facts. The teachers in the study requested prepared lessons to help implement the Educator Newsletter activities. After this process evaluation study was completed ABC Unified School District and Los Angeles Trade Tech College prepared 14 HOTM workbooks for grades K-6. These operationalize the suggested activities in the HOTM newsletters into specific activities that teaches can use without any additional preparation. Results for this evaluation will be available August 2008.

The 2006 study showed the posters were popular and students were able to identify the main message. However, there weren't enough to spread the message throughout the school.

The family newsletters had a positive reception but only one of five was delivered to the homes by students and less than half (41%) of the students read some of it with their parents. A similar percentage (47%) of parents reported reading the newsletter with their students. The authors of the study attributed the low usage to the reading level, which was considered to be too high for the parents. This information should be used in the development of new materials.

2007-2008 Process Evaluation:

A process evaluation of the HOTM newsletters will be completed by the summer of 2008. It will provide similar data for *Network*-funded contractors participating in the 2007-08 impact evaluation. Preliminary results support the findings that taste tests and the factual sections of the newsletters are commonly used.

The data from the 2006 process evaluation confirms the findings of the FFY 07 impact evaluation and goes beyond that by providing information about dosage. But what these evaluations haven't addressed is the contribution a given activity can make toward changing a determinant of fruit and vegetable consumption.

Overall Impressions of Strategies and Results

As mentioned above in Table 5, 16 contractors showed a statistically significant increase in fruit and vegetable consumption. All of these measured change in at least three other factors including knowledge, self-efficacy, and preferences as the most commonly measured ones. Among this group of 16, other factors increased significantly for two or fewer of the contractors. So, one question that remains is: what strategies were used by the contractors that showed a significant increase in consumption, knowledge, self-efficacy, and preferences?

The most frequently used strategy was taste tests. It was used by 14 of the 16 contractors that showed a statistically significant difference in consumption. This was also the most commonly used strategy for contractors that showed a statistically significant change in the commonly measured three other factors. The other strategies used by those who showed a statistically significant increase in these factors included: integrated nutrition education, nutrition education postings/materials, newsletters for the educator and family afterschool nutrition education classes and menu slicks. Newspaper articles were used by two contractors that showed a significant increase in knowledge.

The relative impact of these will be easier to assess in 2008. The data reporting methods used in 2008 were different than in years past and this will allow the *Network* to aggregate data from multiple contractors even though they may not have used the same survey and gauge the extent to which the strategies contribute to change in fruit and vegetable consumption.

Intervention Mapping, a tool to develop a stronger HOTM model

In the spring of 2008 a HOTM Workgroup convened to create an intervention map (Bartholomew et al. 2001²⁷) of the HOTM tool kit to describe the things students would change or learn in relation to a given determinant of fruit and vegetable consumption if a specific element of HOTM were implemented correctly. For example, if taste tests were carried out as intended then students' preferences for fruit and vegetables should change. Cullen, (2003)²⁸ Baxter (2002)²⁹ Domel (1996)³⁰ and their colleagues have provided evidence that preferences are associated with fruit and vegetable consumption and described taste tests as a strategy to change them.

The intervention map was visually displayed as a matrix with the components of the educator and family newsletter as the column headings and the determinants of fruit and vegetable consumption as the row headings. The cells at the intersection of a determinant and HOTM element contained learning and change objectives. They answered the question: what would a student learn or change in relation to the determinant if the HOTM element was implemented as intended. The learning and change objectives were written based on the existing HOTM Cycle II materials.

As an example, three learning or change objectives for preferences and taste tests were written. They include:

- Students taste different varieties of featured produce.
- Students taste produce prepared in various forms, i.e., fresh, frozen, can and dried .
- Students compare and contrast different forms and varieties of featured produce.

But taste tests influence more than preferences. When conducted as a group activity they are appropriate for changing norms, as students learn the names and different varieties of fruit and vegetables they gain knowledge, and as they taste new vegetables they develop confidence that they can taste new foods.

The results of this intervention mapping revealed eight sections of the Educator Newsletter and four sections of the Family Newsletter that are considered by the workgroup to be core elements of HOTM. This status was assigned to these components because of the number of factors they target, the feasibility of implementation, and/or their significance within a classroom model. The teacher training and How to Grow Healthy Students Guide are also core components of HOTM. This "core component" HOTM model will be tested in a quasi-experimental investigation during FFY 09-10.

Table 12: Core components of HOTM Educator and Factors Targeted

Activity → Factor	Cooking in Classroom	Student advocates	Taste testing	Student sleuths	Cafeteria Connections	Just the Facts	Nutrition Facts	School Garden
Knowledge	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Preferences	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>
Self-Efficacy and skills	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>					
Norms	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>			
Outcome expectations	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>				
Social networks		<input checked="" type="checkbox"/>						
Social support	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>				
Empowerment	<input checked="" type="checkbox"/>							
Policy		<input checked="" type="checkbox"/>						
Availability / Access					<input checked="" type="checkbox"/>			

The four core components of the Family Newsletter include: Helping Your Child Eat Healthy, How Much Do I Need, Nutrition Facts, and Recipe. Each of these targets knowledge. If parents use it as intended and do all of the activities, they could gain confidence in their ability to help their children eat healthfully and use Nutrition Facts to guide food choices.

It's worth noting that the components of the educator and family newsletters do not target goal setting, an important self-regulatory determinant of fruit and vegetable consumption. This would be an important component to add to future manifestations of the toolkit.

As mentioned above, the strategies that contractors used were reported in response to an open-ended question. Some were detailed responses and others were more general. Nonetheless, it was difficult to find consistency between number of activities done and the results. In some cases a contractor may have done several different activities that target many factors and not have seen the change in social and cognitive factors or behavior that were detected by a contractor that did fewer activities. The reason for this is unclear and warrants further study.

Sectors

Multiple sectors, as described in the IOM framework, were impacted by the nutrition education interventions. Changes in the family and community sectors were reflected through stories that indicated students were communicating with parents about eating fruit and vegetables or that they chose to eat fruit and vegetables instead of competitive foods. At the community level, partnerships were established with food banks and relationships nurtured with community business that donated seeds and materials. City council members also demonstrated involvement

in the community sector through their participation in nutrition education kick-off events. The school sector is the largest channel used by *Network* contractors.

In 2008, an environmental checklist will be administered to assess the resources available in the school setting that support fruit and vegetable consumption. Using a checklist format it will capture the presence or absence of School Breakfast, Lunch, and snack programs including the presence or absence of fresh fruit or vegetables at those meals, like salad bars. It also examines the school's commitment to limit commercial marketing of calorie dense foods, promote fruit and vegetable consumption, integrated and evidence-based nutrition education into the academic curriculum, gardens and free sources of tap water. These data will be available in the 2008 final report.

NEW

Utilization of Findings

In August and September 2007 the *Network* hosted 15 teleconferences with 3-4 contractors at a time. The purpose was to discuss the nutrition education activities they evaluated, the results of the evaluation, and implications for subsequent nutrition education activities and evaluations. These also served as evaluation capacity building opportunities.

Some contractors indicated they planned to add activities to directly address factors that influence fruit and vegetable consumption, like role plays to change self-efficacy. Others planned to work more intensively on a smaller scale rather than more diffusely on a larger scale. In some cases this meant working in fewer schools or delivering more than five face-to-face nutrition education sessions. The results were used in some cases to garner continued funding for further evaluations.

In regard to preferences, contractors indicated that they would feature fewer items for taste tests and offer them more frequently, a scientifically sound strategy for increasing preference. They also described plans to feature items with low pre-test scores for preferences and familiarity.

The results were also used to increase the rigor of the next phase of evaluations. This led to the addition of comparison groups, expanding the evaluation to other age groups, or continuing into the second or third year of a longitudinal evaluation.

Recommendations

Over the past 3 years of data collection the *Network* has progressively increased the number of participating contractors, the rigor of the evaluations, and materials available to facilitate data collection, reporting and program improvement. This history of maturation and the results above lead to three recommendations.

Firstly, the *Network* needs to ensure that sound measurement methods are used to make judgments about the quality, worth and value of the interventions. There is a gap between the positive results described in qualitative stories collected from the field and numbers in the reports. This gap reveals the need to critically examine the match between the survey tools and nutrition education activities. This would involve ensuring that appropriate survey questions exist and are used to capture change in the factors targeted by the intervention. It is also critical to ensure that the tools are valid and reliable with the low-income populations served by contractors.

Secondly, the *Network* would be able to compare results across multiple sites by requiring contractors to administer standardized and age appropriate behavioral measures. Currently these tools exist but the FFY 2007 did not include this as a requirement. This could be done while maintaining the flexibility of the current system that allows contractors to choose the factors they will use as indicators of success.

In addition, creative measures to explore improved consumption, especially among young children should be explored, as well as opportunities to work with school foodservice to see if it is feasible to obtain produce serving data.

Thirdly, measures of systemic, structural, institutional, and environmental changes must be used to capture change at the outer layers of the Social Ecological Model. This could be done by adding questions to existing and proposed data collection systems. It could also be done by exploring alternative evaluation designs to capture systems change.

Fourthly, the *Network* has, in the past, effectively built contractor's capacity to conduct impact evaluation and there is a need to continue this. There is often turnover at the local level bringing with it a need for continuous evaluation training. Even with the basic trainings the *Network* learns of new areas needing attention, like ensuring quality data collection and data entry, that are best addressed in capacity building forums like trainings, teleconferences, web-based mega-meetings and one-on-one technical assistance provided by multiple individuals. Continued capacity building is recommended.

These four recommendations will move the impact evaluation further forward. Process data will provide a clearer picture of the amount and type of nutrition education delivered and received; an examination of measures will provide an additional layer of confidence that they match interventions. It is expected that this will lead to standardized behavioral measures while allowing contractors to choose cognitive and social measures. Exploring alternative designs to assess systems change may help understand the complex relations among the elements that contribute to change. Continued capacity building will allow funded projects to assess impact, think evaluatively, and build evaluation into institutional processes thereby giving it longevity.

References

- ¹ Institute of Medicine. Progress in preventing childhood obesity : how do we measure up? 2007. The National Academies Press, Washington, DC.
- ² Office of Analysis, Nutrition and Evaluation, 2006. Food Stamp Nutrition Education Systems Review Final Report. Abt Associates Inc. Bethesda, MD. Available at: <http://www.fns.usda.gov/oane/MENU/Published/NutritionEducation/Files/FSNESystemsReview.pdf#xml=http://65.216.150.153/texis/search/pdfhi.txt?query=systems+review&pr=FNS&order=r&cq=&id=4592d04e11>.
- ³ Edmunds LD, Ziebland S. Development and validation of the Day in the Life Questionnaire (DILQ) as a measure of fruit and vegetable questionnaire for 7-9 year olds. *Health Educ Res.* 2002 Apr;17(2):211-20.
- ⁴ Baranowski T, Davis M, Resnicow K, Baranowski J, Doyle C, Smith M, Lin L, Wang DT. Gimme 5 fruit and vegetables for fun and health: Outcome Evaluation. *Health Education & Behavior* 2000; 27(1):96-111.
- ⁵ California Nutrition Network. (2005) Five a Day Power Play! Pre-Post Impact Survey. Unpublished.
- ⁶ Saunders R P, Pate R, Felton G, Dowda M, Weinrich M, Ward D, Parsons M, & Baranowski T. Development of questionnaires to measure psychosocial influences on children's physical activity. *Preventive Med* 1997; 26, 241-247.
- ⁷ Russell, S. 2004. Validity and Reliability of a Knowledge survey for Hawthorne Unified School District. Unpublished.
- ⁸ Reynolds K, Yaroch A, et al. Testing mediating variables in a school-based nutrition intervention program. *Health Psychol* 2002; 21(1): 51-60.
- 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 Domel SB, Baranowski T, Davis H, Leonard SB, Riley P, Baranowski J: Measuring fruit and vegetable preferences among fourth and fifth grade students. *Prev Med* 22(6):866-879, 1993.
- ¹¹ Reynolds K, Yaroch A, et al. Testing mediating variables in a school-based nutrition intervention program. *Health Psychol* 2002; 21(1): 51-60.
- ¹² Hoelscher D, Day RS, Lee ES, Frankowski RF, Kelder SH, Ward JL, Scheurer ME. Measuring the prevalence of overweight in Texas school children. *American Journal of Public Health* 2004; 94: 1002-1008.
- ¹³ Baranowski T, Davis M, Resnicow K, Baranowski J, Doyle C, Smith M, Lin L, Wang DT. Gimme 5 fruit and vegetables for fun and health: Outcome Evaluation. *Health Education & Behavior* 2000; 27(1):96-111.
- ¹⁴ California Healthy Kids Survey Middle School Questionnaire, Module A, Core, Questions A15, A17, and A18. <http://www.wested.org/cs/we/view/pj/245>
- ¹⁵ Youth Risk Behavior Surveillance System. 2005 State and Local Standard High School Questionnaire. <http://www.cdc.gov/nccdphp/dash/yrbs/2003/questionnaire.htm>
- ¹⁶ Youth Risk Behavior Surveillance System. 2005 State and Local Standard High School Questionnaire. <http://www.cdc.gov/nccdphp/dash/yrbs/2003/questionnaire.htm>

-
- ¹⁷ Townsend MS, Kaiser LL, Allen LH, Joy AB, Murphy SP. Selecting Items for A Food Behavior Checklist for a Limited Resource Audience. *Journal of Nutrition Education and Behavior*. 2003; 35:69-82
- ¹⁸ Sylva K, Townsend MS, Martin A, Metz D. Food Stamp Program Food Behavior Checklist, Public Health Institute, California Department of Health Services, 2006. Available at: <http://townsendlab.ucdavis.edu>.
- ¹⁹ Townsend MS, Davidson C, Leaven L, Metz D, Martin A. Administering the Food Stamp Program Food Behavior Checklist: Instruction Guide. Public Health Institute, California Department of Health Services, 2006. Available at: <http://townsendlab.ucdavis.edu>
- ²⁰ Townsend MS, Kaiser LL. University of California Fruit and Vegetable Inventory. University of California Cooperative Extension, 2006. Available at <http://townsendlab.ucdavis.edu>.
- ²¹ Townsend MS, Leaven L, Davidson C, Kaiser LL. Administering the Fruit and Vegetable Inventory: Instruction Guide. University of California Cooperative Extension, 2007. (Accompanies Cat II #672.) Available at <http://townsendlab.ucdavis.edu>.
- ²² 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>.
- ²³ Serdula M, Coates R, Byers T, et al. Evaluation of a brief telephone questionnaire to estimate fruit and vegetable consumption in diverse study populations. *Epidemiology* 1993; 4:455-463.
- ²⁴ Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. Newbury Park, CA: Sage
- ²⁵ Bandura, A. (1986). *Social Foundations of Thought and Action*. Engelwood Cliffs, N.J, Prentice-Hall.
- ²⁶ Russell S and English J. (2007) Final Report Harvest of the Month Implementation Process Evaluation.
- ²⁷ Bartholomew, L. K., Parcel, G. S., Kok, G., & Gottlieb, N. H. (2001). *Intervention mapping: Designing theory and evidence-based health promotion programs*. Mayfield Publishing Company. Mountain View, CA.
- ²⁸ Cullen KW, Baranowski T, et al. 2003. Availability, accessibility, and preferences for fruit, 100% fruit juice, and vegetables influence children's dietary behavior. *Health Educ Behav* 30(5): 615-26.
- ²⁹ Baxter, S. D. and W. O. Thompson 2002. "Fourth-grade children's consumption of fruit and vegetable items available as part of school lunches is closely related to preferences." *J Nutr Educ Behav* 34(3): 166-71.
- ³⁰ Domel, S. B., Thompson, W.O., Davis, H.C., Baranowski T., Leonard, S.B. Baranowski, J. 1996. Psychosocial predictors of fruit and vegetable consumption among elementary school children." *Health Education Research, Theory & Practice* (1996) 11: 299-308.

Appendix A: Select Characteristics of Participants in the 2006-07 Impact Evaluation

Participants	Channel	Duration with Network	Federal FFY 07 Budget	Consumer Classes	Impressions	Impact Evaluation Sample Size
ABC Unified School District	School/District	2005-2008	\$383,397	309	6,572	226
Alameda County Health Care Services Agency - Nutrition Services	Local Health Department	2004-2007	\$3,588,668	1,071	46,944	84
Alameda County Office of Education (Coalition) Hayward USD	School/District	2004-2007	\$3,464,940	2,414	107,874	500
Alhambra Unified School District	School/District	2005-2008	\$568,199	71	2,810	90
Alisal Union School District	School/District	2006-2009	\$1,591,655	2,246	116,835	196
Berkeley Unified School District	School/District	2006-2009	\$1,398,047	6,546	124,837	327
California State University, Chico Research Foundation	College/University	2004-2007	\$1,551,174	391	15,952	431
Compton Unified School District	School/District	2006-2009	\$1,000,356	49	13,146	206
Contra Costa County Health Services	Local Health Department	2005-2008	\$882,271	503	11,740	87
Del Norte Unified School District	School/District	2006-2009	\$514,026	1,345	130,487	190
East Los Angeles College	College/University	2005-2008	\$1,064,143	393	10,697	64
El Monte City School District	School/District	2006-2009	\$720,077	287	41,906	304
Fresno County Office of Education	County Office of Education	2005-2008	\$742,018	58	7,844	62
Hawthorne School District	School/District	2006-2009	\$701,200	252	6,957	445

Humboldt County Office of Education	County Office of Education	2005-2008	\$429,041	161	45,564	71
Huntington Beach Union High School District	School/District	2006-2009	\$912,396	1,263	34,917	128
Kern Co Dept Public Health	Local Health Department	2006-2009	\$255,736	6	197	241
Kernville Union School District	School/District	2005-2008	\$190,395	1,713	7,253	119
Long Beach Unified School District	School/District	2004-2007	\$894,475	643	71,599	116
Long Beach, City of, Department of Public Health	Local Health Department	2005-2008	\$917,166	206	3,435	107
Los Angeles County Office of Education	County Office of Education	2006-2009	\$2,212,025	167	11,824	414
Los Angeles Trade-Technical College	College/University	2006-2007	\$691,496	648	14,954	140
Los Angeles Unified School District	School/District	2004-2007	\$7,776,431	2,428	153,834	50
Marin County, Dept. of Health and Human Services	Local Health Department	2006-2009	\$711,994	297	14,677	65
Merced Office of Education	County Office of Education	2005-2008	\$1,079,436	33	1,317	13
Monrovia Unified School District	School/District	2004-2007	\$642,424	2,926	109,379	130
Monterey County Health Department	Local Health Department	2004-2007	\$573,176	330	7,528	245
Mount Diablo Unified School District	School/District	2005-2008	\$350,527	1,124	4,708	51
Newport-Mesa Unified School District	School/District	2004-2007	\$316,502	89	51,653	153

Orange County Health Care Agency	Local Health Department	2004-2007	\$954,340	519	8,473	81
Orange County Superintendent of Schools - ACCESS	County Office of Education	2005-2008	\$392,080	633	53,568	190
Orange County Superintendent of Schools - Coalition	County Office of Education	2005-2008	\$1,877,634	866	62,326	271
Orange Unified School District	School/District	2005-2008	\$370,539	147	93,429	168
Pasadena Unified School District	School/District	2005-2008	\$1,689,095	5,900	186,720	202
Riverside County Health Care Services Agency	First 5 Children and Families Commission	2004-2007	\$1,098,884	982	54,394	61
Sacramento County Department of Health & Human Services - Clinic Services	Local Health Department	2006-2009	\$340,510	267	3,247	87
San Bernardino, County of, Department of Public Health	Local Health Department	2004-2007	\$471,416	15	195	90
San Francisco Unified School District	School/District	2005-2008	\$1,529,094	1,599	50,599	300
San Francisco, City and County Department of Public Health	Local Health Department	2004-2007	\$424,198	20	613	107
Santa Ana Unified School District	School/District	2005-2008	\$701,250	30	300	231
Santa Barbara County Public Health Department	Local Health Department	2004-2007	\$271,995	22	3,575	148
Shasta County Health and Human Services Agency, Public Health Branch	Local Health Department	2004-2007	\$765,136	18	2,408	56

Shasta County Office of Education	County Office of Education	2005-2008	\$520,399	1,072	20,930	71
Tulare County Office of Education	County Office of Education	2005-2008	\$2,135,656	238	12,989	186
Tulare, County of, Health and Human Services Agency	Local Health Department	2005-2008	\$363,936	465	10,780	170
Ukiah Unified School District	School/District	2005-2008	\$722,896	1,704	70,501	149
University of California, The Regents of the, Cooperative Extension of Alameda County (Child and Youth Nutrition Program)	University of California Cooperative Extension	2005-2008	\$695,159	5	57	343
Ventura Unified School District	School/District	2005-2008	\$288,783	975	26,395	400

Appendix B: Harvest of the Month Survey



Fall 2006

Prepared by

the Research and Evaluation Unit

of the *California Nutrition Network for Healthy, Active Families*

Confidentiality information to be explained to students

We would like for you to complete this survey. You may skip questions you do not want to answer but we hope that you will answer all of them. Any information about who you are will be kept secret. We will not share your name or identification number. They will only be used for reports.

We want you to tell us what you know about healthful eating.

Please bubble your answer ●

1. Eating fruits and vegetables can help lower your chances of getting heart disease or cancer.

- True
- False
- Don't know

2. Fruits and vegetables that are high in Vitamin A are _____ in color.

- Red and white
- Blue and light brown
- Yellow-orange and dark green
- Brown and purple
- I don't know

3. Almost all fruits and vegetables contain a lot of vitamins and _____.

- Protein
- Fiber
- Cholesterol
- Fat
- Don't know

4. Which of the following fruits and vegetables are grown in California:

- Spinach
- Apples
- Pears
- All of the above

5. Fruits and vegetables, like apples and pears, are best when eaten with the peel because that is where most of the fiber and antioxidants are.

- True
- False
- Don't know

6. How much do you like these fruits and vegetables? Please bubble your answer ●

	I do not like this 	I like this a little 	I like this a lot 	I don't know what this is 
Acorn Squash.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Asparagus.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Avocados.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Beets.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Broccoli.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cabbage.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Carrots.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cherries.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cooked Greens.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Corn.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dried Plum.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Grapefruit.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Green Beans.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mandarins (Tangerines)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Melons.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mushrooms.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Peas.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Peppers.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Persimmons.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Plums.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Potatoes.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pumpkins.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Radishes.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Salad Greens.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Spinach.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sweet Potatoes.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tomatoes.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Zucchini.....	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

		Please bubble your answer ●				
		I disagree very much	I disagree a little	I am not sure	I agree a little	I agree very much
						
7. For breakfast, I think I can...						
A. drink a glass of my favorite juice		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
B. add fruit to my cereal		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. For lunch at school, I think I can...						
A. eat a vegetable that's served		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
B. eat a fruit that's served		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. For lunch at home I think I can...						
A. eat carrot or celery sticks instead of chips		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
B. eat my favorite fruit instead of my usual dessert		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. For a snack I think I can choose...						
A. my favorite fruit instead of my favorite cookie		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
B. my favorite fruit instead of my favorite candy bar		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
C. my favorite raw vegetable instead of my favorite cookie		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
D. my favorite raw vegetable instead of my favorite candy bar		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
E. my favorite raw vegetable instead of chips		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	I disagree very much	I disagree a little	I am not sure	I agree a little	I agree very much
11. For dinner I think I can....					
A. eat a serving of vegetables	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
B. eat my favorite fruit instead of my usual dessert	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

During the past 24 hours (yesterday), how many times did you... (please circle the number of times)						
12. Drink 100% fruit juices , such as orange, apple or grape?	0	1	2	3	4	5 or more
13. Eat fruit ? (Do not count fruit juice.)	0	1	2	3	4	5 or more
14. Eat vegetables ? (Include salads and non-fried potatoes.)	0	1	2	3	4	5 or more

15. How old are you? _____
Years

16. Are you Boy
 Girl

17. How do you describe yourself? (You may fill-out more than one)

- Latino, Hispanic
- Black, African American
- White
- American Indian, Alaskan Native
- Asian, Pacific Islander
- Other

Appendix C:
Preference Scores by Featured Item for Schools that Completed the HOTM Survey

Contractor	Produce	Preference					Familiarity				
		N	Pretest Mean	Posttest Mean	Dif	P-Value	N	Pretest %	Posttest %	Dif	P-Value
ABC USD	Apple	102	3.81	3.92	0.11	0.016	102	100.0%	100.0%	0.0%	n/a
ABC USD	Cabbage	81	2.83	3.10	0.27	0.006	100	83.0%	98.0%	15.0%	0.001
ABC USD	Orange	102	3.81	3.91	0.10	0.012	103	100.0%	99.0%	-1.0%	n/a
ABC USD	Peaches	100	3.72	3.76	0.04	0.495	100	100.0%	100.0%	0.0%	n/a
ABC USD	Persimmons	31	3.26	3.68	0.42	0.030	103	31.1%	91.3%	60.2%	0.000
ABC USD	Strawberry	102	3.75	3.84	0.10	0.012	103	99.0%	100.0%	1.0%	n/a
ABC USD	Tangerine	84	3.64	3.81	0.17	0.007	100	86.0%	97.0%	11.0%	0.007
ABC USD	Winter Squash	38	2.95	3.34	0.39	0.007	101	41.6%	90.1%	48.5%	0.000
El Monte	Cabbage	182	2.71	2.79	0.08	0.187	212	88.2%	96.2%	8.0%	0.002
El Monte	Peaches	207	3.59	3.73	0.14	0.003	214	98.6%	98.1%	-0.5%	1.000
El Monte	Persimmons	39	2.92	3.03	0.10	0.500	213	23.9%	64.8%	40.8%	0.000
El Monte	Tomatoes	208	2.88	3.11	0.22	0.001	211	99.1%	99.1%	0.0%	1.000
El Monte	Winter Squash	100	2.46	2.58	0.12	0.175	214	57.0%	78.5%	21.5%	0.000
Fresno COE	Asparagus	45	2.82	2.80	-0.02	0.830	62	75.8%	93.5%	17.7%	0.007
Fresno COE	Cabbage	59	3.10	3.00	-0.10	0.224	63	93.7%	100.0%	6.3%	n/a
Fresno COE	Cherries	61	3.69	3.80	0.11	0.034	61	100.0%	100.0%	0.0%	n/a
Fresno COE	Mandarins	58	3.62	3.74	0.12	0.109	63	95.2%	95.2%	0.0%	1.000
Fresno COE	Melons	57	3.63	3.61	-0.02	0.844	62	96.8%	95.2%	-1.6%	1.000
Fresno COE	Peas	63	2.95	2.87	-0.08	0.402	63	100.0%	100.0%	0.0%	n/a
Fresno COE	Persimmons	30	3.17	3.17	0.00	1.000	60	58.3%	80.0%	21.7%	0.011
Fresno COE	Raisins	61	3.15	2.97	-0.18	0.070	61	100.0%	100.0%	0.0%	n/a
Fresno COE	Spinach	62	2.77	2.73	-0.05	0.651	63	98.4%	100.0%	1.6%	n/a
Fresno COE	Tomatoes	62	2.97	2.98	0.02	0.799	62	100.0%	100.0%	0.0%	n/a

Hawthorne	Asparagus	241	2.74	2.73	-0.01	0.876	441	62.4%	79.4%	17.0%	0.000
Hawthorne	Beets	235	2.74	2.69	-0.05	0.425	427	68.9%	69.8%	0.9%	0.786
Hawthorne	Cabbage	395	3.31	3.23	-0.08	0.050	444	91.2%	95.9%	4.7%	0.001
Hawthorne	Grapefruit	382	3.57	3.51	-0.07	0.067	437	92.7%	92.9%	0.2%	1.000
Hawthorne	Mandarins	266	3.64	3.67	0.03	0.520	438	72.8%	77.2%	4.3%	0.107
Hawthorne	Nectarines	284	3.57	3.57	-0.01	0.880	430	74.7%	80.7%	6.0%	0.012
Hawthorne	Pepper	375	2.85	2.74	-0.10	0.010	423	92.2%	94.3%	2.1%	0.200
Hawthorne	Persimmons	101	3.13	3.04	-0.09	0.378	421	42.3%	42.8%	0.5%	0.936
Hawthorne	Plums	385	3.51	3.58	0.07	0.067	423	94.3%	94.8%	0.5%	0.860
Hawthorne	Pumpkins	410	3.27	3.03	-0.23	0.000	437	96.6%	96.6%	0.0%	1.000
Huntington Beach	Avocado	76	2.97	3.37	0.39	0.000	94	81.9%	95.7%	13.8%	0.001
Huntington Beach	Cabbage	80	2.98	3.08	0.10	0.260	95	89.5%	91.6%	2.1%	0.774
Huntington Beach	Dried Plums	56	2.48	2.79	0.30	0.001	94	68.1%	87.2%	19.1%	0.003
Huntington Beach	Mandarins	78	3.71	3.81	0.10	0.184	96	83.3%	93.8%	10.4%	0.013
Huntington Beach	Nectarines	50	3.36	3.56	0.20	0.086	95	62.1%	72.6%	10.5%	0.087
Kern DPH	Acorn Squash	96	2.28	2.39	0.10	0.334	271	57.9%	60.9%	3.0%	0.539
Kern DPH	Asparagus	107	2.56	2.65	0.09	0.404	275	58.5%	66.9%	8.4%	0.054
Kern DPH	Avocado	170	3.01	3.07	0.06	0.561	260	80.0%	81.9%	1.9%	0.657
Kern DPH	Cabbage	217	2.85	2.90	0.05	0.574	267	90.3%	89.9%	-0.4%	1.000
Kern DPH	Dried Plums	182	2.78	2.84	0.06	0.525	274	92.3%	93.4%	1.1%	0.749
Kern DPH	Mandarins	177	3.40	3.35	-0.05	0.586	285	78.9%	80.0%	1.1%	0.841
Kern DPH	Melons	239	3.57	3.52	-0.05	0.522	271	94.1%	93.4%	-0.7%	0.856
Kern DPH	Tomatoes	249	2.82	3.02	0.20	0.017	273	95.6%	95.6%	0.0%	1.000
Kernville USD	Asparagus	42	2.45	2.57	0.12	0.430	52	84.6%	96.2%	11.5%	0.109
Kernville USD	Avocado	49	2.76	2.84	0.08	0.577	53	94.3%	98.1%	3.8%	0.625
Kernville USD	Cabbage	47	2.45	2.53	0.09	0.569	51	94.1%	98.0%	3.9%	0.625
Kernville USD	Dried Plums	45	2.87	3.02	0.16	0.302	52	88.5%	98.1%	9.6%	0.125
Kernville USD	Mandarins	41	3.20	3.22	0.02	0.872	51	82.4%	98.0%	15.7%	0.021
Kernville USD	Melons	50	3.56	3.68	0.12	0.371	52	96.2%	100.0%	3.8%	n/a
Kernville USD	Peas	51	2.61	2.82	0.22	0.125	52	98.1%	100.0%	1.9%	n/a
Kernville USD	Persimmons	12	2.08	2.50	0.42	0.096	52	28.8%	69.2%	40.4%	0.000

Kernville USD	Raisins	50	2.54	2.76	0.22	0.070	52	98.1%	98.1%	0.0%	1.000
Kernville USD	Tomatoes	52	3.19	3.46	0.27	0.042	52	100.0%	100.0%	0.0%	n/a
LACOE	Asparagus	264	2.77	2.76	-0.01	0.808	416	71.9%	84.1%	12.3%	0.000
LACOE	Avocado	380	3.18	3.23	0.05	0.175	413	93.5%	97.3%	3.9%	0.004
LACOE	Cabbage	361	3.22	3.32	0.10	0.021	409	91.0%	96.3%	5.4%	0.001
LACOE	Nectarines	230	3.52	3.62	0.10	0.023	410	65.9%	72.4%	6.6%	0.012
LACOE	Peas	374	3.19	3.05	-0.14	0.000	407	95.6%	96.1%	0.5%	0.860
LATTC	Apple	134	3.74	3.81	0.07	0.118	134	100.0%	100.0%	0.0%	n/a
LATTC	Cabbage	112	2.92	3.07	0.15	0.062	131	85.5%	96.9%	11.5%	0.000
LATTC	Cantaloupe	54	3.17	3.43	0.26	0.015	134	44.0%	80.6%	36.6%	0.000
LATTC	Carrots	134	3.54	3.57	0.02	0.676	135	99.3%	100.0%	0.7%	n/a
LATTC	Persimmons	54	3.33	3.37	0.04	0.687	131	45.8%	64.9%	19.1%	0.000
LATTC	Spinach	113	2.91	3.04	0.12	0.154	132	87.1%	98.5%	11.4%	0.001
LATTC	Strawberry	132	3.86	3.77	-0.09	0.010	133	100.0%	99.2%	-0.8%	n/a
LATTC	Tangerine	90	3.46	3.81	0.36	0.000	132	71.2%	94.7%	23.5%	0.000
Monrovia USD	Apricots	66	3.35	3.08	-0.27	0.054	123	68.3%	73.2%	4.9%	0.441
Monrovia USD	Beets	24	2.54	2.58	0.04	0.802	121	38.0%	41.3%	3.3%	0.665
Monrovia USD	Cherries	125	3.68	3.73	0.05	0.425	128	99.2%	98.4%	-0.8%	1.000
Monrovia USD	Chive	26	3.00	3.15	0.15	0.476	123	44.7%	40.7%	-4.1%	0.583
Monrovia USD	Cooked Greens	73	3.11	3.12	0.01	0.910	121	75.2%	79.3%	4.1%	0.533
Monrovia USD	Corn	130	3.68	3.71	0.03	0.588	130	100.0%	100.0%	0.0%	n/a
Monrovia USD	Daikon	3	3.67	3.00	-0.67	0.423	121	14.0%	9.9%	-4.1%	0.405
Monrovia USD	Fig	39	2.79	2.67	-0.13	0.391	122	54.9%	50.0%	-4.9%	0.480
Monrovia USD	Garlic	112	2.96	3.17	0.21	0.057	129	92.2%	93.0%	0.8%	1.000
Monrovia USD	Grapefruit	91	3.60	3.51	-0.10	0.191	123	84.6%	87.0%	2.4%	0.711
Monrovia USD	Kumquat	29	3.14	3.00	-0.14	0.489	121	75.2%	79.3%	4.1%	0.533
Monrovia USD	Leek	6	3.00	2.83	-0.17	0.771	123	39.0%	45.5%	6.5%	0.302
Monrovia USD	Lemon	125	3.76	3.78	0.02	0.688	128	97.7%	100.0%	2.3%	n/a
Monrovia USD	Mushrooms	106	2.47	2.67	0.20	0.034	127	90.6%	92.1%	1.6%	0.824
Monrovia USD	Onions	124	2.63	2.63	0.00	1.000	128	98.4%	98.4%	0.0%	1.000

Monrovia USD	Pepper	115	3.09	3.21	0.12	0.225	125	95.2%	96.8%	1.6%	0.754
Monrovia USD	Plums	97	3.35	3.38	0.03	0.777	126	85.7%	87.3%	1.6%	0.839
Monrovia USD	Pluot	2	3.50	2.50	-1.00	0.500	121	14.0%	13.2%	-0.8%	1.000
Monrovia USD	Pumpkins	109	3.09	3.02	-0.07	0.391	125	96.8%	89.6%	-7.2%	0.035
Monrovia USD	Radishes	71	2.77	2.59	-0.18	0.155	126	73.8%	73.0%	-0.8%	1.000
Monrovia USD	Scallion	9	3.00	3.11	0.11	0.681	122	21.3%	23.0%	1.6%	0.868
Monrovia USD	Summer Squash	48	2.77	2.90	0.13	0.402	126	58.7%	59.5%	0.8%	1.000
Monrovia USD	Turnip	51	2.67	2.47	-0.20	0.077	122	59.8%	64.8%	4.9%	0.480
Monrovia USD	Zucchini	73	3.05	3.11	0.05	0.615	123	74.0%	74.0%	0.0%	1.000
Mount Diablo	Acorn Squash	28	2.46	2.29	-0.18	0.326	52	63.5%	78.8%	15.4%	0.096
Mount Diablo	Asparagus	31	2.42	2.48	0.06	0.625	52	63.5%	96.2%	32.7%	0.000
Mount Diablo	Avocado	40	2.93	3.05	0.13	0.405	48	85.4%	97.9%	12.5%	0.070
Mount Diablo	Broccoli	50	3.30	3.22	-0.08	0.522	52	96.2%	100.0%	3.8%	n/a
Mount Diablo	Cabbage	49	3.06	3.02	-0.04	0.761	52	94.2%	98.1%	3.8%	0.500
Mount Diablo	Carrots	47	3.49	3.53	0.04	0.719	50	96.0%	98.0%	2.0%	1.000
Mount Diablo	Green Beans	45	2.89	3.07	0.18	0.209	50	86.0%	96.0%	10.0%	0.125
Mount Diablo	Mandarins	43	3.51	3.65	0.14	0.183	52	86.5%	96.2%	9.6%	0.180
Mount Diablo	Melons	48	3.60	3.54	-0.06	0.569	50	96.0%	100.0%	4.0%	n/a
Mount Diablo	Mushrooms	45	2.40	2.44	0.04	0.736	49	93.9%	98.0%	4.1%	0.625
Mount Diablo	Nectarines	31	2.87	3.06	0.19	0.161	52	67.3%	90.4%	23.1%	0.012
Mount Diablo	Onions	47	2.40	2.55	0.15	0.146	50	94.0%	100.0%	6.0%	n/a
Mount Diablo	Peas	51	2.80	2.96	0.16	0.281	52	98.1%	100.0%	1.9%	n/a
Mount Diablo	Persimmons	15	2.67	2.60	-0.07	0.774	50	46.0%	58.0%	12.0%	0.286
Mount Diablo	Plums	43	3.28	3.14	-0.14	0.323	50	90.0%	96.0%	6.0%	0.453
Mount Diablo	Potatoes	48	3.38	3.44	0.06	0.666	51	96.1%	98.0%	2.0%	1.000
Mount Diablo	Salad Greens	39	3.18	2.87	-0.31	0.063	52	78.8%	94.2%	15.4%	0.039
Mount Diablo	Spinach	43	2.74	2.74	0.00	1.000	51	86.3%	98.0%	11.8%	0.070
Mount Diablo	Sweet Potatoes	43	2.86	2.77	-0.09	0.456	51	90.2%	94.1%	3.9%	0.727
Mount Diablo	Tomatoes	48	2.98	3.00	0.02	0.860	52	94.2%	98.1%	3.8%	0.625
Shasta COE	Acorn Squash	48	3.17	3.20	0.32	0.603	49	96.9%	89.8%	12.2%	0.220

										10.2%	
Shasta COE	Carrots	42	3.14	3.33	0.19	0.103	48	97.9%	89.6%	-8.3%	0.219
Shasta COE	Dried Plums	35	2.63	2.66	0.03	0.845	49	87.8%	81.6%	-6.2%	0.581
Shasta COE	Melons	41	3.71	3.76	0.05	0.688	49	95.9%	85.7%	-10.2%	0.125
Shasta DPH	Asparagus	46	2.70	3.20	0.50	0.001	54	87.0%	98.1%	11.1%	0.070
Shasta DPH	Avocado	51	2.69	3.06	0.37	0.002	55	96.4%	96.4%	0.0%	1.000
Shasta DPH	Cabbage	52	2.75	3.19	0.44	0.000	54	98.1%	98.1%	0.0%	1.000
Shasta DPH	Mandarins	52	3.63	3.88	0.25	0.000	55	96.4%	98.2%	1.8%	1.000
Shasta DPH	Peas	55	2.47	3.18	0.71	0.000	55	100.0%	100.0%	0.0%	n/a
Tulare COE	Acorn Squash	39	2.90	2.92	0.03	0.831	184	40.2%	42.9%	2.7%	0.644
Tulare COE	Asparagus	68	2.84	2.93	0.09	0.435	182	42.3%	74.7%	32.4%	0.000
Tulare COE	Avocado	138	3.16	3.36	0.20	0.003	181	78.5%	94.5%	16.0%	0.000
Tulare COE	Cabbage	142	3.10	3.27	0.17	0.013	178	82.6%	94.9%	12.4%	0.000
Tulare COE	Dried Plums	104	2.86	3.14	0.29	0.002	180	67.8%	80.0%	12.2%	0.005
Tulare COE	Mandarins	134	3.69	3.86	0.16	0.001	181	78.5%	89.0%	10.5%	0.002
Tulare COE	Melons	175	3.69	3.71	0.02	0.613	183	97.3%	98.4%	1.1%	0.727
Tulare COE	Nectarines	156	3.74	3.81	0.08	0.158	183	91.8%	90.2%	-1.6%	0.664
Tulare COE	Persimmons	43	3.16	3.47	0.30	0.068	175	34.3%	55.4%	21.1%	0.000
Tulare COE	Plums	144	3.43	3.51	0.08	0.234	180	86.1%	90.0%	3.9%	0.265
Ukiah USD	Acorn Squash	37	2.43	2.27	-0.16	0.057	103	47.6%	55.3%	7.8%	0.215
Ukiah USD	Asparagus	75	2.68	2.91	0.23	0.010	108	75.0%	87.0%	12.0%	0.015
Ukiah USD	Avocado	82	2.91	3.04	0.12	0.133	99	90.9%	88.9%	-2.0%	0.791
Ukiah USD	Cabbage	81	2.80	2.81	0.01	0.894	108	84.3%	84.3%	0.0%	1.000
Ukiah USD	Dried Plums	73	2.71	2.79	0.08	0.506	105	73.3%	79.0%	5.7%	0.392
Ukiah USD	Mandarins	87	3.70	3.69	-0.01	0.880	105	89.5%	89.5%	0.0%	1.000
Ukiah USD	Peas	94	3.00	3.02	0.02	0.824	104	93.3%	96.2%	2.9%	0.508
Ukiah USD	Persimmons	38	3.05	3.03	-0.03	0.850	103	43.7%	64.1%	20.4%	0.001
Ukiah USD	Tomatoes	105	2.98	3.02	0.04	0.619	108	99.1%	98.1%	-0.9%	1.000

Appendix D: Total Number of Contractors That Used The Strategy Stratified By HOTM Use and Age					
	HOTM	Youth	Adults	Adults & Youth	Total
Monthly taste tests	14	18	3	2	37
Integrated Nutrition Education	8	11	2	4	25
HOTM lessons	8	11	0	1	20
Educator Newsletters	11	6	0	0	17
Nut Ed Postings/Materials	6	6	2	0	14
Family Newsletters	7	5	1	0	13
Cooking Classes	4	4	1	2	11
Physical Activity	3	5	1	1	10
posters	4	3	0	0	7
Teacher Trainings	3	2	0	0	5
Menu Slicks	4	1	0	0	5
Garden Nutrition Education	1	3	0	1	5
Special Events	2	3	0	0	5
Nut Advisory Council	2	2	0	0	4
Salad Bar	1	3	0	0	4
Agency Branded Interventions [§]	0	4	1	0	4
Farm Stand	1	2	0	0	3
Guest Lectures/Mentors	1	2	0	0	3
Newspaper Articles	3	0	0	0	3
Afterschool Nut Ed Classes	2	1	0	0	3
Steps to Health	1	2	0	0	3
Food Guide Pyramid Presentation	1	2	0	0	3
Nutrition education Reinforcement Items	3	0	3	0	6
Power Play! Lessons	0	3	0	0	3
PSAs	1	1	0	0	2
Songs	1	1	0	0	2
Field Trips	2	0	0	0	2
Partnership w/ Food Service	1	1	0	0	2
Contests	1	1	0	0	2
Parent Workshops	1	1	0	0	2
PTA Assistance	1	0	0	0	1
Nutrition Education Messages	1	0	0	0	1
Weekly Chef Meetings	1	0	0	0	1
Visits with Registered Dietitian	0	1	0	0	1
Nutrition Connection Program	0	1	0	0	1
SHAPE	0	0	0	1	1

[§] On the Move With Foodwise, OPT for Kids, LEAP for Families, FAME Harvest Dance, Family Challenge Toolkit