

LUNCH FOR LIFE: EVALUATION OF A SCHOOL LUNCH PROGRAM IMPLEMENTED IN GARFIELD RE-2, COLORADO

A 2 year pilot of the Lunch for Life program was completed in the Garfield RE-2 school district in the Western Slope of Colorado. The Lunch for Life program is aimed at increasing the healthfulness of foods offered and encouraging healthy eating habits in schools in a resource and financially sustainable manner.

An evaluation of the pilot program was completed in order to understand the impacts of the Lunch for Life program on student health and nutrition, and to determine whether such programs are feasible for school districts to introduce and can be sustainable for districts to maintain. In addition to assessing the program's end results, the evaluation aimed to gain insight regarding the specific processes utilized and any challenges presented, in implementing the program.

The results of the evaluation will be used to inform future changes to be implemented in the Garfield RE-2 school district, to guide changes in other school districts throughout Colorado, and to inform broader legislative and policy needs related to school food and nutrition programs.

CONTEXT

Child and adolescent obesity continues to be a public health concern in the United States. Overweight and obese children are more likely to become overweight and obese adults (Serdula et al. 1993), and adults that are overweight and obese are at greater risk for many chronic conditions such as diabetes, cardiovascular disease, and certain cancers (CDC 2010). In addition to these longer term consequences, overweight and obese children may experience immediate health consequences and suffer from social stigmatization.

School food service programs are often called upon to ensure that students have access to healthy foods and beverages. However, perceptions that preparing and offering healthier foods will be more expensive and may result in a lower number of sales to students, often deter programs from making changes. The large financial concerns stem from the fact that many food service programs are required to be self sufficient; the programs rely solely on the money generated from their programs to cover expenses.

SETTING

Garfield County, Colorado, is a primarily rural area located in the Western Slope of Colorado. During the 2009-2010 school year, approximately 4,400 students attended the 10 Garfield RE-2 district schools. The portion of the student population eligible and enrolled for the free and reduced meal programs was 39 percent during the 2007-2008 and 2008-2009 school years, and rose to 48 percent at the beginning of the 2009-2010 school year.

FINDINGS

Foods Offered

Over the 2 year pilot, the Garfield RE-2 school district has made significant progress towards introducing positive changes in the foods offered to students as part of the School Breakfast Program (SBP) and National School Lunch Program (NSLP), and in eliminating unhealthy competitive food items. Highlights include:

- **Homemade meals became a central focus.** Significantly fewer pre-packaged meals were served as part of the SBP and NSLP. Previously served pre-packaged meals were replaced with homemade preparations of the foods. Examples of the changes include the replacement of: chicken nuggets with oven baked or BBQ chicken; frozen pizza with homemade pizza; frozen burritos and wraps with homemade; and frozen French Fries and Tater Tots with hand cut roasted potatoes. While 11 percent of the total food budget was spent on pre-made meals in the 2007-2008 school year, only 3 percent was expended on such items in the 2008-2009 and 2009-2010 school years. The homemade foods were lower in total, and saturated fats, and contained many fewer preservatives. The impacts of these changes benefited the student population participating in the NSLP and SBP (on average, 48 percent of all students participated in the NSLP over time, while 12 percent of all students participated in the SBP over time).
- **Salad bars were introduced at all 10 district schools.** Salad bars were made available daily. Any student participating in the NSLP was able to select items from the salad bar as part of their meal. In addition to providing a venue to offer students fresh fruits and vegetables, the salad bars also encouraged students to try new types of fruits and vegetables, as they could select multiple items from the bar. Students were enthusiastic about the introduction of the salad bars; staff reported that the majority of students participating in the NSLP selected items from the bar.
- **Greater amounts of nutrient rich fresh produce were made available.** In addition to the salad bars, at least one, and often two fresh produce items were made

available daily as part of the NSLP meal. The increase in fresh produce is reflected by the expenditures; the total portion of the budget used for fresh produce increased from 3 percent in 2007-2008 to 7 and 6 percent, respectively in the next 2 years. In addition, a greater amount of nutrient rich produce was served. Romaine and red-leaf lettuces (and on occasion spinach) replaced iceberg lettuce in menu items and were offered daily on the salad bars. Staff reported that the students were enthusiastic about the fresh produce; especially the availability of fruits including watermelon, grapes, kiwis, and berries.

- **Chocolate milk was eliminated.** Chocolate and other flavored milks were eliminated from the SBP and NSLP. Chocolate milk contains an additional 13 g of sugar per 8 oz. serving. School observations and national data on milk consumption patterns in schools suggest that this change had significant impacts on students' in-school nutrition.
- **Significant changes to à la carte programs.** À la carte items were only made available at the high school level, and only water and 100 percent fruit smoothies were offered. These items contained no saturated fats, or added sugars, compared to items available during prior school years which contained up to 9 g of saturated fat and more than 30 g of added sugar. The significant reduction in the number of unhealthy items available, coupled with data showing significant reductions in à la carte sales, indicate that the impacts of these changes on students' nutrition from foods made available in the school cafeterias were significant.

Educational Components

Educational events and programs to teach students about healthy eating and nutrition are being introduced at the schools. During the second year of the program, students at two elementary schools participated in Junior Chef Days. The event allowed students to take part in preparing a homemade dish of ratatouille filled with fresh produce. Following its preparation all students were invited to share the dish.

Parent and staff volunteers reported that the students loved having the hands on experience of helping to prepare the dish, and that they enthusiastically took part in eating the food.

As the program expands, the Junior Chef Day events will be offered in all elementary schools, and educational programs including cooking classes and lectures will be made available to students at higher grade levels.

In-School Performance and Behavior

Many factors influence academic performance and behavior, and therefore no definitive causal link between the changes in the foods consumed by students in school and these outcomes can be drawn. Staff members whom interact with students on a regular basis provided some insights on the potential impacts.

Responses to a survey distributed to in-school staff whom interact with students suggested a relationship between the consumption of foods of minimal or low nutritive value (e.g., soda, candy) and student behavior and attentiveness. In addition, positive responses regarding the program and its potential impact on students' behavior and ability to listen and focus on tasks in the classroom were numerous. These included the following:

- Several staff stated that the students seem less "sluggish" after the lunch period compared to prior years and do not have as many "mood" or "energy" swings. Several staff noted that they observe fewer "sugar highs".
- Many staff reported that students seemed to have greater attentiveness and ability to listen and focus following the lunch period compared to prior years.
- Many staff recognized the importance of making changes to the lunch program but stated that incorporating nutrition education into the curriculum, evaluating other school policies related to food outside the cafeteria, and changing eating habits at home are additional steps that need to be taken.

Costs and Sustainability

Startup Costs. Over the course of the 2 year pilot, start-up costs associated with the assessment of the districts cafeteria programs, new equipment, and training for food service employees totaled approximately \$103,000. These costs were funded by outside grants and not paid for by the Garfield RE-2 district.

Startup costs will vary among school districts that implement the Lunch for Life program; they are dependent on the specific steps that a district takes in implementing the program, as well as the resources already available in the district. It is noted that costs such as these are often outside the scope of what cafeteria programs can pay; a factor that warrants consideration when planning for the continued growth of the program.

Cost for Educational Events and Programs. The costs associated with holding Junior Chef Day events at two elementary schools totaled approximately \$10,500. These costs were funded by outside grants and not paid for by the Garfield RE-2 district.

Costs for educational events such as the Junior Chef Day events will vary depending on the specific manner in which these events are run, and the staff involved. It is noted that costs for program components such as these events are often outside the scope of what cafeteria programs can pay; a factor that warrants consideration when planning for the continued expansion of the program.

Operational Costs. The introduction of the Lunch for Life program did not have a negative impact on the cafeteria's operational costs.

In contrast to what is being seen in many districts nationwide, over the course of the 3 years for which costs were analyzed; the costs of food associated with meal production decreased. The inflation adjusted price per meal of \$1.04 for the 2007-2008 school year decreased to \$0.88 and \$0.89 for the 2008-2009 and 2009-2010 school years, respectively, following the introduction of the Lunch for Life program¹.

The overall labor costs for the Garfield RE-2 district food service program increased by approximately \$60,000 over the course of the 3 years for which costs were analyzed. Increased labor costs were not attributable to the Lunch for Life program, but rather largely to the need to staff two new schools being introduced into the district.

Although the Lunch for Life program did not negatively impact the operational costs of the food service program, the data did indicate that, as is the case with many other schools nationwide, federal support and reimbursements for meal program are not adequate. Moreover, the disparity between costs and the support that is provided by federal funding continues to widen.

Balancing Costs and Revenues. During all 3 years for which the finances were analyzed, the revenues generated from the SBP and NSLP programs alone (i.e., from direct sales and federal and state reimbursements) did not cover the costs associated with producing those meals. The district has therefore historically been reliant on supplemental sources of revenue including à la carte sales, and catering. While these supplemental sources provided enough revenue for the schools to balance their costs and revenues during the 2007-2008 school years, they did not during the 2008-2009 or 2009-2010 school years. The decline in the revenue from à la carte items (an average decline of \$78,000 for the 2 years following the introduction of the Lunch for Life program compared to the 2007-2008 school year) was attributable to changes introduced under the program.

¹ Figures are shown in 2007-2008 dollars.

Insights and Lessons Learned

When asked, the food service director commented that there were several key elements that she believes helped make the program a success. She noted that communication with parents and staff about the changes that were being introduced, and why they were being introduced was essential. Having parents and staff understand what and why changes were being introduced aided the expansion of the concepts of healthy eating into classroom lessons and discussions at home. She also emphasized that the training that food service staff received in the areas of healthy and safe food preparations was essential; it taught staff how to be efficient in cooking foods from scratch and preparing fresh fruits and vegetables, and also made them feel invested in the program and excited about trying new recipes.

Overall, the cafeteria staff that helped the program transition was also very positive about the changes, and their ability to influence students. They enjoyed making homemade meals and felt good about offering students healthier foods. When asked about whether the changes were hard to make the staff reported that at the beginning, the transition took some time getting used to. They reported that after a few weeks however, that they had adapted to the changes required to plan and prepare school meals. They stated that the biggest change was the need for greater organization and planning. Staff reported that narrowing the number of main entrees offered to one or two compared to the greater number that they had previously offered, allowed them to have more time to focus on preparing home cooked meals. When asked about whether there were constraints that made it hard to meet the objectives of the program staff responded that the limited availability and high cost of some produce items presented a challenge. They reported that the students loved the fresh fruits and vegetables, and that they would like to be able to offer more fresh produce to students throughout the year.

TABLES

Table 1. Student Enrollment in the Garfield RE-2 School District.

School	Total Student Enrollment			
	2006/07 School Year	2007/08 School Year	2008/09 School Year	2009/10 School Year
Coal Ridge High	374	472	505	455
Rifle High	698	599	605	597
Rifle Middle	731	750	758	729
Riverside Middle	482	534	682	688
Cactus Valley Elementary	399	441	436	414
Highland Elementary	494	501	533	344
Wamsley Elementary	478	469	515	289
Kathryn Senor Elementary	476	509	357	322
Elk Creek Elementary	NA	NA	293	254
Graham Mesa Elementary	NA	NA	NA	309
TOTAL	4,132	4,275	4,684	4,401

Notes: NA = not applicable. Elk Creek Elementary School was new in 2008/09; Graham Mesa Elementary School was new in 2009/10.

Table 2. Students Eligible for Free and Reduced Lunch in the Garfield RE-2 School District.

School	2006/07 School Year		2007/08 School Year		2008/09 School Year		2009/10 School Year	
	Percent Eligible Free	Percent Eligible Reduced	Percent Eligible Free	Percent Eligible Reduced	Percent Eligible Free	Percent Eligible Reduced	Percent Eligible Free	Percent Eligible Reduced
Coal Ridge High	17%	10%	15%	13%	17%	13%	27%	10%
Rifle High	20%	6%	21%	7%	20%	7%	29%	9%
Rifle Middle	35%	11%	36%	12%	31%	15%	43%	10%
Riverside Middle	24%	12%	26%	10%	24%	16%	34%	11%
Cactus Valley Elementary	26%	12%	28%	11%	22%	14%	36%	11%
Highland Elementary	38%	11%	34%	11%	34%	14%	55%	8%
Wamsley Elementary	40%	15%	37%	14%	37%	18%	52%	12%
Kathryn Senor Elementary	22%	10%	23%	12%	25%	14%	35%	10%
Elk Creek Elementary	NA	NA	NA	NA	20%	11%	35%	11%
Graham Mesa Elementary	NA	NA	NA	NA	NA	NA	41%	13%
Total	28%	11%	28%	11%	26%	14%	38%	10%

Notes: NA = not applicable. Elk Creek Elementary School was new in 2008/09; Graham Mesa Elementary School was new in 2009/10.

Table 3. Student Participation Rates, SBP, and NSLP.

	Average Percent of Total Student Population Participating			Average Percent of Free and Reduced Eligible Students Participating		
	2007/08	2008/09	2009/10	2007/08	2008/09	2009/10
SBP (Breakfast)	15%	9%	12%	29%	9%	7%
NSLP (Lunch)	53%	45%	45%	69%	69%	65%

Notes: NSLP = National School Lunch Program
SBP = School Breakfast Program

Table 4. Actions Identified for Lunch for Life: Year 1 and 2.

Targeted Change
Year 1
Eliminate processed foods from breakfast and lunch programs.
Introduce salad bars to all elementary schools.
Make fresh salads available in all secondary schools.
Remove all à la carte options at elementary and middle schools.
Eliminate all products with trans-fats and high fructose corn syrup.
Eliminate chocolate milk.
Replace many canned fruits and vegetables with fresh.
Begin cooking from scratch in all schools.
Increase the use of whole grain bread options.
Replace iceberg lettuce with healthier greens.
Provide professional development opportunities for cafeteria staff.
Reduce amount of waste from paper goods used during service.
Set non-cafeteria food policies.
Year 2
Sustain changes made in Year 1.
Introduce salad bars to all secondary schools.
Introduce Junior Chef Day events in elementary schools.
Increase the use of foods from local sources when possible.

Table 5. Changes in Foods Ordered and Used in Garfield RE-2 School District Cafeterias.

	Approximate Percent Composition of Food Budget Spent on Various Types of Foods			Average Percent for 2008/09 and 2009/10	Average Change Following Implementation of Lunch for Life	
	2007/08	2008/09	2009/10	Food	Food	Group
Prepared Meals						
Breakfast (prepared entrée containing egg and/or meat)	1%	0%	0%	0%	-1%	-8%
Lunch (prepared entrée)	10%	3%	3%	3%	-7%	
Protein Components						
Meat	14%	22%	22%	22%	+8%	
Fish	0.2%	0.3%	0%	0.1%	-0.04%	
Beans	0.3%	1%	1%	1%	+1%	+17%
Eggs	0.3%	0.6%	1%	0.8%	+0.5%	
Cheese/Non-milk Dairy	5%	11%	15%	13%	+8%	
Milk						
Milk	26%	23%	22%	23%	-3%	-3%
Fruits and Vegetables						
Fresh Produce (fruits and vegetables)	3%	7%	6%	7%	+4%	
Fruit (canned and frozen)	8%	7%	6%	6%	-2%	+5%
Fruit Snacks & Bites	1%	0%	0%	0%	-1%	
Vegetables (canned and frozen)	2%	7%	5%	6%	+4%	
Grains /Baking Goods						
Pasta/Rice	0.3%	1%	1%	1%	+1%	
Breads	5%	5%	4%	5%	+0.1%	
Sweet Breads	2%	0%	0%	0%	-2%	+2%
Baking Goods	1%	4%	4%	4%	+3%	
Soup	1%	0.2%	0.04%	0.1%	-1%	
Spices/Seasoning	0.3%	1%	1%	1%	+1%	
Snacks/Desserts						
Chips/Pretzels/Crackers	2%	1%	1%	1%	-1%	
Desserts/Cookies	1%	0.1%	0.1%	0.1%	-1%	
Frozen Desserts	1%	0%	0%	0%	-1%	-5%
Trail Mix and Cereal/Granola Bars	1%	0%	0%	0%	-1%	
Non milk Drinks	1%	1%	0%	0.5%	-1%	
Other						
Nuts/Seeds	1%	1%	0.4%	1%	+0.3%	
Condiments - other	2%	1%	2%	2%	-0.4%	
Condiments - salad dressing	1%	1%	1%	1%	+0.3%	-6%
Other	0.1%	0%	0%	0%	-0.1%	
Unknown	9%	3%	4%	3%	-6%	
TOTAL	100%	100%	100%			

Notes: Data was obtained from records of food orders and end of year inventories. No end of year inventory was available for the 2007/08 school year; however, portions of the food budget spent on various items is likely a close representation of what was ordered and served.
A minimal number of items ordered for one year are consumed in the following school year.

Table 6. Inventory of Pre-made Lunch Meals Served, by School Year.

Item	Total Dollars Spent
2007/08 School Year	
Uncrustables, PB & Jelly	\$6,700
Chicken & Pepperoni Crispitoes	\$170
Uncrustables, Grilled Cheese	\$770
Pizza, Cheese (frozen)	\$780
Cheese pizza, stuffed crust (frozen)	\$170
Pizza, Pepperoni (frozen)	\$1,600
Pepperoni pizza, stuffed crust (frozen)	\$320
Pepperoni Pizza Strips	\$610
Pockets, Ham and Cheese	\$2,300
Pockets, Meatball	\$200
Pockets, Pizza	\$1,200
Hot Pocket, Philly Steak/cheese	\$74
Hot Pockets, Peanut Butter & Jelly	\$8
Maxi Sticks	\$1,800
Beef Chimichangas	\$2,900
Chicken Chimichangas	\$2,300
Burrito, Beef n Bean	\$1,600
Burrito, Bean Fiesta	\$660
Chicken Stir Fry	\$2,000
Egg rolls	\$860
Shrimp Poppers	\$230
Cheese Stuffed Breadsticks	\$2,400
Pizza (from area pizza shops) ^a	\$22,000
2007/08 TOTAL	\$52,000
2008/09 School Year	
Pizza (from area pizza shops) ^a	\$13,000
2008/09 TOTAL	\$13,000
2009/10 School Year	
Pizza (from area pizza shops) ^a	\$14,000
2008/09 TOTAL	\$14,000

Notes:

^a Pizza from area pizza shops represents only a portion of the pizza served. During the 2007/08 school year frozen pizza and homemade pizza was also served; during the subsequent two school years, homemade pizza was also served.

Items were obtained from records that contained the majority of district cafeteria ordering and from end of year inventory records. No end of year inventory was available for the 2007/08 year.

A minimal amount of additional pre-made meals may have been ordered by schools during 2007-2008. Ordering was centralized during 2008-2009 and therefore the full list of pre-made meals for that school year is reflected above.

A minimal number of items ordered for one year may have been consumed in the following school year.

Table 7. Meat Products Purchased and Served by Year.

Item	2007/08 Total Dollars for Purchased	2008/09 Total Dollars for Purchased and Served	2009/10 Total Dollars for Purchased and Served
Beef			
Ground Beef	\$400	\$18,400	\$21,900
Ground Beef and Hamburger Patties	\$5,600	\$12,200	\$11,000
Beef Crumble, Taco Filling	\$8,200	--	--
Roast Beef	\$2,800	--	--
Meatballs, 30 lb. case 0.5 oz. ea.	\$200	--	--
Chicken			
Chicken, raw	--	\$4,300	\$12,500
Chicken, diced or strips	\$10,800	\$15,700	\$11,800
Chicken Fried Beef Patty, Steak Fingers	\$3,200	--	--
Chicken Nuggets/Tenders/Stix	\$10,300	--	--
Oven Fried Chicken Pieces	\$5,700	--	--
Popcorn Chicken, Chicken Rings, Chicken Wings, Chicken Fries	\$5,300	--	--
Chicken Patties	\$4,800	--	--
Turkey			
Turkey Roasts, raw	\$4,100	\$7,400	\$7,600
Turkey Breast, cooked	\$4,300	\$2,900	\$3,800
Turkey, ground	\$500	--	\$300
Turkey Franks	\$1,300	--	--
Turkey Ham, Turkey Bologna	\$2,000	--	--
Pork			
Ham, pork	\$5,100	\$4,600	\$7,200
Sausage Patties	\$3,200	\$1,100	\$6,900
Other			
Rib B Q	\$1,200	--	--
Pepperoni	\$1,900	\$2,600	\$2,000
Corn Dogs	\$4,600	--	--
Canned Tuna	\$800	\$1,200	--
Assorted Hoagie Meats	\$1,300	\$500	--
Bacon Bits, Imitation	\$100	--	--
TOTAL	\$87,700	\$70,900	\$85,000

Notes: -- = no product purchased

Dollar amounts are estimates and are not adjusted for inflation. Information on package sizes was limited, and preclude a comparison of the volume/quantity of items purchased.

Data is taken from records of the district's centralized food ordering (containing the majority of ordering for school and breakfast programs, a la carte offerings, and a small amount of additional ordering used for fundraising and catering). Although individual schools order some items that are not contained within these records these would not have included meat products and therefore the inventory provides an accurate representation of the types and amounts of these items. Data from end of year inventories was used to adjust totals. No end of year inventory was available for the 2007/08 school year.

A small amount of overstock from 2007/08 ordering was served during the 2008/09 school year.

Table 8. À La Carte Offerings by School Year.

School	2006/07 ^a	2007/08	2008/09 & 2009/10
Elementary Schools			
Kathryn Senor Elementary	NI	None	None
Cactus Valley Elementary		4 oz. ice cream and sherbet cups (Fridays only)	None
Highland Elementary	NI		None
Wamsley Elementary			
Elk Creek Elementary	--	--	None
Graham Mesa Elementary	--	--	--, None ^b
Middle Schools			
Rifle Middle	Ice cream products (sandwiches, bars, cones, cups), Powerade, juice drinks, flavored milk drinks, reduced fat plain and chocolate milk, water	Water, Gatorade, 100% fruit juice, 4 oz. ice cream and sherbet cups (not sold every day, primarily drinks offered)	None
Riverside Middle	Chips (assorted varieties), cheese and cracker packs, ice cream products (sandwiches, bars, cones, cups), Rice Crispy treats, cookies, fruit snacks, , trail mix, corn nuts, granola bars, Pop Tarts, Hot pretzels with cheese sauce. Powerade, juice drinks, flavored milk drinks, reduced fat plain and chocolate milk, water	Water, Gatorade, 100% fruit juice, 4 oz. ice cream and sherbet cups	None
High Schools			
Rifle High	NI	Water, Gatorade, 100% fruit juice, ice cream & sherbet products (cups, sandwiches, bars), Starbucks Frappuccino beverages	Water
Coal Ridge High	NI	Water, Gatorade, 100% fruit juice, ice cream & sherbet products (cups, sandwiches, bars), 16 oz. 100% juice smoothie	Water (every day), 16 oz. 100% juice smoothie (3 days/week)

Notes: -- = not applicable, school was not open

NI = no information, complete information on the offerings at this school were not obtained. See note (a) below.

^a A comprehensive list of à la carte items for the 2006-2007 school year was only available for the middle schools, as this information was obtained as part of a separate research study. Similar items were offered at the middle schools and high schools during that year. Fewer items were available at the elementary schools. Small ice cream cups, sherbet cups, and fruit snacks were available.

Items shown for the middle schools are items that were available at the beginning of the school year. Throughout the school year the available items were scaled back.

^b Graham Mesa School was opened for the 2009-2010 school year. No à la carte items were made available at the school during that school year.

Table 9. Impacts of Changes Introduced under Lunch for Life to Food Offered as Part of NSLP and SBP.

	Item Offered	Ingredients	Serving Size	Nutritional Information Per Serving							Source	Magnitude of Change & Notes
				Calories	Fat (g)			Sugars (g)	Fiber (g)	Sodium (g)		
					Unsaturated	Saturated	Trans					
Main Entrée - Example 1 Pizza	L for L	Homemade cheese pizza	1 slice	296	3.1	4.4	0	--	2	0.59	Garfield RE-2 recipe (nutritional information reflects crust made with 100% white flour. Fiber content would be greater than that shown here due to use of whole wheat flour)	
		Whole Wheat Crust - Flour (51% Whole wheat, 49% white), water, yeast, sugar, shortening, lowfat dry milk, salt Toppings: garlic, onions, tomato paste, water, spices, lite mozzarella cheese										
	Old	Frozen stuffed crust cheese pizza (Red Baron)	1 slice, 164 g	400	8	6	0	12	2	1.1	Web-based data	
		Crust: Enriched flour, water, yeast, soybean oil, sugar, cornmeal, salt, DATEM, sodium acid pyrophosphate, modified food starch, sodium bicarbonate, dough conditioner, defatted soy flour Toppings: Low moisture part skim mozzarella cheese, mozzarella cheese substitute, water, tomato paste, modified food starch, sugar, dextrose, salt, spice, onion, dehydrated Romano cheese, garlic powder, paprika, citric acid, beet powder, cultured pasteurized part-skim milk, salt, enzymes										
	Old	Frozen cheese pizza (Tony's)	1 slice, 156g	390	6	10	0	3	--	--	Package	
		Similar to above (Red Baron)									Little Ceasars Pizza was offered on occasion, at most schools not more often than one time per month.	
	Old & L for L	Little Caesar's cheese pizza	1 slice	240	4.5	4.5	0	3	1	0.41	Web-based data	
		Crust: Wheat Flour, Niacin, Iron, Thiamin Mononitrate, Riboflavin, Folic Acid, Water, Vegetable Oil, High Fructose Corn Syrup, Yeast, Gluconic Acid, Salt, Baking Soda, Cellulose Gum, Sodium Propionate (preservative), Food Starch-Modified, Corn Syrup Solids, Vital Wheat Gluten, Dough Conditioners, Natural and Artificial Flavors Toppings: Water, Tomato Paste, Spices, High Fructose Corn Syrup, Modified Food Starch, Citric Acid, Low Moisture Part Skim Mozzarella and Muenster, Powdered Cellulose to prevent caking, Natamycin (A Natural Mold Inhibitor).									For all pizza types (homemade, frozen, and Little Ceasars) other varieties including pepperoni and vegetable (with onions, peppers, mushrooms, etc) were additionally served.	

Table 9. Impacts of Changes Introduced under Lunch for Life to Food Offered as Part of NSLP and SBP.

	Item Offered	Ingredients	Serving Size	Nutritional Information Per Serving							Source	Magnitude of Change & Notes	
				Calories	Fat (g)			Sugars (g)	Fiber (g)	Sodium (g)			
					Unsaturated	Saturated	Trans						
Main Entrée - Example 2 Chicken	L for L	Oven baked chicken	Chicken (thigh meat only), Low Fat Yogurt, Low Fat Buttermilk, Bread Crumbs, Spices, Parmesan Cheese	4 oz	95	1.2	1.1	0	--	0.7	0.4	Garfield RE-2 recipe	
	L for L	BBQ chicken	Chicken (thigh meat only), Cattleman's BBQ sauce (Tomato Paste, High Fructose Corn Syrup, Corn Syrup, Water, Distilled Vinegar, Molasses, Salt, Mustard Bran, Natural Hickory Smoke Flavor, Spices, Onion Powder, Garlic Powder, Sodium Benzoate (Preservative), Caramel Color, Sugar, Natural Flavors)	4 oz	114	1.9	0.8	0	--	3	0.6	Garfield RE-2 recipe Web-based data	Chicken meals were offered approximately 1 time per week and were fairly popular with students. Although specific participation rates are not available for individual meals served, on average over the school years from 2007-2008 to 2009-2010 between 45 and 53% of students participated in NSLP.
	Old	Chicken nuggets (Tyson's)	Chicken, Water, Salt, and Sodium Phosphates. Breaded with: Bleached Wheat Flour, Water, Modified Food Starch, Yellow Corn Flour, Salt, Dextrose, Leavening, Spice, Extractives of Annatto and Turmeric, Natural Flavor. Fried in Vegetable Oil	5 nuggets (3-4 oz)	280	13	4	--	0	--	0.5	Web-based data	
Side item - Example 1 Potatoes	L for L	Roasted potatoes	Potato, Olive Oil, Salt, Pepper	1/4 c	97	1	0.2	0	0	2.5	0.3	Garfield RE-2 recipe	Significant impact. Potatoes are served as a side item approximately 2-3 days per week, and were fairly popular with students. Although specific participation rates are not available for individual meals served, on average over the school years from 2007-2008 to 2009-2010 between 45 and 53% of students participated in NSLP.
	Old	Frozen french fries (Ore-Ida Brand*)	Potatoes, Vegetable Oil, Salt, Dextrose, Disodium Dihydrogen Pyrophosphate, Annatto (Vegetable Color)	3 oz	120	3	0.5	0	0.5	2	0.4	Web-based data	
Milk	Old & L for L	Milk - plain, 1 and 2 % milkfat	Skim or lowfat milk, Vitamin D3	8 oz	100-120	1-2	1.5-3	0	12		0	Package	Significant impact. Milk is offered daily as part of SBP and NSLP meals. Evidence from school observations and national data on milk consumption patterns in schools suggest that when available, students select chocolate or flavored milks more than 50% of the time.
	Old	Milk - chocolate - 1 % milkfat	Lowfat Milk, High Fructose Corn Syrup, Cocoa (processed w/ Alkali), Corn Starch, Cocoa, Salt, Carrageenan, Vanillin (An Artificial Flavor), Vitamin A Palmitate, Vitamin D3	8 oz	170	1	1.5	0	25		0	Package	

Notes: g = gram
L for L = Lunch for Life program
NSLP = National School Lunch Program
SBP = School Breakfast Program
-- = information not provided
* = information on specific brand served was not available, or multiple brands served. Brand selected provides an estimate of that served.

Table 10. Nutritional Content of À La Carte Items Offered by Year.

Item Offered		Schools Offering ^a	Nutritional Information Per Package					Sugars (g)	Source
			Calories	Fat (g)					
				Unsaturated	Saturated	Trans			
2006/07^b									
Cheese and crackers (Nabisco, Handi snacks variety)	27g	M	100	3.5	1.5	0	2	package	
Snack Mix (Quaker, kid mix)	7/8 oz	M	110	2.5	1	0	4	package	
Sunflower seeds (variety of flavors)	1 oz	M	160-170	10.5-12.5	1.5	0	<1-4	package, lightly salted and honey roasted varieties	
Corn Nuts (variety of flavors)	39 g	M	180	5	1	0	0-1	package, based on BBQ, Ranch, and original varieties	
Granola bars (Quaker, chewy chocolate chip)	1 oz	M	120	2.5	1.5	0	9	package	
Trail Mix (Dakota Gourmet, s'mores variety)	1.25 oz	M	140	3.5	1	0	10	package	
Fritos	1 oz	M	160	8.5	1.5	0	0.5	package	
Sun Chips (variety of flavors)	1 oz	M	140	5	1	0	2	package, information for original and harvest cheddar varieties	
Potato Chips (Lays, BBQ)	1 oz	M	150	7	3	0	2	package	
Hot Pretzel	143 g	M	485	3.4	0.9	0	<1	USDA - for large soft pretzel	
Cheese sauce for hot pretzel	1/4 c	M	80	4	2	2	2	package	
Rice krispie bars (Kellogg's)	22 g	M	90	1.5	1	0	8	package	
Pop tarts (variety of flavors)	104 g	M	400-410	5	5	0	34-35	package, information for blueberry and strawberry	
Chocolate chip cookies (Pillsbury)	varies	M	135	3.5	2	1.5	10	USDA - Pillsbury refrigerated dough	
Cinnamon rolls (homemade)	30 g	M	110	3	1	0	9	USDA - cinnamon dough with frosting	
Fruit snacks (variety of brands, types, flavors)	varies	M	68-100	0.3-0.5	0-0.5	0-0.5	11-13	package, information for Curious George fruit snacks, Kettle Valley fruit snack, and Gushers	

Table 10. Nutritional Content of À La Carte Items Offered by Year.

Item Offered		Schools Offering ^a	Nutritional Information Per Package					Sugars (g)	Source
			Calories	Fat (g)					
				Unsaturated	Saturated	Trans			
Ice cream cups (variety of brands, flavors)	4 oz	M	130	3	4	0	10	package, information for vanilla flavor	
Sherbet cups (variety of brands, flavors)	4 oz	M	120	1	1	0	20	web-site, based on orange flavor	
Ice cream sandwich (variety of brands, types, flavors)	varies	M	240-300	3.5-5	5-7	0-1	24-25	package, based on Carnation, Klondike and M&M brands/varieties	
Ice cream bar (Snickers)	121 g	M	390	12	9	0	31	package	
Ice cream cones (Drumstick, variety of flavors)	141 g	M	340-360	10-11	11	0	24-29	package, information for vanilla, vanilla fudge, and vanilla caramel varieties	
Powerade (variety of flavors)	20 oz	M	150	0	0	0	37.5	package	
100% Juice (Minute Maid, variety of types)	16 oz	M	220	0	0	0	48-52	package, information for apple and orange juice	
Juice drinks (Minute Maid, variety of flavors)	20 oz	M	250-300	0	0	0	68-75	package, information for pink lemonade (3% juice), tropical citrus (10% juice), and strawberry passion (10% juice)	
Milk drinks (Hershey's, cookies and cream and vanilla cream)	20 oz	M	560-640	5	9	0	88	package	
Milk - plain, 1 and 2 % milkfat	8 oz	M	100-120	1-2	1.5-3	0	12	package	
Milk - chocolate - 1 % milkfat	8 oz	M	170	1	1.5	0	25	package	
Water	12 oz, 20 oz	M	0	0	0	0	0	package	
2007/08									
Ice cream cups (variety of brands, flavors)	4 oz	E, M, H	130	3	4	0	10	package, information for vanilla flavor	
Sherbet cups (variety of brands, flavors)	4 oz	E, M, H	120	1	1	0	20	web-site, based on orange flavor	
Ice cream sandwich (variety of brands, types, flavors)	varies	H	240-300	3.5-5	5-7	0-1	24-25	package, based on Carnation, Klondike and M&M brands/varieties	

Table 10. Nutritional Content of À La Carte Items Offered by Year.

Item Offered		Schools Offering ^a	Nutritional Information Per Package					Sugars (g)	Source
			Calories	Fat (g)					
				Unsaturated	Saturated	Trans			
Ice cream bar (Snickers)	121 g	H	390	12	9	0	31	package	
Starbucks Frappuccino	9.5 oz	H	190	1	2	0	30	web-site; information for mocha flavor	
Gatorade (variety of flavors)	20 oz	M, H	125	0	0	0	35	package	
100% Juice (Minute Maid, variety of types)	16 oz	M, H	220	0	0	0	48-52	package, information for apple and orange juice	
100% Fruit smoothies	16 oz	H	NA, 100% fruit juice, similar to juice beverages listed above.				--		
Water	12 oz, 20 oz	M, H	0	0	0	0	0	package	
2008/09									
100% Fruit smoothies	16 oz	H	NA, 100% fruit juice, similar to juice beverages listed above.				--		
Water	12 oz, 20 oz	H	0	0	0	0	0	package	
2009/10									
100% Fruit smoothies	16 oz	H	NA, 100% fruit juice, similar to juice beverages listed above.				--		
Water	12 oz, 20 oz	H, M	0	0	0	0	0	package	

Notes: E = elementary school
g = gram
M = middle school
H = high school
USDA = U.S. Department of Agriculture
-- = not applicable

^a Detailed account of schools offering various items is shown in Table 7.

^b For the 2006-2007 school year, a comprehensive list of a la carte items was obtained only for middle schools, and therefore only these are included here. During this school year the high schools had similar types and numbers of items. The elementary schools had a more limited selection than the middle schools.

Table 11. Summary of Startup Costs Associated with Lunch for Life, Year 1 & 2.

Item	Cost
Year 1	
School Lunch Assessment to Target Recommendations	\$11,100
Kitchen Equipment & Serving Trays	
Salad bars (quantity-5) & serving tongs for elementary schools, food processors (quantity - 3), vegetable driers (quantity-9), fruit and vegetable wedgers, pairing and chef knives, sharpening steels, muffin tins, various misc. items.	\$19,040
Compartment trays	\$4,960
Software	
"Nutrikids" Nutrient analysis program	\$280
Training	
Training for "Nutrikids" program	\$500
Training for cafeteria managers (healthy food preparation and recipes)	\$9,500
Year 2	
Training	
Training for cafeteria managers (healthy food preparation and recipes)	\$3,500
Kitchen Equipment	
Salad bars (for 1 new elementary school, 2 middle schools and 2 high schools), salad bar accessories, hand mixers, freezer, milk cooler, heated cabinet, knives, serving utensils, storage containers, cutting boards, roasting pans, various misc. kitchen items.	\$54,500
TOTAL	\$103,380

Notes: Startup costs were funded by the Children's Health Foundation; the donation was funded in part by the Colorado Health Foundation "Healthy Nutrition in Schools" grant.

Table 12 Series. Cost Analysis: Changes with Time

Table 12a. Breakdown of Costs: SBP and NSLP.^a

Category	2007/08		2008/09		2009/10	
	Amount	% of Total	Amount	% of Total	Amount	% of Total
Labor	\$888,000	61%	\$974,000	68%	\$947,000	67%
Food for meal production	\$545,000	37%	\$411,000	29%	\$409,000	29%
Kitchen Services/ Non-food Disposables	\$33,000	2%	\$45,000	3%	\$57,000	4%
Total	\$1,466,000		\$1,430,000		\$1,413,000	

Notes: NSLP = National School Lunch Program
SBP = School Breakfast Program
% = percent

^a Data for analysis was provided by the RE-2 School district. Data provided included costs associated with à la carte, catering, and summer on vendor specific data available for the 2008-2009 and 2009-2010 school years relative to the revenue from à la carte and catering.
^b Costs for food and disposables above are not adjusted for inflation. Average inflation for food from 2007 to 2008 was +5%; and from 2007 to 2009 was 6.7%. If food and disposables were adjusted for inflation the amounts for the 2008/09 and 2009/10 in terms of 2007/08 dollars would be: food for meal production - 2008/09 - \$390,000, 2009/10 - \$382,000; disposables - 2008/09 - \$43,000, 2009/10 - \$53,000.

Table 12b. Calculation of Meal Equivalents^a

Year	NSLP Meals Served ^b	SBP Meals Served ^b	Meal Equivalents from SBP ^c	Revenue from À la Carte	Meal Equivalents from À la Carte Revenue ^d	Revenue from Catering	Meal Equivalents from Catering Revenue ^d	Total NSLP Meals + Meal Equivalents ^e
2007/08	401,414	107,765	71,125	\$101,000	38,258	\$41,000	15,530	526,327
2008/09	371,814	72,903	48,116	\$28,000	10,219	\$35,000	12,774	442,923
2009/10	349,672	93,914	61,983	\$18,000	6,316	\$28,000	9,825	427,796

Notes: NSLP = National School Lunch Program
SBP = School Breakfast Program

^a Foods used for SBP and NSLP are not tracked by the food service program separately, and therefore the cost for a SBP and NSLP plate can not be calculated separately. Additionally costs associated with food used for catering and à la carte programs are not tracked separately, in their entirety. Therefore in order to calculate the costs of food per meal Total NSLP Meals + Meal Equivalents is calculated. Following protocols from the National Food Service Management Institute, 1 SBP meal is equivalent to 0.66 NSLP meals. Meal equivalents for extra food sales revenue (i.e., à la carte or catering) is equal to the sales in dollars divided by the free lunch reimbursement rate plus the commodity value per meal.

^b Includes student and adult meals

^c Meal equivalents from SBP = SBP Meals served * 0.66

^d Meal equivalents fro revenue = Revenue/(Free Lunch reimbursement rate + Commodity Value per meal) (see Table 17)

^e Total NSLP Meals + Meal Equivalents = NSLP Meals Served + Meal Equivalents from SBP + Meal Equivalents from À la Carte Revenue + Meal Equivalents from Catering Revenue

Table 12c. Food Costs per Plate^a

Year	Total NSLP Meals + Meal Equivalents	Food Cost per Plate	Food Cost per Plate in 2007/08 Dollars ^b
2007/08	526,327	\$1.04	\$1.04
2008/09	442,923	\$0.93	\$0.88
2009/10	427,796	\$0.96	\$0.89

Notes: NSLP = National School Lunch Program

^a Foods used for SBP and NSLP are not tracked by the food service program separately, and therefore the cost for a SBP and NSLP plate can not be calculated separately. Because a much smaller portion of breakfasts are produced in the district, the price calculated per plate is more heavily influenced by the NSLP costs/plates. Foods associated with NSLP production are greater, and therefore the cost to produce a NSLP meal is likely to be slightly greater than the figure shown here, while those to produce a SBP plate are lower than the figure shown.

^b Costs adjusted for inflation. Average inflation for food from 2007 to 2008 was +5%; and from 2007 to 2009 was 6.7%.

Table 12d. Trays per Labor Hour and Daily Labor Hours per School.

Year	Average NSLP & SBP Meal Equivalents Served per Day	Cafeteria Labor Hours per Day	Trays per Labor Hour	District Schools	Cafeteria Labor Hours per Day per School
2007/08	2,731	198.5	14	8	25
2008/09	2,470	217.5	11	9	24
2009/10	2,421	217.5	11	10	22

Notes: NSLP = National School Lunch Program
SBP = School Breakfast Program

Table 13. Summary of Costs Associated with Junior Chef Day

Item	Cost
Food	\$750
Staffing	\$9,700
TOTAL	\$10,450

Notes: Junior chef day events were held at 2 elementary schools during the second year of the program.

Table 14. Breakdown of Revenues and Costs from within the Cafeteria Program.

Category	2007/08	2008/09	2009/10
Revenue Generated from Cafeteria Activities			
Federal & State Reimbursement	\$734,000	\$703,000	\$781,000
Lunch and Breakfast Sales (amount paid by students and staff)	\$638,000	\$578,000	\$383,000
À la carte Sales	\$101,000	\$28,000	\$18,000
Catering	\$41,000	\$35,000	\$28,000
Total Revenue	\$1,514,000	\$1,345,000	\$1,210,000
Costs			
Labor	\$888,000	\$974,000	\$947,000
Food (for SBP, NSLP, à la carte, catering)	\$545,000	\$411,000	\$409,000
Kitchen Services/Non-food Disposables	\$33,000	\$45,000	\$57,000
Total Costs	\$1,466,000	\$1,430,000	\$1,413,000
Revenue - Costs	+	-	-

Notes:

Data for analysis was provided by the RE-2 School district. Data includes revenues associated with summer programs.

Revenues generated from within the cafeteria only are shown; revenue sources including donations and grants are not shown.

Table 15. Student Meals Served, SBP and NSLP.

	2007/08	2008/09	2009/10
SBP (Breakfast)	107,285	72,489	93,379
NSLP (Lunch)	394,823	359,531	338,716
Total	502,108	432,020	432,095

Notes: NSLP = National School Lunch Program
 SBP = School Breakfast Program

Table 16. Total Meals Served, and Apportionment by Type.

School Year	Total Meals Served	% of Total to Free Eligible Students	% of Total to Reduced Eligible Students	% of Total to Full Pay Students
Breakfast				
2007/08	107,285	23%	17%	60%
2008/09	72,489	60%	22%	18%
2009/10	93,379	72%	15%	13%
Lunch				
2007/08	394,823	41%	14%	45%
2008/09	359,531	42%	19%	39%
2009/10	338,716	55%	14%	31%

Notes: % = percent

Table 17. Reimbursement Rates and Meal Pricing.

	2007-08	2008-09	2009-10
Reimbursement Rates ^a			
Breakfast			
Free, R	\$1.35	\$1.40	\$1.46
Free, SN	\$1.61	\$1.68	\$1.74
Reduced, R	\$1.05	\$1.10	\$1.16
Reduced, SN	\$1.31	\$1.38	\$1.44
Full Pay	\$0.24	\$0.25	\$0.26
Lunch			
Free	\$2.47	\$2.57	\$2.68
Reduced	\$2.07	\$2.17	\$2.28
Full Pay	\$0.23	\$0.24	\$0.25
Meal Pricing in RE-2 Garfield District ^b			
Breakfast			
Students, all schools	\$2.00	\$2.00	\$2.00
Adults	\$2.50	\$2.50	\$2.50
Lunch			
Students, elementary	\$2.75	\$2.75	\$2.75
Students, middle & high school	\$3.00	\$3.00	\$3.00
Adults	\$3.75	\$3.75	\$3.75

Notes:

^a SN= Severe need rate - In 2008/09 6 of 9 RE-2 Schools were reimbursed at this rate. In 2009/10 8 of 10 schools were reimbursed at this rate. R = Regular rate - the remainder of RE-2 Schools were reimbursed at this rate.

^b Students qualifying for reduced rate meals are provided breakfast at no cost (all grades), lunch at no cost (grades K-2) and lunch at the cost of \$0.40 (grades 3-12).

FIGURES

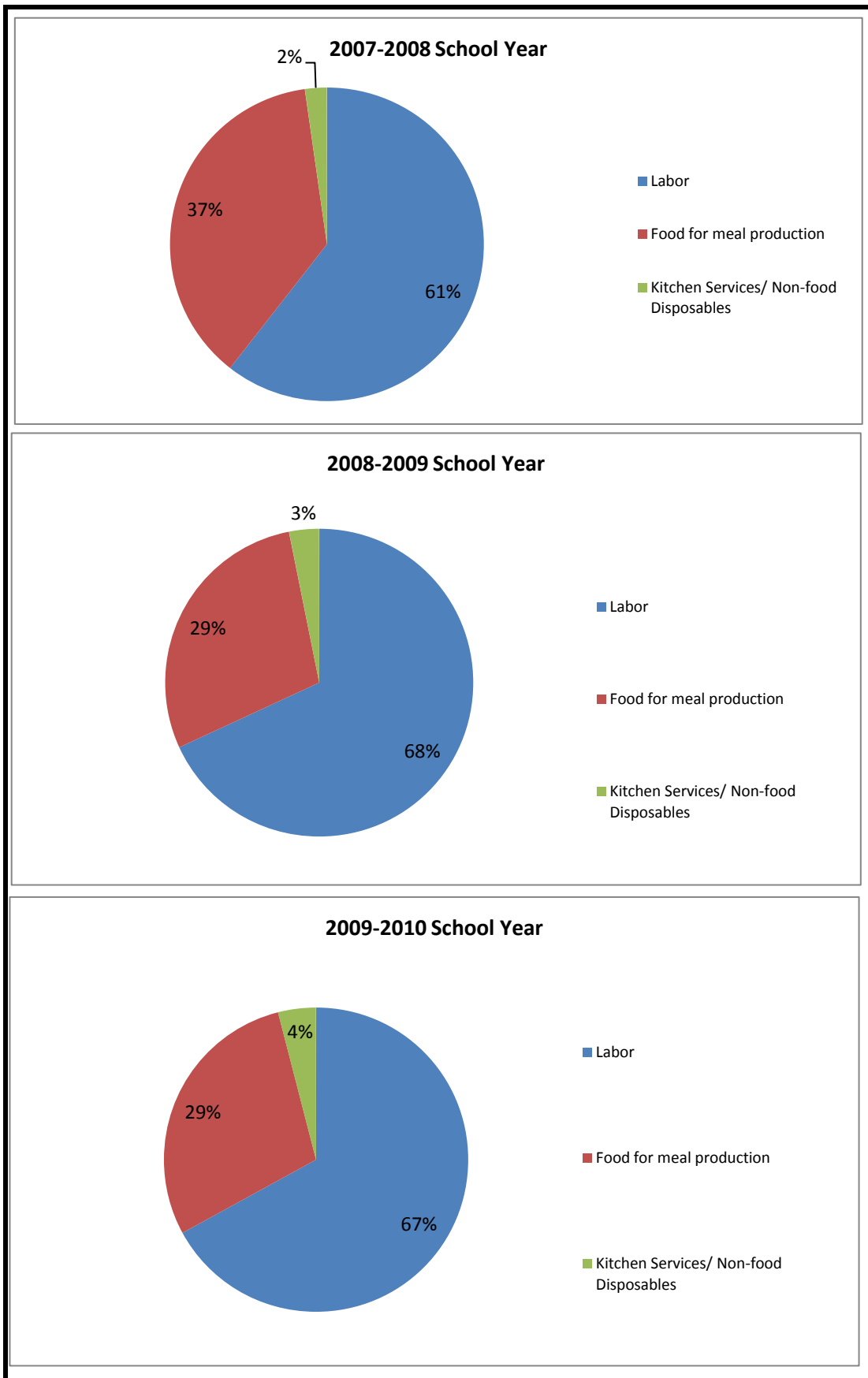


Figure 1. Breakdown of Costs to Produce NSLP and SBP.

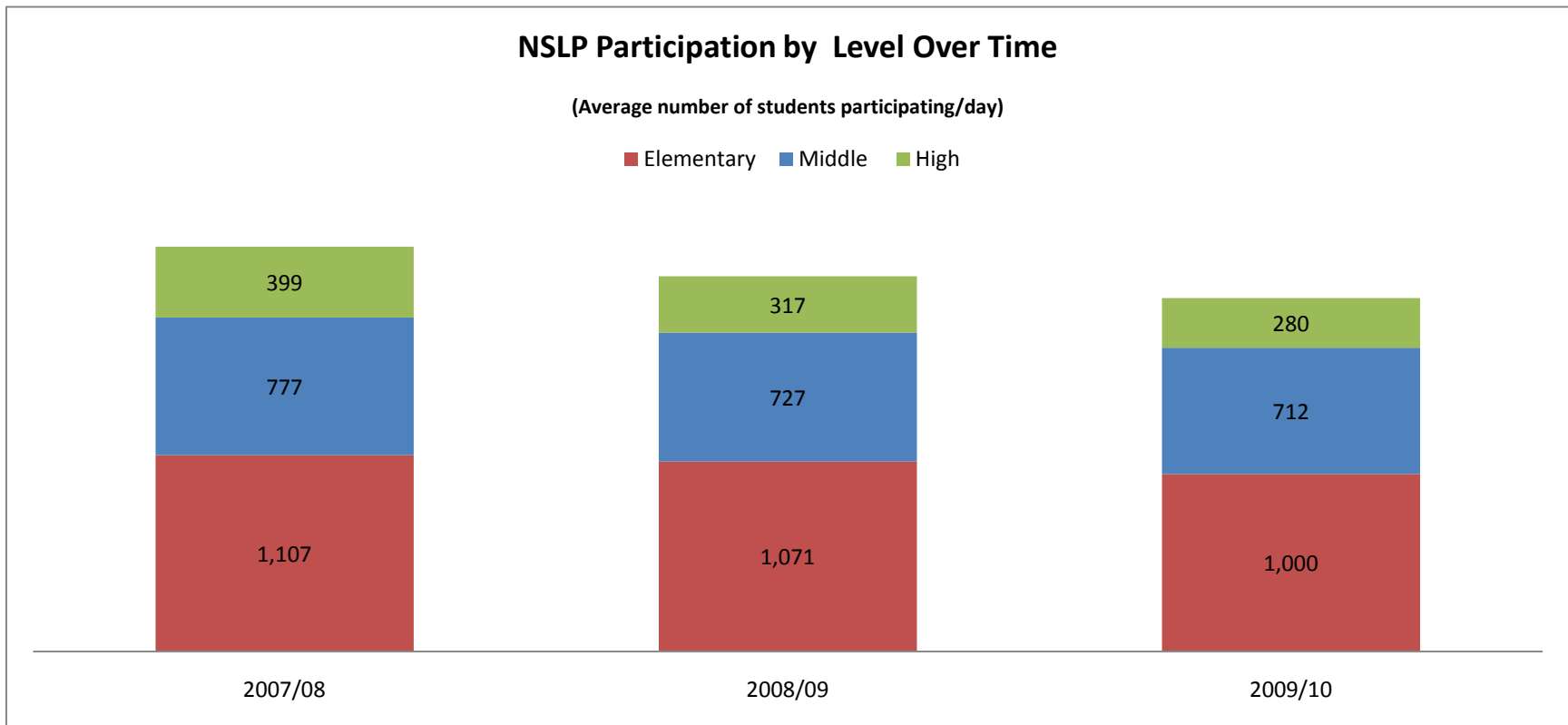


Figure 2. NSLP Participation by Level Over Time.