Published in final edited form as:

J Sch Health. 2017 February ; 87(2): 98–105. doi:10.1111/josh.12472.

Healthy concessions: high school students' responses to healthy concession stand changes

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Abstract

BACKGROUND—A previous sales data analysis demonstrated success in selling healthier items at a concession stand. Questions remained regarding student satisfaction and whether the intervention reached non-health conscious students.

METHODS—Cross-sectional anonymous samples of students at a large midwestern high school were surveyed before and after an intervention improved the number of healthier items available at the concession stand.

RESULTS—The survey was completed by 301 students pre-intervention and 314 students post-intervention. Satisfaction remained good (3.7 pre and 3.6 post). Satisfaction with the variety and taste of foods increased. We compared students who felt having healthy items were important at the concessions to those who did not. Overall satisfaction with concessions did not differ between groups. The latter group (healthy items not important) reported improved satisfaction with food variety (2.8 to 3.1, $p = .02$) and the former reported improved satisfaction with healthy foods (2.5 to 2.9, $p = .03$) and overall taste (3.2 to 3.4, $p = .02$). Of the healthy items not important students 76% reported purchasing at least one new healthier food.

CONCLUSIONS—Adding healthier foods to school concession stands has positive effects on student satisfaction, sales and reaches all students whether or not they care about having healthy items available.

Keywords

adolescence; diet; concession stand; school-based health promotion; community-based participatory research; community health promotion and child health

Seventeen percent of US children age 2-19 are obese.¹ Childhood obesity has been in part linked to foods high in solid fats and added sugars, including sodas and snack foods.²⁻⁵ School environments have been targeted as an important area for change in the fight against childhood obesity.⁶ Policy changes enacted locally and federally by the US Department of Agriculture (USDA) have targeted the school lunch programs and competitive foods sold during the school day. However, policies often do not apply to foods sold on school grounds outside of the school day, including concessions at sporting events.⁷ In 2010-11 only one state had a law governing foods and drinks sold at evening school events and regulations were suggested but not required.⁸ In 2010-11, 89% of school districts nationwide had no food policies governing evening and/or community events at high schools and only 1% had “strong” policies.^{9,10} The Iowa Healthy Kids Act specifically exempts concession stands from its new school food regulations as is true for laws in some other states.¹¹ Despite the Mississippi Healthy Student Act of 2007, in 2011 only 20% of districts surveyed in Mississippi had a policy regarding junk food sold at concession stands.¹² School sporting events are gathering places for children, parents and community members. While perhaps not the bulk of calories consumed by students, the lack of healthier options at school events sends an inconsistent message to students about the importance of healthy eating.^{13,14} Furthermore, these events often occur during meal times, leaving spectators without healthy meal options.^{15,16}

Booster clubs are parent-led volunteer organizations that raise money for student organizations and sports teams. Booster clubs receive a substantial portion of their funding from concession sales.¹⁷ As a result, such groups may be resistant to changing concession stand offerings for fear of losing profits and decreasing customer satisfaction (including students).¹⁷⁻²³

We formed a unique partnership between the school's parent booster organization and a research team from a public university using community-based participatory research methods (CBPR), which have been described in detail elsewhere.^{24,25} The overarching aim of this partnership was to engage stakeholders in the implementation of concession stand changes in one large high school, while evaluating the effect of these changes on concession sales, profits and consumer satisfaction. As described in our previous publication, sales data showed that new healthy foods made up 9.2% of sales revenue (and around 11% of items sold), products modified to remove trans-fats remained popular and overall income per game remained stable.²⁴ Questions still remained regarding how students felt about the changes and which students were reached by the intervention (ie, was it only the health conscious students?). In this paper, we examine the student responses to healthy changes made to items

at the concession stand in terms of satisfaction, reported purchases and examine how this differs between those who think that having “healthy” items available at the concession stand is important and those who do not.

METHODS

In 2008, a partnership of researchers and Booster Club members reviewed the nutritional content of the items served at the concession stand that serviced sporting events for a large high school (about 1700 students) located in a mid-western community of fewer than 25,000 people. They generated a list of possible new items that the Booster Club would be interested in adding to their concession stand and items that could be modified to improve their nutritional content. Items were selected after determining their availability, nutritional content, and cost. New items met the USDA Team Nutrition guidelines for competitive foods (<10% saturated fat, <35% total fat, <35% sugar by weight) and had no trans fat. For example, granola bars were chosen that were lower in sugar to meet these guidelines.

Before including these items on the menu, a baseline survey of students measured which items students would be most interested in purchasing, and whether they would be willing to purchase the items at a pre-determined price point. With this information, Boosters chose new foods for the concession stand and the price at which to sell them. Additionally, some ingredients in two existing food items were replaced with alternatives to remove trans fats and decrease saturated fat. These items were first tested during the winter 2008-09 basketball season, and then featured during the fall 2009 season (football/swimming/wrestling).

Baseline surveys in 2008 also measured student satisfaction and attitudes towards foods sold at the concession stands. Follow-up surveys administered after the fall 2009 sports season measured satisfaction and attitudes again as well as frequency of concession purchases and acceptable price points. Both surveys asked about student attendance at different types of school sporting events. A specific question asked “how important is it to you that (Name of School) offer healthy/nutritious food and drink choices during sporting events” in both the pre and post surveys. The 2009 survey also asked whether participants had completed the initial survey. Satisfaction questions were modeled after validated satisfaction questions and used standard validated Likert answer choices (Table 1).^{26,27} The questions were pilot tested with students to gauge understanding of the questions.

Anonymous surveys were distributed to all interested students in the cafeteria as they waited in line during the lunch periods with nonmonetary gifts for survey completion. Once around 300 completed surveys had been returned, collection was stopped. Student interest was high and surveys were completed at both time points by the beginning of the second of 3 lunch periods. Each lunch period include a mix of students from all grades.

Data Analysis

Responses from the baseline and follow-up surveys were compared using t-statistics (Mann Whitney-U) and F-statistics (Pearson chi-square) using STATA 13. Primary analyses were run with all respondents. Separate analyses were done using only respondents who reported

completing the baseline survey to determine if there were statistically significant differences ($p < .05$) in responses among those who reported completing the baseline survey compared to those who did not. Additional analysis compared those reporting attending sporting events to those who did not. Results from the restricted analyses were not significantly different from those using the full sample. Accordingly, results from the full analysis are presented.

Price preferences were measured for each of the new foods. In the 2008 and 2009 surveys, students were asked if a pre-specified price for each item was less than they would expect to pay, about the same as their expected price, or more than they would pay (responses were given values of 1, 2, and 3, respectively). Price sensitivities were calculated using the mid-point formula (equivalent to price elasticities in the economics literature).²⁸ It is assumed that a student would purchase a product if he/she specified that the listed price was less than or equal to his/her expected price. Analysis examining those who believed it was important to have healthy food at the concession stand and those who did not was based on the concurrent question asked on the same pre or post intervention questionnaire.

RESULTS

The pre-intervention survey (fall season 2008-09) was completed by 301 students and the post-intervention survey (after the fall season 2009-2010) was completed by 314 students. In 2008, 50.7% of respondents were female and in 2009, 40.3% were female. In 2008, 97.8% of respondents reported attending a sporting event and 97.4% in 2009. As we were unable to count the actual number of students present during the given lunch period in a busy cafeteria, we estimated response rates based on the number of students assigned to each lunch period. Survey response rate estimates for 2008 were 51% and 2009 were 56%.

Reported Purchases

In the 2009 survey, students were asked to report the number of times they purchased an item at a concession stand (Table 2). Students purchased candy the most (an average of 2.9 purchases over the season – about 3 months). On average students purchased popcorn and nachos about 2.5 times over the season. Student reported purchases suggest that grilled chicken sandwiches, soft pretzels, and granola bars were moderately popular items with students reporting buying these items at least 2 or more times. Given their popularity and price, nachos (\$2.50) accounted for 17.1% of predicted revenue and grilled chicken sandwiches (\$3.00) accounted for 13.6% of predicted revenue, based on reported purchases from the survey. Previously sold items were calorically dense compared to new healthier items and accounted for the predominant percentage of calories sold (Table 2).

Interestingly, students who reported they did not believe it was important for healthy foods to be offered at concession stands reported purchasing many of the healthier foods with similar frequency compared to those who believed it was important (Table 3). Seventy-six percent of students who felt having healthy items were *not important* reported purchasing at least one new healthier food while 78.7% of students who felt having healthy items were *important* reported purchasing at least one new healthier food. These were not significantly different. Those who felt healthy items were *important* were more likely to report purchasing granola bars, apples and baby carrots.

A comparison of reported likelihood of purchase (2008 survey) and reported purchase instances (2009 survey) demonstrates that students are amenable to healthy foods in the concession stands (Table 3). For example, nearly 70% of students said they would be likely to purchase a grilled chicken sandwich and in 2009, nearly 50% of the surveyed students reported purchasing them. In addition, almost half of the surveyed students said they would be likely to purchase carrots, and 16% reported purchasing them.

Student responses to survey questions in both years are detailed in Table 4. It turns out that students liked the variety of foods offered at the concession stands better in 2009 ($p = .002$) and they liked the taste of the foods better in 2009 ($p = .012$). Overall satisfaction and reported frequency of concession purchases remained unchanged.

These survey responses were then broken out by students who indicated that they were either indifferent or did not believe that it was important that healthier foods were offered at concession stands, and students who believed it was important (Table 4). Students who said it was *not important* that healthy foods be offered were more pleased with the overall variety of foods available in 2009 ($p = .018$).

Students who voiced that offering healthy foods was important reported that they liked the taste of the concession stand foods better in 2009 ($p = .023$) as well as the variety of healthy items ($p = .037$). In contrast to their peers who did not believe offering healthy foods was important, this latter group saw no difference in the overall variety of foods offered.

Price Sensitivity

When comparing listed prices in 2008 and 2009 (Table 5) students were very price sensitive for some new items except for pretzels. These price sensitivity measures represent the percent change in demand for an item when the price changes by 1% and can be done only for items for which the suggested price changed. The most pronounced change was in granola bars where a 1% increase in price equates to more than a 5% decrease in demand, and vice versa. The least price sensitive item was the pretzel, which suggests that a higher price could still yield big sales.

DISCUSSION

This paper builds on the evaluation of a unique intervention that added healthy items to a high-school concession stand. Previously published data show that these items sold and profits remained stable.²⁴ This study describes the student response to these changes and clarifies who purchased the new items. A key question of interest was whether non-health conscious students would also buy the new foods. Students responded to the changes in the concession stand positively and the survey data suggests that there is a demand for healthy items. Students reported purchasing new and modified items though candy remained the most frequent item reported by students. Even students who did not think having healthy items at the concession stand was important reported purchasing the new items. Their reported purchase rates were similar to students who felt healthy items were important except for lower purchases of granola bars, apples and carrots. Seventy-six percent of students who did not feel healthy items were important purchased at least one of the new

healthier items. Student satisfaction remained good with no difference between the 2 years. However, after the changes, students rated the variety and taste higher. Importantly, those who did not feel having healthy concession stand food was important showed a greater improvement in their rating of the variety available. We also found that students were very price sensitive for granola bars and trail mix but not pretzels.

These survey data are consistent with sales data collected during this intervention.²⁴ However, students also suggested willingness in the pre-surveys to buy granola bars and trail mix that did not sell as well as predicted. This may link to the high price sensitivity of these 2 products. For example, granola bars were price sensitive and when the group sold them for \$1 which was the same as the candy bars, they did not sell well.²⁴ Perhaps selling the granola bars at a lower price or increasing the price of candy bars would have helped sales. Unfortunately, lowering the price of granola bars or trail mix would have lowered their profit margin below an acceptable level.

Even students who did not think having healthy options were important showed increased satisfaction with the variety of concession options. This could reflect a number of factors. First, the large number of healthy items added at once significantly increased the number of menu items available. Second, the advertising campaign emphasized not healthier choices but more variety. The slogan was “great taste: more choices.” This was done because student feedback suggested they might consider “healthy” items as less tasty; this is consistent with some literature.²⁹ Third, students are used to seeing such foods offered in retail settings, such as super markets. It is possible that they expect these choices elsewhere, even when they do not believe it is important. On the other hand, students who thought having healthy food was important were more likely to report buying granola bars, apples, and carrots. This data suggests that perhaps these items were seen as being the “healthy choices.”

Reported purchases and sales data show that students spread their purchases over a greater variety of foods that now included some higher nutrient density foods. Whereas this is a positive achievement, it must be noted that candy sales continued to dominate. To decrease their sales, candy would either need to be removed or at least increased in price.

There are no published comparable studies on the topic of school concession stand interventions or student satisfaction with concession stand products. There are a small number of articles regarding sport concession venues outside of schools but they are limited and predominantly outside of the United States.^{30,31} A study of one Canadian recreation facility showed that after implementation of new healthy food guidelines, 16% of concession items offered met criteria for being healthy. Limited sales data suggested decreased sales and observational data suggested unhealthy options dominated children's choices.¹⁹ At another recreation facility, the same group revamped the menu and sold 41% healthy items.³² At a third facility, they showed that when the number of healthy items available increased from 9.1% to 25% the sales of healthy items went from 7.7% to 27% (predominantly healthy smoothies) without changing revenue.³³ A dissertation study with 6 US parks and recreation concession stands attempted to increase water sales, add fruit to the menu, and to test a promotional campaign of signs and stickers. The promotional campaign did not affect sales but some sites were able to successfully add fruit.³⁴ These 3 sites sold fresh fruit, displayed

it prominently and used the promotional signs. Parents reported taste, cost and child preference as the top drivers of food choices and only 7% reported healthiness as a factor.³⁴ No satisfaction data was collected in any of these studies. One study of youth baseball in North Carolina showed 89% of food and beverages consumed were from the concession stand and 73% of the food eaten was consider a less healthy option. Seventy-eight percent of baseball practices and games occurred during meal hours (5-7PM).

Other studies have shown that like these students, adults and children are price sensitive.^{29,35} One vending machine study in schools showed improved sales of healthy products with price reductions on these products.³⁵ Likewise, studies in schools have shown that gradual change in the content of meals toward a healthier food has been well received^{36,37} and that lower fat foods³⁷ and more fruits and vegetables can be sold to students.³⁸ Simply making items such as carrots available to students may increase consumption.³⁹ One study showed that in states where there were policies recommending prohibition of junk food in concession stands youth drank less soda.⁴⁰

Limitations

The strengths of the study include its unique focus and the combination of survey data and sales data (see companion paper).²⁴ However, the following limitations should be considered when evaluating this study. This information reflects the results of a pilot study done in one large midwestern high school and may not reflect the experiences of students in all schools. Pre-post samples were not paired as they were done anonymously. This information is based on student self-report. Differences between self-reported purchases and sales data may reflect (1) over-reporting of certain purchases and/or (2) reflect purchases of new items during the basketball season (not included in the sales data). We could not compare price sensitivity on apples and carrots because the product being queried changed between surveys. Questions regarding candy did not differentiate between hard candy (suckers and taffy (\$0.25)) and candy bars (\$1.00). Sales data from a previous paper showed that about two-thirds of candy sales were 25¢ candies.²⁴

Conclusion

Adding healthy foods to traditionally less healthy food venues (high school concession stands) is well received and profitable. Even students who did not place importance on having healthy food at the concession stand still purchased these healthier items and appreciated the increased variety even more than their peers. Students are, however, very price sensitive and cheap candy will continue to be a big seller as long as it is available. A price structure that increases the price of these items could be considered. Groups running food venues should be encouraged to add healthy options.

IMPLICATIONS FOR SCHOOL HEALTH

These findings suggest important lessons for school health. First, venues like concession stands sell food on school property. They should not be left out of plans to improve the school nutrition environment. Second, there appears to be a market among students for healthier options, even if they may not out sell some unhealthy alternatives such as candy.

Third, healthy changes to the concession stand seem to affect the buying habits of all students, not just those interested in healthier foods. Students may be open to consuming some healthier options even if they do not explicitly state a desire for “healthier food.” Fourth, changes can be made to concession stand venues by offering healthy items without impacting sales or satisfaction. There is an opportunity to work with parent groups or others who run these concession stands for profit and find ways to make changes and maintain profits. Fifth, a focus on increased variety seems to have resonated with students. Sixth, making further inroads into replacing items like candy with healthier options may require additional changes beyond adding healthy foods to the menus, such as pricing changes or limiting the availability of these unhealthy choices. Pricing changes may be effective given students’ price sensitivity for many items. Smaller profit margins on some healthy items may present a challenge. A guide to help concessions make changes is available without cost for download at <http://cph.uiowa.edu/prc/>.

Human Subjects Approval Statement

This study was approved by the University of Iowa Institutional Review Board. A letter including the elements of consent was attached to the survey, students were reminded to read it and completion of the survey was considered consent. Documentation of consent was waived by the IRB.

ACKNOWLEDGEMENTS

We thank the Muskie Boosters organization and the members of the project committee without whom this project could not have happened. This study was supported by a grant from the Wellmark Foundation. Salary support for Dr. Laroche came from a NIH career development award, K23HL093354.

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Table 1

Relevant Survey Questions

1. Thinking about your most recent experience with the concessions stands at _____ High School during sports events, please indicate your overall level of satisfaction with food and drinks offered.	Very unsatisfied	Unsatisfied	Neither satisfied nor unsatisfied	Satisfied	Very satisfied	Not applicable
2. The variety of current items at the concession stand is:	Poor	Fair	Good	Very Good	Excellent	Not applicable
3. The taste of current items at the concession stand is...	Poor	Fair	Good	Very Good	Excellent	Not applicable
4. How important is it to you that _____ High School offer healthy/nutritious food and drink choices during sports events?	Very unimportant	Unimportant	Neither important nor unimportant	Important	Very important	
5. How satisfied are you with the healthiness/nutritional value of the food and drink choices currently available during sports events at the _____ High School?	Very unsatisfied	Unsatisfied	Neither satisfied nor unsatisfied	Satisfied	Very satisfied	Not applicable
6. The variety of healthy items currently offered at the concession stand is?	Poor	Fair	Good	Very Good	Excellent	Not applicable
7. How often, if at all, do you buy items from the concession stand at _____ High School during sports events? <i>Please circle one answer.</i>	Never	Seldom	Sometimes	Frequently	Always	

Table 2

Reported Purchasing Behaviors during Fall 2009 Season

	Number Reporting a Purchase	Reported Quantity Purchased	Projected Purchase Quantity	Concession Price	Revenue	% of Food Revenue ^a	Calories	% of all calories
Foods sold in both years								
Candy	238	2.9	702	\$0.25; \$1.00	\$351	4.1%	80; 250	6.1%
Pork sandwich	120	2.8	336	\$3.00	\$1,008	11.7%	280	5.9%
Nachos (plain; with meat)	222	2.6	588	\$2.00; \$3.00	\$1,470	17.1%	320; 830	21.3%
Popcorn – large box	220	2.6	579	\$1.00	\$579	6.7%	597	21.8%
Hot dogs	177	2.4	432	\$2.00	\$864	10.1%	440	12.0%
Pizza ^b	-	-	608 ^c	\$2.50	1519 ^c	17.7% ^c	300	11.5%
Foods sold in 2009 only								
Grilled chicken sandwich	145	2.7	390	\$3.00	\$1,170	13.6%	264	6.5%
Soft pretzels	155	2.5	384	\$1.00	\$384	4.4%	160	3.9%
Trail mix	110	2.4	266	\$1.00	\$266	3.1%	220	3.7%
String cheese	122	2.3	284	\$0.50	\$142	1.7%	80	1.4%
Granola bars	135	2.3	313	\$1.00	\$313	3.6%	190	3.7%
Pickles	78	2.3	178	\$1.00	\$178	2.1%	20	0.2%
Baby carrots with dip	72	2.2	160	\$1.25	\$200	2.3%	95	1.0%
Apples	91	2.1	187	\$0.75	\$140	1.6%	90	1.1%

Quantity purchased was estimated by using the self-reported question in the post survey. We assumed a quantity of 1 for each reported purchase. If an individual said they purchased an item twice, the quantity purchased is reported as 2. Projected purchase quantity was calculated by multiplying the number reporting a purchase by the reported purchase quantity. Revenue was calculated by multiplying the projected purchase quantity by the price. Based on previous data, for candy the assumption was made that 75% were 0.25 candies and 25% \$1.00 candy and for Nachos the assumption was made that the split was 50/50. % of Food revenue was calculated by adding up purchases of all foods in the revenue column.

^aNot including beverage revenue

^bthis item was sold at the concession but not asked on the questionnaire.

^cthis number is an estimate based on actual sales data from 2009 as frequency of pizza purchase was not asked on the questionnaire. Sales data includes purchase made by students, parents and others.

Table 3

Percent of Students Reporting Purchasing Foods by Those Who Do and Do Not Believe Healthy Food Options Are Important

Percent of Students Reporting Purchasing Food					
	All Students	Not Important	Important	Chi-square	p-value
Foods offered in both years					
Candy	69.3%	68.8%	70.5%	0.10	.75
Nachos	55.0%	58.4%	53.2%	0.80	.37
Popcorn	56.0%	56.0%	56.6%	0.01	.91
Hot dogs	40.3%	38.4%	42.2%	0.43	.51
Pork sandwich	33.7%	35.2%	32.9%	0.16	.68
Foods offered in 2009					
Grilled chicken sandwich	40.0%	36.8%	42.2%	0.88	.34
Soft pretzels	36.0%	32.8%	38.7%	1.10	.29
String cheese	28.3%	24.8%	30.6%	1.22	.26
Trail mix	26.3%	22.4%	29.5%	1.87	.17
Granola bars	32.3%	22.4%	39.9%	10.10	.001
Pickles	17.7%	14.4%	20.2%	1.69	.19
Apples	18.0%	12.8%	22.0%	4.11	.04
Baby carrots	16.3%	10.4%	20.2%	5.19	.02

Table 4
Student Attitude Changes Separated by Beliefs Regarding Importance of Serving Healthy Foods at Concessions

<i>Attitudes of all student respondents</i>							
2008				2009			
N	Average Ranking	St Dev	N	Average Ranking	St Dev	Pearson Chi-square	p-value
Overall Satisfaction	3.8	0.95	301	3.8	1.06	5.01	.286
Variety of Concession Foods	3.0	1.01	307	3.2	0.93	17.48	.002
Taste of Concession Foods	3.1	0.97	306	3.3	1.04	12.90	.012
Importance of Healthy Foods	3.5	1.14	312	3.5	1.13	3.61	.462
Satisfied with Healthfulness	3.4	0.98	307	3.6	0.95	4.20	.380
Variety of Healthy Items	2.6	0.99	254	2.7	1.00	5.89	.117
Frequency of Concession Purchases	3.4	1.05	312	3.4	1.07	2.28	.685
<i>Panel 1 Respondents who do not believe it is important for healthy foods to be offered at concessions</i>							
2008				2009			
N	Average Ranking	St Dev	N	Average Ranking	St Dev	Pearson Chi-square	p-value
Overall Satisfaction	3.7	1.04	126	3.6	1.11	2.15	.707
Variety of Concession Foods	2.8	0.98	128	3.1	0.82	11.88	.018
Taste of Concession Foods	2.9	0.97	128	3.0	0.98	2.22	.695
Satisfied with Healthfulness	3.4	0.90	128	3.3	0.94	1.86	.761
Variety of Health Items	2.6	0.91	115	2.6	0.93	2.47	.481
Frequency of concession purchases	3.4	1.09	129	3.3	1.08	5.43	.246
<i>Panel 2: Respondents who believe it is important for healthy foods to be offered at concessions</i>							
2008				2009			
N	Average Ranking	St Dev	N	Average Ranking	St Dev	Pearson Chi-square	p-value
Overall Satisfaction	3.9	0.89	175	3.9	1.01	5.20	.267
Variety of Concession Foods	3.1	1.01	179	3.4	0.98	7.72	.102
Taste of Concession Foods	3.2	0.96	178	3.4	1.05	11.35	.023
Satisfied with Healthfulness	3.5	1.04	179	3.7	0.93	6.78	.148
Variety of Healthy Items	2.5	1.05	139	2.9	1.05	8.49	.037

<i>Attitudes of all student respondents</i>							
2008				2009			
N	Average Ranking	St Dev	N	Average Ranking	St Dev	Pearson Chi-square	p-value
Frequency of concession purchases	171	3.4	182	3.5	1.04	2.49	.646

Change between Years in What Students Will Pay for Foods (Based on Listed Price in Survey)

Table 5

Food	2008 Price	Less Than or Equal to Expected Price	More Than Expected Price	2009 Price	Less Than or Equal to Expected Price	More Than Expected Price	Price sensitivity ⁱ
String Cheese	\$0.50	79.0%	21.0%	\$0.50	81.6%	18.4%	–
Granola Bars	\$0.75	77.1%	22.9%	\$1.00	51.7%	48.3%	5.33
Trail Mix	\$1.50	62.4%	37.6%	\$1.00	74.4%	25.6%	1.99
Soft Pretzel	\$1.50	86.3%	13.7%	\$1.00	84.6%	15.4%	0.04
Grilled Chicken Sandwich	\$3.00	59.5%	40.5%	\$3.00	66.1%	33.9%	–

ⁱThe price sensitivity measures are price elasticities and were calculated using the mid-point formula (reference in the text). Demand for each item was calculated by counting the number of respondents who believed that the price was less than or equal to what they expected to pay. This price sensitivity measure is the percent change in demand when price changes by 1%. These measures can only be calculated if an item appears in both years and if the price changes between the years.