

Healthy Bargains: Fruits and Vegetables are Nutritious and Economical



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CSPI and the Nutrition Policy Project

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Healthy Bargains: Fruits and Vegetables are Nutritious and Economical
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Executive Summary

Most people know that fruits and vegetables are good for them. Yet, most Americans do not eat the recommended amounts. One barrier is the belief that fruits and vegetables are not affordable.

We compared the costs of fruits and vegetables with other commonly consumed snacks and side dishes. We analyzed twenty snack and nineteen side dish options.

Overall we found that the average price per serving of healthy fruits and vegetables was less than unhealthy options for both snacks and side dishes. The average price per serving of the fruit or vegetable snacks was \$0.34, while that of the unhealthy snacks was \$0.67. The average price per serving of vegetable side dishes was \$0.27, compared to \$0.31 for the less healthful side dishes.

In addition to fruits and vegetables being less expensive on average, the fruit and vegetable options had fewer calories. Differences in calories per serving between the fruits and vegetables versus the less healthful options often were large, with fruits and vegetables having 15 to 260 fewer calories than the unhealthy snacks and 35 to 150 fewer calories than the unhealthy side dishes.

This report reinforces the emerging view that fruits and vegetables can be nutritional bargains. Fruits and vegetables are comparable in price to, or less expensive than, unhealthy snacks and side dishes and contain fewer calories.



Stove Top Stuffing costs 38 cents per half-cup serving.
Sweet potatoes cost 31 cents per half cup.

Background

Despite the many known benefits of eating a healthy diet, few Americans eat a diet consistent with the *Dietary Guidelines for Americans*. They currently over-consume solids fats, added sugars, refined grains, and sodium, and under-consume fruits, vegetables, and whole grains.^{1,2} One consequence is that obesity has steadily increased since the 1970s; two-thirds of Americans are now overweight or obese.³

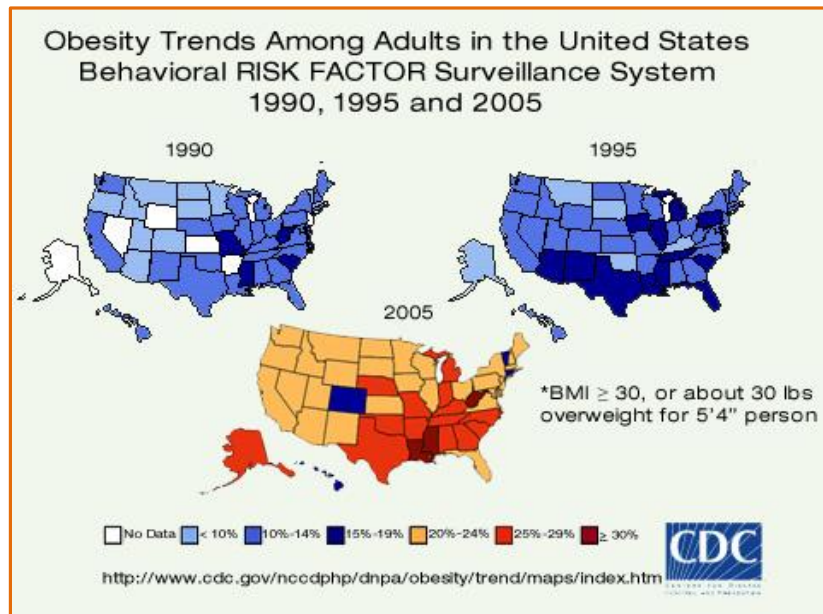
Obesity contributes to preventable and costly diseases, such as type 2 diabetes, heart disease, stroke, and certain types of cancer.⁴ Obesity-related diseases cost \$190 billion annually,⁵ and also contribute to lost productivity.

Fruits and vegetables are high in nutrient density and low in caloric density.

Foods low in caloric density are associated with eating fewer calories.⁶ Under-consumption of fruits and vegetables and over-consumption of unhealthy foods (high in solid fats, added sugars, refined grains, and sodium) are associated with increased risk of chronic diseases.⁷ Fruits and vegetables contain vitamins, minerals, and fiber that are essential for good health, and consuming a diet rich in fruits and vegetables can reduce the risk of heart disease and stroke.⁸

Most people know that fruits and vegetables are good for them, yet few consume recommended amounts.⁹ One barrier is that many believe that healthy food is more expensive than unhealthy food.^{10,11} But is this commonly held belief true?

Research on the costs of healthy versus unhealthy foods has produced mixed results. Several studies have shown that fruits and vegetables are affordable. The Produce Marketing Association analyzed the cost per serving of fruits and vegetables throughout the year. It found that on average the cost of a serving of fresh fruit was \$0.28 and a serving of fresh vegetables was just \$0.21 in 2009–2010.¹² A 2012 United States Department of Agriculture (USDA) study found that healthy foods were less expensive than unhealthy ones on the basis of edible weight or average portion size. They were only more expensive when analyzed using cost



per calorie.¹³ Other studies that used food cost per calorie also found fruits and vegetables to be more expensive.^{14,15}

Several studies have shown that the weight of food consumed is more constant over time than the number of calories eaten,^{16,17,18,19} suggesting that people eat to feel full and satisfied, rather than to take in a set number of calories. In addition, consumer's primary dietary goal should not be to get the most calories for the least cost, but rather to get necessary nutrients and avoid excessive amounts of unhealthy ones at an affordable cost. Most Americans, including those with low incomes, are eating more calories than they need. Where diets are lacking is in fruits, vegetables, whole grains, fiber, and other key nutrients.

To explore this topic further, we compared the costs of fruits and vegetables with commonly consumed unhealthy snacks and side dishes. We compared foods by cost per serving, since that is most consistent with how people eat.

Methods

Fruits, vegetables, snacks, and side dishes were assessed at one major grocery store in the Washington, D.C. metro area (Westwood Giant, Bethesda, MD). We used the price listed on the day the data was collected (all prices were assessed on the same day in August 2012). If an item was on sale, the sale price was used. If the item was sold by unit and not per pound, several of the items were weighed and average weight per unit was determined.

For fruits and vegetables, the price per pound was converted to price per cup using USDA edible cups per pound data²⁰ (see Appendix). We used the standard serving size of a half cup for fruits and vegetables. For snacks and side dishes, we used the serving size listed on the package, and for all grain items we used a standard half-cup serving size. We purchased family-size containers of snacks and side dishes, rather than single-serve containers to ensure the lowest cost per serving, with the exceptions of M&Ms, Hershey's Milk Chocolate Bar, and Power Bar, because they are commonly consumed from single-serve packages. Calories per serving were determined using the USDA nutrient database for fruits and vegetables²¹ and Nutrition Facts labels for snack foods and side dishes.



Baby carrots have 25 calories per serving. Pretzels have 110 calories per serving.

While this report was based on prices at one large grocery store in one city, the relative prices of healthy and unhealthy options should be comparable to localities with a lower or higher cost of living. In addition, the prices were assessed at one point in time, during the summer. Food prices, especially for produce, fluctuate throughout the year. However, a large percentage of fruits and vegetables are not grown locally in most retail grocery stores, and different fruits and vegetables regularly come into season globally. In addition, frozen or canned produce is available year round.

Results

We analyzed 20 snack and 19 side dish options. Overall, we found that the average price per serving of healthy fruit and vegetable options was less than unhealthy options for both snacks and side dishes. The average price per serving of the fruit or vegetable snacks was \$0.34 and for the unhealthy snacks was \$0.67 (see Table 1). The average price per serving of the healthy vegetable options was \$0.27 versus \$0.31 for the unhealthy side dishes (see Table 2).



For example, a half cup of apple was \$0.26, but a Fruit by the Foot imitation fruit snack was \$0.45. A half cup serving of grapes was \$0.46, while a package of M&Ms (1.69 ounces) was \$0.75. For side dishes, a half cup of sweet potatoes was \$0.31; a half cup of Stovetop Stuffing was \$0.38. A serving of cucumber (half cup) was \$0.14, while a one-ounce serving of Lays potato chips was \$0.27. In the three cases where the fruit or vegetable option was more expensive, it cost \$0.04 to \$0.16 more than the unhealthy option. For example, Tostitos tortilla chips with Heluva Good dip cost \$0.54 cents per serving, while green pepper with Sabra hummus cost \$0.70 per serving.



Table 1: Costs of Healthy and Unhealthy Snacks

Snack	Serving Size	Cost Per Serving	Calories
Fruit by the Foot (Variety Pack)	1 Roll	\$0.45	80
Apple	½ cup	\$0.26	65
Tostitos Tortilla Chips with Heluva Good Dip (French Onion)	1 oz (7 chips) with 2 TBSP dip	\$0.54	200
Green Pepper and Sabra Classic Hummus	½ cup pepper with 2 TBSP hummus	\$0.70	95
Rold Gold Pretzels (Tiny Twists)	1 oz (17 pretzels)	\$0.21	110
Baby-cut Carrots	½ cup	\$0.28	25
Nature's Valley Crunchy Granola Oats 'n Honey	1 package (2 bars)	\$0.50	190
Peach (Canned in Juice)	½ cup	\$0.41	55
Peach	½ cup	\$0.36	35
Swiss Cake Roll	2 rolls	\$0.30	270
Watermelon	½ cup	\$0.23	25
Power Bar (Chocolate Peanut Butter)	1 bar	\$2.00	300
Pineapple (Canned in Juice)	½ cup	\$0.33	75
Pineapple	½ cup	\$0.33	40
Hershey's Milk Chocolate Bar	1 bar	\$0.99	210
Banana	½ cup	\$0.16	65
Oreo Cookies	3 cookies	\$0.27	160
Cantaloupe	½ cup	\$0.20	25
M&M's (Milk Chocolate)	1 package	\$0.75	230
Grapes	½ cup	\$0.46	50



example, three Oreo cookies have

In addition to being reasonably priced, fruits and vegetables have fewer calories than many popular snacks and side dishes (see Tables 1 and 2). Calories per serving differences between the healthy and unhealthy options were often large, with fruits and vegetables having 15 to 260 fewer calories for snacks and 35 to 150 fewer calories for side dishes. For

3 Oreo cookies have 160 calories and a half cup of cantaloupe has 25 calories

160 calories and a half cup of cantaloupe has 25 calories. A half cup of Rice-a-Roni is 155 calories, while a half cup of cabbage is only 15 calories.

Table 2: Cost of Healthy and Unhealthy Side Dishes			
Side Dish	Serving Size	Cost per Serving	Calories
Knorr Noodle Mix (Teriyaki)	½ cup	\$0.45	160
Summer Squash	½ cup	\$0.38	20
Rice-a-Roni (Rice Pilaf)	½ cup	\$0.17	155
Cabbage	½ cup	\$0.17	15
Ore-Ida French Fries (Golden Fries)	3 oz (14 fries)	\$0.36	130
Broccoli	½ cup	\$0.34	25
Stovetop Stuffing (Chicken)	½ cup	\$0.38	150
Sweet Potato	½ cup	\$0.31	110
Lay's Potato Chips	1 oz (15 chips)	\$0.27	160
Cucumber	½ cup	\$0.14	5
Pepperidge Farm Garlic Bread (Texas Toast; frozen)	1 slice	\$0.25	140
Green Beans (frozen)	½ cup	\$0.30	20
Green Beans	½ cup	\$0.24	20
Kraft Macaroni & Cheese	½ cup	\$0.34	180
Peas (frozen)	½ cup	\$0.38	60
Pillsbury Crescent Rolls	1 roll	\$0.37	110
Cauliflower	½ cup	\$0.31	15
Kraft Singles (American Cheese Product)	1 slice	\$0.20	60
Slice of Tomato	1 slice	\$0.13	5

Discussion

It is time to reconsider the commonly held belief that fruits and vegetables are more expensive than unhealthy options. We found fruits and vegetables are often as, or more, affordable than less healthy snacks and side dishes. For example, people could save money by serving cauliflower rather than crescent rolls at dinner or cucumber slices rather than potato chips with a sandwich. Fruits and vegetables also are lower in calories and often provide more vitamins, minerals, and fiber.

One barrier may be how people perceive the value of fruits and vegetables. Historically, calories were perhaps the most important nutritional asset of food, so calories have been a key driver of food choices. Calories are, of course, still important and a key nutritional need. However, most Americans need fewer calories

than they are currently consuming. In addition, unhealthy options are marketed to consumers much more than fruits and vegetables. That marketing may position those foods as more desirable and a better value. Shelf-stable snacks also are more widely available than fresh produce, so they are found in more retail venues, increasing people's familiarity with those items.

Could supermarkets reduce the costs of fruits and vegetables to make them more affordable for consumers? Some argue that produce pricing can and should be reduced. Price mark ups on fruits and vegetables are high and the profit margin for retailers is higher on fruits and vegetables than processed items in the center of the store. Others contend fruits and vegetables have high cooling, transportation, and labor costs before reaching the store, and then high refrigeration, labor, and waste costs in the store. In addition, price is not the only determinate of consumers' purchases. Produce is judged on its appearance more than any other grocery category, and appearance fluctuates. Marketing produce could help to increase sales. Marketing could give increased perception of value to produce and increase consumer familiarity with how to prepare and consume different types of fruits and vegetables.^{22,23,24}

Two cups of fruit and two and a half cups of vegetables a day (recommended for a 2,000 calorie diet)²⁵ may seem unattainable to some people, but it may be easier than you think. Recommendations could be met by eating a half cup of blueberries with yogurt and a half cup of orange juice at breakfast, a large apple as a snack, a half cup of baby carrots with lunch, and a large sweet potato and a cup of broccoli at dinner. A lunch or dinner sized salad often contains the entire recommended amount of vegetables in just one meal. Not only is it easy to eat all your fruits and vegetables, but it is affordable. The Produce Marketing Association found that on average people can purchase the daily recommended amount of (fresh) fruits and vegetables for \$2.18.²⁶ The USDA found similar results; people are able to purchase the daily recommended amounts of fruits and vegetables (including fresh, frozen, canned, and dried items) for \$2.00–\$2.50.²⁷

When purchasing fruits and vegetables, look for items that are on sale. If you use a grocery list when shopping (which we recommend), be flexible about fruit and vegetable selections depending on price and quality. Different fruits and vegetables come into season at different times of the year. They are likely to be less expensive when in season. Frozen and canned options, depending on the time of the year, may be less expensive than some fresh options.

Another common concern with fruits and vegetables is that they will spoil or get bruised before being eaten. Try planning which fruits and vegetables to eat first based on storage

life: eat foods that spoil more quickly, like raspberries, soon after purchase, and save items that store better, like green beans or apples, for later in the week.

Tips for Further Increasing the Affordability of Fruits and Vegetables

Plan ahead: make a grocery list to avoid purchases you are unlikely to eat or be able to use before they spoil

Purchase what is on sale or in season

Check out frozen and canned options

Eat foods that spoil quickly first. Save foods that store better for later in the week

Buy fruits and vegetables in bulk when prices are low... but don't buy more than you or your family will eat

Cut and freeze fruits and vegetables that are about to spoil to use in recipes later

Buy fewer items, and do your produce shopping twice a week

Appendix

Healthy Snacks		
Snack	Price per Pound	Edible Cups per Pound
Apple	\$1.99	3.85
Green Pepper	\$1.49	2.50
Baby-cut Carrots	\$1.99	3.54
Peach (canned)	\$1.99	2.77
Peach	\$1.48	1.81
Watermelon	\$0.72	1.55
Pineapple (canned)	\$0.98	1.49
Pineapple	\$1.19	1.82
Banana	\$0.69	2.13
Cantaloupe	\$0.58	1.48
Grapes	\$2.49	2.72

Healthy Side Dishes		
Side Dish	Price per Pound	Edible Cups per pound
Summer Squash	\$1.49	1.94
Cabbage	\$0.79	2.30
Broccoli	\$1.99	2.91
Sweet Potato	\$1.29	2.08
Cucumber	\$1.25	4.36
Green Beans (frozen)	\$2.00	3.29
Green Beans	\$1.49	3.13
Peas (frozen)	\$2.00	2.64
Cauliflower	\$1.10	1.77

End Notes

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