



The Search for Affordable Nutrient Rich Foods: A comparison of supermarket food prices in Seattle-King County

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How much do nutritious foods cost? Are healthful foods available everywhere in American cities or only in selected areas? Do food stores charge higher prices in lower income districts? Does Seattle contain “food deserts” where neighborhood access to healthful foods is restricted, whether by lack of grocery stores or transportation? And does the cost of a market basket of common foods vary from one supermarket chain to another – and if so, by how much?

Assuring equal access to healthful foods has become a priority for public health. Many chronic diseases, notably obesity and diabetes, have been linked to over-consumption of energy dense foods that can provide empty calories at low cost. This CPHN study used a market basket of 100 foods to examine food availability and food prices during the period January 2009-April 2009. One question asked was whether food prices within a given supermarket chain varied by store location. Studies have suggested that people in lower income neighborhoods may pay more for food. Another question was whether the same 100 foods would cost more in a given store chain as opposed to another. Some supermarket chains have the reputation, deserved or not, of being expensive.

Seven Supermarket Chains

Seven supermarket chains in King County were selected for the study (See **Exhibit 1**). To compare prices across neighborhoods, prices in 5 of the chains were assessed in 2 stores, one located in higher income and one located in lower income areas. Average incomes were obtained for the supermarket census tract and 2 neighboring tracts. Data on income by census tract for 2008 came from

Public Health—Seattle & King County (PHSKC) and were geo-coded against King Co. parcel address data. Mean incomes were between \$17,000 and \$37,000 for lower income and between \$71,000 and \$127,500 for higher income areas. Two specialty stores, Metropolitan Market and PCC, were tested at a single location. Geographic locations of all stores are shown in **Exhibit 2**.

The CPHN market basket of 100 foods

The custom-designed market basket of 100 foods was based on the Consumer Price Index and the Thrifty Food Plan Market Baskets. This new instrument included commonly eaten foods, as well as a number of healthful foods that are recommended for improving diet quality. Prices were based on medium size available at most chain stores. For each location, the lowest price available for each item in was used; most often this was the store brand price.

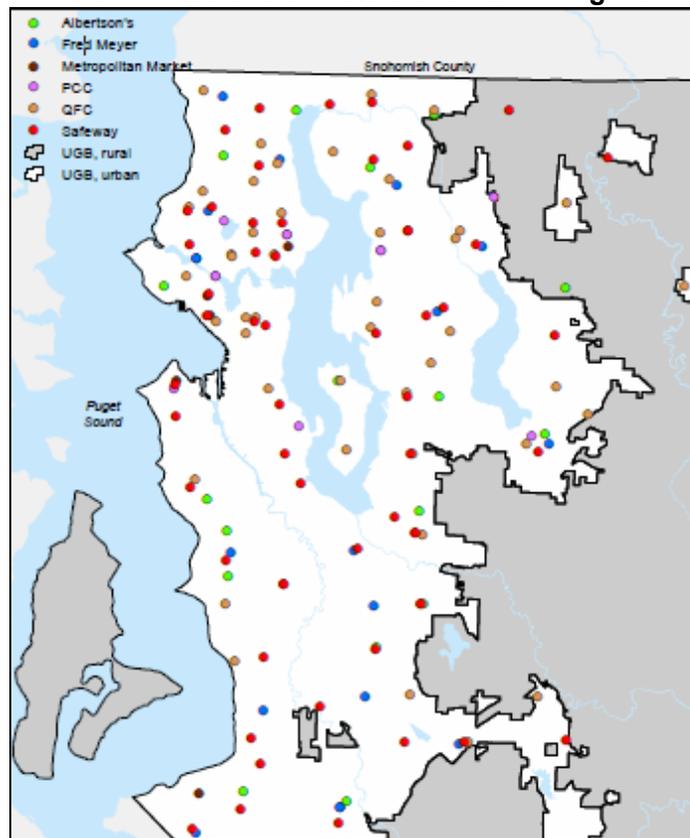
Did the cost of a market basket of 100 healthful foods vary by store chain and/or by Seattle neighborhood?

Exhibit 1: Locations of supermarkets

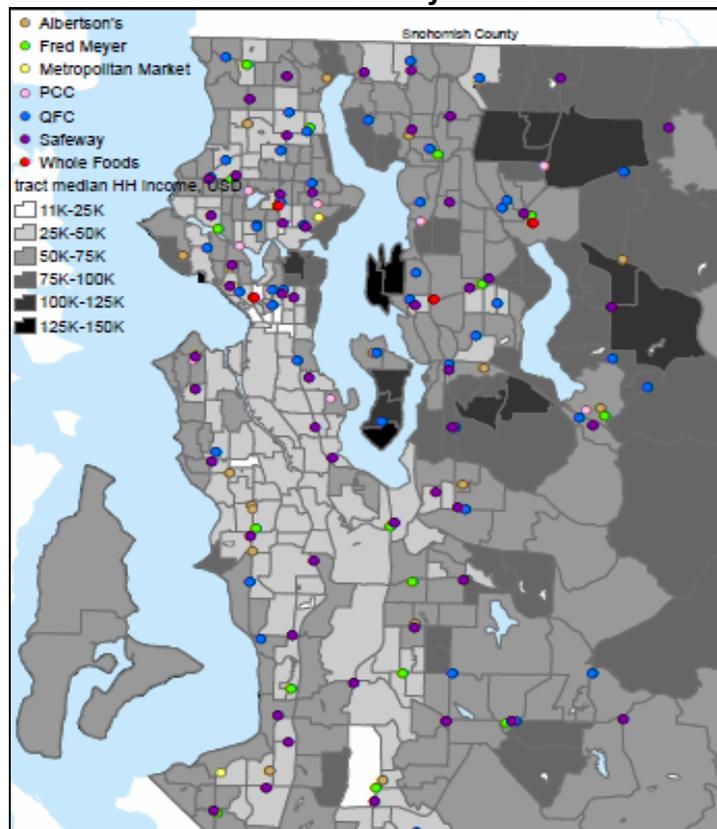
Supermarket Chain	Higher Income Location	Lower Income Location
Safeway	Sammamish	Burien
Fred Meyer	Bellevue	Auburn
QFC	Mercer Island	Rainier
Albertsons	Redmond	Auburn
Whole Foods	Bellevue	Seattle
Metropolitan Market	Queen Anne	
PCC	Kirkland	



Exhibit 2: Locations of 7 store chains in King Co.



Distribution of 7 store chains by CT income



If only name brands were available for a product, that price was recorded. Otherwise if store brand was available and cheaper, its price was used. Data collected reflect prices from January 2009 to April 2009. Sale prices, specials, coupons, and/or membership discounts were excluded. If a particular item was not carried by a given store, a closely related item was priced instead. For example, PCC carried only raw sugar as opposed to refined sugar, and all meats were organic. Whole Foods had fresh turkey breast, rather than frozen; did not carry 2L containers of soda, and had freshly baked cupcakes rather than packaged. Package sizes were standardized when needed. The total cost of the market basket was the sum of the prices of all 100 foods. A link to the market basket used in the study, together with prices for each store, appears at the end of this report.

No food deserts in Seattle.

The geographic distribution of supermarkets in Seattle is shown in Exhibit 2, left panel. A plot of locations by census tract income (right panel) suggests that there were no obvious “food deserts”. Supermarkets were distributed across lower income and higher income neighborhoods. Ongoing analyses will test if all

neighborhoods had easy road or public transport access to supermarkets and grocery stores.

Price comparisons by store location

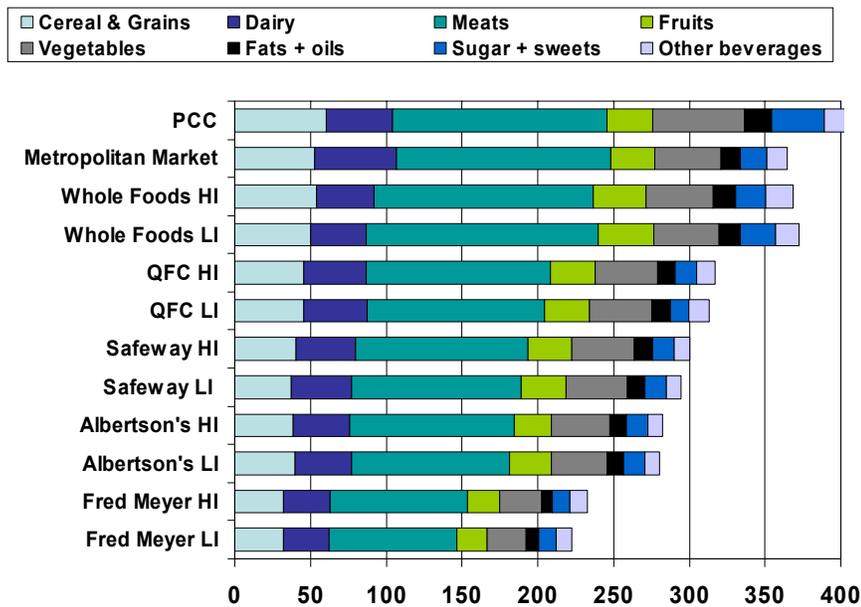
Food prices across locations were compared using analysis of variance for repeated measures. Food prices across store chains were compared using one-way analysis of variance. All analyses were conducted for the total market basket and separately for the major food groups. The availability of the market basket foods in each store at the time of data collection was assessed as percent of total.

No difference in price by store location

The cost of the market basket for each of the 5 chains in each of two neighborhoods is shown in **Exhibit 3**. The prices are shown separately for each food group. There were no significant differences in food price by store location. Albertsons, Fred Meyer, QFC, Safeway, and Whole Foods had the same prices at the lower income (LI) and higher income (HI) neighborhood locations. There were no systematic differences by food group. Since no statistically significant differences by location were observed, prices were averaged across both locations for later analyses.



Exhibit 3: Cost of market basket in dollars by store chain, location (LI and HI), and food group



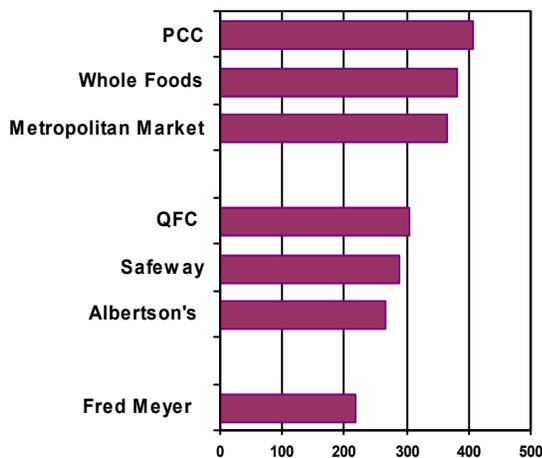
Big differences in food prices by store chain

There were almost two-fold differences in the cost of the market basket by store chain as shown in **Exhibit 4**. The mean total cost ranged from \$218.22 at Fred Meyer to \$405.69 at PCC.

The market basket at Fred Meyer was significantly cheaper as compared to all of the 6 competing chains. Albertsons, Safeway, and QFC occupied the middle ground and were not significantly different from one another. Albertsons was less expensive than QFC. At the most expensive end, PCC, Whole Foods, and Metropolitan Market were not different from each other

Fred Meyer had the lowest cost market basket.

Exhibit 4: Market basket in \$ by supermarket chain:



but were significantly higher than Albertsons, Safeway or QFC. Statistical tests showed that market basket prices were significantly different among the seven chains ($p < 0.05$), which clustered into 3 groups.

Quality and Cost

The major differences were mostly due to brand availability and characteristics of meat and produce carried. Since quality is hard to measure objectively, quality was left out of the analysis. However, differences in the quality of meat and produce and other items might explain some of the price differences among chain stores. For example, PCC and Whole Foods both tended to carry only hormone free, grass fed, and organic meat products while Albertsons, Safeway, QFC, and Fred Meyer carried both organic and non organic meat products and the market basket reflected the cheapest option available. Similarly, PCC and Whole Foods carried much more organic produce and tended to have few non-organic options compared to other competitors such as Fred Meyer. Last, PCC and Whole Foods do not carry heavily processed foods so fresher, more nutrient dense options were selected as substitutes for several items. See **Exhibit 5** for a sample of price differentials by supermarket chain for common individual healthful food items in the market basket.



Exhibit 5: Individual healthful food prices by supermarket chain (January – April 2009)

Food Items	Safeway	Fred Meyer	QFC	Albertsons	Whole Foods	Metro Market	PCC
2% milk, ½ gal.	\$2.29	\$1.79	\$1.99	\$2.19	\$2.19	\$1.99	\$2.69
Cheddar cheese, 8 oz.	\$3.79	\$2.99	\$3.79	\$3.99	\$2.99	\$4.29	\$5.49
Fruit flavored yogurt, reduced or nonfat, 6 oz.	\$0.75	\$0.57	\$0.72	\$0.65	\$0.89	\$0.83	\$0.95
Lean and extra lean ground beef, per lb.	\$4.99	\$4.29	\$4.74	\$4.84	\$4.99	\$5.99	\$3.99
Chicken breast, bone-in, per lb.	\$2.49	\$1.99	\$3.49	\$2.39	\$5.34	\$4.69	\$3.99
Salmon, fresh, per lb.	\$9.99	\$4.49	\$6.99	\$6.99	\$10.99	\$19.99	\$7.99
Eggs, grade A, 1 doz.	\$3.19	\$1.99	\$3.04	\$2.09	\$2.79	\$1.99	\$2.29
ReadytoServe soup, meat & vegetable, 10.5 oz. can	\$0.99	\$0.79	\$1.09	\$1.79	\$1.59	\$1.99	\$2.50
Peanut butter, creamy, 16 oz.	\$2.74	\$2.49	\$2.74	\$2.99	\$2.84	\$3.29	\$4.94
Whole wheat loaf, 22 oz.	\$1.69	\$1.69	\$2.49	\$2.55	\$3.29	\$3.02	\$3.69
Oatmeal dry, 18 oz.	\$2.04	\$1.99	\$2.49	\$2.39	\$2.99	\$3.29	\$3.39
Whole grain cereal, 15 oz.	\$2.59	\$2.39	\$3.84	\$3.28	\$3.47	\$2.49	\$4.29
Brown long grain rice, 32 oz.	\$3.79	\$2.73	\$4.99	\$2.79	\$3.69	\$4.49	\$4.19
Red delicious apples, per lb.	\$1.99	\$0.98	\$1.99	\$1.14	\$1.99	\$1.99	\$1.29
Bananas, per lb.	\$0.89	\$0.69	\$0.89	\$0.88	\$0.99	\$0.89	\$1.19
Orange juice, frozen from concentrate, 12 oz.	\$2.00	\$1.19	\$2.00	\$1.89	\$4.69	\$1.89	\$4.19
Broccoli, per lb.	\$1.99	\$1.74	\$1.99	\$0.79	\$2.99	\$ 0.99	\$1.99
Carrots, 2 lb. bag	\$1.69	\$0.99	\$1.69	\$0.99	\$1.99	\$1.19	\$2.99
Tomatoes, per lb.	\$1.54	\$0.99	\$1.99	\$3.89	\$2. 99	\$3.99	\$2. 99
Red or white table wine, 750 ml	\$4.79	\$5.89	\$5.99	\$3.99	\$7.49	\$6.49	\$7.00

Wide availability across all chains

No systematic differences in food availability by store chain or by location were observed. The availability of a standard market basket of 100 mostly healthy foods was relatively high. All stores had 95% or greater availability of the total market basket at the time of data collection. Similarly, there were no systematic differences in the availability of specific food groups by neighborhood.

Conclusion

Physical proximity to supermarkets is one factor thought to influence healthier diets. Studies in the US and the UK have pointed to the emergence of urban ‘food deserts’ – areas devoid of supermarkets and grocery stores that were home to minorities and other disadvantaged groups. Lack of access to healthful foods was lined, in turn, with higher rates of obesity, diabetes and other chronic disease.

A preliminary look at the Seattle food supply structure suggests that all neighborhoods, regardless of income, had physical access to a supermarket. Moreover, the 5 major supermarket chains had the same prices in lower income and in higher income neighborhoods.

However, consumer access to a nutritious diet is also influenced by the food costs. Studies have pointed to growing price disparities between energy-dense foods that are nutrient poor and the more healthful options: lean meats, low fat dairy, and fresh vegetables and fruit. With shrinking food budgets, economic access to foods may be just as important as physical distance and transportation.

There were almost two-fold differences in the cost of the CPHN market basket of foods by supermarket



chain. Depending on store, the same foods cost from \$200 to \$400. There is an urgent need to provide consumer information on local food prices to improve access to affordable nutrient rich foods for all.

The World Health Organization has recognized food prices as an economic indicator with broad implications for public health. When food prices go up relative to incomes, there are predictable, negative effects on nutrition and health. Public health practitioners and researchers ought to view food prices as a major environmental influence on eating behaviors and nutrition. With this in mind, food prices need to be integrated into public health surveillance. For their part, retailers should work together with food producers and nutrition professionals to identify and promote the most affordable, appealing nutrient rich foods.

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For more information about the University of Washington Center for Public Health Nutrition, please visit <http://depts.washington.edu/uwcphn/>

For link to the CPHN market basket and food prices by store chain visit:

http://www.cphn.org/reports/brf2_prices.pdf

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Further Reading

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