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Younger Consumers Exhibit Less Demand for Fresh Vegetables

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Contents

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Abstract

Growth over time in the demand for fresh vegetables for at-home consumption may slow because of differences in the behavior of younger and older birth cohorts. A birth cohort includes people born in the same year and is similar in concept to a generation. People born around the same point in history may share common behaviors that they carry throughout their lives independent of age. Using data from the Consumer Expenditure Survey, collected between 1982 and 2003, this study explores how at-home demand for fresh vegetables varies among members of younger and older cohorts. People born more recently are found to spend less money for fresh vegetables than older Americans do. Unless something happens to alter how the current young make food choices, they likely will exhibit a lower level of demand for at-home fresh vegetables in their later years than today's older generations currently exhibit, all else constant. Changes in how people purchase and consume food may help to explain these effects.

Keywords: Fresh vegetables, cohort effects, food demand, demand projections

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Introduction

When deciding what foods to eat and whether to cook these foods from basic ingredients, buy them in convenient, pre-cooked packages, or order them from a restaurant, people draw on their past experiences. Americans born in the first half of the 20th century, for example, grew up in a period when family meals were commonly cooked at home from basic ingredients. For people born more recently, eating out and eating convenience foods at home have both been relatively more common. People born around the same point in history (a "birth cohort") may have shared more similar experiences with regard to the acquisition and consumption of foods than people born farther apart in time. Different birth cohorts may likewise exhibit distinct patterns of food demand. They may even carry these distinct behaviors throughout their lives independent of age. Fresh vegetables bought for at-home consumption are one food for which demand appears to vary among birth cohorts. Today's younger cohorts are exhibiting less demand for fresh vegetables (excluding melons) than older Americans are. And, all else constant, they may also exhibit less demand for at-home fresh vegetables in their later years than today's older generations currently do.

Differences in the demand for foods between younger and older birth cohorts could lead to changes in what Americans buy and consume on average. Younger birth cohorts will ultimately replace older generations (a process known as "cohort succession"). If these younger people tend to demand less of any type of food, the population-average demand for that food could grow more slowly or even decline. In fact, data already point to slowing growth in per capita demand for fresh vegetables. Although estimates of consumption per person fluctuate from year to year, Americans increased their daily consumption of fresh vegetables from about 0.76 cup to 0.98 cup per person between 1980 and 2000 (fig. 1). Since that time, however, the long-term rate of growth appears to have slowed. The daily amount of fresh vegetables that Americans ate in 2007 rose to 1.00 cup per person, after having previously fallen to 0.97 cup in 2006 and 2005.

How much cohort succession could affect demand for at-home fresh vegetables over time is difficult to quantify because the methodology typically used to project demand for a food makes no allowances for differences in behavior across birth cohorts. Researchers, such as Blisard et al. (2003) and Lin et al. (2003), generally identify the relationships between a household's demand for foods and its income and demographic characteristics. They then use the identified relationships to extrapolate what households in the future will do. For example, if a positive relationship is found between a current household's demand for vegetables and its head of household's age, then a researcher may conclude that demand will increase with time if the average age of householders will be greater in the future. By contrast, if householders are likely to be younger in the future, on average, demand will be expected to grow more slowly.

Cohort effects influence a person's lifetime demand for foods on top of how income and other demographic characteristics, including age, affect demand. Compare, for example, a consumer born in 1960 and her parents born in, say, 1940. Regardless of how food choices change with age for each of these people, if a cohort effect is at work, the younger person may demand

a different amount of fresh vegetables than her parents did at the same age points in their lives. For instance, controlling for all other factors, when she is 30 years old, the younger person could demand a lesser amount than her parents did when they were 30. Likewise, when she is 40, she could again demand a lesser amount of fresh vegetables than her mother and father did at 40. Finally, if having observed the younger person demanding less at several age points in her life than her parents did at the same age points, all else constant, it can be predicted that she may also demand less in the years 2020 to 2030, when she is in her 60s, than her parents do now. Thus, in order to identify how the demand for a food varies among birth cohorts, it is necessary to observe members of the cohorts at many different points in their lives. Because all members of a birth cohort are the same age at any one point in time, researchers need to use data collected over many years. Few surveys of food demand have been repeatedly collected over the years, which may help to explain why demand projections do not more routinely account for cohort effects. One survey that has been repeatedly collected over many years is the Consumer Expenditure Survey (CE) (U.S. Department of Labor).

Using data from the CE, collected between 1982 and 2003, this study identifies how a household's spending on fresh vegetables for at-home consumption depends on the head of household's birth cohort. Identified differences in behavior across younger and older birth cohorts are likely to reflect historical circumstances that have shaped people's life experiences. Other explanations may exist, of course, but one possibility is that, as a result of their experiences, younger cohorts place more value on eating at restaurants in order to save time, socialize, or enjoy a variety of foods without needing to acquire specialized cooking skills.

Projections based on household income, demographic characteristics, including the latest age point that a householder has reached, and birth cohort represent only one scenario for the near future. They do not account for a number of other factors that may also shape demand. For example, immigration, including the arrival of younger people from countries where men and women of all ages are relatively more accustomed to cooking meals with fresh vegetables, could affect how much members of younger cohorts in the United States demand fresh vegetables, on average.

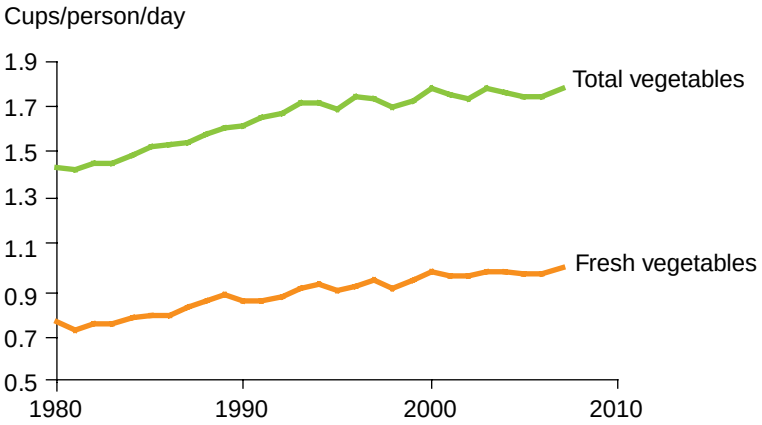
Also not considered in the projections within this study are unforeseen changes in prices and household income and the effects of government programs to educate Americans about the importance of vegetable consumption to health. Marketers might also be able to stimulate retail demand above what this study projects by introducing new, convenient fresh vegetable products. Indeed, over the past few decades, marketers have introduced several new, fresh vegetable products, including baby carrots, bagged salads, and broccoli florets. The development and rapid consumer acceptance of fresh-cut vegetables has stimulated demand for these vegetables while allowing the industries to evolve from suppliers of relatively low-value bulk products to marketers of upscale value-added products.

Recent Growth in the Demand for At-Home Fresh Vegetables

As per capita fresh vegetable consumption increased throughout the 1980s and 1990s and then more recently slowed (fig.1), the per capita amount of fresh vegetables moving from production through domestic marketing channels changed. Indeed, changes at one level of the food system are likely to mirror developments at another level. To estimate the amount of fresh vegetables that enter the food marketing system, ERS approximates the total annual supply of fresh vegetables available for all uses as the sum of production, imports, and beginning stocks. The amount available for domestic human food use is then assessed as total supply net of other measurable uses like farm inputs, exports, ending stocks, and industrial uses. Because this assessment is essentially a residual, ERS estimates of the amount of food available for domestic human use are also referred to as disappearance data. Finally, in order to estimate the amount of fresh vegetables that Americans actually consume, ERS further adjusts per capita disappearance data for spoilage, waste, and other losses that occur as fresh vegetables not only move through marketing channels but are prepared and either eaten or discarded.

Net domestic disappearance of fresh market vegetables increased 16 percent to 56.3 billion pounds between 1994-98 and 2004-08 (table 1). About 58 percent of the gain came from increased domestic production, with net imports providing the remainder. However, after accounting for population growth, per capita use expanded more slowly than in the recent past. Per capita use of all fresh vegetables averaged 188.5 pounds per person in 2004-08—up just 4 percent from 1994-98 but 21 percent higher than in 1984-88. Fresh use peaked most recently in the early 2000s as the industry responded to strong widespread demand for various fresh-cut products. However, over the last half of this decade, per capita fresh vegetable use has been sluggish as

Figure 1
Fresh vegetable consumption, 1980-2010
Fresh vegetable consumption rose during the 1980s and 1990s



Note: Based on loss-adjusted disappearance data. Cup weights of vegetables are defined according to the *2005 Dietary Guidelines for Americans* and its supporting guidance document MyPyramid Plan. Figures do not include melon consumption.

Source: USDA, Economic Research Service, Food Availability (Per Capita) Data System, http://www.ers.usda.gov/Data/FoodConsumption/.

Table 1

U.S. fresh vegetables (including potatoes): Supply and utilization, farm weight, 1980-2009[1]

Fresh vegetable use was higher in the first half of current decade

Year	Supply				Disappearance				
	Production	Imports	Beginning stocks[2]	Total	Exports	Ending stocks[2]	Shrink and loss[3]	Total[4]	Per capita use[5]
	Million pounds								*Lbs/person*
1980	33,598	1,938	821	36,356	2,093	691	321	33,252	145.9
1981	32,836	1,943	691	35,469	2,488	644	300	32,037	139.1
1982	33,993	2,198	644	36,835	2,056	759	497	33,523	144.2
1983	34,186	2,397	759	37,342	2,134	736	401	34,072	145.2
1984	35,584	2,804	736	39,123	2,350	823	428	35,523	150.2
1985	36,275	2,792	823	39,890	2,190	811	685	36,204	151.7
1986	36,697	2,841	811	40,349	2,430	693	433	36,794	152.7
1987	38,771	3,086	693	42,550	2,499	843	508	38,700	159.2
1988	40,263	3,076	843	44,182	2,514	842	443	40,383	164.6
1989	41,711	3,473	842	46,027	2,691	881	464	41,991	169.8
1990	41,212	3,755	923	45,890	2,796	960	716	41,418	165.6
1991	41,891	3,717	960	46,568	3,009	996	486	42,078	166.0
1992	44,495	3,178	996	48,670	3,421	1,002	668	43,579	169.6
1993	45,840	4,350	1,002	51,192	3,466	821	857	46,049	176.9
1994	48,485	4,222	821	53,528	3,968	1,154	664	47,742	181.2
1995	46,281	4,986	1,154	52,421	3,708	1,071	750	46,893	175.9
1996	47,262	5,997	1,071	54,330	3,755	1,064	711	48,800	181.0
1997	49,321	5,822	1,064	56,207	3,933	1,151	810	50,313	184.4
1998	47,608	6,931	1,151	55,690	3,916	1,243	682	49,849	180.5
1999	50,775	6,500	1,243	58,518	4,006	1,345	966	52,202	186.9
2000	53,741	6,297	1,345	61,383	4,381	1,266	956	54,779	194.0
2001	53,008	6,805	1,266	61,079	4,307	1,341	890	54,542	191.2
2002	52,712	7,483	1,341	61,536	4,394	1,250	858	55,034	191.1
2003	53,472	7,883	1,250	62,605	4,272	1,253	776	56,304	193.7
2004	55,499	8,032	1,253	64,783	4,224	1,492	1,125	57,942	197.5
2005	52,461	8,561	1,492	62,514	4,347	1,280	747	56,140	189.7
2006	51,583	9,038	1,280	61,901	4,092	1,162	791	55,856	187.0
2007	51,688	9,927	1,162	62,778	3,975	1,472	881	56,449	187.1
2008 p	49,686	10,219	1,472	61,376	4,115	1,272	816	55,173	181.2
2009 f	50,690	10,449	1,272	62,411	4,068	1,390	860	56,093	182.5

p = Preliminary. f = ERS forecast.

Note: This table excludes melons, dry pulses, sweetpotatoes, and mushrooms.

[1]Fresh vegetables also include fresh-market vegetables washed, cut, and/or packaged in fresh processing operations.

[2]Applies only to brussels sprouts and onions.

[3]Includes fresh dry-bulb onions and fresh-market cabbage.

[4]Shipments to U.S. territories were subtracted from total utilization for some commodities during 1980-88 but are not shown separately.

[5]Per capita figures may not sum to published totals due to rounding.

Source: Computed by USDA, Economic Research Service from tables 54 and 74 of *Vegetables and Melons Yearbook* for 2009, raw data available at http://www.ers.usda.gov/publications/vgs/#yearbook.

increasing demand for vegetables, such as bell peppers, romaine/leaf lettuce, and onions, has been partly offset by steadily declining potato and head lettuce use.

Fresh market vegetables account for more than half of total vegetable consumption in the United States. After adjusting per capita vegetable disappearance data for nonedible food parts and food lost through spoilage, plate waste, and other losses in the home and food marketing system, in 2007, Americans ate 1.78 cups of vegetables daily, on average, not including consumption of melons.[1] Fresh market vegetables accounted for 1 cup of this total.

[1]The year 2007 represents the most recent loss-adjusted disappearance data.

The majority of fresh vegetables are sold for at-home consumption. Food "at home" is defined to include foods typically bought at a retail store, such as at a supermarket or grocery store, that may be further prepared in the consumer's home. By contrast, "away-from-home" food is generally purchased at a restaurant, fast food outlet, or other foodservice establishment, such as a hotel, hospital, or school cafeteria, and is ready for immediate consumption. About 80 percent of fresh-market carrots and spinach are eaten at home (Lucier et al., 2004; Lucier and Lin, 2007). By contrast, the at-home shares for fresh-market onions and mushrooms are 67 and 59 percent, respectively (Lucier et al., 2001, 2003).

Several factors are responsible for increasing per capita fresh vegetable consumption above what Americans ate in the early 1980s (fig. 1). Lucier et al. (2006) credit food processors for introducing convenience items like baby carrots, bagged baby spinach, and broccoli florets, which do not require peeling, chopping, or cutting. They also acknowledge government programs that educate Americans about the importance of vegetable consumption to health, including those sponsored by the National Fruit and Vegetable Program.[2] Finally, Lucier et al. (2006) attribute increased demand to trends in the population, such as rising incomes, aging, and increased racial and ethnic diversity, for shaping tastes and preferences in favor of vegetables.

[2]In 2001, USDA and Center for Disease Control (CDC) joined the Produce for Better Health Foundation (PBH) in its 5 A Day social marketing campaign. Previously, the PBH and the National Cancer Institute (NCI) had co-sponsored this campaign. The CDC and NCI are both part of the U.S. Department of Health and Human Services. The expanded National 5 A Day Partnership was renamed the National Fruit and Vegetable Program in March 2007.

Various studies, including Blisard et al. (2003) and Lin et al. (2003), have projected that trends in the U.S. population other than cohort succession will continue to drive Americans to increase their demand for vegetables over the remainder of this decade and into the next. Between 2000 and 2020, Blisard et al. (2003) project Americans to increase their real per capita expenditures, including spending for both fresh and processed at-home vegetables, by 7.2 percent.

Aging and other trends in the population, such as racial and ethnic diversity, should also increase the volume of most types of vegetables that Americans consume at home. Between 2000 and 2020, Lin et al. (2003) project that the same trends considered by Blisard et al. (2003) will increase the volume of lettuce Americans consume at home by about 3.6 percent and tomatoes by 1 percent. Potatoes are the major exception, with the at-home intake of fried potatoes and other potato products predicted to drop by 11 and 4 percent, respectively.

How much a household spends on a food is one way to measure the household's demand for that food. Consumption is another. And yet, comparing the projections of Blisard et al. (2003) with those of Lin et al. (2003) clearly shows that these two measures of food demand are only imperfectly correlated. Two households could purchase the same quantity of fresh vegetables

but have very different levels of spending if one household purchases mostly high-priced vegetables while the other household buys less costly varieties. The relatively modest increases in food consumption projected by Lin et al. (2003) relative to the increases in food spending projected by Blisard et al. (2003) likewise suggest that the identified trends in the population are driving Americans to buy larger quantities of vegetables and more expensive types of foods. The greater demand for high-priced bell pepper and romaine/leaf lettuce is consistent with these projections. That larger quantities of fresh vegetables are not moving from the farm gate into marketing channels suggests other factors are also at work (table 1).

Several factors may be contributing to slow growth in the amount of fresh vegetables that enter the food system. One possibility is that less food is being wasted as fresh-cut vegetables grow in popularity. When florets are cut from a head of broccoli, for example, the stem is wasted. However, as this process increasingly moves from households' kitchens to processing facilities, if the fresh-cut processing facilities are relatively more efficient and manage to waste less of the head of broccoli, then less food per capita needs to enter the food marketing system to support how much broccoli Americans, on average, consume. For example, some companies may make broccoli slaw from the stems that are cut when producing florets. Another factor contributing to sluggish growth in per capita consumption and net disappearance data may be that cohort succession is acting as a drag on demand.

If a cohort effect is influencing the demand for at-home fresh vegetables, determining how demand will change over time will be much more difficult than previously believed. The methodology researchers generally use to project demand for a food accounts only for changes in income and other demographic trends, not for any differences in behavior between birth cohorts. Projections are typically based on data collected over only 1 or 2 years. Blisard et al. (2003), for instance, use data for 1997-98 to identify how changes in a household's income and demographic characteristics affect its food expenditures. These researchers then assume that any such changes will continue to affect demand in the future as they did in 1997-98. For example, a 70-year old in 2020 is expected to behave like a 70-year old with similar characteristics today.[3] Under this assumption, researchers can combine the results of their statistical analyses with information from the U.S. Census Bureau on how the U.S. population is likely to change. Because reaching an older age point and having more income are both associated with spending more money on fresh vegetables, for example, one can project that the combination of rising incomes and an aging population will lead to higher rates of spending.

[3]Blisard et al. (2003) acknowledge the potential for cohort succession and cite it as a limitation of their study.

Cohort Succession Reduces Demand, Creates Uncertainty

The demand for at-home fresh vegetables may change in the near future with many of the same factors that have shaped it in the recent past. As just discussed, rising incomes and changes in the Nation's demographic profile will likely increase how much money we spend on vegetables for at-home consumption as well as the amounts of most types of vegetables we eat. However, other factors, including possibly the food choices of younger people, may be working to reduce demand.

For younger birth cohorts in the United States, eating out or eating convenience foods at home has become commonplace. Away-from-home food expenditures accounted for 48.8 percent of all food expenditures in 2007, according to ERS data, compared with 44.8 percent in 1987, 32.1 percent in 1967, and 25.2 percent in 1957. Even when meals and snacks are made at home, they are increasingly assembled from prepared components, not cooked from scratch, argues Park (1998). Indeed, he claims that America is "fast approaching a time when a home meal preparer may never cook a meal from basic ingredients" (p. 435).

The growing popularity of convenience foods may be difficult to reverse if, once households cut back on home cooking, their cooking skills decline. On the one hand, among younger people, evidence of such a decline exists. Many food manufacturers and publishers of cook books, for example, have had to simplify the language they use in recipes for younger people (Sagon, 2006). "Food companies have to acknowledge that there used to be a level of teaching in the home by moms and grandmas that is not as evident today," explains Janet Myers of Kraft Foods (Sagon, 2006, p. A01). On the other hand, the growing number of popular cooking shows on television may stimulate all cohorts to learn to cook.

Of course, fresh vegetables are often used as a basic ingredient in meals cooked from scratch. Most traditional varieties are low on the convenience scale and tend to require some amount of peeling, chopping, and cutting. Studies further show that vegetables, including fresh and processed foods, are most popular among adventurous cooks who claim, for example, to often try new recipes, entertain guests, and cook nutritious meals (Wansink and Lee, 2004).

Household food spending, as reported in the CE, is one way to measure the demand for fresh vegetables. As noted above, higher levels of food spending are associated with buying a larger quantity of food, more expensive foods, or both. The CE, published by the Bureau of Labor Statistics, is a principal source of data on how much money American households spend for goods and services. The diary portion of the CE, in particular, asks households to report their weekly expenditures for different types of at-home foods.

Fresh vegetables sold for at-home consumption account for about 6 percent of what households spend for all at-home foods, if an average is calculated over all households, including those headed by members of different birth cohorts and with other characteristics.[4] The 2007 CE shows that households spent an average of $3,465 per year for at-home foods, of which $190 was

[4]Total fruit and vegetable spending, including fresh and processed varieties, represents about 18 percent of households' at-home food budget.

for fresh vegetables. Furthermore, the average household contained 2.5 people. Thus, households spent about $76 annually per person for at-home fresh vegetables, or about $1.46 per person per week. This money does not include spending for fresh vegetables in restaurant meals or in other forms of food away from home. For example, it does not include salads bought at a fast food outlet. The CE reports spending at restaurants and fast food outlets but does not specify what types of foods a household purchased.

Because it has been published annually since 1982, CE data also reveal the food spending habits of particular birth cohorts over their lifetimes. For example, the 1982 CE reports fresh vegetable expenditures of households headed by people who were born between 1957 and 1961, when these heads of household were 21 to 25 years old. These expenditures can be compared with, say, the results of the 2003 CE, which reports spending by this same birth cohort when they were 42 to 46 years old (see box, "Consumer Expenditure Survey Reports More Than 20 Years of Food Spending"). Of course, in order to compare expenditures across different years, one must assume that the people in each year's sample are representative of their birth cohort. One must also adjust for inflation for which we use the Consumer Price Index.

Consumer Expenditure Survey Reports More than 20 Years of Food Spending

The Consumer Expenditure Survey (CE) measures the spending habits of U.S. consumers and includes data on their expenditures, income, and demographic characteristics. These data are collected by the U.S. Census Bureau under contract with the Bureau of Labor Statistics. The CE has been published annually since 1982. Data from eight different years are used for this study.

The diary component of the CE contains detailed information on households' food expenditures. For this component of the CE, a panel of households are asked to report their spending on small, frequently purchased items normally difficult to recall, consisting of food and beverages, tobacco, housekeeping supplies and nonprescription drugs, personal care products and services, fuels, and utilities. Two weeks of data are normally collected, although some households report only 1 week. Households that reported only 1 week of expenditures were eliminated, and the remaining household observations were averaged over the 2 reporting weeks.

Data collected in different years can be combined to study food demand. For example, using the 1987 CE, one can observe the demands of households with household heads born in 1960. These householders were then 27 years old. Likewise, using the 1997 CE, one can again estimate the demands of households with household heads born in 1960. These householders were then 37 years old. Finally, by observing a sample of householders from this same cohort at enough different age points, one can identify the effects of age separately from the effects associated with when a cohort was born.

The CE does not follow the same households over time. Thus, in order to draw inferences about the behaviors of a cohort, it is necessary to assume that the householders in each year's sample are representative of their birth cohort. Such data have been called a "time series of cross sections" (Deaton, 1997).

Significant differences are revealed if, instead of averaging over all households, the spending habits of particular birth cohorts are examined. According to an analysis of data from the CE, there is a strong relationship between a household's per capita expenditures for fresh vegetables for home consumption and the head of household's birth year. For example, among cohorts born between 1957 and 1961, spending[5] on fresh vegetables averaged $0.81 and $1.32 per week in 1982 and 2003, respectively (table 2). Among cohorts born between 1927 and 1931, spending was greater than that of the younger cohort in both years, averaging $1.60 and $1.74 per week in 1982 and 2003, respectively.[6]

These data illustrate a very general tendency for younger cohorts to spend less money on fresh vegetables for home consumption. To properly measure this tendency, Stewart and Blisard (2008) use CE data from eight selected years between 1982 and 2003. Their statistical analysis measures how a household's fresh vegetable expenditures vary with the head of household's birth cohort while also accounting for the effects of this person's age, household income, prices, and other factors. Controlling for the other factors that can affect demand, Stewart and Blisard (2008) found that otherwise similar households spend $0.21 more per person per week if the head of household was born in 1950 instead of 1960 and $0.66 more if the head of household was born in 1930 (fig. 2).[7]

[5]Prices were adjusted to December 2007 prices using the Consumer Price Index for all items.

[6]Simple t-tests confirm that these particular differences are statistically significant. Not all differences between cohorts shown in table 2 are statistically significant in all years. One reason is that these comparisons do not control for other determinants of demand, such as each cohort's average age and income. However, controlling for these other demand determinants, Stewart and Blisard (2008) demonstrate that the differences are statistically significant for cohorts born far enough apart in time.

[7]These differences are in real December 2003 dollars.

Table 2

Weekly household spending per capita, selected years, 1982-2003

Head of household's birth year affected how much money was spent for fresh vegetables

Birth year of household head	1982	1985	1988	1991	1994	1997	2000	2003
				Dollars				
1957-61	0.81	1.07	1.17	1.24	1.16	1.28	1.19	1.32
	(0.08)	(0.07)	(0.08)	(0.08)	(0.07)	(0.09)	(0.08)	(0.10)
1952-56	1.30	1.07	1.22	1.22	1.24	1.24	1.32	1.53
	(0.09)	(0.07)	(0.08)	(0.08)	(0.08)	(0.09)	(0.08)	(0.12)
1947-51	1.07	1.23	1.11	1.23	1.35	1.44	1.78	1.69
	(0.08)	(0.08)	(0.08)	(0.08)	(0.11)	(0.11)	(0.15)	(0.11)
1942-46	1.21	1.08	1.28	1.53	1.51	1.84	1.67	1.71
	(0.08)	(0.07)	(0.10)	(0.11)	(0.12)	(0.21)	(0.12)	(0.12)
1937-41	1.43	1.12	1.59	1.60	1.44	1.92	1.94	1.82
	(0.13)	(0.10)	(0.12)	(0.11)	(0.14)	(0.17)	(0.19)	(0.14)
1932-36	1.26	1.58	1.48	1.63	1.78	1.84	1.93	1.85
	(0.10)	(0.17)	(0.11)	(0.13)	(0.18)	(0.19)	(0.15)	(0.17)
1927-31	1.60	1.38	1.68	1.97	1.67	1.95	2.04	1.74
	(0.15)	(0.11)	(0.12)	(0.16)	(0.14)	(0.16)	(0.28)	(0.13)
1922-26	1.93	1.53	2.21	2.05	1.77	1.93	1.75	2.00
	(0.13)	(0.14)	(0.18)	(0.16)	(0.15)	(0.16)	(0.15)	(0.21)
All households	1.33	1.26	1.42	1.43	1.41	1.43	1.42	1.41
	(0.03)	(0.03)	(0.03)	(0.03)	(0.04)	(0.04)	(0.04)	(0.03)

Note: Per capita weekly average expenditures for at-home fresh vegetables among households headed by members of different birth cohorts. All estimates are inflated to December 2007 prices using the Consumer Price Index. Standard errors are in parentheses.
Source: ERS analysis of the Consumer Expenditure Survey, Bureau of Labor Statistics.

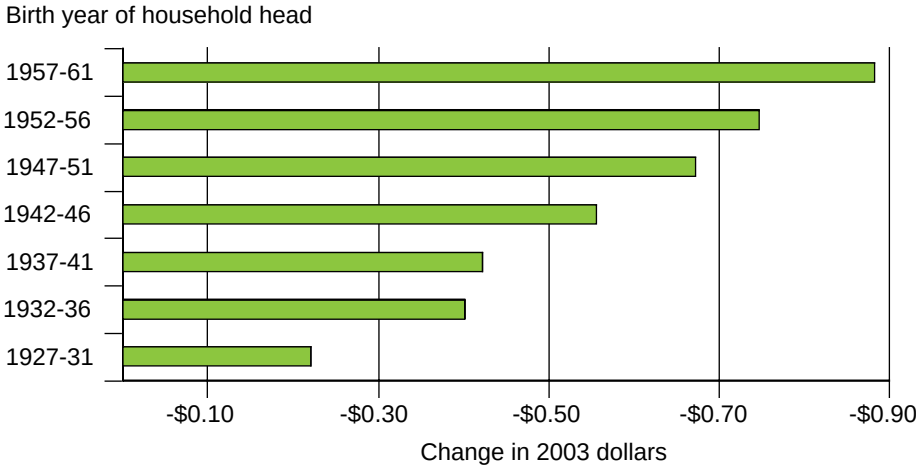
Cohort succession may be acting as a drag on demand for fresh vegetables for at-home consumption. What, however, does the future hold? Projections by Stewart and Blisard (2008) illustrate one scenario. These projections account for anticipated increases in households' incomes over time and other demographic trends in the population. Unlike previous demand projections, they also account for cohort succession. As described above, Stewart and Blisard (2008) use CE data collected over more than 20 years to identify how demand varies among particular groups of cohorts. Nonetheless, those data lack information on still younger cohorts. In order to project future demand, the researchers must estimate how much money these still younger cohorts will spend based on the behavior of cohorts old enough to be included in the data. Following a suggestion by Mori and Clason (2005), they assume that future cohorts will exhibit the same level of demand as the youngest cohort on which they have data. Of course, this assumption may be overly optimistic for the case of fresh vegetables because the trend of decreasing demand among still younger and younger cohorts may be continuing. Even if it has stopped, according to Stewart and Blisard (2008), a typical household could still spend about 10 percent less for fresh vegetables for home consumption in 2020 than it did in 2000, after adjusting for inflation. If current teenagers and children spend less when they reach adulthood than their parents do, the reduction will likely be even greater. On the other hand, Americans may spend more money on at-home fresh vegetables in the aggregate (across all households) if population gains are large enough to offset reductions in per household expenditures.

By reducing overall growth in household spending on fresh vegetables for at-home consumption, the cohort effect will either cause households to buy smaller quantities of fresh vegetables, purchase a narrower mix of fresh vegetables that excludes more expensive foods, or both. Identifying exactly how demand will be affected would require a further analysis of how consumption

Figure 2

Change in weekly spending per person between cohorts born 1927-61 and cohorts born 1922-26

Households headed by younger cohorts exhibit less demand for fresh vegetables



Note: All households are assumed to have the same characteristics except for the head of household's birth year. Per capita weekly spending for at-home fresh vegetables are in inflation-adjusted 2003 dollars.

Source: Stewart and Blisard (2008).

varies by cohort. The CE data used by Stewart and Blisard (2008) include only information on food spending. Moreover, the dietary implications of the cohort effect will depend on whether younger Americans offset any decrease in at-home fresh vegetable consumption with increases in consumption of vegetables in prepared foods and away-from-home foods. For example, if, instead of buying fresh potatoes to prepare potato wedges or other foods at home, Americans buy more prepared potato products from supermarkets, their overall demand for this vegetable may remain unchanged. There is no evidence at this time of a recent increase in processed vegetable consumption (shown in figure 1 as the difference between total and fresh vegetable consumption).

Conclusions

The demand projections presented in this study, based on household income, demographic characteristics, and birth cohort, represent only one scenario for the near future. Marketers might be able to stimulate retail demand above what these projections suggest by introducing new, convenient fresh vegetable products. A complementary approach would be to also place more emphasis on the away-from-home market. Social marketers, such as the National Fruit and Vegetable Program, have traditionally spread their message through displays in the produce aisle of supermarkets and logos on fresh food products.[8] If younger generations are less apt to shop in the produce aisle, such a marketing strategy may be less successful at increasing demand among them. Social marketers instead could promote vegetable consumption as a part of convenience at home or in restaurant foods eaten away from home. Indeed, the Produce for Better Health Foundation, a founding member of the National Fruit and Vegetable Program, has recently been working to get more vegetables onto restaurant menus and, in 2006, completed a review of obstacles to vegetable consumption at restaurants (see Glanz et al., 2007).

Although rising incomes and other demographic trends in the population may be increasing the demand for vegetables, as argued by Blisard et al. (2003) and Lin et al. (2003), younger cohorts are spending less money on fresh vegetables for at-home consumption than older cohorts, all else constant. Cohort succession will likewise subtract from any growth in at-home fresh vegetable demand that the other trends in the population are creating. If prepared foods and away-from-home foods are not filling the gap created by reduced demand for fresh vegetables at home, government programs to educate Americans about the critical role of overall vegetable consumption to health also may be important.

[8]Social marketing promotes behaviors using the same marketing principles that businesses may employ to sell products to consumers.

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