New basket of goods and services being priced in revised CPI

Beginning with January 1987 estimates, the Consumer Price Index reflects changes in Americans' spending patterns since 1972–73; the new index permits more accurate tracking of price changes throughout the 1980's

CHARLES MASON AND CLIFFORD BUTLER

The Consumer Price Index (CPI) is being revised effective with publication of data for January 1987.[1] As a part of the revision, the market basket of goods and services priced for the index is being updated to reflect how consumers are spending their money. Buying patterns can change over time as a result of changes in prices, demographic characteristics of the population, income, or tastes and habits. Historically, the Bureau of Labor Statistics has updated the CPI market basket approximately every 10 years. The uses of the CPI as a measure of inflation and the effects of economic policy, as a deflator of other statistical series, and as an income or benefits escalator require that it be current and accurate.

The last revision of the CPI market basket of goods and services took place in 1978 and was based on 1972–73 spending patterns. The revised 1987 CPI uses a market basket reflecting 1982–84 buying patterns. In addition, new definitions of some expenditure categories in the CPI are being introduced. This article describes how the market basket is constructed and compares the new basket with the previous one. Consumption changes that have taken place since the last revision are examined with respect to developments in prices, demographics, and other variables which may explain the observed market basket differences.

Charles Mason is chief of the Cost Weights Revision staff in the Division of Consumer Prices and Price Indexes, Office of Prices and Living Conditions, Bureau of Labor Statistics. Clifford Butler is an economist on the Cost Weights Revision staff.

Construction of the market basket

The Consumer Price Index is a measure of the average change in the price paid by urban consumers for a fixed market basket of goods and services.[2] The composition and relative weight of each component of that market basket is derived from estimates of expenditures from the ongoing Consumer Expenditure Survey.[3] The expenditure data are tabulated using a hierarchical system with three principal levels of aggregation.

The seven major expenditure groups—food and beverages, housing, apparel and upkeep, transportation, medical care, entertainment, and other goods and services—are disaggregated into 69 expenditure classes, which in turn are divided into 184 item strata.[4] Examples of item strata in the CPI include white bread, college tuition and fees, and women's suits. The expenditure weight for each item stratum is an estimate of total expenditure by the index population for that item. It is calculated as the product of estimates of mean expenditures of consumer units and the number of consumer units.

Mean expenditures are derived from 1982–84 Consumer Expenditure Survey data, and estimates of the number of consumer units are obtained from a special tabulation of the 1980 census files. A consumer unit is defined as: (1) all members of a particular household who are related by blood, marriage, adoption, or other legal arrangements such as foster parenting; (2) an individual who lives alone or who shares a household with others or lives as a roomer in a

private home or lodging house or in permanent living quarters in a hotel or motel, but who is financially independent; or, (3) two or more persons who share living quarters and who pool their income to make joint expenditure decisions. Financial independence is determined by three major expense categories: housing, food, and other living expenses. To be considered financially independent, at least two of the three major expense categories must be provided by the respondent. The consumer unit concept is based on the economic interdependencies within a housing unit and thus differs from both the concept of family and of household. Families, by definition, exclude unrelated individuals and the household concept as used in other surveys includes all individuals who share living quarters, regardless of the economic interrelationships among the residents.

The process of compiling and calculating the expenditure weights takes about 3 years. During that time, the prices of the goods and services in the revised market basket may change. Before introducing the new market basket into the CPI, the expenditures are updated to reflect the price changes. The expenditure weights are updated by applying the price change, as calculated from the former CPI, from the midpoint of the expenditure base period (June 1983 for the new revision) to the month in which the Bureau actually begins to price the goods and services in the new market basket. For the 1987 revision, this update uses either November or December 1986 data, depending on the item and the geographic area. Until the updating for price change is performed, the expenditure weights are referred to as preliminary.

The CPI populations

A CPI is constructed for two population groups. The Consumer Price Index for All Urban Consumers, CPI-U, is based on the expenditures of all urban consumer units without regard to income or employment status. Rural residents outside metropolitan areas, all farm residents, the military, and individuals in institutions are excluded from the index population. The CPI-U covers about 81 percent of the Nation's consumer units and 80 percent of the total noninstitutional population.

The Consumer Price Index for Wage Earners and Clerical Workers, CPI-W, is based on urban consumer units who meet additional requirements related to their employment: more than one-half of the consumer unit's income must be earned from clerical or wage occupations, and at least one of the members has to have been employed for 37 or more weeks in an eligible occupation during the last 12 months. The CPI-W population comprises 38 percent of all consumer units and 42 percent of the noninstitutional population. As table 1 indicates, the average wage and clerical worker consumer unit is more than 10 percent larger than the average all-urban unit—3.0 versus 2.6 persons. This difference primarily reflects the exclusion from the CPI-W of the retired population, which tends to have smaller consumer units.

The average age of the reference person in the all-urban index consumer units is higher than in the wage earner index units, again because retired persons are included in the all-urban population. The reference person is defined as the person first mentioned by respondents in the Consumer Expenditure Survey when asked to list consumer unit members starting "with the name of the person or one of the persons who owns or rents this home." The concept of a reference person differs slightly from the "household head" concept used in earlier expenditure surveys. In those surveys, the household head was defined as the husband in husband-wife families. In other families, the head was considered to be the person designated as such by the consumer unit members.

The inclusion of retired persons in the CPI-U population is also evidenced by the smaller number of earners per consumer unit. The urban index population has an average of 1.4 employed members while the wage earner index population averages 1.8. The higher average age of the all-urban population is the principal reason for its higher proportion of homeowners and contributes to its greater frequency of female reference persons because of women's greater longevity.

The wage earner index units have a higher total income than the all-urban ones. However, when adjusted for consumer unit size, per capita income is greater for the CPI-U population.

Since the last revision of the CPI, similar changes have occurred in both index populations. In 1972–73, the average CPI-U consumer unit consisted of 2.8 members with 1.3 persons actively employed. By the 1982–84 reference period, the average size had declined to 2.6 members, but the number of persons actively employed had grown to 1.4. The number of CPI-U consumer units with a male reference person fell by nearly 12.5 percent between the two periods, so that men are now reported as reference persons in only 67 percent of the units. This latter development probably reflects both changes in social attitudes and the well-documented increase in the number of female-headed households in recent years. The age of the reference person declined from 47 to 46 years.

The CPI-U consumer unit income, as reported in the Consumer Expenditure Survey, grew 88 percent over the period,

Table 1. Demographic characteristics of the former and revised CPI populations

Characteristic	Former		Revised	
	Urban	Wage earner	Urban	Wage earner
Income before taxes	$12,332	$13,008	$23,183	$24,057
Per capita income before taxes	$4,404	$4,065	$8,917	$8,019
Size of consumer unit (persons)	2.8	3.2	2.6	3.0
Age of reference person	47.3	42.1	46.2	40.3
Number of:				
Earners	1.3	1.7	1.4	1.8
Children	1.0	1.2	.7	.8
Percent reporting homeownership	55.8	56.8	59.5	57.4
Sex of reference person:				
Male	75.9	83.8	66.5	71.9
Female	24.1	16.2	35.1	28.1

from $12,332 to $23,183. On a per capita basis, income was up 102 percent. During the same time, however, inflation measured by the CPI-U increased 114 percent.[5]

Relative importances

The expenditure weight of an item in the CPI is derived from the expenditure survey as described above. The CPI is a fixed-weight index of the Laspeyres type. If one denotes the index by $I_{t,0}$, where t is the comparison period for which a new index number is to be calculated and 0 is the reference period, then:

$$I_{t,0} = \frac{\sum_i p_{ti}\, q_{0i}}{\sum_i p_{0i}\, q_{0i}} \times 100 \qquad (1a)$$

where p_{ti} is the price of item i in the comparison period t; p_{0i} is the price of item i in the base period; and q_{0i} is the quantity consumed of item i in the base period.

The formula can be rearranged such that:

$$I_{t,0} = \sum_i \left(\frac{p_{0i}\, q_{0i}}{\sum_i p_{0i}\, q_{0i}} \right) \times p_{ti}/p_{0i} \times 100 \qquad (1b)$$

where p_{ti}/p_{0i} is the relative of price change between the base period and time t. Because the quantity of an item consumed in the base period times the price of the item in the base period equals the base-period expenditure, E_0, then:

$$I_{t,0} = \sum_i \frac{E_{0i}}{\sum_i E_{0i}} (p_{ti}/p_{0i}) \times 100 \qquad (1c)$$

Therefore, weighting the price relatives by expenditures is equivalent to weighting price levels by constant quantity weights.

When the CPI is revised, the quantity weights change to reflect the changes in consumption that have taken place over time. Between revisions, however, prices for different items can change in relation to one another. This differential price movement results in changes to the relative importance of items in the index. Relative importance is defined as the share that the base-period expenditure multiplied by the price relative for a particular item stratum is of the sum of all base-period expenditures multiplied by their price relatives. That is:

$$RI_{t,i} = \frac{E_{0i}\,(p_{ti}/p_{0i})}{\sum_i E_{0i}\,(p_{ti}/p_{0i})} \times 100$$

Items whose prices rise faster than average become relatively more important. For example, from December 1977 to December 1983, the price for fuel oil, as measured by the all-cities CPI-U, increased 531 percent, or more than twice as fast as the average for all items. As a result, the relative importance for fuel oil rose from 0.484 percent to 1.106 percent over the period. When new expenditure weights are introduced in a revision of the CPI, the changes in relative importances result from the revised quantities implicit in the new expenditure levels. Table 2 shows average expenditures per consumer unit and relative importances for the former and revised CPI-U and CPI-W indexes at the major group level and for selected expenditure classes. The expenditure weights and relative importances shown for the former CPI are based on the official December 1984 CPI, while the expenditure weights and relative importances for the revised CPI are based on the 1982–84 expenditures.[6] The 1987 revision uses the 1982–84 expenditures updated for price change.

As the data in table 2 show, many of the trends that were noted in earlier revisions have continued.[7] The relative importance for the service expenditure classes continued to grow in relation to the commodity expenditure classes. Food declined in relative importance, continuing a long-established trend. Since the 1939 CPI revision, when food and beverages accounted for more than one-third of the CPI market basket, the relative importance of that category has fallen by nearly half.

The changes in relative importances between the former and revised CPI-U will be reviewed in greater detail in the remainder of this article. Before turning to that analysis, however, a few comparisons between the CPI-U and CPI-W are of interest.

The larger size of the consumer unit in the CPI-W population accounts for the greater relative importance for food at home. Because the CPI-U covers a higher percentage of homeowners, it would be expected to have a larger relative importance for owners' equivalent rent. The greater importance for owners' equivalent rent in the CPI-U is further augmented by the fact that the rental value of the average owned home is higher in the all-urban population. The higher overall relative importance of housing for the all-urban population derives from three facts: (1) owners are more prevalent in that population; (2) owners' rental values are higher than those for rental units; (3) on average, both owners and renters in the urban index population occupy dwellings of greater rental value than those occupied by the CPI-W population:

	CPI-U	*CPI-W*
Average rent (for renters)	$3,437	$3,197
Percent renters in population	40.5	42.6
Average homeowners' equivalent rent (for owners)	$5,885	$5,064
Percent homeowners in population	59.5	57.4

The difference in estimates for medical care reflects the higher percentage of retired and unemployed persons covered by the CPI-U. Employer-paid health insurance is not available to significant numbers of the CPI-U all-urban population, and the greater proportion of older people means that more is spent per capita to treat the medical conditions associated with aging.

Changes in expenditure weight definitions

Aside from updating the expenditure weights to reflect the most recent findings from the Consumer Expenditure Survey, the periodic revision of the CPI provides an opportunity to modify the structure of the aggregate index by (1) combining some detailed indexes into a single-item stratum; (2) developing separate indexes for items that had previously been combined with others; or (3) pricing previously unpriced items.[8] Changes of this sort are based on an examination of the expenditure data and are made in an effort to keep the CPI coverage current and to spread price collection over the optimal mix of items in order to minimize the sampling error of the all-items CPI.[9]

In addition, the index revision also facilitates the introduction of definitional modifications to the way that certain item strata expenditure weights are computed. Some computational or definitional changes are made so that the expenditure weights are definitionally consistent with the way a particular item stratum can be most effectively priced. Or the change in definition may reflect more accurately the consumption of the component that is being priced. The major definitional changes that have been made within the index as part of the revision are discussed below.

Food and beverages. In the former CPI, food purchases at grocery stores while away from home on trips and vacations were classified as unpriced "food away from home" expenditures. The price change attributed to these expenditures was that for restaurant meals and snacks away from home. In the revised CPI, grocery store food purchases while on trips have been assigned to the expenditure category for food at home. The rationale for the change is that expenditures for food at out-of-town grocery stores are made by persons who then take the purchased food back to where they are staying and prepare their own meals. The expenditures are not identified by item in the Consumer Expenditure Survey, and so were allocated proportionally over all the categories of food at home, resulting in a 2.3-percent increase in food at home expenditures and a 3.8-percent reduction for food away from home.[10]

In the former CPI, all alcoholic beverages purchased on trips were unpriced. In the revised CPI, out-of-town purchases have been allocated between package store sales for off-premises consumption and alcoholic beverages by the drink for on-premises consumption in the same proportion as alcoholic beverage expenditures while in one's home city are reported.

Housing. The definition of lodging away from home has been expanded to include an imputed value for owners' use of their vacation property. Unlike most other definitional changes, which simply move expenditures from one category (possibly unpriced) to another, this is an element of expenditure not included in the former CPI. Its inclusion in the revised CPI increases the total expenditures for the housing major group by 2.4 percent.

Information processing equipment has been included as a separate item stratum and expanded to include devices such as home computers and smoke detectors. Formerly, business equipment for home use was included in the item stratum for stoves, ovens, and other major appliances.

Other video equipment is a new stratum that includes video cassette recorders and players as well as video game equipment. Hand tools, which were not priced in the former CPI, have been included in the definition of the item stratum

Table 2. Previous and revised average consumer unit expenditures for, and relative importances of, expenditure categories, CPI-U and CPI-W

Expenditure category	CPI-U				CPI-W			
	Previous		Revised		Previous		Revised	
	Average expenditure	Relative importance	Average expenditure	Relative importance	Average expenditure	Relative importance	Average expenditure	Relative importance
All items	$22,065.00	100.000	$19,362.65	100.000	$23,289.47	100.000	$18,760.52	100.000
Food and beverages, total	4,380.12	19.851	3,454.36	17.840	4,975.17	21.271	3,678.00	19.605
Food at home, total	2,776.44	12.583	1,962.94	10.138	3,188.22	13.631	2,138.70	11.400
Food away from home	1,352.14	6,128	1,189.82	6.145	1,512.36	6.466	1,229.19	6.552
Alcoholic beverages	239.85	1.087	301.60	1.558	275.29	1.177	310.11	1.653
Housing, total	8,318.95	37.702	8,255.57	42.637	8,174.15	34.948	7,498.02	39.967
Residential rent	1,367.59	6.198	1,099.66	5.679	1,350.27	5.773	1,207.05	6.434
Homeowners' equivalent rent	3,029.08	13.728	3,519.20	18.175	2,956.90	12.642	2,963.97	15.799
Apparel and upkeep	1,116.71	5.061	1,263.23	6.524	1,169.94	5.002	1,221.31	6.510
Transportation, total	4,772.88	21.631	3,620.03	18.696	5,643.65	24.129	3,918.51	20.887
New vehicles	851.49	3.859	1,064.36	5.497	939.79	4.018	995.25	5.305
Used vehicles	1,014.77	4.599	246.08	1.271	1,356.12	5.798	426.99	2.276
Motor fuel	1,215.34	5.508	929.49	4.800	1,453.19	6.213	1,095.24	5.838
Public transportation	347.97	1.577	269.67	1.393	318.56	1.362	198.30	1.057
Medical care, total	1,383.25	6.269	928.58	4.796	1,302.56	5.569	740.10	3.945
Entertainment, total	931.58	4.222	848.02	4.380	917.57	3.923	763.93	4.072
Other goods and services	1,173.64	5.319	992.85	5.128	1,205.73	5.155	942.72	5.025

"lawn equipment, power tools, and other hardware." Indoor plants and fresh cut flowers are a priced item stratum in the revised CPI. These items were previously in the unpriced portion of the other housefurnishings expenditure class. Home care of invalids, the elderly, and convalescents also is a priced item stratum in the revised CPI. Expenditures for these items were formerly unpriced as a part of the housekeeping services expenditure class.

Apparel and upkeep. Boys' active sportswear is now being priced in the CPI. The change makes boys' apparel consistent with the other apparel expenditure classes. The CPI now also prices women's apparel accessories, with expenditures included in the expenditure weight for women's underwear, nightwear, and accessories. The "other apparel commodities" category has been restructured to better reflect the importance of certain items. Watches and jewelry have each become a separate item stratum. Luggage, which formerly was tabulated along with watches and jewelry, is instead now combined with sewing materials and notions.

Transportation. In the former CPI weights, all expenditures for vehicles were valued at the net transaction price—that is, the negotiated price less any trade-in value. In the expenditure weights for the revised CPI, the treatment of trade-ins and outright sales of used vehicles is changed. Trade-ins, at their market value, continue to be netted out of the price of purchased used cars. In addition, the market value of trade-ins on new cars is netted from used car purchases, rather than new car purchases. Outright sales of vehicles from one consumer to another are netted against the corresponding purchase because the transaction is really an intrapopulation exchange of wealth; there is no net change in used car consumption. The remaining used car purchases are the CPI expenditure weight. They comprise the sale of vehicles by the business and government sectors to consumers, plus dealer markup on used cars previously owned by consumers. In the 1982–84 period, the use of the new expenditure weight definitions for new and used vehicles resulted in a 17.0-percent increase in the weight for new vehicles and a 60.4-percent decrease for used vehicles when compared to the expenditure weight definition in the former CPI. The definitional changes are consistent with the way in which vehicles are priced in the CPI.

Because the prerevision method double-counted certain used car values by neglecting to subtract all used car sales from used car purchases, the combined value of new and used vehicles was overstated. As a result, the new procedure reduces the total estimated expenditure for the transportation major group by 9.7 percent. The reduction more than offsets the added expenditure for imputed rent of owned vacation properties, and is responsible for an overall 1.0-percent definitional reduction in CPI-urban expenditures for all items.

In addition to this major definitional change, three small changes have been made in the transportation section. "Other automobile related fees" has been expanded slightly to include expenditures for other vehicle rentals. Other vehicle rentals, which include such items as trailers and car-top carriers, were unpriced in the former CPI. "Other intercity transportation" has been enlarged to include ship fares, which have begun to be priced in the CPI. "Intracity transportation" has been expanded to include the expenditure for van pools which are currently unpriced but for which pricing will begin at a future date as appropriate methods are developed.

Medical care. A significant number of definitional changes have been introduced in this area. However, almost all of them are accounted for by two factors. First, there is a change in the way health insurance premiums in the CPI are represented in the expenditure weights. While this has no effect on the final index result and is mathematically equivalent to the former procedure, it is believed that the new structure provides a clearer picture of the role of health insurance in the CPI. Health insurance represents only expenditures by consumers for premiums—employer contributions are, of course, not included. Other medical care expenditures are the out-of-pocket payments by consumers. Insurance premiums can be viewed as purchasing two things: (1) the medical care for which benefits are paid, and (2) the services of the insurance carrier in administering the policy. This second element has been labeled retained earnings and refers to the operating cost and any profit of the insurance carrier.

In the former CPI, the entire insurance premium was classified as health insurance. However, within health insurance, it was broken into many item strata for pricing—one for each type of benefit paid and one for the retained earnings associated with each type of benefit. The price movement for a health insurance benefit stratum (for example, insurance-paid hospital rooms) was the same as the price movement for the corresponding medical item in the CPI (hospital rooms). The price movement for a retained earnings stratum was the combination of price change for the relevant medical care item and an estimate of changes in retained earning as a proportion of premiums. In the revision, instead of using the price change for hospital rooms (or any other medical item) for both the hospital room index and the hospital-room-paid-by-insurance index, the expenditures for the two types of hospital room payments are combined in a single index. The expenditure weight for each medical care item is the combination of the direct out-of-pocket expense for the item and the indirect expense for the item paid from consumer-purchased health insurance. The health insurance expenditure weight is then the sum of all the retained earnings items.

In allocating insurance premiums between covered medical care and retained earnings, secondary source data were obtained from the Health Care Financing Administration, U.S. Department of Health and Human Services, to break

out the retained earnings from covered medical care. Separate allocation proportions were developed for Blue Cross and Blue Shield, commercial health insurance companies, health maintenance organizations, and Medicare part B. Medicare had no retained earnings and its premiums were allocated between professional services and hospital rooms.

The second change in the treatment of medical care services is a restructuring that provides unique categories for "professional services" and "hospital and related services." Eye care (including eyeglasses and contact lenses) has been combined with physicians' services, dental services, and other professional services to form the "professional services" index. In the former CPI, a distinction was made between the purchase price of eyeglasses and contact lenses (commodities), and the charge associated with fitting eyeglasses and contact lenses for the consumer (services). It has grown increasingly more difficult to dissagregate provider charges into these components so, in the revised CPI, the total cost is collected in a single index in the medical care service component. The change results in a 12.2-percent reduction in the medical care commodity component. Fees for lab tests and x rays (with a relative importance of 0.094) have been moved from professional services and, along with emergency room charges, make up the outpatient services category.

Entertainment. The growth of entertainment expenditures has led to a number of changes. Services for pets, principally veterinary services, and video rentals are now priced in "other entertainment services." Water sports equipment, which was previously unpriced by the CPI, is now included in the expenditure weight for "other sporting goods." Separate indexes are being produced for club memberships, fees for participant sports, and fees for lessons and instructions.

Other good and services. "School textbooks and supplies" has been expanded to include expenditures for elementary school textbooks and supplies and sets of reference books. Both of these items previously were unpriced in the CPI. The unpriced items accounting fees and cemetery lots and vaults have become part of two new item strata for personal financial services and funeral expenses, respectively. Legal services also become a separate stratum.

Changes in consumption patterns

Many factors contributed to the change in expenditures for each item in the CPI market basket between 1972–73 and 1982–84. It is possible to quantify some of these factors. The expenditure weights were developed for each of a total of 184 priced and 23 unpriced item strata within each of 45 geographic areas. At this most basic level, the total expenditure is equal to the average expenditure per consumer unit in the geographic area (from the Consumer Expenditure Survey), multiplied by the number of consumer units in that area (from the decennial census), as follows:

$$E_{ij} = n_j e_{ij} \qquad (2)$$

where:

E_{ij} = total annual expenditure for item i in geographic area j;
n_j = the number of consumer units in area j; and,
e_{ij} = average annual expenditure per consumer unit on item i in area j.

To explain the changes in the CPI-U market basket, we have developed a series of factors that help to account for the difference between the total expenditure for an item nationwide in 1972–73 (E_i) and the expenditure for the same item in 1982–84 (E_i'). These factors are presented in table 3. For clarity, the expenditures in each case are presented as relative importances—that is, the expenditure for an item as a percentage of the expenditure for all items. The left-hand data column shows the relative importance for each item, or combination of items, from the 1972–73 Consumer Expenditure Survey. The right-hand column contains the relative importances from the 1982–84 survey. (The 1982–84 results were updated for price change through the end of 1986 before introduction in the 1987 CPI-U.) The intervening columns of data in table 3 are indexes of change from 1972–73 to 1982–84 for each of the factors for which effects on the market basket are being measured.

Population growth. The change in national expenditures for each item can be factored into two parts, the change in the number of consumer units and the change in expenditures per consumer unit. The relationship may be expressed as follows:

$$E_i' = \left(\frac{N'}{N}\right)\left(\frac{\bar{e}_i'}{\bar{e}_i}\right)E_i \qquad (3)$$

where N (N') is the number of consumer units in 1972–73 (1982–84); and $\bar{e}_i(\bar{e}_i')$ is the national average expenditure per consumer unit for item i in 1972–73 (1982–84). When we define $C = N'/N$ as the factor of change in the number of consumer units, the above equation becomes:

$$E_i' = C\left(\frac{\bar{e}_i'}{\bar{e}_i}\right)E_i \qquad (4)$$

From 1972–73 to 1982–84, the number of CPI-U consumer units grew by 23.5 percent. Because this growth factor is the same for all items in the CPI, it affects only the level of expenditures and not the relative importances among items. As a result, it does not appear in table 3. The growth in consumer units is, in turn, a composite of the change in the size of the population (up 11 percent) and the

Table 3. Indexes of change in relative importance for expenditure groups, 1972–73 to 1982–84

Expenditure group	1972–73 relative importance	Indexes of change (1972–73=100)				1982–84 relative importance
		Prices	Population shift	Definition	Implicit quantity	
All items	100.000	215.8	100.4	99.0	97.2	100.000
Food and beverages	20.562	213.7	100.3	100.0	84.5	17.840
Food	19.227	216.2	100.2	100.0	81.6	16.283
Food at home	13.513	210.4	99.9	102.3	72.8	10.138
Cereal and bakery products	1.542	238.0	99.6	102.3	75.3	1.351
Cereal and cereal products	.384	244.7	99.9	102 3	93.2	.429
Flour and prepared flour mixes	.107	213.9	99.7	102.3	73.3	.082
Cereal	.164	270.4	99.6	102.3	109.8	.237
Rice, pasta, and cornmeal	.113	236.5	100.7	102.3	83.0	.110
Bakery products	1.158	235.8	99.5	102.3	69.1	.921
White bread	.332	231.6	99.5	102.3	61.1	.229
Fresh other breads, biscuits, rolls, and muffins	.236	230.9	99.9	102.3	78.8	.210
Cookies, fresh cakes, and cupcakes	.280	243.7	99.4	102.3	67.9	.226
Other bakery goods	.310	236.8	99.5	102.3	71.4	.256
Meats, poultry, fish, and eggs	5.171	172.6	99.9	102.3	72.6	3.177
Meats, poultry, and fish	4.849	174.9	99.9	102.3	72.0	2.992
Meats	3.853	174.1	99.7	102.3	67.6	2.219
Beef and veal	2.091	173.4	99.7	102.3	64.3	1.140
Ground beef other than canned	.562	167.6	100.4	102.3	94.4	.438
Chuck roast	.236	184.5	97.4	102.3	45.2	.094
Round roast	.234	154.9	99.2	102.3	35.3	.062
Round steak	.773	182.1	100.1	102.3	88.3	.098
Sirloin steak	.141	178.2	99.6	102.3	72.9	.090
Other beef and veal	.144	156.4	100.4	102.3	51.9	.358
Pork	1.136	172.8	99.9	102.3	66.3	.638
Bacon	.211	175.7	100.5	102.3	62.1	.114
Chops	.246	168.9	99.8	102.3	73.7	.150
Ham	.304	161.8	100.3	102.3	58.9	.143
Other pork including sausage	.374	182.7	99.2	102.3	69.6	.231
Other meats	.626	179.0	99.2	102.3	80.9	.441
Poultry	.611	141.4	100.1	102.3	103.5	.439
Fresh whole chicken	.250	138.3	100.3	102.3	84.5	.144
Fresh and frozen chicken parts	.200	144.4	100.0	102.3	144.9	.205
Other poultry	.160	142.5	99.9	102.3	79.9	.089
Fish and seafood	.385	236.2	101.0	102.3	74.2	.334
Canned fish and seafood	.143	224.1	100.1	102.3	59.0	.093
Fresh and frozen fish and seafood	.242	243.3	101.4	102.3	82.4	.241
Eggs	.322	138.1	100.6	102.3	84.3	.185
Dairy products	1.788	201.8	99.8	102.3	76.4	1.350
Fresh milk and cream	1.054	193.8	99.7	102.3	68.0	.680
Fresh whole milk	.766	193.8	99.6	102.3	54.6	.396
Other fresh milk and cream	.288	193.9	100.1	102.3	103.5	.284
Processed dairy products	.733	213.3	99.9	102.3	87.4	.670
Cheese	.372	208.4	99.9	102.3	98.7	.374
Ice cream and related products	.185	215.1	99.7	102.3	178.2	.170
Other dairy products including butter	.176	221.8	100.0	102.3	65.4	.126
Fruits and vegetables	1.928	219.6	99.9	102.3	80.8	1.677
Fresh fruits and vegetables	1.105	206.1	100.2	102.3	90.2	1.009
Fresh fruits	.506	219.1	100.5	102.3	93.6	.512
Apples	.107	203.5	99.2	102.3	91.0	.096
Bananas	.069	181.7	101.0	102.3	140.6	.088
Oranges	.087	299.3	102.4	102.3	46.3	.061
Other fresh fruits	.242	207.9	100.0	102.3	108.1	.267
Fresh vegetables	.599	195.1	99.9	102.3	86.8	.497
Potatoes	.136	201.7	98.9	102.3	66.2	.088
Lettuce	.090	235.9	100.5	102.3	64.9	.068
Tomatoes	.092	148.9	100.1	102.3	112.2	.076
Other fresh vegetables	.280	194.1	100.2	102.3	99.3	.265
Processed fruits and vegetables	.823	237.6	99.6	102.3	69.9	.668
Processed fruits	.390	254.8	99.4	102.3	78.5	.381
Fruit juices and frozen fruit	.242	270.5	99.5	102.3	92.6	.296
Canned and dried fruit	.148	229.1	99.4	102.3	51.4	.085
Processed vegetables	.433	222.1	99.8	102.3	61.1	.288
Frozen vegetables	.111	235.7	99.8	102.3	75.4	.097
Other processed vegetables	.322	217.4	99.7	102.3	55.7	.191
Other foods at home	2.709	269.7	99.9	102.3	72.2	2.584
Sugar and sweets	.370	285.4	99.7	102.3	70.9	.366
Sugar and artificial sweeteners	.268	281.0	99.7	102.3	70.9	.261
Sweets including candy	.101	296.9	99.7	102.3	71.1	.105
Fats and oils	.346	221.2	100.0	102.3	71.8	.270
Nonalcoholic beverages	.947	319.5	100.1	102.3	60.4	.897
Carbonated drinks	.528	353.6	100.3	102.3	53.4	.490
Coffee	.261	226.9	99.5	102.3	86.9	.251
Other noncarbonated drinks	.158	358.5	99.9	102.3	56.2	.156
Other prepared foods	1.046	235.0	99.9	102.3	87.3	1.050
Canned and packaged soup	.105	219.1	99.5	102.3	74.0	.083
Frozen prepared foods	.164	234.1	99.7	102.3	98.8	.186
Snacks	.188	247.0	99.5	102.3	95.9	.217
Seasonings, condiments, sauces, and spices	.270	243.0	100.1	102.3	85.4	.275
Miscellaneous prepared foods including baby food	.319	226.9	100.0	102.3	81.6	.290

Table 3. Continued—Indexes of change in relative importance for expenditure groups, 1972–73 to 1982–84

Expenditure group	1972–73 relative importance	Indexes of change (1972–73=100)				1982–84 relative importance
		Prices	Population shift	Definition	Implicit quantity	
Food away from home	5.714	229.8	101.0	96.2	100.5	6.145
Lunch	1.825	230.6	101.3	100.0	105.8	2.162
Dinner	2.089	226.2	101.1	100.0	115.1	2.639
Other meals and snacks	1.097	230.2	100.4	100.0	84.3	1.025
Unpriced board and catered affairs	.703	238.1	100.6	56.8	69.6	.319
Alcoholic beverages	1.335	178.2	101.3	100.0	134.8	1.558
Alcoholic beverages at home	1.030	175.9	101.7	103.8	99.4	.910
Beer and ale	.476	189.6	100.5	103.8	103.6	.468
Distilled spirits	.393	157.3	102.1	103.8	72.6	.228
Wine	.160	180.9	104.3	103.8	142.6	.215
Alcoholic beverages away from home	.241	187.7	100.1	102.8	290.2	.647
Unpriced items	.065	180.4	100.7	0.0	(1)	(1)
Housing	38.215	214.6	100.6	102.4	105.3	42.637
Shelter	23.165	201.7	101.3	104.0	111.3	26.283
Renters' cost	7.353	201.8	102.3	115.7	88.9	7.485
Rent, residential	6.612	196.8	102.6	100.0	88.7	5.679
Other renters' cost	.814	246.2	100.2	223.0	84.2	1.806
Lodging while out of town	.508	256.5	99.9	266.6	96.3	1.601
Lodging while at school	.234	224.4	100.2	100.0	67.4	.170
Tenants' insurance	.073	244.4	101.8	100.0	40.2	.035
Homeowners' cost	15.318	200.6	101.1	100.0	124.7	18.569
Owners' equivalent rent	15.133	197.3	101.1	100.0	125.6	18.175
Household insurance	.185	468.9	101.5	100.0	93.2	.394
Maintenance and repairs	.494	234.2	96.3	100.0	42.9	.230
Maintenance and repair services	.250	256.8	96.6	100.0	45.1	.134
Property maintenance and repair services	.244	256.8	96.6	100.0	46.1	.134
Unpriced items	.006	258.3	97.1	0.0	(1)	(1)
Maintenance and repair commodities	.245	211.1	96.0	100.0	40.3	.096
Material, supplies, and equipment for home repair	.149	215.6	95.0	100.0	28.4	.041
Other maintenance and repair commodities	.066	201.5	97.6	100.0	87.2	.054
Unpriced items	.030	209.8	97.4	0.0	(1)	(1)
Fuel and other utilities	6.290	284.4	99.0	100.0	100.3	8.519
Fuels	3.625	363.1	98.7	100.0	83.4	5.187
Fuel and other household fuel commodities	.595	515.4	94.9	100.0	40.9	.571
Fuel oil	.491	535.1	95.1	100.0	35.4	.425
Other household fuel commodities	.103	421.7	93.4	100.0	74.8	.146
Gas (piped) and electricity	3.030	333.2	99.8	100.0	95.6	4.617
Electricity	1.900	299.9	100.9	100.0	106.9	2.945
Utility (piped) gas	1.130	389.1	98.4	100.0	80.6	1.672
Other utilities and public services	2.665	177.5	100.1	100.0	146.8	3.331
Telephone services	1.928	168.5	100.2	100.0	139.8	2.181
Water and sewer maintenance	.510	212.1	100.2	100.0	115.9	.602
Cable television	.078	162.7	93.5	100.0	722.4	.409
Refuse collection	.140	183.1	101.0	100.0	112.0	.139
Unpriced items	.010	185.7	97.3	0.0	(1)	(1)
Household furnishing and operations	8.760	198.7	100.0	100.0	93.9	7.835
Housefurnishings	5.203	174.3	99.5	100.0	115.0	4.974
Textile housefurnishings	.615	201.9	100.4	100.0	72.8	.436
Furniture and bedding	1.557	178.0	100.0	100.0	101.7	1.352
Bedroom furniture	.448	198.4	100.2	100.0	100.2	.428
Sofas	.322	153.1	100.3	100.0	109.8	.260
Living room chairs and tables	.335	164.7	99.5	100.0	83.8	.220
Other furniture	.452	185.4	100.0	100.0	110.4	.444
Appliances including electronic equipment	1.973	127.4	97.3	100.0	140.5	1.647
Major household appliances	.591	191.9	93.2	100.0	88.4	.449
Refrigerators and home freezers	.134	176.5	100.3	100.0	113.5	.129
Laundry equipment	.087	184.9	98.7	100.0	175.3	.133
Stoves, ovens, dishwashers, and air conditioners	.228	154.2	99.5	81.7	136.0	.187
Information processing equipment	(1)	(1)	(1)	(1)	(1)	.233
Television and sound equipment	1.135	121.4	100.6	100.0	145.2	.965
Television	.536	112.7	100.3	100.0	122.8	.357
Other video equipment	(1)	(1)	(1)	(1)	(1)	.250
Sound equipment	.599	129.2	100.8	100.0	95.7	.358
Unpriced items	(1)	(1)	(1)	(1)	(1)	(2)
Other housefurnishings	1.058	240.2	100.6	100.0	125.6	1.540
Floor and window coverings, infants', laundry, cleaning, and outdoor equipment	.212	208.3	100.6	100.0	92.8	.197
Clocks, lamps, and decor items	.188	187.2	102.9	100.0	170.6	.297
Tableware, serving pieces, and nonelectric kitchenware	.321	214.3	101.4	100.0	77.7	.260
Lawn equipment, power tools, and other hardware	.223	192.7	98.5	100.0	128.9	.262
Small kitchen appliances, sewing machines, vacuum cleaners, and portable heating equipment	(1)	(1)	(1)	(1)	(1)	.222
Indoor plants and fresh cut flowers	(1)	(1)	(1)	(1)	(1)	.193
Unpriced items	.115	202.4	101.2	31.2	310.8	.109
Housekeeping supplies	1.443	248.4	100.0	100.0	72.9	1.253
Laundry and cleaning products including soap	.530	254.2	99.6	100.0	67.2	.433
Household paper products and stationery supplies	.441	243.2	100.2	100.0	79.0	.407
Other household, lawn, and garden supplies	.472	246.8	100.5	100.0	73.7	.414

Table 3. Continued—Indexes of change in relative importance for expenditure groups, 1972–73 to 1982–84

Expenditure group	1972–73 relative importance	Indexes of change (1972–73=100)				1982–84 relative importance
		Prices	Population shift	Definition	Implicit quantity	
Housekeeping services	2.113	224.9	100.9	100.0	70.0	1.608
Postage	.202	216.2	100.9	100.0	123.3	.261
Babysitting	.396	213.4	100.4	100.0	74.3	.302
Domestic services	.429	214.7	101.1	100.0	67.1	.300
Other household services	.666	244.7	101.4	100.0	48.3	.383
Appliance and furniture repair	.357	218.2	99.6	100.0	49.3	.184
Care of invalids, elderly, and convalescents in the home	(1)	(1)	(1)	(1)	(1)	.054
Apparel and upkeep	7.498	148.1	100.4	100.0	122.1	6.524
Apparel commodities	6.794	138.5	100.2	100.0	132.3	5.981
Apparel commodities less footwear	5.893	135.2	100.3	100.0	132.1	5.062
Men's and boys'	2.070	146.6	100.4	100.0	110.6	1.614
Men's apparel	1.668	144.6	100.4	100.0	112.0	1.300
Suits, coats, sportcoats, and jackets	.651	130.4	100.0	100.0	93.4	.380
Furnishings	.302	180.6	101.2	100.0	118.9	.314
Shirts	.286	152.6	101.0	100.0	149.0	.315
Dungarees, jeans, and trousers	.406	134.9	100.0	100.0	103.9	.273
Unpriced men's uniforms and other clothing	.023	143.7	100.9	100.0	109.1	.017
Boys' apparel	.402	154.7	100.1	100.0	105.1	.314
Boys' apparel	.383	154.8	100.2	106.8	102.3	.311
Unpriced boys' uniforms and other clothing	.019	153.3	99.9	13.6	146.7	.003
Women's and girls'	2.967	114.2	100.1	100.0	162.5	2.642
Women's apparel	2.479	113.1	100.3	100.0	168.4	2.269
Coats and jackets	.333	93.1	98.7	100.0	157.5	.231
Dresses	.540	112.6	100.9	100.0	129.2	.380
Separates and sportswear	.576	103.8	100.5	100.0	377.2	1.086
Underwear, nightwear, hosiery, and accessories	.526	158.2	99.7	127.8	77.1	.392
Suits	.321	77.8	102.0	100.0	119.2	.146
Unpriced items	.183	112.1	100.4	28.3	122.9	.034
Girls' apparel	.488	120.1	99.4	100.0	133.6	.373
Girls' apparel	.480	120.2	99.4	100.0	132.7	.365
Unpriced items	.008	112.5	99.0	100.0	190.1	.009
Infants' and toddlers'	.144	175.6	99.7	100.0	193.0	.233
Infants' and toddlers' apparel	.110	175.1	99.9	100.0	228.3	.211
Unpriced items	.034	177.2	99.3	100.0	78.2	.022
Other apparel commodities	.712	181.3	100.8	100.0	91.8	.573
Watches, jewelry and luggage (1978)	.498	185.3	100.0	100.0	140.8	.467
Sewing materials (1978) and luggage (1987)	.214	175.4	99.8	162.1	36.5	.106
Watches	(1)	(1)	(1)	(1)	(1)	.102
Jewelry	(1)	(1)	(1)	(1)	(1)	.365
Footwear	.901	159.4	100.2	100.0	133.1	.918
Men's	.285	168.4	101.0	100.0	119.4	.278
Boys' and girls'	.237	160.2	100.0	100.0	102.6	.187
Women's	.378	152.1	99.8	100.0	165.0	.453
Apparel services	.704	240.5	101.5	100.0	66.0	.544
Other apparel services	.256	220.7	101.6	100.0	94.7	.261
Laundry and drycleaning other than coin operated	.448	251.7	101.4	100.0	51.6	.283
Transportation	19.065	245.3	100.5	90.3	91.9	18.696
Private	17.787	244.2	100.5	90.3	91.6	17.303
New vehicles	4.775	175.8	99.2	117.0	117.6	5.497
New cars	4.248	176.1	99.3	116.9	106.6	4.439
New trucks and motorcycles	.527	173.9	98.7	117.6	207.8	1.058
New trucks	(1)	(1)	(1)	(1)	(1)	.976
New motorcycles	(1)	(1)	(1)	(1)	(1)	.082
Used vehicles	2.805	325.1	100.2	39.6	73.3	1.271
Used cars	2.544	325.5	100.1	46.6	62.5	1.158
Unpriced items	.261	321.0	100.7	20.8	134.0	.113
Motor fuel	4.064	318.2	100.8	100.0	76.8	4.800
Automobile maintenance and repair services	1.536	238.3	100.9	100.0	86.9	1.538
Body work	.204	258.4	101.5	100.0	61.5	.158
Automobile drive train, brake, and miscellaneous mechanical repairs	.331	246.0	101.2	100.0	110.0	.434
Maintenance and servicing	.589	226.9	100.6	100.0	82.3	.530
Power plant repair	.412	238.6	100.8	100.0	82.8	.394
Unpriced items	(1)	(1)	(1)	(1)	(1)	.022
Other private transportation	4.608	202.5	101.3	100.0	92.7	4.197
Other private transportation commodities	.846	180.9	100.8	100.0	120.6	.893
Motor oil, coolant, and other products	.089	242.9	102.1	100.0	69.6	.074
Automobile parts and equipment	.757	173.7	100.6	100.0	129.1	.819
Tires	.541	172.2	100.8	100.0	95.1	.428
Other parts and equipment	.217	177.4	100.2	100.0	211.9	.391
Other private transportation services	3.762	207.3	101.3	100.0	87.2	3.304
Automobile insurance	2.130	199.0	101.6	100.0	83.5	1.724
Vehicle finance charges	.862	234.0	99.4	100.0	94.9	.912
Automobile finance charges	.805	234.4	99.3	100.0	83.4	.749
Unpriced items	.058	227.4	100.8	100.0	258.4	.163
Automobile fees	.770	200.5	103.1	100.0	87.5	.668

Table 3. Continued—Indexes of change in relative importance for expenditure groups, 1972–73 to 1982–84

Expenditure group	1972–73 relative importance	Indexes of change (1972–73=100)				1982–84 relative importance
		Prices	Population shift	Definition	Implicit quantity	
Automobile registration, licensing, and inspection fees	.455	181.5	103.3	100.0	77.0	.315
Other automobile related fees	.267	231.6	102.7	100.9	106.8	.329
Unpriced items	.047	207.0	104.0	88.5	56.3	.024
Public transportation	1.278	260.1	100.5	100.0	87.0	1.393
Airline fares	.564	290.5	101.2	100.0	111.3	.885
Other intercity transportation	.066	238.6	99.6	130.6	150.9	.149
Intracity public transportation	.616	234.8	99.9	107.6	46.7	.349
Unpriced items	.031	254.5	97.7	11.0	260.9	.011
Medical care	5.003	241.5	100.5	100.0	82.3	4.796
Medical care commodities	1.015	189.3	100.2	89.9	114.0	.946
Prescription drugs	.480	213.0	99.5	104.4	114.5	.583
Nonprescription drugs and medical supplies	.534	167.9	101.1	74.1	112.5	.363
Internal and respiratory over-the-counter drugs	.296	222.7	101.2	100.0	72.3	.232
Nonprescription medical equipment and supplies	.115	206.7	100.7	100.0	114.1	.131
Medical care services	3.988	254.8	100.6	102.8	76.4	3.850
Professional medical services	2.075	251.6	100.7	130.3	77.6	2.546
Physicians' services	1.016	247.9	100.4	145.2	74.5	1.313
Dental services	.777	236.3	101.0	108.2	79.7	767
Eye care and other professional services	.244	354.1	100.5	146.7	76.3	.466
Eye care	(1)	(1)	(1)	(1)	(1)	.320
Services by other medical professionals	(1)	(1)	(1)	(1)	(1)	.147
Hospital and related medical services	.335	342.8	100.2	240.7	88.8	1.178
Hospital room	.150	327.5	100.1	215.8	91.4	.467
Other inpatient hospital services	.182	306.9	100.4	228.2	69.7	.429
Outpatient services	(1)	(1)	(1)	(1)	(1)	.279
Unpriced items	.002	295.1	95.2	100.0	143.2	.003
Health insurance	1.579	240.3	100.7	8.3	82.4	.125
Entertainment	4.814	188.1	100.7	100.0	100.2	4.380
Entertainment commodities	2.822	188.9	100.1	100.0	86.0	2.200
Reading materials	.690	222.5	100.1	100.0	90.8	.668
Newspapers	.375	209.9	99.3	100.0	86.1	.323
Magazines, books, and periodicals	.315	237.4	100.9	100.0	95.8	.346
Sporting goods and equipment	.910	157.7	100.1	100.0	77.0	.530
Sports vehicles including bicycles	.665	161.4	100.1	100.0	46.4	.239
Other sporting goods	.225	146.9	100.3	114.7	159.6	.291
Unpriced items	.020	156.1	100.2	0.0	(1)	(1)
Toys, hobbies, and other entertainment	1.222	193.1	100.1	100.0	88.4	1.001
Toys, hobbies, and music equipment	.608	190.7	98.8	100.0	87.6	.481
Photographic supplies and equipment	.243	184.1	101.6	100.0	62.3	.136
Pet supplies and expense	.338	203.9	101.3	100.0	111.1	.372
Unpriced items	.033	194.9	101.2	100.0	38.6	.012
Entertainment services	1.992	155.9	101.4	100.0	120.3	2.180
Club membership and fees	.606	197.2	101.2	100.0	115.5	.669
Club membership	(1)	(1)	(1)	(1)	(1)	.354
Fees for participant sports	(1)	(1)	(1)	(1)	(1)	.315
Admissions	.335	185.7	101.2	100.0	199.2	.601
Other entertainment services (1978)	.251	167.5	101.6	198.0	219.2	.890
Fees for lessons and instructions	(1)	(1)	(1)	(1)	(1)	.211
Other entertainment services (1987)	(1)	(1)	(1)	(1)	(1)	.679
Unpriced items	.800	186.2	101.6	2.3	121.1	.020
Other goods and services	4.843	224.7	100.0	100.0	98.3	5.128
Tobacco and other smoking products	1.423	212.0	99.4	100.0	77.9	1.120
Tobacco and other smoking products	1.423	212.0	99.4	100.0	77.9	1.120
Unpriced items	(1)	(1)	(1)	(1)	(1)	(2)
Personal care	1.873	213.1	100.3	100.0	64.4	1.236
Toilet goods and personal care appliances	.844	217.2	100.1	100.0	76.3	.672
Hair, dental, shaving, and miscellaneous personal care	.582	219.0	100.1	100.0	63.5	.389
Cosmetics, bath and nail preparations, manicure and eye makeup implements	.262	213.4	100.1	100.0	105.4	.283
Personal care services	1.029	209.6	100.4	100.0	54.3	.564
Beauty parlor services for females	.694	211.0	100.0	100.0	64.1	.450
Haircuts and other barber shop services for males	.334	206.8	101.4	100.0	33.7	.113
Unpriced items	.001	222.1	101.5	100.0	62.9	(2)
Personal and educational expenses	1.547	250.5	100.2	100.0	148.9	2.772
Schoolbooks and supplies	.202	241.2	100.1	100.0	78.1	.182
College textbooks	.116	240.2	99.6	100.0	95.1	.126
School textbooks and supplies	.065	243.1	99.9	161.8	38.1	.046
Unpriced items	.021	240.5	103.5	35.2	108.2	.010
Personal and educational services	1.345	251.9	100.2	100.0	159.1	2.590
Tuition and other school fees	1.077	250.7	99.7	100.0	122.7	1.583
College tuition	.714	249.0	98.8	100.0	105.8	.890
Elementary and high school tuition	.180	259.5	101.9	100.0	121.1	.276
Unpriced (1978)	.183	248.9	100.9	100.0	188.7	.416
Child day care and nursery school	(1)	(1)	(1)	(1)	(1)	.255
Other tuition and fees	(1)	(1)	(1)	(1)	(1)	.097
Unpriced items (1987)	(1)	(1)	(1)	(1)	(1)	.064

Table 3. Continued—Indexes of change in relative importance for expenditure groups, 1972–73 to 1982–84

Expenditure group	1972–73 relative importance	Indexes of change (1972–73=100)				1982–84 relative importance
		Prices	Population shift	Definition	Implicit quantity	
Personal expenses	.268	257.0	102.4	100.0	297.9	1.007
Legal service fees	(1)	(1)	(1)	(1)	(1)	.370
Funeral expenses	(1)	(1)	(1)	(1)	(1)	.291
Personal financial services	(1)	(1)	(1)	(1)	(1)	.264
Unpriced items	.055	255.4	102.3	27.5	434.9	.082

[1] Not applicable.
[2] Less than .0005.

average size of the consumer unit (down from 2.8 to 2.6 persons per unit).

Consumption is calculated in terms of consumer units rather than on a per capita basis because many items, such as shelter and heating fuel, are consumed by the unit as a whole. But this per-consumer-unit basis of CPI expenditures is important for interpreting many of the results as well. For example, as will be explained in more detail below, table 3 shows that the implicit quantity change for ground beef between the former and revised market baskets is a decline of 5.6 percent. This, however, should not be interpreted as a reduction in per capita consumption of ground beef. While the average consumer unit purchased 5.6 percent less, that average unit also had 7 percent fewer people, so per capita consumption actually rose. Even here the changes in the demographic makeup of the consumer unit—the increase in the number of older Americans and the decline in the number of children per consumer unit—may be more explanatory than a strict per capita comparison. In general, the following discussion is confined to data per consumer unit because the unit is the entity that does the buying. But one must also keep in mind that the average unit in 1982–84 was about 7 percent smaller than in 1972–73.

Index of price change. Changes in expenditures for an item may be affected by changes in the price of that item. The index of price change in table 3 represents the cost of purchasing a unit of an item in the 1982–84 period as a percent of the cost of purchasing the same item in 1972–73. The price index for an item stratum, I_i, can be expressed using equation (1c), as follows:

$$I_i = \frac{\sum_j \sum_k E_{ijk} \, (p'_{ijk}/p_{ijk})}{\sum_j \sum_k E_{ijk}} \times 100 \qquad (5)$$

where i indexes the item stratum; j indexes the local areas; and k indexes the varieties included within an item stratum.

We can define the price factor in the changing expenditure weights as:

$$P_i = I_i/100 \qquad (6)$$

Equation (4) can then be rewritten as:

$$E'_i = CP_i\left(\frac{\bar{e}'_i}{P_i\bar{e}_i}\right) E_i \qquad (7)$$

Substituting (5) in the denominator of (7), and recalling that $\bar{e}_i = (1/N)(\sum_j \sum_k E_{ijk})$ gives the following result:

$$E'_i = CP_i \left(\frac{\bar{e}'_i}{1/N\left(\sum_j \sum_k E_{ijk}p'_{ijk}/p_{ijk}\right)} \right) E_i \qquad (8)$$

The ratio in parentheses in equation (8) is the average per-consumer-unit expenditure in 1982–84 for item stratum i as a proportion of what the average consumer unit from 1972–73 would have spent in 1982–84 had it continued to purchase the same quantity and quality of the item. This ratio will be analyzed further in subsequent sections.

The price change index calculated differs from the published CPI indexes for certain items because it treats the period 1972–73 through December 1977 differently and uses an owners' equivalent rent measure. When the 1972–73 expenditures were updated for price change to their introduction date of December 1977, each item stratum expenditure was updated using the CPI for the expenditure class to which it belongs. The price relative in equation (5) is, therefore, a composite. From 1972–73 to December 1977, it is the average price change for the entire expenditure class to which an item belongs, and from December 1977 to 1982–84, it is the price change for the item itself.

The difference in price movement between the expenditure class and the item stratum can have significant effects. For example, cola drinks showed a 59-percent price increase in the published CPI from 1972–73 to 1977. But the 1977 revision expenditure weights for colas were updated using the total nonalcoholic beverages expenditure class, which increased 171 percent due to the effect of a 225-percent increase in coffee prices. The impact of this use of expenditure-class-level updating will be discussed more

later. When owners' equivalent rent became the CPI-U measure for homeowners' shelter costs in 1983, homeownership expenditures from the 1972–73 period were updated to December 1982. The price changes and item definitions used in that 1983 expenditure weight revision have been used in the measure of price change in table 3.[11]

Index of consumer unit shift. Consumption of many items may depend on the geographical location of the consumer unit. The factor for geographic shift of consumer units measures the relative effect that a shift in the geographic location of the population has had on consumption. It can be expressed as follows:

$$G_i = \frac{1/N' \sum_j n_j' \sum_k e_{ijk}(p_{ijk}'/p_{ijk})}{1/N \sum_j n_j \sum_k e_{ijk}(p_{ijk}'/p_{ijk})} \quad (9)$$

One can interpret equation (9) as the ratio of the costs of two updated national market baskets. The first is updated from 1972–73 to 1982–84 for changes in both prices and population distribution. The second is updated only for price change. The index of geographic shift in table 3 is equal to $100(G_i)$. Note that the denominator of equation (9) is equal to the denominator of the ratio in equation (8). Substituting in (8) gives the following relationship between current and revised expenditures for each item in the market basket.

$$E_i' = CP_iG_i \left(\frac{\bar{e}_i'}{1/N' \left(\sum_j n_j' \sum_k e_{ijk} p_{ijk}'/p_{ijk} \right)} \right) E_i \quad (10)$$

The following examples are useful in illustrating the effect that population shift has had on consumption. Fuel oil is consumed more heavily in the North and East, both because of cold weather and because of the ready availability of oil as a fuel. The shift of population from the North and East to the South and West has had the effect of reducing fuel oil expenditures by 4.9 percent. On the other hand, tighter housing markets in the West, combined with faster population growth there, have produced national expenditures for residential rent that are 2.6 percent higher than in the 1972–73 period.

Definitional change. Changes in item definitions also occur from one market basket to another. These changes may be structural or conceptual, normally resulting from a refinement in the way the CPI looks at a particular item or group of items. These definition changes influence the level of calculated expenditures for the affected items and require that a corresponding adjustment be made to the data before expenditures reported in 1972–73 and in 1982–84 can be compared in a meaningful manner.

Take, for example, medical care services. In 1972–73, medical care services did not include eyeglasses and contact lenses, which were defined as medical care commodities. The revised index for medical care services will include expenditures for eyeglasses and contact lenses. This definitional change results in an observed increase in medical care services expenditures of 2.8 percent and a corresponding decline of 10.1 percent for medical care commodities over what would have been reported using the old definition of these items.

The index of definition change in table 3 measures the effect of such structural or conceptual changes for items in the revised CPI. The relationship may be expressed as follows:

$$D_i = \frac{1/N' \left(\sum_j \sum_{k \in S_i'} E_{ijk}' \right)}{1/N' \left(\sum_j \sum_{k \in S_i} E_{ijk}' \right)} \quad (11)$$

where S_i' is the set of varieties (indexed by k) that define the item stratum i for the revised CPI and S_i is the set of varieties that defines the item stratum in the prerevision market basket. Recognizing that the numerator of the ratio in equation (11) is equal to $\bar{e}_i'$ and substituting in equation (10), we reach our final analytical disaggregation of the change in expenditures between market baskets:

$$E_i = CP_iG_iD_i \left(\frac{1/N' \left(\sum_j n_j' \sum_{k \in S_i'} e_{ijk}' \right)}{1/N' \left(\sum_j n_j' \sum_{k \in S_i} e_{ijk}(p_{ijk}'/p_{ijk}) \right)} \right) E_i \quad (12)$$

Now, if we let q_{ijk} equal the average annual quantity of variety k within item i purchased in 1972–73 by a consumer unit in local area j, and q_{ijk}' equal the same for 1982–84, then we can define a factor for the effect of quantity change as follows:

$$Q_i = \frac{1/N' \sum_j n_j' \sum_{k \in S_i} p_{ijk}' q_{ijk}'}{1/N' \sum_j n_j' \sum_{k \in S_i} p_{ijk}' q_{ijk}} \quad (13)$$

Substituting (13) in (12) gives us:

$$E_i' = (C)(P_i)(G_i)(D_i)(Q_i)E_i$$

One can thus trace the expenditure weights for each item or group of items in the 1982–84 market basket as a series of changes to the 1972–73 expenditures. First, the number of consumer units grew by a constant C. For all items, this was a 23.5-percent increase or a factor of 1.235 (or an index of 123.5). Next, expenditures changed as a direct result of changes in per unit prices for each item—P_i. Expenditures also changed because the geographic distribution of the population shifted—G_i. Definitional changes—D_i—to the item stratum coverage have been introduced. And, finally, as a residual, there have been implicit changes in the quantities consumed—Q_i.

This quantity index requires some care in interpretation. At the aggregate levels—food and beverages, men's clothing, and so forth—the index of implicit quantity change is not the sum of the number of items consumed in one period compared to the aggregate number of items consumed in the other. Rather, it is a measure of the reported expenditures in the 1982–84 period compared to the cost of purchasing (at 1982–84 prices) the basket of goods and services purchased in the 1972–73 period, adjusted for the growth in the number of consumer units, shifts in the geographic location of the consumer units, and any definitional changes.

For some highly homogeneous item strata, such as oranges or fuel oil, the quantity index can reasonably be interpreted as an index of the change in the absolute quantity consumed. The quantity index of 35.4 for fuel oil translates into a 64.6-percent decline in the number of gallons of fuel oil purchased by the average consumer unit. On the other hand, the 91.9 quantity index for transportation does not translate into 8.1 percent fewer units of transportation being consumed. It indicates instead that the average consumer unit spent 8.1 percent less on transportation commodities and services in 1982–84 than it would have if it had continued to purchase the same mix and quantities of transportation items in 1982–84 as in 1972–73.

The quantity change index is calculated as a residual term between the 1982–84 and the adjusted 1972–73 expenditures. As a result, it is highly dependent on the other indexes used in its construction. For example, as noted above, the updating procedure used in the 1978 revision overstated price change for carbonated drinks; thus, the quantity measure understates the real quantity change. In addition, quality changes, which are factored out of the CPI price indexes, are reflected as increases or decreases in the quantity change index. The new car quantity index of 106.6, for example, is larger than the actual growth in the number of new cars purchased because the price index is a constant quality index but the quality of new vehicles has increased over the past 10 years. The change in quality is reflected in the quantity index because each car purchased has more to it—radial rather than bias-ply tires, for example.

In evaluating the quantity changes between the baskets of goods and services purchased in the two periods, one cannot draw consumer welfare or "quality of life" conclusions. The data show only the quantities of particular goods and services consumed in the two periods. The level of utility or consumer satisfaction derived from this consumption pattern is not within the scope of this article and may be influenced by additional variables which are not accounted for in the presentation. Among the variables which are not accounted for but which may have direct bearing on consumer welfare are the values of nonmarket goods and services received, subsidies, government services, and employee benefits. Each of these factors may affect reported consumption in one or both periods. In addition, this particular quantity index has been adopted to remove any effect of population movements to geographic areas with greater consumption levels.

The Consumer Expenditure Survey on which the CPI market basket is based does not collect noncash or barter transactions and, as a result, the CPI market basket does not reflect the value of goods and services obtained in this manner. Because the CPI market basket is based on out-of-pocket expenses, it does not include the value of many subsidies (particularly "in-kind" subsidies), government services, or the value of employer-provided benefits. In-kind subsidies are a direct grant of a particular item or a third-party payment for a particular item, such as subsidized housing or college scholarships. In-kind subsidies differ from cash or income subsidies in that the latter convey money to the consumer unit to finance purchases of goods and services. These purchases are reported in the Consumer Expenditure Survey and are, therefore, in the CPI. But because they involve no out-of-pocket expense for the consumer unit, in-kind subsidies are not reported in the expenditure survey, and thus are excluded from the CPI market basket. Employee benefits, which may range from Christmas turkeys to paid health insurance to employer-provided automobiles, are similarly not included. Changes in the type or level of employee benefits over time may have a profound effect on consumer unit welfare. Certainly the increase in employer-paid and government-provided health insurance since 1972 has had a positive effect on consumer welfare.

Causes of market-basket change

Supply and demand forces play a major role in establishing consumption patterns. On the supply side, weather, labor and capital costs, and the level of technology determine the quantities supplied. The price and availability of substitute goods, the level of consumer income and tastes, and various demographic factors determine the quantity of a particular item demanded at the market price. The quantity index in table 3 allows us to examine some of the changes

in consumption patterns brought about by these various forces over the study period.

Food and beverages. During the period between the two expenditure reference bases for the CPI, the quantity index for food at home declined. (Of course, this decline was in part offset by more food consumption away from home.) The 7-percent decline in family size had a retarding effect on the quantity of foods purchased. However, a 7-percent decline in the size of consumer units would not necessarily result in exactly a 7-percent reduction in food consumption. Changes in demographic characteristics of the population may also have an effect by altering consumer preferences and caloric intake requirements. The direction and magnitudes of these demographic effects are, however, beyond the scope of this investigation. In table 3, items that show slight declines in the index of quantity change may not have declined on a per-person basis at all. Items that exhibit increases in consumption may have increased somewhat more on a per-person basis than the index indicates.

The indexes of quantity change in the table give some indication of the scope of the decline in consumption of food at home. Only seven item strata show an increase from the 1972–73 period, and only poultry registers an increase in consumption at the expenditure class level. Consumption changes within the expenditure class for cereal and bakery products are an example of how recent health and fitness concerns have altered consumer buying patterns. Flour and prepared flour mixes, rice, pasta, and cornmeal all show consumption declines, while cereal consumption—led by an increase in high fiber, low sugar cereals—increased by 9.8 percent.

Since the 1972–73 base period, there has been significant movement within the meat, fish, and poultry group. Consumption of red meat such as beef, pork, and veal has declined while poultry consumption has increased. However, beef has remained the meat of choice, although there has been substitution among types of beef consumed. Specifically, in those consumer units for which beef is a dietary staple, it appears that ground beef has been substituted for the higher-priced roast. At the other end of the spectrum, it appears that those consumers who have reduced their intake of red meat tend to consume steak when they do consume red meat. The strong movement toward poultry consumption may be explained by health concerns, but poultry has also become cheaper relative to red meats. The latter development reflects dramatic increases in the efficiency of the poultry industry resulting from the use of growth hormones which reduce the time between hatching and sale.

Dairy products displayed significant substitution across item strata between the two expenditure survey periods. Consumers shifted from whole milk to other, lower fat forms of milk; consumption of fresh whole milk declined about 45.4 percent, while other milk consumption rose by nearly 3.5 percent. Consumption levels in the fruit and vegetable category show mixed results, with some increases and some decreases. Per capita consumption may have actually risen in several categories.

Weather also plays a large role in determining consumption levels. For example, during the 1972–73 base period, good weather resulted in an abundant orange crop. In fact, 1973 was a record year in the Florida citrus industry. This contrasts with the 1982–84 period, which was particularly bad for citrus growers. The resulting low supply and high price of oranges in the latter period had a retarding effect on the consumption of oranges.

This reduction in orange consumption, however, did not result in a net decline in consumption of fresh fruits as a whole. For example, while the quantity index for oranges declined over time, banana consumption rose. The value of imports of bananas rose from an average of $204 million between 1970–75 to $592 million between 1982–84.[12] Thus, there seems to have been a significant amount of substitution of bananas for oranges as the relative price difference made bananas more attractive to consumers. In addition, the banana is a good source of potassium and other minerals, readily recommending itself to consumers desiring a health and fitness diet.

Within the other categories of foods at home, sugar and sweets consumption declined substantially from the 1972–73 base period, as did purchases of fats and oils. These changes were almost certainly influenced by health and nutritional concerns, and by changes in the distribution of the American population. Children (including teenagers) make up one-third of the population, but consume about half of all confectionery output. As families had fewer children (table 1) and as parents became more concerned with health and nutrition, the sugar and sweets industry was hard pressed to maintain sales levels.

Much of the change in consumption patterns for nonalcoholic beverages is a result of the updating procedure described earlier. For these items, it is illustrative to look at the relative importances and see that they have remained constant, or nearly so, for both carbonated beverages and coffee. In part because of the overall decline in the relative importance for food at home, these two item strata now account for a larger share of food at home consumption than they did in 1972–73.

The decline in other prepared foods is smaller than for most other food at home categories and reflects the time constraints on American households; the need to prepare quick and easy meals certainly was a factor in this consumption change. As the number of two-earner families increased, it is not surprising that the number of meals purchased away from home also increased. That the increase in the quantity index for dinners is greater than the increase in lunches away from home, however, seems counterintuitive in light of the increasing proportion of two-earner households. But as couples had fewer children, school lunches—

which are a significant part of lunches away from home—declined in importance. This decline partially offset the increase in lunches away from home purchased by employees.

The dramatic increase in alcoholic beverages away from home reflects an improved method for the reporting of these expenditures in the Consumer Expenditure Survey. Within the alcoholic beverages category, the shift from distilled spirits to consumption of beer, ale, and wine is well documented and reflects changing tastes and the popularity of new products such as light beer and wine coolers.

Housing. The housing component of the CPI is made up of 10 expenditure classes covering a wide spectrum from rent to utilities to appliances to household services such as babysitting and postage. The relative importance of this component has grown substantially between survey periods, from 38.2 for the former CPI to 42.6 in the revision. This growth is mostly the result of the increase in homeowners' equivalent rent. The revised CPI has a relative importance for homeowners' equivalent rent of 18.2 percent of the total market basket of goods and services, compared to 13.7 percent for the former CPI. (See table 2.) The index of implicit quantity change also displayed substantial growth, increasing more than 25 percent between revisions. (See table 3.)

The expenditures for homeowners' equivalent rent are calculated by asking owners in the Consumer Expenditure Survey to estimate what their homes would rent for, unfurnished and without utilities. The higher average consumption of homeowner shelter costs is, in part, the result of increasing homeownership, with 59.5 percent of all consumer units owning their housing in 1982–84, versus 55.8 percent in 1972–73. In addition, changes in the stock of housing and in household makeup have contributed to the increased importance of owners' shelter expenditures. In 1980, for example, 42.9 percent of homes were air-conditioned, compared with only 29.6 percent in 1970. The average number of rooms per housing unit has also increased, from 5.6 rooms per unit in 1970 to 5.8 rooms in 1980. In addition, the number of occupants has fallen from 3.2 per unit to 3.0.[13]

The quantity decline in residential rent is almost entirely accounted for by the fact that only 40.5 percent of the CPI-U population were renters in 1982–84, compared with 44.2 percent in 1972–73. It is further reduced by the fact that 72 percent of renter utility bills were paid by the landlord in 1972–73, versus only 67 percent in 1982–84. Because renters paid more of their utility costs directly, those costs appear in the revised indexes' utility categories and not in residential rent. In the remaining portions of the housing component, increases in consumption for some items tended to be offset by declines for others.

The growth in importance of some previously unpriced housing items has led to the construction of new indexes. Two of these indexes are in the area of home electronics: one for video cassette recorders and other video equipment, for which unit sales grew over 400 percent between 1978 and 1982,[14] and another for computers and related information processing equipment. Unit sales for personal computers rose from 100,000 units in 1978 to about 2 million in 1982. While many of these units were bought by businesses, significant consumer purchases are reflected in the CPI market basket. Other new indexes are for care of invalids and the elderly in the home, and for indoor plants and fresh cut flowers, both of which grew significantly in importance since the last revision.

Other areas within the housing major group also showed large consumption increases over the survey period. The largest rise was for cable television service, which showed an increase of more than 600 percent over the period. This was the largest single item-stratum increase between revisions. It is almost entirely due to the greater availability of cable television services across the country. Moreover, the price increase for cable service was among the smallest in the housing major group. This is due in part to the decreasing marginal cost of adding subscribers to the local cable network. Consumption of all other nonenergy utilities and public services increased significantly over the decade.

In contrast, fuel oil showed a dramatic 64.6-percent reduction in consumption in the face of large price increases. The lower consumption reflects fuel conservation (such as by the insulation of homes) and substitution of other forms of home heating, such as electricity, which showed a small increase in per-consumer-unit consumption. Natural gas consumption, however, fell on average.

Consumption of housefurnishings rose significantly over the decade. Two housing booms undoubtedly contributed to that trend. Consumption was also stimulated by much lower than average price increases, especially (but not exclusively) for electronic devices.

Consumption of all housekeeping services, with the exception of postage, declined since the last revision. Among those declining most were domestic services, appliance and furniture repair, and other housekeeping services. Prices for each of these strata more than doubled between revisions.

The collection of expenditures by college students in the Consumer Expenditure Survey changed between 1972–73 and 1982–84. In earlier surveys, college students were considered part of their parents' consumer unit if the child lived in a college dormitory or in other college- or university-regulated housing. This required parents, not the students themselves, to make reports on expenses. It was not clear, however, that the parents were able to provide complete and accurate expenditure data. In the current survey, college students living in college-regulated housing are considered to be separate consumer units and therefore report their own expenditures. This change allows for more precise accounting of expenses of students living outside their parents' home. The improvement should be especially reflected in

the estimates for lodging while at school.

Housing maintenance and repair showed a decrease in consumption between the reference periods. Maintenance and repair costs are those services and commodities that a tenant normally pays for. For owners, these costs are imputed from reports by renters of homes with characteristics similar to the owner population. Therefore, the quantity changes noted in table 3 suggest that tenant responsibility for maintenance and repair has declined since the last revision.

Apparel and upkeep. The apparel and upkeep major group is composed of four age- and sex-specific expenditure classes for clothing, one for infants' wear, and classes for footwear; sewing materials, luggage, and notions; watches and jewelry; and apparel services. As shown in table 3, each of these expenditure classes, with the exception of sewing materials and luggage and apparel services, showed a modest to substantial increase in implicit quantity since the last CPI revision. However, despite these quantity increases, the relative importance of the apparel and upkeep category as a whole declined. The difference between the expenditure survey data and the CPI suggests that average prices of purchased apparel have risen faster than the CPI. These observations could mean either that consumers are buying a more expensive grade of clothing or that the CPI understates price change for the category, or some combination of the two.

There is some prima facie evidence to support the notion that the CPI understates apparel price change. For example, the CPI for women's suits has declined 14 percent since December 1977, although casual observation suggests that one could not purchase a woman's suit today for less than in 1977. The frequent, radical style changes and prevalence of sales as a marketing technique greatly complicate the measurement of price change for some apparel items. While these price measurement issues are beyond the scope of this article, new procedures have been introduced as part of the January 1987 CPI revision that will deal with some of these problems. Other topics are currently under careful review and research.

The possible understatement in price change for clothing items makes changes in real consumption difficult to assess. However, a few conclusions can be drawn, especially in those cases where style changes are less rapid. The decrease in real consumption for men's suits, sportcoats, coats, and jackets coincides with an increase in the consumption of other items of men's apparel and reflects the trend toward more casual dress for men. The large consumption drop for sewing materials and notions is probably related to the growth in the proportion of families in which both spouses work. Less time is available for sewing and related activities. On the other hand, the development and improvement of attractive, easy-care fabrics has reduced the demand for drycleaning and laundry services despite the decline in at-home hours available to two-earner families for these activities.

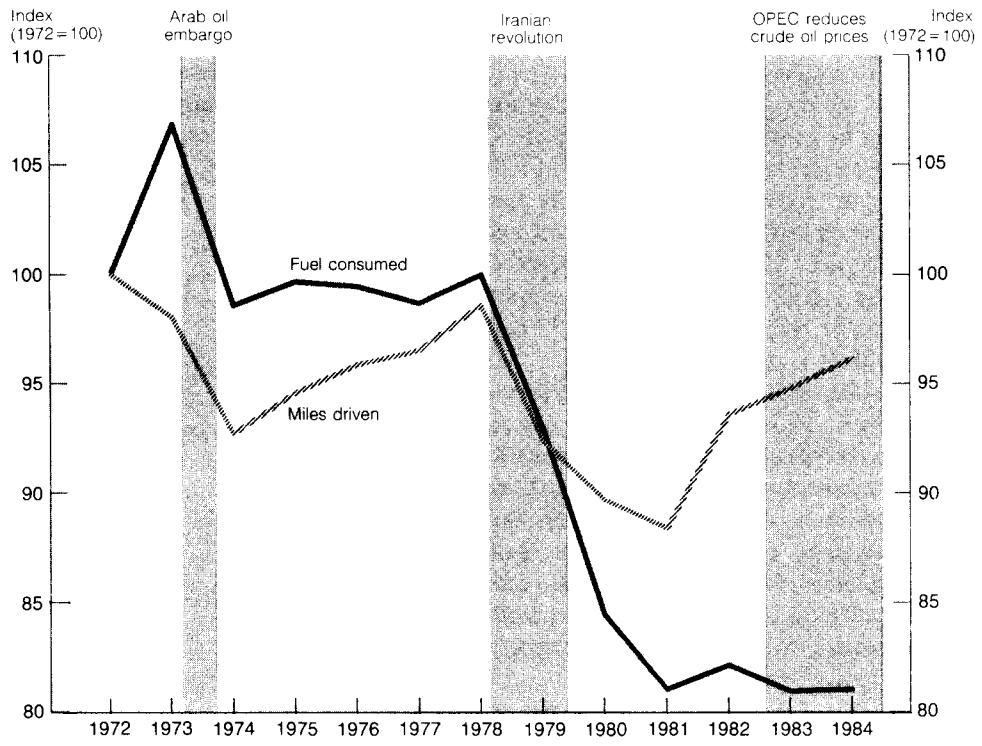
Transportation. The transportation major group comprises two forms of transportation which are, at least to some degree, substitutes for each other. The first component, private transportation, includes the purchase and ownership costs of vehicles as well as the cost of operating and maintaining them. The second component is public transportation and includes expenditures for travel between cities by air, bus, ship, boat, or train and travel within cities by subway, intracity bus, vanpool, and taxi. Over the decade between revisions, private and public transportation each showed similar implicit quantity declines; however, the mix of items within each type of transportation has shifted significantly.

The index of quantity change in table 3 shows two notable changes for private transportation. Motor fuel consumption was radically altered beginning with the Arab oil embargo of 1973–74, which sent gasoline prices soaring and started a move toward conservation never before seen in this country during peacetime. Fuel efficiency standards were legislated for new cars to be sold in the United States, and a gas-saving 55 mph speed limit was imposed. Even after the embargo was lifted in March of 1974, conservation efforts continued while oil prices began a slow decline. The conservation was reflected in an increase in the sale of small, fuel-efficient cars and a reduction in miles driven. (See charts 1 and 2.) Between 1972 and 1975, miles driven annually declined almost 6 percent. Then, influenced by the Iranian crisis, miles driven per year fell more than 10 percent between 1978 and 1981. In 1982, miles driven began to increase as crude oil and gasoline prices declined. Both less driving and a 19-percent increase in fuel efficiency created a 23.2-percent decline in gasoline consumption per consumer unit from 1972–73 to 1982–84.

Consumers are keeping their vehicles for longer periods. In 1984, the average age of owned vehicles was 7.5 years, among the highest ever. Many factors could have contributed to this greater longevity—fewer miles driven per year, greater durability, less deterioration caused by using leaded gas, and less incentive for replacement due to style change. As consumers have kept cars for longer periods, the need for automobile parts and equipment has increased significantly, as reflected in the consumption increase shown in table 3.

This increase in age, however, has not translated into increased total automobile maintenance and repair *service* expense. The index of implicit quantity change shows a consumption decrease of nearly 13 percent. Some of the decline in maintenance and repair service may be attributed to improved structural standards such as those for bumpers and windshields, longer recommended service intervals, better protection against corrosion, the 55 mph speed limit, and more do-it-yourself maintenance.

Chart 1. Indexes of total fuel consumption and miles driven, 1972-84



SOURCE: U.S. Federal Highway Administration

The consumption increase for new car purchases reflects a basic CPI concept. The CPI prices a "constant quality" automobile. Therefore, when new cars are introduced, that part of the sticker price increase which is the result of quality improvements and not pure price change is factored out. The consumer, however, has not purchased a "constant quality" automobile, but rather an automobile with more and better features at the higher sticker price. This results in an increase in relative importance for new cars when the revised index is compared to the former CPI. Between 1972–73 and 1982–84, the combined purchased quantities of new trucks and motorcycles doubled. Vans are classified as trucks and their increasing popularity was one factor in the increase.

The consumption of items within public transportation changed significantly between 1972–73 and 1982–84. In the earlier period, half of the relative importance for public transportation was for airline fares. But the heavy discounting of airline fares after industry deregulation in 1979 resulted in an increase in air transport consumption, and, as a result, the relative importance for airline fares has risen to nearly two-thirds of the public transportation expenditure weight.

The quantity index change for intracity public transportation in table 3 does not reflect fully the trend in use of these services. Ridership for intracity public transportation actually rose over the study period from an average of 6,613 million passenger miles in 1972–73 to 7,868 million passenger miles in 1982–84.[15] When the 1972–73 expenditure weights were introduced in the January 1978 CPI, intracity transportation expenditures were updated for price change using the price index for all public transportation. However, intracity transportation prices actually rose more slowly between 1972–73 and 1977 than prices for other public transportation, particularly airfares. As a result, the intracity transportation quantity index is understated by the effects of the difference between price change for intracity transportation and that for all public transportation over the period 1972–73 to 1977. Expenditures in this category are also affected by changes in government subsidies of fares.

Medical care. The revised relative importance for the medical care major group is slightly less than what it was in 1972–73, as shown in table 3, and nearly one-fourth less than the former 1984 CPI medical care component (table 2). This decline results from changes in the ways consumers pay for medical care. Major medical expenses very frequently are partially paid for (and sometimes fully paid for) by health insurance, and many insurance premiums are fully or partially paid by employers or by government. Because the CPI relates only to consumption expenditures, employer- and government-provided benefits are not included. So, while medical care prices have risen at a rapid rate over the

past decade (up 141 percent compared to 116 percent for all items), average consumer unit expenditures rose only 92 percent for all medical care and only 19 percent for health insurance.

That medical care expenditures have risen less rapidly than medical care costs indicates the increasing proportion of medical costs paid for by employer-financed insurance or government transfer payments. While the percentage of full-time workers who were covered by an employer health plan that provided hospitalization and surgical benefits remained constant at 95 percent between 1971 and 1982, the percentage of full-time workers covered by plans that were fully employer-paid rose from 71 percent in 1971–72 to 73 percent in 1982.[16] (See table 4.)

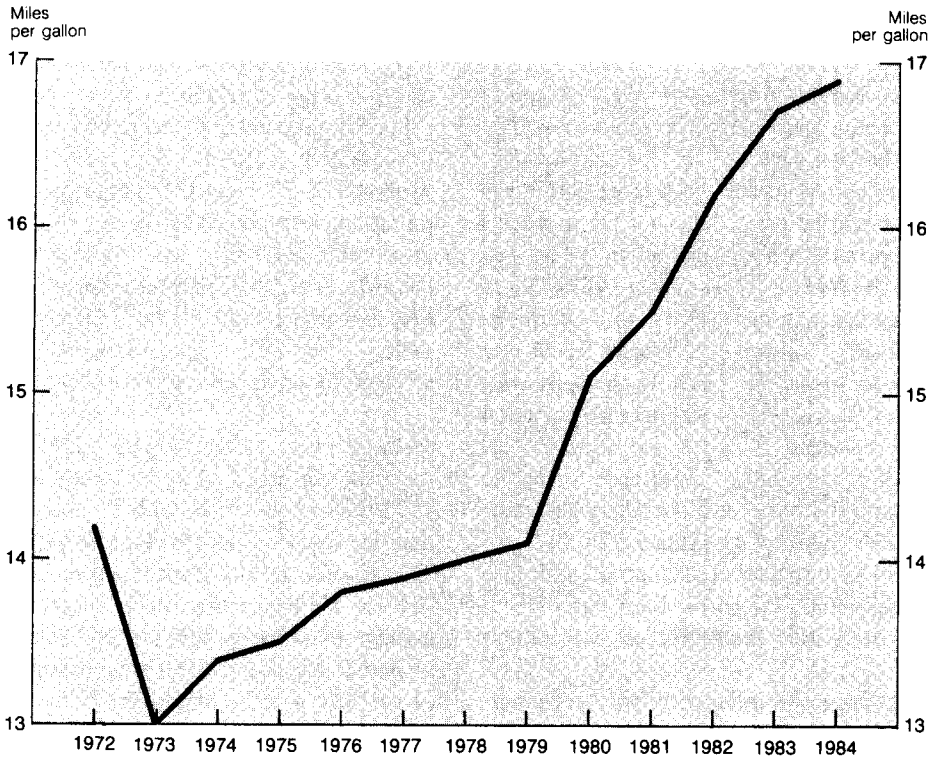
Medical, major medical, and dental coverage were expanded substantially among all insurance plans and among noncontributory plans over the same period. There have also been improvements in benefits for covered employees. Both major medical and catastrophic illness provisions were improved by either implementing ceilings on employee costs or reducing existing ceilings. Coverage in extended care facilities and home health care facilities also became more common during this period, as did coverage for surgery done on an outpatient basis.[17]

As described earlier, health insurance in the revised CPI contains only the retained earnings portion of the insurance premium. The benefits are being allocated to the medical care commodity or service for which the health insurance pays. Chart 3 shows the relative distribution of medical care expenditures, both before and after the health insurance allocation. Most medical expense categories include significant benefit payments from health insurance. Insurance benefits paid the largest proportion of the bills for the various hospital expenses. Physicians' services, however, remain the predominant expense among medical care categories.

Table 4. Percent of full-time workers covered by employer health insurance plans, 1973 and 1983

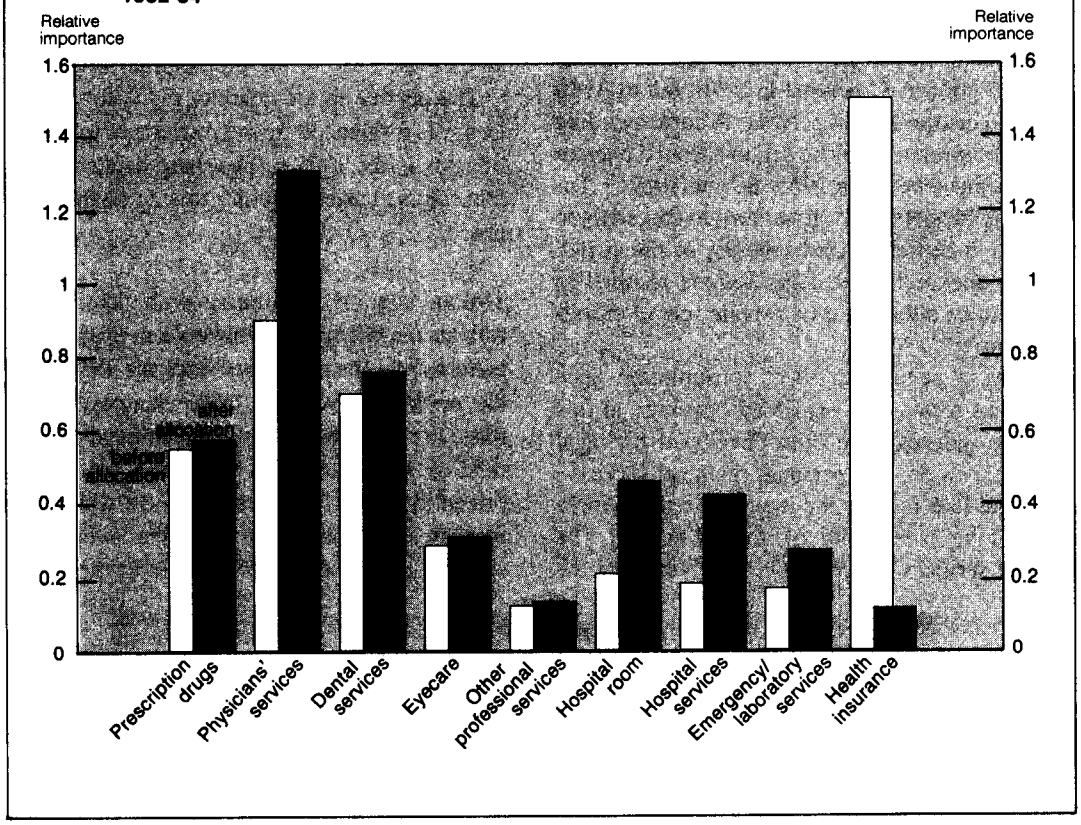
Type of plan	1973	1983
All plans:		
Hospitalization	95	95
Surgical	95	95
Medical	90	94
Major medical	70	88
Dental	12	58
Noncontributory plans:		
Hospitalization	71	72
Surgical	71	72
Medical	67	72
Major medical	49	64
Dental	11	48

Chart 2. Average miles driven per gallon of motor fuel consumed, 1972-84



SOURCE: U.S. Federal Highway Administration

Chart 3. Relative importance of medical care costs before and after health insurance allocation, 1982-84



Entertainment. The entertainment major group shows almost no change between the former and revised CPI's.[18] This apparent stability, however, is the net result of less consumption of entertainment commodities and more consumption of entertainment services. The decline among entertainment commodities is broadly based; the only exception is the strong growth for sporting goods, which reflects the increased popularity of health and fitness products. The rapid rise of fuel and interest costs was largely responsible for the sizable drop in consumption of "sports vehicles including bicycles." In particular, recreation vehicle sales declined from a peak of 583,000 units annually in 1972 to fewer than 258,000 in 1982.[19] Snowmobile sales also declined from 400,000 units per year in the early 1970's to 125,000 units in 1982.[20] The decline in consumer unit size can be seen in the quantity declines in toys, hobbies, and other entertainment commodities. Consumption of entertainment services, on the other hand, has grown 20 percent since the last CPI revision. Because of this growth, the revised CPI has separate indexes for club memberships, fees for participant sports, and fees for lessons and instructions. The greatly expanded other entertainment services index now encompasses spending on veterinary and other pet services and the rapidly expanding video cassette rental market. Between revisions, the quantity index for admissions almost doubled, reflecting increased consumption for the cinema, concerts, and sporting events.

Other goods and services. The final major group, other goods and services, comprises personal care, tobacco products, and personal and educational expenses. Overall, this major group was nearly unchanged in its relative importance between 1972–73 and 1982–84. However, personal and educational services showed large rises since the last revision, with each item stratum registering an increase. The large quantity increase for the previously unpriced tuition and other school fees category is largely the result of the growth in expenditures for day care and nursery schools as the percentage of two-earner households rose. In 1970, 43.6 percent of households with both spouses present reported that husband and wife both worked outside the home. By 1983, that percentage had grown to 59.6. The rise in the numbers of dual-earner families and single-parent households means that 7 million children now are cared for in some form of day care center. Enrollment in trade schools—particularly those offering instruction in computer-related fields—also increased over the study period. College enrollment grew by one-third between 1972 and 1983, with the result that the quantity index for tuition has risen.

The increase in tuition at private elementary and high schools is somewhat illusory, in that it reflects more of a shuffling in the mix of private schools attended than an

increase in private school attendance. Enrollment in private schools has remained fairly constant over the past decade at about 11 percent of total school enrollment.[21] Church-related schools accounted for 95 percent of private school enrollment in 1965–66 and 87 percent in 1976, but by 1980 that enrollment had declined to 84 percent. A corresponding increase in nonchurch-related private schools from 5 percent to 16 percent took place between 1965–66 and 1980.[22] Tuition at the nonchurch-related private schools averaged three times that charged at church-related schools, so the switch to higher priced nonchurch-related institutions resulted in increased expenditures although total private school enrollment remained stable.[23]

The near-tripling of personal services consumption since the last revision has resulted in expanded coverage in this category. Separate indexes have been developed for legal services, funeral expenses, and personal financial services. The growth of legal fees reflects the increase in the divorce rate and the growing complexity of American life. The personal financial services are particularly affected by the rapid increase in direct charges for banking services which resulted from deregulation of the banking industry. The growing complexity of the tax laws may have contributed to an increased use of tax preparation services.

The decline in the quantity index for personal care services was influenced by the movement toward a more casual lifestyle in the 1970's. The sharp decline in consumption of tobacco is consistent with growing health concerns over its use.

THE REVISED CPI, beginning with data for January 1987, reflects the changes that have taken place in the expenditure patterns of consumer units since the 1972–73 period. As in the previous revisions, these changes, which have taken place in response to supply and demand conditions, alter the relative importances of the goods and services that are priced in the CPI. The result is a CPI which more accurately measures the changes in the price level for the goods and services purchased by consumers in the 1980's. □

FOOTNOTES

[1] This is the third of a series of articles describing the Consumer Price Index revision. The other articles are John Marcoot, "Revision of the Consumer Price Index is now underway," *Monthly Labor Review,* April 1985, pp. 27–38; and John Marcoot and Richard Bahr, "The revised Consumer Price Index: changes in definitions and availability," *Monthly Labor Review,* July 1986, pp. 15–23.

[2] For detailed information on the construction of the CPI, see *BLS Handbook of Methods Volume II The Consumer Price Index,* Bulletin 2134–2 (Bureau of Labor Statistics, April 1984).

[3] The Consumer Expenditure Survey provides a continuous and comprehensive flow of data on the buying habits of American consumers for use in a wide variety of economic research and analysis, and in support of revisions to the Consumer Price Index. To meet the needs of data users, the BLS makes the data available in news releases, bulletins, articles in the *Monthly Labor Review,* and public-use computer tapes. See, for example, *Consumer Expenditure Survey: Interview Survey 1982–83,* Bulletin 2246 (Bureau of Labor Statistics, 1986); and *Consumer Expenditure Survey: Diary Survey 1982–83,* Bulletin 2245 (Bureau of Labor Statistics, 1986).

[4] In addition to the 184 item strata for which prices are collected in the CPI, there are 23 unpriced strata composed of minor and difficult to price items. The unpriced strata constitute 1.2 percent of the 1982–84 expenditures.

[5] One method of evaluating the impact of rising prices on income is by using a "real-income" measure. In computing real income, current income is adjusted by changes in the CPI or other measures of price change. There are inherent dangers in this type of adjustment, however, as discussed in Paul Ryscavage, "Reconciling divergent trends in real income," *Monthly Labor Review,* July 1986, pp. 24–29.

[6] December 1984 was used as the reference month for the comparison because, prior to that time, the CPI-W did not use the rental equivalence measure for homeownership costs.

[7] See Marcoot and Bahr, "The revised Consumer Price Index," pp. 15–16.

[8] Marcoot and Bahr, "The revised Consumer Price Index."

[9] Sylvia G. Leaver, William L. Weber, Michael P. Cohen, and Kenneth P. Archer, "Determining an Optimal Item-Outlet Sample Design for the 1987 U.S. Consumer Price Index Revision," *Proceedings from the Meetings of the American Statistical Association* (Chicago, 1986).

[10] The revised treatment is consistent with pricing procedures in the former CPI. In the Point of Purchase Survey, which is used to obtain an outlet pricing sample, respondents can identify out-of-town outlets which, when selected for pricing, are used in the CPI even though they are not located within the primary sampling unit.

[11] Owners' estimates of their equivalent rent were updated using the residential rent index to December 1982.

[12] *Statistical Abstract of the United States, 1986* (Bureau of the Census, 1986), table 1432.

[13] *Census of Housing, Detailed Housing Characteristics 1970* and *1980* (Bureau of the Census, 1970 and 1980).

[14] "Industry Facts and Figures," *Consumer Electronics Annual Review,* 1983 and 1984 editions.

[15] U.S. Federal Highway Administration.

[16] Robert M. Frumkin, "Health insurance trends in cost control and coverage," *Monthly Labor Review,* September 1986, pp. 3–8.

[17] Frumkin, "Health insurance trends."

[18] It should be noted that the CPI classifies TV's, VCR's, and sound equipment as household furnishings rather than as entertainment items. Both the National Income and Product Accounts and the Consumer Expenditure Survey tabulate them as entertainment commodities. Due to the different classification, the growth in this industry contributed to the increased relative importance of housing rather than entertainment.

[19] *Statistical Abstract of the United States, 1986,* table 1042.

[20] Lawrence Ingrassia, "Snow thrower and snowmobile sales still lag," *The Wall Street Journal,* Feb. 2, 1982, p. 33.

[21] *Current Population Reports, Private Schools Enrollment, Tuition, and Enrollment Trends: October 1979,* Series P–23, no. 121 (Bureau of the Census, September 1982); *Provisional Estimates of Social, Economic, and Housing Characteristics,* PHC 80–81–1 (Bureau of the Census, March 1982); and *Digest of Educational Statistics 1982* (National Center for Educational Statistics, May 1982).

[22] Data for 1965–66 are derived from *Statistics of Non-Public Elementary and Secondary Schools 1965–66* (National Center for Educational Statistics, 1981). Data for 1980 and 1982 are from *Digest of Education Statistics 1980* and *1982* (U.S. Deaprtment of Education, 1984), respectively.

[23] *Current Population Reports, Private School Enrollment,* pp. 27–28.