

Distribution of consumption examined using aggregate expenditure shares

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What proportion of aggregate expenditures for food in the U.S. economy is made by lower income groups, and what proportion by the highest? How much of total fuel and utilities is purchased by urban residents of the Northeast region? The answers to these and similar questions about the distribution of consumption among diverse population groups can have important implications for social and economic policy or for organizational marketing strategies.

This report presents estimates of aggregate expenditure shares,¹ developed from the Bureau's ongoing Consumer Expenditure Survey, that can help to clarify such issues. It is one of a series of reports which focuses on alternative ways of examining the expenditure survey data and presenting previously unpublished results.

'Expenditure share' defined

Mathematically, an aggregate expenditure share (s_i) is defined as:

$$\frac{\sum_j \bar{X}_{ij}(f_j)}{\bar{X}_i(N)}$$

where \bar{X}_{ij} is the average expenditure of population group j for item i ; f_j is the number of consumer units in group j ; \bar{X}_i is the "all consumer units" average expenditure for item i ; and N is the number of consumer units in the total population. For purposes of the expenditure survey, a consumer unit is defined as a group of persons living together who pool their income to make joint expenditure decisions, such as a family or independent single people.² Each consumer unit has a householder or "reference" person; this person is the first member mentioned by the survey respondent when asked to list the members of the unit starting "with the name of the person or one of the persons who owns or rents the home." It is with respect to this person that consumer units are classified.

Some examples based on actual expenditure survey data

serve to illustrate the calculation and proper interpretation of aggregate expenditure shares. Suppose one wants to determine how much of the aggregate expenditure for food was made by consumer units with householders age 65 or over in 1982-83. Based on survey data, there were 13.8 million such consumer units in that period, and their mean annual food expenditures were \$2,288. The aggregate expenditure for food by this group was \$31.6 billion (13.8 million times \$2,288). There were 71.6 million consumer units in the urban population³ with a mean food expenditure of \$3,137; thus, the aggregate food expenditure for all consumer units was \$224.6 billion. The aggregate expenditure share for food purchased by consumer units in the 65-and-over age group was 14.1 percent (\$31.6 billion/\$224.6 billion), while their population share was 19.3 percent (13.8 million/71.6 million).

Two factors influence a group's aggregate expenditure share: 1) the group's mean expenditure for the item, and 2) the number of consumer units in the group. Two groups could have the same aggregate expenditure share but for different reasons. For example, the under-25 and the 65-and-over age groups had about the same aggregate expenditure shares for entertainment in 1982-83, although the group under 25 spent one and a half times as much per consumer unit as those in the older group. However, the younger group had only about half as many units as the 65-and-over group, and thus the total dollars spent by each group were almost equal.

Aggregate expenditure shares are to be distinguished from shares of each consumer unit's budget spent for various expenditure items (budget shares). A given group could spend a large proportion of their total expenditures for a particular item, and yet have a relatively lower aggregate expenditure share. A case in point is the transportation expenditures of the under-25 age group. Their mean transportation expenditure of \$2,623 per consumer unit in 1982-83 was 22.6 percent of their total annual expenditures. Yet their share of aggregate transportation expenditures was only 6.9 percent because their mean transportation expenditure was below the all-consumer-unit average.

Highlights

Aggregate expenditure shares from the interview portion of the 1982-83 expenditure survey (see "Notes on the data")

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Table 1. Distribution of annual aggregate expenditures of urban consumer units by quintile of before-tax income, 1982-83

[Aggregates in millions of dollars, unless otherwise indicated]

Item	Aggregate ¹	Quintiles of income				
		Lowest 20 percent	Second 20 percent	Third 20 percent	Fourth 20 percent	Highest 20 percent
Number of consumer units (in thousands)	61,763	12,328	12,321	12,373	12,337	12,403
Percent distribution of consumer units	100.0	20.0	20.0	20.0	20.0	20.0
		Percent of aggregate				
Total expenditures (in millions)	\$1,172,323	8.8	12.8	17.7	23.6	37.2
Food	190,415	11.3	13.1	18.7	23.4	31.5
Alcoholic beverages	17,725	9.3	13.6	19.1	25.0	32.7
Housing	354,334	10.4	13.9	17.6	22.5	35.7
Shelter	200,606	10.6	13.5	17.5	22.4	36.8
Owned dwellings	116,670	6.1	8.8	14.8	23.6	47.4
Rented dwellings	66,086	19.2	23.3	24.8	20.8	11.9
Other lodging	17,849	8.3	8.3	12.8	20.3	50.4
Fuels, utilities, and public services	90,112	12.3	16.7	19.1	22.8	29.1
Household operations	16,614	9.2	11.4	14.7	21.7	43.1
Housefurnishings and equipment	47,001	5.9	10.9	16.2	23.0	44.8
Apparel and services	63,554	8.3	11.9	16.9	22.8	40.1
Transportation	228,708	6.6	12.2	18.7	24.8	37.7
Vehicles	85,418	5.1	10.2	18.0	24.7	42.0
Gasoline and motor oil	65,468	8.1	14.4	20.1	25.5	32.1
Other vehicle expenses	64,048	6.6	12.3	18.8	25.5	36.8
Public transportation	13,773	9.4	13.3	15.8	19.9	41.5
Health care	50,707	12.5	19.6	20.1	21.5	26.3
Entertainment	54,413	6.4	9.7	16.1	25.5	42.2
Personal care	10,623	9.7	14.1	17.7	22.9	35.4
Reading	7,843	9.3	13.5	18.3	24.5	34.6
Education	15,873	20.7	9.8	10.6	16.2	42.8
Tobacco	12,846	12.1	17.8	21.3	25.0	23.8
Miscellaneous	17,293	9.3	11.5	17.0	24.4	37.8
Cash contributions	37,243	4.7	9.0	17.7	23.2	45.3
Personal insurance and pensions	110,802	2.1	6.3	14.5	26.1	50.9
Life and other personal insurance	15,378	6.3	9.5	15.5	24.7	44.0
Retirement, pensions, and social security	95,423	1.4	5.8	14.4	26.3	52.0

¹ Aggregates were developed only for those units providing complete reports of income. For this reason, aggregates presented here will be lower than those reported in table 2.

Table 2. Distribution of annual aggregate expenditures of urban consumer units by age of householder and by region, 1982-83

[Aggregates in millions of dollars, unless otherwise indicated]

Item	Aggregate	Age of reference person						Region			
		Under 25	25-34	35-44	45-54	55-64	65 and over	Northeast	Midwest	South	West
Number of consumer units (in thousands)	71,570	7,013	17,210	13,028	10,034	10,436	13,849	16,236	18,666	22,833	13,835
Percent distribution of consumer units	100.0	9.8	24.0	18.2	14.0	14.6	19.4	22.7	26.1	31.9	19.3
		Percent of aggregate						Percent of aggregate			
Total expenditures	\$1,352,100	6.0	24.5	23.4	18.3	15.0	12.6	21.7	26.1	31.1	21.1
Food	224,515	5.7	22.6	23.5	18.6	15.5	14.1	23.4	25.7	30.5	20.4
Alcoholic beverages	20,397	11.8	30.0	20.6	15.1	13.3	9.0	24.0	24.3	28.2	23.4
Housing	413,960	5.8	26.6	23.6	16.7	13.5	13.8	22.3	25.8	30.2	21.7
Shelter	233,461	6.5	28.9	24.6	15.7	12.1	12.3	22.1	24.4	28.9	24.7
Owned dwellings	136,913	1.7	25.9	29.4	17.9	13.7	11.5	20.5	27.0	29.5	23.0
Rented dwellings	75,076	15.7	37.5	16.3	10.2	7.5	12.9	23.9	19.5	28.3	28.3
Other lodging	21,471	4.7	17.6	23.4	20.9	17.8	15.5	25.6	24.7	27.0	22.6
Fuels, utilities, and public service	106,567	4.4	21.1	21.9	18.5	16.7	17.4	24.2	28.0	31.9	15.9
Household operations	19,395	4.2	31.9	22.0	11.7	11.2	19.1	19.1	25.0	34.0	21.8
Housefurnishings and equipment	54,536	6.1	26.2	23.1	18.7	14.7	11.2	20.5	28.1	31.4	20.1
Apparel and services	73,717	7.4	25.0	25.2	18.6	14.1	9.7	22.1	25.0	32.0	21.0
Transportation	265,667	6.9	26.2	23.3	18.9	14.4	10.3	20.5	25.8	32.6	21.1
Vehicles	100,341	7.3	29.2	25.1	18.1	11.9	8.4	19.9	26.5	34.7	18.9
Gasoline and motor oil	76,907	6.9	24.3	22.4	19.7	15.7	11.0	19.5	26.9	33.4	20.2
Other vehicle expenses	72,929	6.8	24.7	22.6	19.6	15.5	10.9	20.7	24.5	31.0	23.7
Public transportation	16,317	5.4	24.2	20.2	16.4	18.0	16.0	28.4	21.6	23.8	26.5
Health care	58,830	3.7	16.0	16.7	16.0	18.7	28.9	20.9	24.9	33.5	20.6
Entertainment	62,265	6.5	27.0	27.1	17.3	13.4	8.7	20.3	26.3	29.1	24.4
Personal care	12,596	5.1	20.2	21.0	17.8	17.6	18.3	22.2	25.5	31.4	21.1
Reading	9,089	5.7	22.9	21.0	16.9	16.1	16.2	25.5	27.1	26.9	20.1
Education	19,610	17.5	15.8	22.8	30.2	10.5	3.2	30.1	25.3	25.7	18.8
Tobacco	14,671	6.6	23.0	22.1	19.8	17.4	10.9	23.6	27.2	33.1	15.9
Miscellaneous	19,323	4.3	21.7	23.4	18.5	17.8	14.2	20.4	24.1	28.9	26.5
Cash contributions	41,224	1.7	12.4	22.0	22.5	19.1	22.3	17.3	29.4	34.5	18.9
Personal insurance and pensions	116,301	4.4	25.5	24.7	21.3	19.3	4.8	18.9	28.8	32.3	20.0
Life and other personal insurance	18,465	2.4	19.1	24.9	23.6	18.3	11.6	17.8	31.2	34.6	16.3
Retirement, pensions, and social security	97,836	4.7	26.7	24.7	20.9	19.5	3.5	19.1	28.3	31.9	20.8

Chart 1. Distribution of consumer units, and aggregate expenditure shares for health care, by age of householder, 1982-83

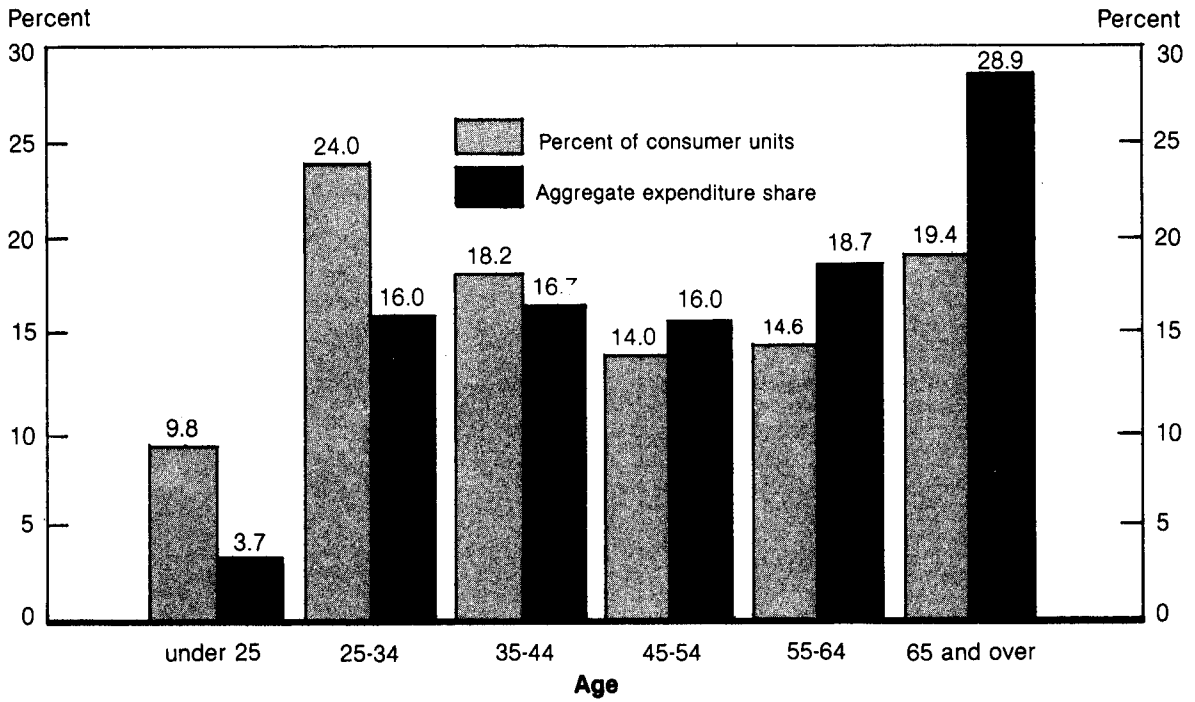
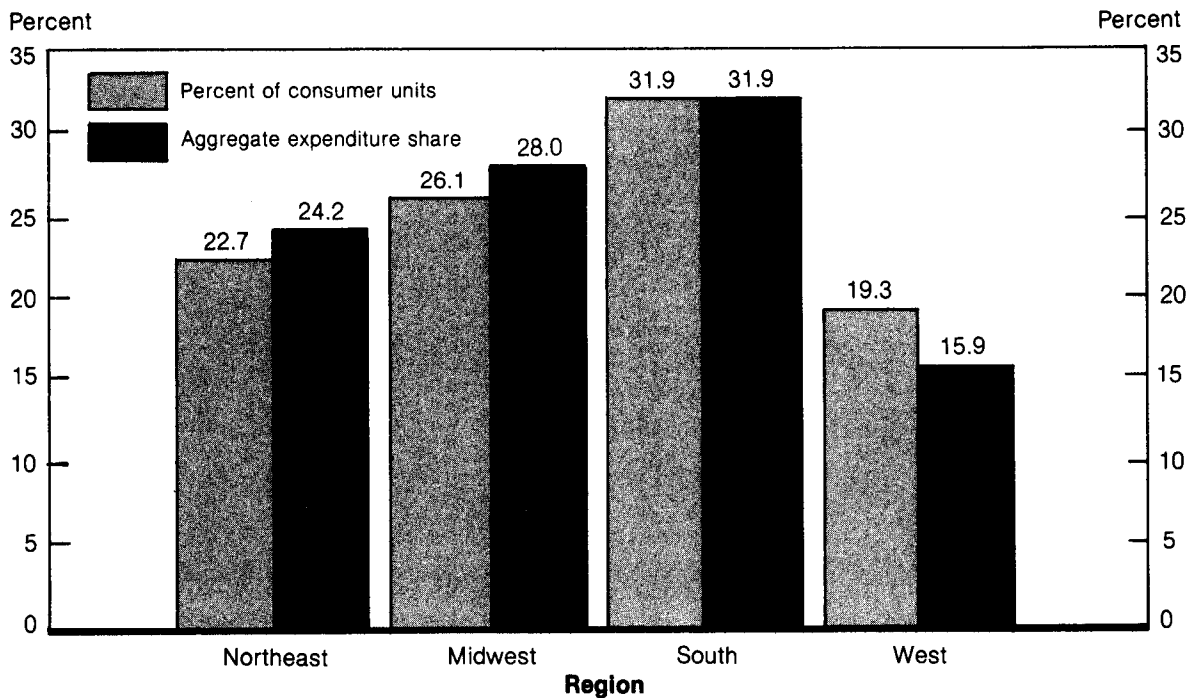


Chart 2. Distribution of consumer units, and aggregate expenditure shares for fuels, utilities, and public services, by region, 1982-83



are presented in tables 1 and 2. Consumer units are classified by income quintile,⁴ age of householder, and region. Among the salient findings:

- The lowest income quintile group accounted for 9 percent of total aggregate expenditures, less than half of the proportion of the population they represent. The highest income quintile's aggregate expenditure share for all items was 37 percent, which was almost twice their 20-percent proportion of the population.
- For the lowest quintile, which includes many student consumer units, the only items for which aggregate expenditure share approximated population share were rent and education.
- The aggregate food expenditure shares for the 25-to-34 and 35-to-44 age groups were nearly the same—23 percent and 24 percent, respectively—but the mean annual food expenditure of the older group was more than \$1,000 higher.
- More than a third of aggregate expenditures for rented dwellings were made by consumer units in the 25-to-34 age group.
- The group age 45 to 54 had the largest aggregate expenditure share for education, 30 percent, because many in this group are likely to be paying for children's college education.
- The group under age 25 had the lowest aggregate expenditure share for transportation, while the group 25 to 34 had the largest. It is between these age groups that vehicle ownership increased from 70 percent to 87 percent.
- As expected, the 65-and-over group had the largest aggregate expenditure share for health care. (See chart 1.)
- While the aggregate expenditure shares for the regions were generally about the same as their population shares, there were some noteworthy differences. For example, the West's aggregate expenditure share for rented dwellings was 9 percentage points above its population share.
- The West's aggregate expenditure share for fuels, utilities, and public services was 3 percentage points below its population share. This is because the West has a large proportion of renters whose rent payment includes utilities. (See chart 2.)
- Aggregate expenditure shares for public transportation were 7 percentage points above the population share in the West and 8 percentage points below the population

share for the South. (Public transportation includes airfares as well as mass transit.)

- The aggregate expenditure share for education in the Northeast was 7 percentage points above the population share, while the South's was 6 percentage points below. The Northeast had the largest proportion of student consumer units.

Notes on the data

Data for the Consumer Expenditure Survey are collected from a nationwide sample of households in the civilian noninstitutional population. The survey is conducted for the Bureau of Labor Statistics by the Bureau of the Census.

The continuing survey represents a major enhancement of a long-established program. The Bureau of Labor Statistics has been gathering information on spending patterns and living costs for nearly a century—since the Federal Government authorized such a survey in 1888–89. For the past half century, the survey has been part of the periodic revision of the Consumer Price Index, next slated for 1987.

The current survey incorporates major methodological improvements that were first used in the 1972–73 survey.

About 5,000 households in each of two independent samples are asked to participate in the survey. Households in one sample are asked to participate in a quarterly interview survey over a 12-month period. (Twenty percent of the sample for the interview survey is replaced each quarter.) The other sample is asked to keep a detailed record of expenses in the form of a diary for 2 consecutive weeks.

The expenditure data should be interpreted with care. The expenditures are averages for a sample of households in the group being analyzed, and as such are subject to both sampling and nonsampling errors. □

FOOTNOTES

¹ Sometimes referred to as market shares.

² See U.S. Department of Labor, *Consumer Expenditure Survey: Interview Survey, 1982–83*, Bulletin 2246 (Bureau of Labor Statistics, February 1986).

³ The urban population consists of all persons living in Standard Metropolitan Statistical Areas (SMSA's), and in urbanized areas and urban places of 2,500 or more persons outside of SMSA's. "Urban," as defined for this survey, includes the rural populations within SMSA's.

⁴ Consumer units are ranked in ascending order of income, and then divided into five equal groups.