Supplemental Measures of Material Well-Being: Basic Needs, Consumer Durables, Energy, and Poverty, 1981 to 2002

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INTRODUCTION

This report continues an effort begun in 2003 to explore additional ways of assessing the economic well-being of the U.S. population. Issued as a companion to the U.S. Census Bureau's reports on alternative measures of income and poverty, this report also attempts to expand our understanding of the population in poverty in the United States.

The economic well-being of a population can be measured in many ways. Using income to measure well-being avoids comparing the situations of people with different spending preferences. For example, one person might spend money on a variety of goods; another might spend almost all on video games; while a third might spend little and save for a rainy day. If their incomes are the same, an income measure considers them to be equally "well-off," even if they differ in other aspects of their material condition.

Poverty, as officially defined, indicates that a family's income is below a threshold designed to reflect its needs. The thresholds, designed in the 1960s, vary by family size and composition to determine who is in poverty. If a family's total income is less than that family's threshold, then that family, and every individual in it, is considered to be in poverty. Official poverty estimates are based on data collected in the Current Population Survey's (CPS) Annual Social and Economic Supplement (ASEC), following the Office of Management and Budget's (OMB) Statistical Policy Directive 14 (1978).

Income-based measures do not always provide a completely satisfactory measure of material well-being. Cash income measures, which are used in most Census Bureau reports, do not include the effect of taxes and noncash benefits, nor do they account for the advantages of owning long-lived assets such as a home or consumer durables.

Another measure of economic well-being is expenditures of households and families.[1] Expenditure measures focus on what a household spends rather than on income it receives. Closely related are "consumption" measures, which focus on the benefits derived from money spent or items owned. A report on poverty measurement by the National Academy of Sciences stated that expenditures and consumption measure not only the *ability* to maintain a certain level of well-being but also the *actual* level attained (Citro and Michael, 1995). Researchers have observed that expenditures vary less than income in the United States, because people tend to save when their income is high and spend from savings or borrow when it is low (Slesnick, 1993). Thus, information on expenditures can shed light on economic well-being beyond that which comes from information on current income alone.

[1] See the discussion in the 2003 report on supplemental measures of well-being (U.S. Census Bureau, 2003).

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The focus of this report is on yet another set of measures of economic well-being, simply called "material well-being" indicators, which provide a more or less direct picture of the conditions in which people are living. The indicators include the presence or absence of selected appliances and electronic goods in a home, take account of housing and neighborhood conditions, obtain ratings of community services, and measure whether households have been able to meet basic needs. Some specific examples include items such as refrigerators, telephones, and air conditioning; problems such as broken windows, leaky roofs, fear of crime, streets out of repair; and whether rent and utility bills have been paid. Overall, the set of measures is meant to take broad account of a household's standard of living. Material well-being measures have some features that make them attractive as an additional measure of economic well-being. For example:

- Material well-being measures can be closer to conditions experienced at the present time. More like expenditure measures, and less like income and poverty measures, they are less subject to major swings when people temporarily have high or low income.
- Material well-being can be improved by purchases made in previous years, such as appliances, cars, or houses. People benefit from these assets long after they received the income or made the purchase. Material well-being measures are closer to consumption measures than are income, poverty, or expenditure measures in reflecting this aspect of living conditions.
- Some measures of material well-being reflect not only income or other resources, but also needs, which are sometimes hard to measure. For example, people may have health problems, a high cost of living, or other factors that make it harder to make ends meet with a given level of income. When needs put a strain on the budget, the strain affects living conditions and therefore affects material well-being.
- Material well-being can also differ for households depending on assistance provided by relatives, neighbors, employers, charities, and others not counted in income or expenditures.

The 2003 report *Supplemental Measures of Material Well-Being: Expenditures, Consumption, and Poverty 1998 and 2001* was issued by the Census Bureau with the collaboration of the Interagency Working Group on Alternative Measures of Material Well-Being, which included representatives of the Office of Management and Budget, the Bureau of Economic Analysis, the Bureau of Labor Statistics, and the Energy Information Administration (U.S. Census Bureau, 2003). That report provides further background and discussion of detailed properties of well-being measures and a bibliography of related materials.

This report focuses on trends in economic well-being from 1992 to 2002. The purpose is to broaden discussion of the issues involved with supplementing income-based poverty measures with other measures that focus on consumption and material well-being. It is by no means a comprehensive document.

The next section discusses trends in material well-being from 1992 to 1998, using data from the Survey of Income and Program Participation (SIPP), and includes information on material well-being, the relation of material well-being to poverty, and changes for population subgroups. The third section examines the possession of consumer durables from 1992 to 2002, using data from the Consumer Expenditure Survey (CE). The fourth section uses data from the Residential Energy Consumption Survey (RECS) to examine trends in energy use and energy efficiency in the United States from 1981 to 2001, with a focus on energy use by households with poverty-level incomes. The report concludes with a review of results, a discussion of data sources, and information on how to obtain additional detailed tables and other information related to the subjects covered in this report.

TRENDS IN MATERIAL WELL-BEING: 1992 TO 1998

The Survey of Income and Program Participation (SIPP) provides measures of more than 70 items related to household material well-being. Thirty-nine of the measures reported in 1992 and 1998 can be compared and are examined here.[2] These measures cover five topical areas or "domains": consumer durables,

[2] The data for this section of the report come from the 1991, 1992, and 1996 panels of the SIPP. Data from the 1991 and 1992 panels used in this report were collected from October 1992 to January 1993; data from the 1996 panel used in this report were collected from August to November 1998. The population represented (the population universe) is the civilian noninstitutionalized population living in the United States. The estimates in this report are based on responses from a sample of the population. As with all surveys, estimates may vary from the actual values because of sampling variation or other factors. All comparisons using SIPP data in this report have undergone statistical testing and are significant at the 90-percent confidence level unless otherwise noted.

Table 1.
Percent of Households With Selected Indicators of Material Well-Being: 1992 and 1998

Indicator	1992		1998		
	Estimate	90-percent confidence interval	Estimate	90-percent confidence interval	Percentage-point change
Consumer durables					
Food freezer	37.1	36.5–37.7	34.9	34.2–35.7	*–2.2
Computer	20.7	20.3–21.2	42.0	41.4–42.6	*21.3
Dishwasher	49.3	48.6–50.0	56.0	55.4–56.7	*6.7
Air conditioner	68.7	68.1–69.5	77.7	77.0–78.4	*9.0
Clothes dryer	78.0	77.5–78.4	77.8	77.3–78.3	–0.2
Clothes washer	84.8	84.4–85.2	82.0	81.7–82.4	*–2.8
Videocassette recorder	73.8	73.4–74.3	85.2	84.7–85.7	*11.4
Microwave	82.2	81.7–82.6	90.7	90.3–91.1	*8.5
Telephone	94.7	94.5–94.9	96.2	95.9–96.4	*1.5
Television	96.6	96.4–96.8	98.4	98.2–98.5	*1.8
Stove	98.9	98.8–99.1	98.7	98.6–98.8	–0.3
Refrigerator	99.1	99.0–99.2	99.3	99.2–99.4	0.2
Housing conditions					
No problem with mice, rats, insects	85.1	84.7–85.6	87.3	86.8–87.8	*2.2
Housing not so bad, would move	90.0	89.7–90.3	92.1	91.8–92.5	*2.1
No roof or ceiling leaks	91.4	91.1–91.7	93.1	92.8–93.4	*1.7
No broken windows	92.4	92.1–92.7	95.9	95.7–96.1	*3.6
No cracks in walls	95.4	95.1–95.6	96.0	95.8–96.2	*0.7
No plumbing problems	95.0	94.7–95.3	97.4	97.2–97.6	*2.4
No holes in floor	98.9	98.8–99.0	99.1	99.0–99.2	0.2
No exposed wires	98.6	98.4–98.7	99.2	99.1–99.3	*0.6
Crime and safety					
Does not stay at home for safety	89.2	88.9–89.6	87.1	86.8–87.5	*–2.1
Neighborhood is considered safe	91.0	90.7–91.4	91.4	91.1–91.7	0.3
Does not carry anything to protect self	88.5	88.2–88.8	92.5	92.1–92.8	*4.0
Home is considered safe	94.1	93.8–94.4	95.9	95.7–96.2	*1.8
Neighborhood conditions					
Free from traffic noise problems	75.4	75.0–76.0	78.6	78.1–79.2	*3.2
Free from street repair problems	80.2	79.7–80.8	83.6	83.1–84.1	*3.4
Free from trash or litter in area	88.8	88.4–89.1	91.8	91.5–92.1	*3.1
No abandoned buildings in neighborhood	89.6	89.3–90.0	92.0	91.7–92.4	*2.4
No problem industry or business	90.4	90.0–90.8	92.7	92.4–93.1	*2.4
No smoke or odors in neighborhood	92.6	92.4–93.0	95.1	94.8–95.4	*2.4
Would not move due to poor community services	94.3	94.0–94.5	98.2	98.0–98.3	*3.9
Meeting basic needs					
No unmet essential expenses	85.9	85.4–86.2	86.0	85.6–86.4	0.1
Expect help from friends, family, or community	84.4	83.9–84.7	86.5	86.1–87.0	*2.1
No unpaid utility bills	89.9	89.6–90.3	90.9	90.5–91.2	*0.9
No unmet need for dentist	90.3	89.8–90.5	92.1	91.7–92.5	*1.8
No unpaid rent or mortgage	92.2	91.9–92.5	94.6	94.4–94.9	*2.4
No unmet need for doctor	92.3	91.9–92.6	93.9	93.6–94.2	*1.6
Phone was not disconnected	96.4	96.2–96.6	96.2	95.9–96.4	–0.3
Had enough of food wanted	97.6	97.5–97.8	97.8	97.6–98.0	0.2

* Percentage-point change from 1992 to 1998 is statistically significant from 0 at the 90-percent confidence level.

Source: U.S. Census Bureau, *Survey of Income and Program Participation, 1991, 1992, and 1996 panels.*

housing conditions, crime and safety, neighborhood conditions, and meeting basic needs. Across 28 of these 39 measures, positive indications of material well-being were in evidence for a higher proportion of U.S. households in 1998 than six years earlier (Table 1).

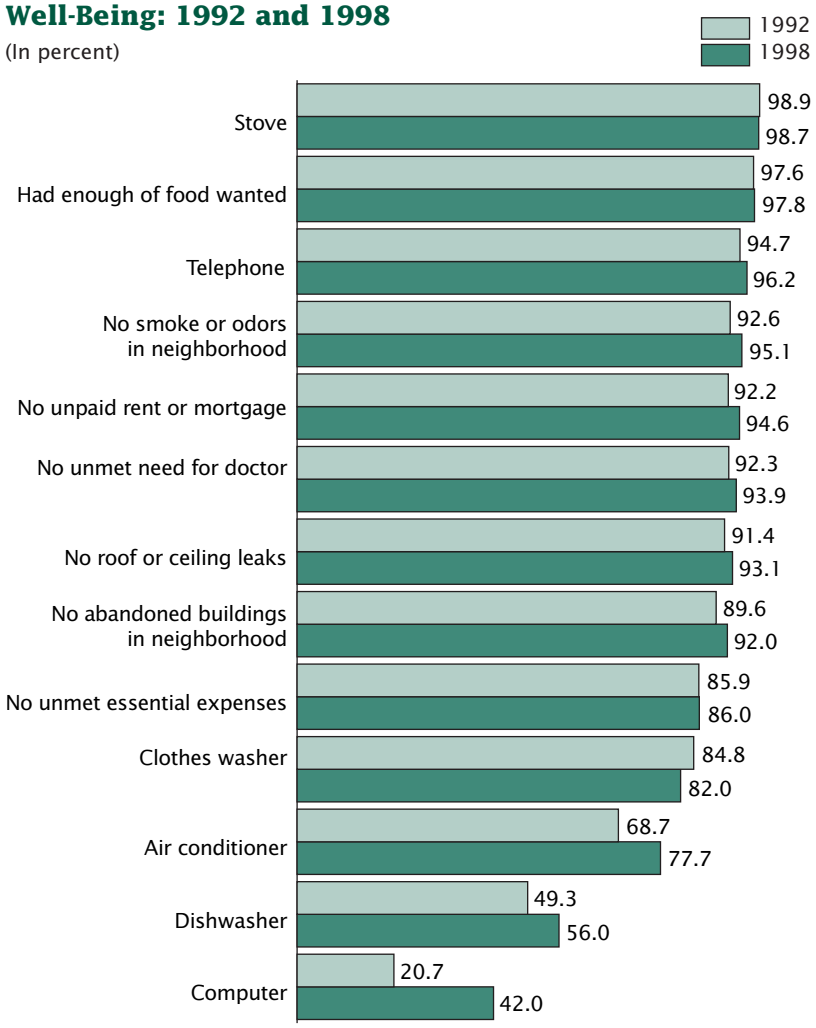
The trend towards greater material well-being was especially strong for items that could be considered innovations. Bresnahan and Gordon (1997, page 2) noted that "Innovations are important if they make a difference in the way human beings live and work . . . New goods matter if they improve the quality of life . . . and/or allow the current quality of life to be maintained at less expense." The durable goods considered innovations are computers, microwave ovens, and videocassette recorders (VCRs). In 1992, 21 percent of

households had computers; by 1998, 42 percent did. VCRs and microwave ovens made their commercial debuts in the 1970s, which makes them newer than most other items asked about in the SIPP.[3] They increased in prevalence by 11 percentage points and 9 percentage points, respectively, in the 1992 to 1998 period. Air conditioning (though not a new technology) also increased in prevalence during this time.[4]

Some indicators of material well-being, however, showed no growth or even a decline. Fewer households had freezers in 1998 than in 1992. A greater number of household respondents in 1998 than in 1992 said they sometimes stayed at home out of concern for their safety.[5]

Many of the items that showed slow growth or no growth between 1992 and 1998 had already become nearly universal by 1992. This was true of televisions, stoves, refrigerators, and freedom from housing problems such as cracks in walls, holes in the floor, and exposed wires. It was also true of avoiding disconnection of telephone service and having enough food in the household. At least 95 percent of households already exhibited these indicators of material well-being in 1992.[6]

Figure 1.
Households by Specific Measures of Material Well-Being: 1992 and 1998
(In percent)



Source: U.S. Census Bureau, Survey of Income and Program Participation, 1991, 1992, and 1996 panels.

Neither the slow growth nor the fast growth items clustered in any one of the five domains. In fact, the consumer durables domain included the item with the fastest growth (computers) and several of the items with the greatest declines.[7] One domain showed relatively equal growth across items: all neighborhood conditions showed growth of 2 to 4 percentage points.

While the list of 39 measured items provides a detailed accounting of changes in material well-being, focusing on a few items helps illuminate the change. The 2003 report on supplemental measures of material well-being illustrated the range of available indicators by choosing 14 measures (U.S. Census Bureau, 2003, p. 9). Of these, 13 can be tracked from 1992 to 1998. As with the full set

[3] Microwave ovens were introduced in 1967, but less than 1 percent of households possessed one until after 1971 (Liegey, 2001). VCRs were introduced in the late 1970s (Liegey and Shepler, 1999).

[4] The increase in the possession of air conditioners was not statistically different from that of VCRs or microwave ovens.

[5] The decline in the possession of freezers was not statistically different from the decline in not staying home for safety reasons.

[6] Although the percentage increase was small, growth was statistically significant in the percentage of households possessing televisions, having no cracks in walls, or not having exposed wires.

[7] The apparent decline in the possession of clothes washers and dryers may have been produced by a change in wording of the questions between 1992 and 1998. Freezers were not statistically different in their rate of decline from clothes washers and dryers, and also not statistically different from some items in other domains: staying at home for safety, meeting essential expenses, or having phone service disconnected.

of items, the proportion of the population that possessed items in most of these areas increased (Figure 1). This is especially evident in the three items that were present in the smallest portion of households: computers, dishwashers, and air conditioners (central and room). Noticeably fewer households possessed these items in 1992 than in 1998. Overall, the proportion of households with these measures of material well-being increased for 10 of the 13 types.[8]

Evaluating changes in material well-being

This record of increasing material well-being measured in the SIPP matches up with Census Bureau reports of trends in income and poverty measured in the Current Population Survey (CPS) over this period of time. While many types of material well-being were growing in prevalence, household income was rising and poverty was falling. Median household income measured in the CPS in 1992, adjusted to 1998 dollars, was $38,482, and it grew to $42,844 in 1998 (DeNavas-Walt et al., 2003). The official poverty rate, also based on CPS data, was 14.8 percent in 1992 and fell to 12.7 percent in 1998 (Proctor and Dalaker, 2003). It should be noted that differences in datasets limit the accuracy of comparisons of trends in material well-being with trends in income and poverty.[9]

Nonetheless, the increases in these measures of well-being from 1992 to 1998 did correspond with similar trends in other measures of economic well-being. The agreement of all three indicators increases confidence that overall well-being did increase during this period.

That American households had higher income, a lower prevalence of poverty, and increasing presence of many indicators of material well-being suggests that Americans were, in fact, "better off" in a larger sense. However, various subgroups of the population may have participated in these trends differently—a possibility that will be examined below.

For durable goods, and perhaps certain other material well-being measures, improvements in quality and technology pose another problem for interpretation. This is because the measures used here reflect only whether a household owns a durable; they do not provide any information about its characteristics or condition. Changes in material well-being may be understated because quality improvements are not counted, as is often the case when the possession of appliances, vehicles, and computers is recorded. Alternatively, low-income households may possess items of older vintage that are more expensive to use. One indicator related to the latter hypothesis, the energy efficiency of home heating and cooling, is examined in Section Four, which presents statistics from the Energy Information Administration (EIA).

Finally, indicators of material well-being may partially reflect tastes or priorities rather than economic conditions. In some cases, for example, a household may not want an item and may even consider itself better off by not owning it. More broadly, changes in the proportion of households owning various items may reflect general popularity and not simply a change in ability to afford them. It may be that popularity or changing tastes influenced the observed decrease in ownership of food freezers as well as the rapid increase in ownership of computers. Other observed patterns of material well-being indicators may also have been subject to similar influences.

Material well-being and poverty

Just as measures of material well-being increased from 1992 to 1998 for all households, they also increased for households with income below the poverty line measured in the SIPP data[10] (Table 2). Households below the poverty line had large increases in the possession of computers and air conditioners (the difference in the percentage-point growth in these two items was not statistically significant). The percentage of households below the poverty line that did not pay rent or mortgage because of difficulty meeting expenses decreased by 5 percentage points from 1992 to 1998; the percentage with telephones increased by 6 percentage points. Of the 12 measures examined in Table 2, 8 showed a significant increase in the 1992–1998 period.

Household characteristics and material well-being

Levels and trends in material well-being differ by age, sex, race,

[8] The exceptions were unmet essential expenses, having enough food, and possession of a stove. None of these measures decreased significantly from 1992 to 1998.

[9] Household poverty trends recorded in the SIPP did not match trends in official poverty rates. Official poverty rates fell during this period, but the SIPP household poverty rates remained unchanged. Two factors may be responsible for this difference. First, poverty calculated on a household basis has quite different properties from the official rates, which are calculated using the family as the unit of analysis (Mayer and Jencks, 1993; Bauman, 1999). Second, numerous differences in data-collection methods create differences in estimated income and other characteristics between SIPP and other surveys (Coder and Scoon-Rogers, 1996).

[10] In this section, poverty refers to household poverty as measured in the SIPP, which is similar to the official poverty measure measured in the CPS, but is based on the age and income of all household members, rather than only those related by birth or marriage. See discussion in footnote 9.

For a technical discussion of ways to compare changes in the material well-being of poor and non-poor households, see Appendix C.

Table 2.
Households With Income Below Poverty: Percentage With Selected Measures of Material Well-Being: 1992 and 1998

Indicator	1992	1998	Percentage-point change
Stove	97.1	96.7	–0.4
Enough of food wanted	91.1	92.4	1.3
Telephone	81.1	87.0	*5.9
No smoke or odors in neighborhood	89.7	93.2	*3.6
No unpaid rent or mortgage	81.4	86.8	*5.4
No unmet need for doctor	84.2	85.9	1.7
No roof or ceiling leaks	85.5	89.1	*3.6
No abandoned houses in neighborhood	83.3	88.3	*5.1
No unmet essential expenses	68.4	69.3	0.9
Air conditioner	52.6	67.7	*15.1
Dishwasher	20.0	25.7	*5.7
Computer	7.1	18.4	*11.4

* Percentage-point change from 1992 to 1998 is statistically significant from 0 at the 90-percent confidence level.

Source: U.S. Census Bureau, Survey of Income and Program Participation, 1991, 1992, and 1996 panels.

Hispanic origin, and other factors.[11] To examine these differences, four indicators of well-being were selected to summarize trends in their respective domains.[12] The first indicator measures whether a household has all of the following appliances: a telephone, a stove, a refrigerator, a clothes washer, a clothes dryer, and a dishwasher. In 1992, 45 percent of all households had a complete set of these basic appliances. By 1998, 50 percent did (Table 3). The second indicator was whether a household lived in a dwelling free from broken windows, a leaky roof, cracks in the walls, holes in the floor, plumbing problems, exposed wires, and problems with pests. In 1992, 73 percent of households reported they had none of these problems, growing to 79 percent in 1998. The third indicator, representing the domain of crime and safety, was whether the household considered its neighborhood to be safe. This measure showed no change from 1992 to 1998, remaining at 91 percent in both years. Finally, the fourth indicator, having fewer than two difficulties meeting basic needs, grew from 88 percent to 90 percent in the 1992 to 1998 period.

Different segments of the population had different levels of these indicators of material well-being. Among those with higher levels in 1998 were households with householders aged 65 and over, which were more likely than younger groups to be free of housing problems and to report fewer than two difficulties meeting basic needs (although they were below younger groups in their rate of possession of a complete set of appliances).[13] Others with high levels of these material well-being indicators in 1998 were households with householders holding bachelor's or higher degrees and married households without children.[14] Groups with low material well-being indicator levels included Black households, Hispanic households, households whose reference person was not a high school graduate, and unmarried households with children.[15]

Growth in at least some types of material well-being measures was

[11] Among the factors used to describe households is "household type" (see Table 3). This factor includes the traditional Census Bureau classifications of family or nonfamily households (based on the presence of more than one person related by birth or marriage) and classification based on the presence or absence of children under 18 in the household. Earlier reports found that the presence of children was strongly related to lower material well-being.

[12] No generally accepted method exists to summarize indicators of material well-being in various domains. With the exception of the indicator of neighborhood safety, the summary indicators used here were chosen to be consistent with previous Census Bureau reports and to represent the full range of subjects covered by the individual measures (Bauman, 2003). Neighborhood safety was chosen because, among safety indicators, it was close to the middle in terms of the 1992–1998 change.

[13] The difference in freedom from housing problems between households with householders 65 and older and households with householders aged 45 to 64 was not statistically significant.

[14] The difference between married households without children and married households with children in the possession of a complete set of appliances was not statistically significant.

[15] Because Hispanics may be any race, data in this report for Hispanics overlap slightly with data for the Black population. Based on data from Wave 8 of the 1996 panel of the SIPP, 4 percent of Black households were also Hispanic. Data for Asians and Pacific Islanders and for the American Indian and Alaska Native population are not shown in this report because of their small sample size in the 1998 panel of the SIPP. None of the differences between Blacks and Hispanics in the four types of material well-being shown in Table 3 was statistically significant.

Table 3.
Percent of Households With Favorable Measures of Material Well-Being by Characteristics of Householder and Household Type: 1992 and 1998

Household characteristic	Possess basic durables			No housing problems			Consider neighborhood safe			Fewer than two difficulties meeting basic needs		
	1992	1998	Change[1]	1992	1998	Change[1]	1992	1998	Change[1]	1992	1998	Change[1]
All households												
Total	44.6	50.5	5.8	73.0	79.2	6.2	91.0	91.4	0.3	88.3	90.4	2.1
Age of householder												
15 to 29	32.6	35.8	3.2	69.1	78.0	8.8	87.5	89.6	2.1	81.9	85.1	3.3
30 to 44	47.7	53.5	5.8	69.1	77.2	8.1	90.5	91.1	0.6	83.8	87.1	3.3
45 to 64	52.0	56.4	4.4	74.3	79.7	5.4	92.5	91.5	–1.0	90.5	91.4	0.9
65 or older	37.1	45.0	7.9	79.9	82.3	2.3	92.3	92.7	0.3	97.0	97.2	0.2
Sex of householder												
Male	50.8	55.1	4.2	75.0	80.8	5.8	93.2	93.3	0.1	90.0	92.5	2.5
Female	33.3	44.9	11.6	69.2	77.2	8.0	87.1	89.0	1.9	85.3	87.9	2.6
Race and Hispanic origin of householder												
White	48.2	53.9	5.7	75.3	80.3	5.0	92.7	92.9	0.2	89.6	91.6	2.0
White non-Hispanic	50.3	56.8	6.5	76.7	81.5	4.8	93.9	93.8	–0.1	90.3	92.4	2.1
Black	17.4	28.3	10.8	56.0	72.9	16.9	78.6	80.6	2.0	78.2	81.8	3.7
Other	45.7	44.2	–1.5	69.6	73.9	4.4	89.8	90.5	0.7	90.0	90.6	0.5
Hispanic (any race)	20.3	24.6	4.3	56.6	68.7	12.1	78.3	83.8	5.5	80.1	84.0	3.8
Householder education												
Not high school graduate	20.3	23.1	2.8	65.5	72.2	6.7	86.5	86.3	–0.1	84.9	86.0	1.1
High school graduate	40.9	46.1	5.2	72.6	79.8	7.3	91.0	91.3	0.2	86.4	89.1	2.7
Some college	51.1	55.3	4.2	74.4	79.4	5.1	91.4	91.3	–0.1	87.3	89.7	2.4
Bachelor's or more	67.3	70.1	2.8	79.2	83.1	3.9	94.9	95.1	0.2	95.2	96.1	0.9
Household type												
Nonfamily alone	29.2	34.7	5.6	75.6	79.9	4.3	89.6	90.3	0.8	91.5	91.2	–0.3
Nonfamily with others	36.3	41.9	5.6	69.1	78.1	9.0	88.0	91.1	3.0	84.8	88.7	3.9
Married, no children[2]	58.3	65.1	6.8	80.7	84.3	3.6	94.9	94.3	–0.6	94.8	96.2	1.4
Married with children[2]	56.1	64.2	8.1	70.6	78.9	8.3	93.0	92.9	–0.1	86.0	90.4	4.4
Unmarried, no children[2]	32.7	37.8	5.1	69.5	75.6	6.1	87.5	90.5	3.0	87.5	89.2	1.7
Unmarried with children[2]	25.0	29.9	5.0	55.4	67.4	12.1	82.2	83.4	1.1	71.6	75.0	3.4

[1] Percentage-point change from 1992 to 1998.
[2] Children include all household members under 18.

Source: U.S. Census Bureau, Survey of Income and Program Participation, 1991, 1992, and 1996 panels.

observed for all population subgroups. With one exception, households with a reference person aged 65 or over, all subgroups examined here had greater freedom from housing problems in 1998 than in 1992. Measures of the possession of basic appliances and having fewer than two difficulties meeting basic needs improved for half or more of the groups as well.[16] Perceptions of neighborhood safety, which did not change for the population as a whole, also did not change for most (20 of 22) of the population subgroups examined here. Perception of neighborhood safety increased for households with a female reference person and those with a Hispanic reference person.

[16] The change in the rate of possession of consumer durables was statistically significant for all but the following: households with a reference person aged 15 to 29, Hispanics, households with a reference person with less than a high school diploma, nonfamily households living with others, and unmarried households without children. The change in having fewer than two difficulties meeting basic needs was statistically significant for 12 of the 22 groups.

Table 4.
Percent of Consumer Units (CUs) Reporting Ownership of Selected Appliances and Vehicles by Expenditure (Outlay) Decile: 1992 and 2002

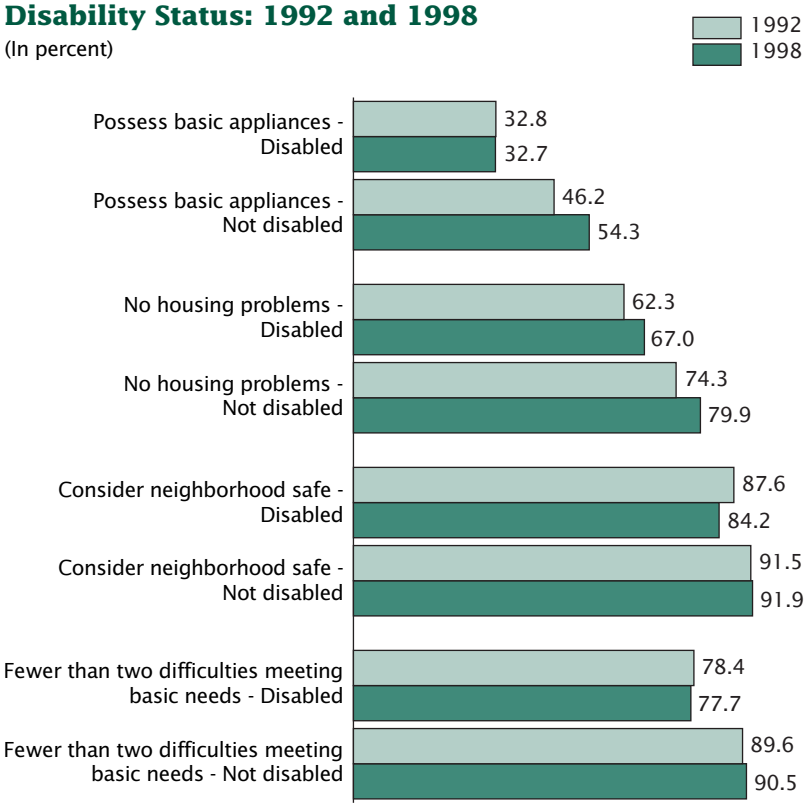
	Expenditure decile										
	1	2	3	4	5	6	7	8	9	10	Overall
Microwave											
1992	39.4	60.8	64.7	73.4	78.1	83.9	88.7	90.7	94.0	94.3	76.8
2002	77.1	89.1	90.6	94.5	94.8	95.8	96.0	97.9	98.4	97.7	93.2
Refrigerator											
1992	94.9	97.7	98.0	98.8	99.2	99.3	99.5	99.9	99.7	99.9	98.7
2002	95.3	99.0	99.0	99.5	99.9	99.6	99.9	99.8	99.8	99.9	99.2
Freezer											
1992	20.5	28.5	28.4	28.6	31.4	32.2	36.0	39.6	40.0	42.3	32.8
2002	21.6	28.1	27.2	29.5	28.8	31.0	32.6	36.9	34.6	37.8	30.8
Garbage disposal											
1992	14.2	20.4	23.5	30.4	31.7	38.2	43.4	47.7	56.9	66.8	37.3
2002	23.2	28.1	35.8	39.1	43.8	49.4	53.1	60.6	65.6	71.3	47.0
Washer											
1992	44.5	60.5	63.2	69.0	71.8	77.7	84.9	90.3	93.0	95.0	75.0
2002	54.0	68.0	71.6	76.8	78.7	84.9	87.5	89.9	93.0	95.3	80.0
Dryer											
1992	30.4	46.7	52.8	60.9	66.1	73.8	82.6	87.3	91.3	93.4	68.5
2002	47.0	62.3	67.1	73.4	76.7	82.5	85.9	89.1	92.2	95.1	77.1
Color TV											
1992	77.5	91.5	92.6	95.5	96.4	97.2	98.3	99.0	99.2	99.4	94.7
2002	92.4	97.1	98.1	98.9	98.7	98.9	99.5	99.1	99.5	99.7	98.2
Computer											
1992	4.1	5.1	6.2	8.6	13.7	16.2	22.7	26.3	37.5	45.8	18.6
2002	21.0	30.3	38.8	48.8	55.4	66.4	74.4	80.2	86.7	91.1	59.3
Sound components											
1992	26.5	35.3	43.6	50.3	54.7	62.0	68.1	70.0	77.7	84.9	57.3
2002	39.9	57.6	63.5	71.6	72.0	76.8	81.8	83.7	88.4	89.5	72.5
VCR											
1992	22.1	38.2	50.6	62.2	71.7	77.4	84.4	88.2	92.0	93.6	68.1
2002	55.9	75.0	82.8	89.9	89.1	92.8	93.6	95.6	96.6	97.6	86.9
Stoves combined[1]											
1992	89.5	97.7	97.7	98.7	99.0	99.1	99.3	99.7	99.7	99.8	98.0
2002	91.1	99.0	98.3	99.0	99.1	99.2	99.4	98.9	99.3	99.4	98.3
Dishwashers combined[2]											
1992	11.5	22.0	29.2	37.6	44.4	51.3	59.6	65.7	77.6	87.8	48.7
2002	23.8	35.7	39.9	48.3	54.8	62.3	69.2	75.9	83.3	88.1	58.1
Auto, truck, van											
1992	45.6	68.8	80.1	87.7	91.4	93.4	95.7	95.9	96.9	96.0	85.1
2002	48.0	73.1	81.7	89.5	91.4	93.5	94.3	95.2	95.8	94.6	85.7

[1]Stoves combined includes gas stoves, electric stoves, and other stoves. [2]Dishwashers combined includes built-in dishwashers and portable dishwashers.

Notes: Appliances that are provided in rental units are included in the above charts. Expenditure deciles are created by using an outlays definition of expenditures. The primary differences between total expenditures, as used in CE published data, and outlays are in the vehicle and home mortgage definitions. The outlays approach replaces vehicle sales price with vehicle payments made during the survey reference period. Home mortgage principal payments are included in outlays, while the CE total expenditures definition considers these to be investments and does not include them. The information on appliance ownership is inventoried during the CU's first interview and is carried forward to subsequent interviews. If a CU purchases an appliance (which it previously did not own) in a subsequent interview, the inventoried information is not updated. Similarly, the first interview appliance information is not updated if an appliance is sold or discarded in a subsequent interview.

Source: Bureau of Labor Statistics, unpublished Consumer Expenditure Survey Interview Data 1992, 2002.

Figure 2.
Indicators of Material Well-Being by Household Disability Status: 1992 and 1998
(In percent)



Note: Households classified as disabled have one or more working age adults (aged 25 to 64) reporting that a health condition limits the work they can do.
Source: U.S. Census Bureau, Survey of Income and Program Participation, 1991, 1992, and 1996 panels.

Changes in indicators of material well-being of population subgroups

Although the rate of growth of indicators of material well-being varied somewhat across subgroups, the period from 1992 to 1998 did not produce great changes in the groups' relative standing. Of the few population subgroups that had larger increases than others, most had had lower material well-being than the comparison groups did in 1992. This pattern was true of Blacks and Hispanics, two groups that made gains relative to non-Hispanic Whites in freedom from housing problems.[17] Hispanics also had a larger gain in perceived neighborhood safety than did non-Hispanic Whites. Similarly, households with a female reference person had a larger gain in their possession of basic appliances than households with a male reference person, after starting with a lower level of possession in 1992.[18] The share of married households with children with fewer than two difficulties meeting basic needs increased more than the shares of nonfamily households living alone and married households without children. Both married and unmarried households with children experienced larger growth in freedom from housing problems than did single-person households and married households without children.

Smaller increases in material well-being indicators occurred in two groups that already had higher levels. Gains in freedom from housing problems and in having fewer than two difficulties meeting basic needs were smaller for households with a reference person aged 65 or over than for most younger groups. Households whose reference person had a bachelor's degree or more education had smaller gains in freedom from housing problems than households whose reference person had a high school diploma.

One notable exception was found in the pattern of greater increases in material well-being occurring in groups with previous low measures of material well-being. Households with working-age adults reporting that they are limited in their work due to disability have been found in the past to have low levels of material well-being. This group continued to have low well-being levels even after controlling for income, assets, and other economic and demographic factors (Bauman, 2004). Similarly, the relative position of households with disabled members did not improve in any of the four areas examined here, and they fell behind in possession of basic appliances and in considering their neighborhoods safe (Figure 2).

In 1992, 36 percent of households with disabled working-age adults (aged 25 to 64) reported having a full set of appliances, compared with 46 percent of other households. In 1998, the proportions were 37 percent (an increase of 1 percentage point) and 52 percent (an increase of 6 percentage points), respectively.

[17] Blacks were not statistically different from Hispanics in their rate of change in freedom from housing problems.

[18] However, this finding may reflect a greater percentage of households identifying women as the reference person in 1998 than in 1992, possibly due to changes in interview procedures.

Table 5.
Average Number of Selected Appliances and Vehicles Owned per Consumer Unit (CU) by Expenditure (Outlay) Decile: 1992 and 2002

	Expenditure decile										
	1	2	3	4	5	6	7	8	9	10	Overall
Microwave											
1992	0.4	0.6	0.7	0.7	0.8	0.9	0.9	0.9	1.0	1.0	0.8
2002	0.8	0.9	0.9	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Refrigerator											
1992	1.0	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.2	1.1
2002	1.0	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.2	1.1
Freezer											
1992	0.2	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.5	0.3
2002	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.3
Garbage disposal											
1992	0.1	0.2	0.2	0.3	0.3	0.4	0.4	0.5	0.6	0.7	0.4
2002	0.2	0.3	0.4	0.4	0.4	0.5	0.5	0.6	0.7	0.7	0.5
Washer											
1992	0.4	0.6	0.6	0.7	0.7	0.8	0.8	0.9	0.9	1.0	0.8
2002	0.5	0.7	0.7	0.8	0.8	0.9	0.9	0.9	0.9	1.0	0.8
Dryer											
1992	0.3	0.5	0.5	0.6	0.7	0.7	0.8	0.9	0.9	0.9	0.7
2002	0.5	0.6	0.7	0.7	0.8	0.8	0.9	0.9	0.9	1.0	0.8
Color TV											
1992	0.9	1.2	1.3	1.4	1.5	1.6	1.8	1.9	2.1	2.4	1.6
2002	1.3	1.6	1.8	1.9	2.0	2.2	2.4	2.5	2.6	2.9	2.1
Computer											
1992	0.0	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.4	0.5	0.2
2002	0.3	0.3	0.4	0.6	0.6	0.8	0.9	1.0	1.2	1.4	0.8
Sound components											
1992	0.3	0.4	0.5	0.6	0.6	0.7	0.8	0.9	1.0	1.2	0.7
2002	0.5	0.7	0.8	0.9	0.9	1.0	1.1	1.2	1.3	1.5	1.0
VCR											
1992	0.2	0.4	0.5	0.7	0.8	0.9	1.0	1.1	1.2	1.4	0.8
2002	0.6	0.9	1.1	1.2	1.3	1.4	1.5	1.7	1.8	2.0	1.4
Stoves combined[1]											
1992	0.9	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.1
2002	0.9	1.0	1.0	1.0	1.1	1.0	1.1	1.1	1.1	1.2	1.0
Dishwashers combined[2]											
1992	0.1	0.2	0.3	0.4	0.4	0.5	0.6	0.7	0.8	0.9	0.5
2002	0.2	0.4	0.4	0.5	0.6	0.6	0.7	0.8	0.8	0.9	0.6
Auto, truck, van											
1992	0.6	0.9	1.2	1.4	1.6	1.7	1.9	2.1	2.3	2.5	1.6
2002	0.6	1.0	1.2	1.5	1.6	1.8	2.0	2.1	2.3	2.4	1.7

[1]Stoves combined includes gas stoves, electric stoves, and other stoves. [2]Dishwashers combined includes built-in dishwashers and portable dishwashers.

Notes: Appliances that are provided in rental units are included in the above charts. Expenditure deciles are created by using an outlays definition of expenditures. The primary differences between total expenditures, as used in CE published data, and outlays are in the vehicle and home mortgage definitions. The outlays approach replaces vehicle sales price with vehicle payments made during the survey reference period. Home mortgage principal payments are included in outlays, while the CE total expenditures definition considers these to be investments and does not include them. The information on appliance ownership is inventoried during the CU's first interview and is carried forward to subsequent interviews. If a CU purchases an appliance (which it previously did not own) in a subsequent interview, the inventoried information is not updated. Similarly, the first interview appliance information is not updated if an appliance is sold or discarded in a subsequent interview.

Source: Bureau of Labor Statistics, unpublished Consumer Expenditure Survey Interview Data 1992, 2002.

Table 6.

Concentration Indexes of Ownership Rates of Selected Appliances and Vehicles: 1992 to 2002

(By expenditure outlays)

	Concentration indexes										
	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Refrigerator	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.00	0.00	0.01
Color TV	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.01
Microwave	0.12	0.10	0.09	0.08	0.06	0.06	0.06	0.05	0.04	0.04	0.03
VCR	0.19	0.17	0.15	0.13	0.11	0.11	0.10	0.09	0.08	0.07	0.07
Washer	0.12	0.11	0.11	0.11	0.11	0.11	0.10	0.10	0.11	0.09	0.08
Dryer	0.16	0.16	0.15	0.14	0.14	0.13	0.13	0.13	0.13	0.11	0.10
Sound components	0.18	0.18	0.17	0.16	0.15	0.14	0.14	0.12	0.12	0.12	0.11
Stoves combined[1]	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01
Computer	0.40	0.38	0.37	0.38	0.34	0.32	0.30	0.27	0.25	0.23	0.22
Dishwashers combined[2]	0.27	0.26	0.26	0.25	0.23	0.23	0.23	0.21	0.21	0.21	0.20
Garbage disposal	0.24	0.22	0.21	0.23	0.19	0.21	0.21	0.18	0.18	0.20	0.18
Freezer	0.11	0.11	0.12	0.11	0.11	0.11	0.11	0.12	0.11	0.11	0.08
Auto, truck, van	0.09	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.07	0.07	0.08

[1]Stoves combined includes gas stoves, electric stoves, and other stoves.
[2]Dishwashers combined includes built-in dishwashers and portable dishwashers.

Notes: Concentration indexes are a bivariate analog of the Gini coefficient. A concentration index will have a value of zero when there is no inequality in the ownership of a particular durable across the expenditure outlays distribution. In other words, the percentages of consumer units owning a particular durable are equal across the deciles. Indexes of higher values indicate that inequality in outlays favor consumer units of higher outlays, while indexes less than zero indicate a concentration of ownership among consumer units with lower outlays. For these indexes, consumer units are ranked by total expenditure outlays.

Source: Bureau of Labor Statistics, unpublished Consumer Expenditure Survey Interview Data 1992, 2002.

Similarly, households with disabled working-age adults fell behind in their perception of neighborhood safety by 3 percentage points, while other households gained by 1 percentage point. Larger proportions of households with disabled adults reported freedom from housing problems and fewer than two difficulties meeting basic needs. Those improvements were about the same as the improvements for other households.

TRENDS IN THE POSSESSION OF CONSUMER DURABLES: 1992 TO 2002

Data from the U.S. Consumer Expenditure (CE) Survey also shed light on material well-being. Consumer units (CUs), rather than households or families, are the unit of analysis.[19] Tables 4 and 5 and Figures 3, 4, and 5 include information on the percentage of consumer units reporting the ownership of selected appliances and vehicles and the average number of these durables in 1992 and 2002. Tables 6 and 7 show measures of their distribution over the full 11-year period, 1992 to 2002. The information presented is based on appliance ownership collected during the first interview.[20]

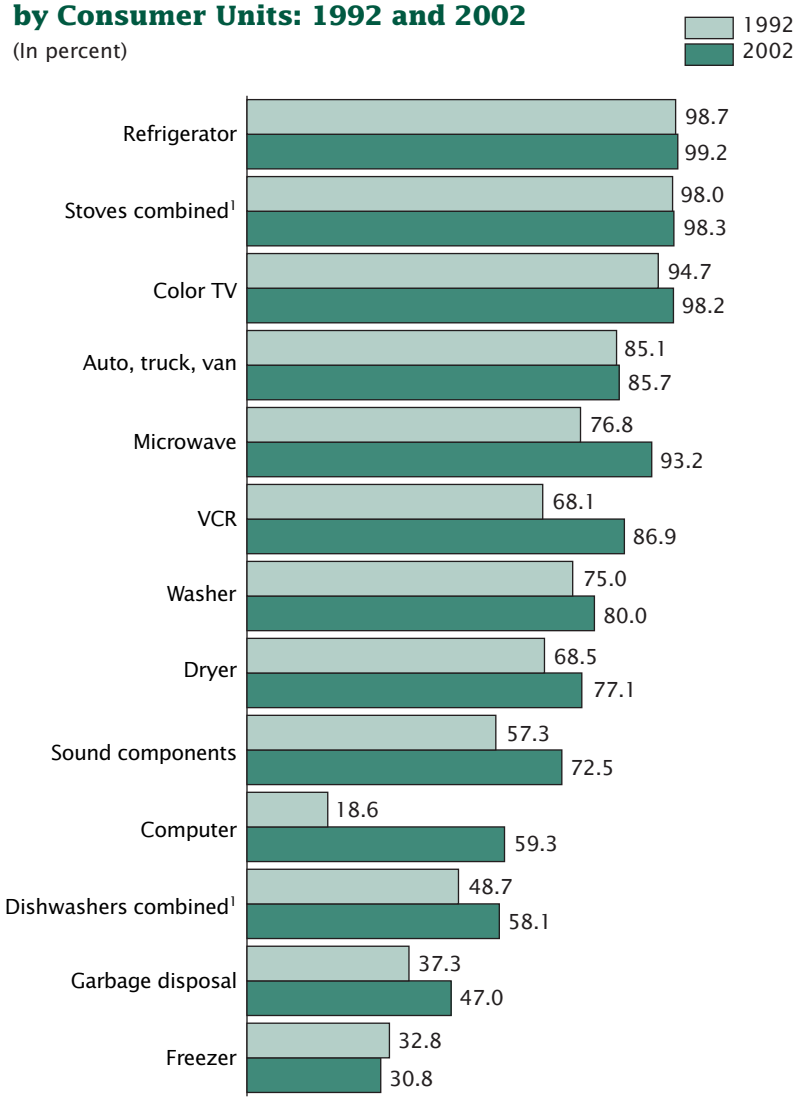
[19] A consumer unit consists of members of a household related by birth, marriage, adoption, or some other legal arrangement; a single person living alone or sharing a household with others, but who is financially independent; or two or more people living together who share responsibility for at least two out of the three major types of expenses: food, housing, and other expenses. Also, students living in university-sponsored housing are included in the sample as separate consumer units.

[20] The information on appliance ownership is inventoried during the consumer unit's (CU) first interview and is carried forward to subsequent interviews. If a CU purchases an appliance (which it previously did not own) in a subsequent interview, the inventoried information is not updated. Similarly, the first interview appliance information is not updated if an appliance has been sold or discarded by the time of a subsequent interview. An appliance that is provided in a rental unit is included and identified as "owned" although the consumer unit does not own the item but has exclusive access to it.

As presented in the 2003 report on supplemental measures, results are shown by deciles. First, consumer units are ranked by expenditure outlays from lowest to highest expenditure level and then divided into 10 equal groups of CUs according to this ranking. Percentages of ownership and the average number of durables in each decile are then produced. Expenditure deciles are created by using an outlays definition, as in the 2003 report. The primary differences between total expenditures used in CE published data and outlays used in the tables and charts in this report are in the vehicle and home mortgage definitions. The outlays approach replaces vehicle sales price with vehicle payments made during the survey reference period. Home mortgage principal payments are included in outlays, while the CE total expenditures definition considers them to be investments and does not include them.[21]

As shown in the 2003 report on supplemental measures of well-being (U.S. Census Bureau, 2003) and by others (noted previously as well), the majority of consumer units own or have access to most of the appliances and vehicles inventoried in the CE (exceptions are freezers and garbage disposals, and in 1992, computers and dishwashers). The percentages of ownership for refrigerators, stoves, and color televisions are consistently high over the deciles from 1992 to 2002. The greatest gain in ownership from 1992 to 2002 is for computers. In 1992, 18.6 percent of all consumer units owned or had access to a computer in their homes; by 2002, 59.3 percent did (Table 4 and Figure 3). Consumer units in the higher deciles were more likely than those in lower deciles to own computers (Table 4 and Figure 5). This trend is also exhibited by the concentration indexes shown in Table 6: the higher the concentration index, the greater the concentration of computers in the higher

Figure 3.
Ownership of Selected Appliances and Vehicles by Consumer Units: 1992 and 2002
(In percent)

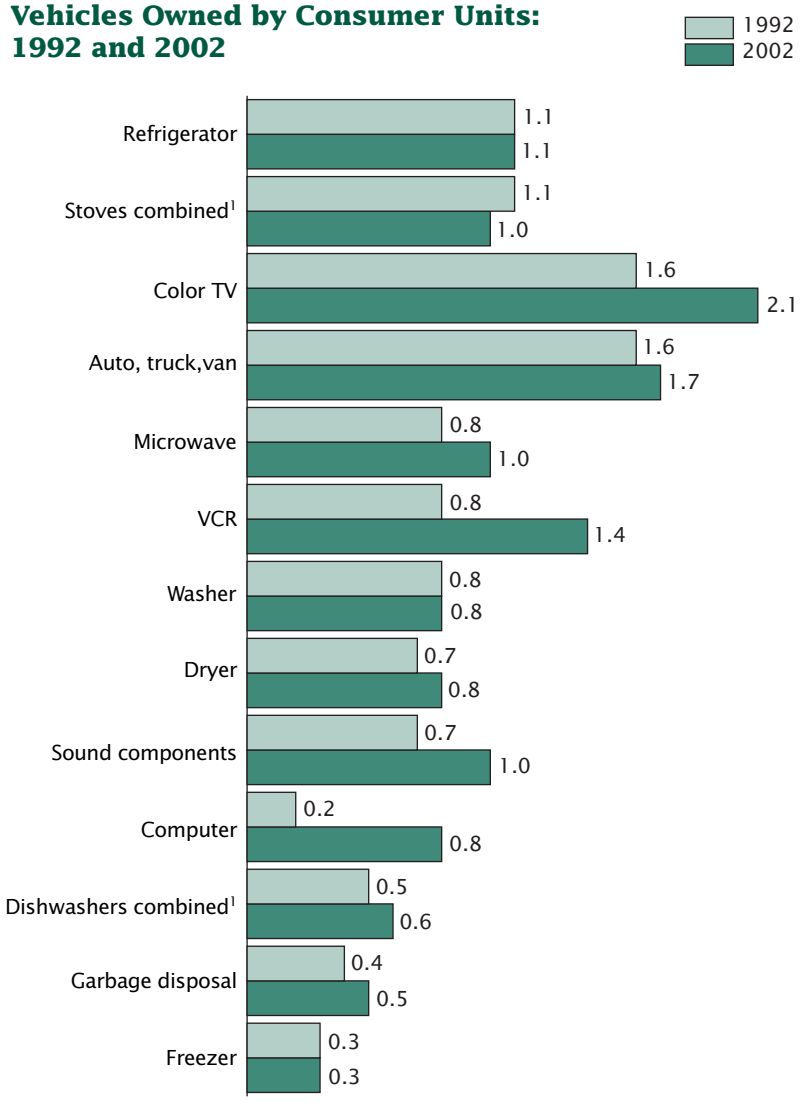


[1] Stoves combined includes gas stoves, electric stoves and other stoves. Dishwashers combined includes built-in dishwashers and portable dishwashers.
Source: Bureau of Labor Statistics, Consumer Expenditure Survey interview data, 1992 and 2002.

[21] The updated values for vehicle ownership for 2001 are different than those reported in the 2003 report on supplemental measures of well-being (U.S. Census Bureau, 2003). The values reported here were produced by first ranking all consumer units by total expenditure outlays. Then the ownership rates and average number of durables owned in each decile of consumer units were produced. The 2001 results for vehicles published in the 2003 publication were based on ranking consumer units by expenditures using a family size adjustment. The appliance results for 2001 are slightly different from those reported in the 2003 report because of a slight modification to the construction of the ranking and the creation of deciles.

Figure 4.

Average Number of Selected Appliances and Vehicles Owned by Consumer Units: 1992 and 2002



[1] Stoves combined includes gas stoves, electric stoves and other stoves. Dishwashers combined includes built-in dishwashers and portable dishwashers.
Source: Bureau of Labor Statistics, Consumer Expenditure Survey interview data, 1992 and 2002.

expenditure outlay deciles.[22] The concentration index has been decreasing over time, indicating an increasingly more equal distribution. The average number of computers owned also increased from 1992 through 2002 (Table 5). In the top deciles, each consumer unit had on average more than one computer in 2002; in 1992 it was less than one.

Other large increases in ownership rates occurred for microwave ovens and entertainment equipment such as VCRs and sound components. Microwaves were almost as prevalent as refrigerators by 2002 (Table 4), and their distribution became fairly equal over the deciles as evidenced by the concentration indexes decreasing from 0.12 to 0.03 from 1992 to 2002 (Table 6). The average number of microwaves in a consumer unit was one or almost one for each decile by 2002.

Entertainment equipment, represented by VCRs and sound components, increased in ownership and prevalence over the time period. About 87 percent of all consumer units in 2002 owned a VCR, compared with 68 percent in 1992 (Table 4). The 1992 and 2002 percentages for sound components were slightly lower than the percentages for the same years for VCRs. The average number of videocassette recorders owned in the upper deciles doubled to about two per consumer unit in 2002, from less than two in 1992 (Table 5). The number of sound components was 1.5 in the upper decile in 2002. The concentration indexes reveal that the ownership of VCRs varied along the expenditure outlays distribution but that consumer units all along the distribution were becoming more likely to own a VCR in 2002 (index = 0.07) compared with 1992 (index = 0.19) (Table 6). Sound components were somewhat concentrated among consumer units in the upper deciles (Table 4) but were

[22] A concentration index is a bivariate analog of the Gini coefficient. The index is based on the distribution of one variable in combination with another variable. For example, in Table 6, the concentration index represents a particular relationship between the distribution of the ownership of a durable and the rank of consumer units by total expenditure outlays. Graphically the index can be represented by the plot of the cumulative distribution of consumer units owning a particular durable on the *y* axis by consumer units ranked by total expenditure outlays on the *x* axis.

A concentration index will have a value of zero when there is no inequality in the ownership of a particular durable across the expenditure outlays distribution. In other words, the percentages of consumer units owning a particular durable are equal across the deciles. Indexes of higher values indicate that inequality in outlays favor consumer units of higher outlays, while indexes less than zero indicate a concentration of ownership among consumer units with lower outlays.

becoming more equally distributed (Table 6) (2002 index = 0.11 versus 1992 index = 0.18).

On average, by the year 2002, most consumer units owned or had access to only one each of the durables with a few exceptions (Table 5). The average was about one-half for food freezers, garbage disposals, and dishwashers. The average overall ranged from 1.4 to 2.1 for VCRs (already discussed), color televisions, and vehicles. The average number of color televisions and vehicles was greater than one for most deciles, with the average for color televisions greater over the deciles and over time. The average number of vehicles owned changed very little over the 1992 to 2002 period. The distribution of vehicles was more concentrated among consumer units with greater expenditures than among those with lower expenditures. Compared with vehicles, the possession of color televisions was relatively more equally distributed across the total expenditure distribution (Table 7).

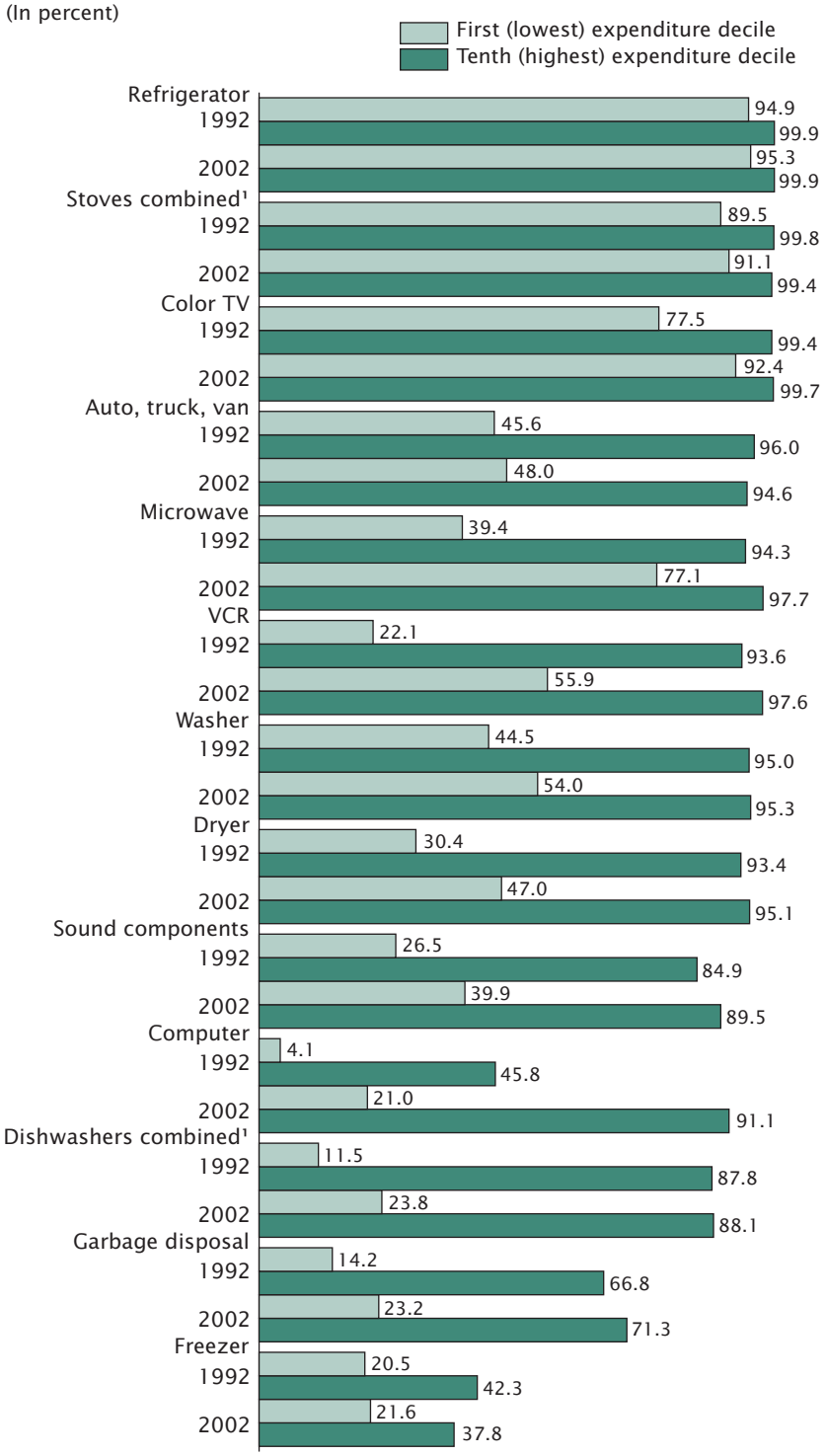
ENERGY USE AND POVERTY: 1981 TO 2001

The Energy Information Administration (EIA) of the U.S. Department of Energy conducts the Residential Energy Consumption Survey (RECS) every four years. The RECS collects data on energy consumption and expenditures and energy-related subjects for the household sector of the U.S. economy.

Between 1981 and 2001, the total number of households represented by the RECS increased by 28.8 percent, from 83.1 million in 1981 to 107.0 million in 2001 (Table 8). Over the same period, the number of households with household income below the poverty line increased by 36.4 percent, from

Figure 5.
Ownership of Selected Appliances and Vehicles by Consumer Units at the First and Tenth Expenditure (Outlay) Decile: 1992 and 2002

(In percent)



¹ Stoves combined includes gas stoves, electric stoves and other stoves.
Dishwashers combined includes built-in dishwashers and portable dishwashers.
Note: Expenditure deciles are created by using an "outlays" definition of expenditures.
Source: Bureau of Labor Statistics, unpublished Consumer Expenditure Survey Interview Data 1992, 2002.

Table 7.

Concentration Indexes of Average Number of Selected Appliances and Vehicles Owned: 1992 to 2002

(By expenditure outlays)

	Concentration indexes										
	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Refrigerator	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Color TV	0.15	0.15	0.15	0.15	0.14	0.13	0.14	0.14	0.14	0.13	0.13
Microwave	0.12	0.10	0.10	0.09	0.07	0.07	0.06	0.06	0.05	0.05	0.04
VCR	0.24	0.22	0.21	0.20	0.19	0.19	0.18	0.17	0.17	0.17	0.17
Washer	0.12	0.11	0.11	0.11	0.11	0.11	0.10	0.10	0.11	0.10	0.09
Dryer	0.16	0.16	0.15	0.14	0.14	0.13	0.13	0.13	0.13	0.11	0.10
Sound components	0.22	0.22	0.21	0.22	0.20	0.20	0.20	0.19	0.18	0.19	0.17
Stoves combined[1]	0.03	0.03	0.03	0.03	0.02	0.03	0.03	0.03	0.03	0.03	0.03
Computer	0.42	0.40	0.39	0.41	0.37	0.35	0.34	0.32	0.30	0.28	0.27
Dishwashers combined[2]	0.27	0.26	0.26	0.26	0.23	0.23	0.23	0.20	0.21	0.21	0.20
Garbage disposal	0.24	0.23	0.22	0.23	0.20	0.21	0.21	0.18	0.19	0.20	0.19
Freezer	0.11	0.11	0.12	0.12	0.11	0.11	0.10	0.12	0.11	0.11	0.08
Vehicles	0.21	0.20	0.20	0.19	0.20	0.19	0.19	0.19	0.18	0.18	0.19

[1]Stoves combined includes gas stoves, electric stoves, and other stoves.
[2]Dishwashers combined includes built-in dishwashers and portable dishwashers.

Notes: Concentration indexes are a bivariate analog of the Gini coefficient. A concentration index will have a value of zero when there is no inequality in the ownership of a particular durable across the expenditure outlays distribution. In other words, the percentages of consumer units owning a particular durable are equal across the deciles. Indexes of higher values indicate that inequality in outlays favor consumer units of higher outlays, while indexes less than zero indicate a concentration of ownership among consumer units with lower outlays. For these indexes, consumer units are ranked by total expenditure outlays.

Source: Bureau of Labor Statistics, unpublished Consumer Expenditure Survey Interview Data 1992, 2002.

11.0 million in 1981 to 15.0 million in 2001.

Total annual Btu consumption per household decreased by 17.5 percent between 1981 and 2001 from an average of 111.7 million Btu to 92.2 million Btu. Among those households with household incomes below the poverty line, total Btu consumption was lower and the decrease between 1981 and 2001 was larger. Total Btu consumption per household for these households decreased by 23.7 percent between 1981 and 2001 from an average of 92.7 million Btu to 70.7 million Btu. Among households with incomes above 1.25 times the poverty level, total annual Btu consumption per household decreased by 16.9 percent between 1981 and 2001, from an average of 115.8 million Btu to 96.2 million Btu.

After adjusting for inflation, total annual energy expenditures among all U.S. households decreased by 16.9 percent between 1981 and 2001, from an average of $1,760 to $1,463 in 2000 dollars (Figure 6). Among the households with incomes below the poverty line, total energy expenditures decreased by 22.1 percent, from an average of $1,431 to $1,115. Among households with incomes above 1.25 times the poverty level, total energy expenditures decreased by 16.5 percent, from $1,832 to $1,529.

Home heating

Paralleling total annual space heating Btu consumption, total annual inflation-adjusted space heating expenditures decreased by 33.5 percent between 1981 and 2001, from an average of $705 to $469 (Table 9). Among households in poverty, total inflation-adjusted space heating Btu expenditures were lower and the decrease

Table 8.
Energy Consumption and Expenditures by Selected Household Characteristics: 1981 and 2001

Characteristic	1981			2001		
	Number of households (millions)	Total Btus[1] per household (thousand Btus)	Total dollars per household (inflation-adjusted U.S. dollars)	Number of households (millions)	Total Btus[1] per household (thousand Btus)	Total dollars per household (inflation-adjusted U.S. Dollars)
All households	**83.1**	**111,720**	**1,760**	**107.0**	**92,202**	**1,463**
Household income						
Less than $10,000	23.3	94,160	1,453	11.0	65,248	1,019
$10,000 to $14,999	12.5	104,135	1,630	7.7	69,704	1,101
$15,000 to $19,999	10.7	103,669	1,633	8.9	80,479	1,265
$20,000 to $29,999	17.7	114,696	1,848	14.0	83,380	1,289
$30,000 to $39,999	10.1	132,567	1,986	13.9	86,881	1,370
$40,000 to $49,999	4.3	130,480	2,152	13.2	92,804	1,488
$50,000 to $74,999	3.1	149,313	2,521	21.7	102,516	1,650
$75,000 or more	1.4	204,742	3,181	16.6	124,675	1,993
Income relative to poverty threshold						
Income below poverty threshold	11.0	92,733	1,431	15.0	70,697	1,115
Income 1 to 1.25 times poverty	4.8	98,311	1,508	5.1	87,421	1,370
Income above 1.25 times poverty	67.3	115,779	1,832	86.9	96,192	1,529

[1]British thermal unit (Btu): The quantity of heat required to raise the temperature of 1 pound of liquid water by 1 degree Fahrenheit at the temperature at which water has its greatest density (approximately 39 degrees Fahrenheit).

Notes: Household income is income from all sources, self-reported by the household respondent. Consumption and expenditures are for major fuels used by the household, including electricity, natural gas, fuel oil, kerosene, and liquefied petroleum gas (LPG) as applicable.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-457 A-G of the 1981 Residential Energy Consumption Survey and 2001 Residential Energy Consumption Survey.

between 1981 and 2001 was larger. The average total annual space heating expenditures for these households decreased by 37.7 percent from $608 to $379. Among households with incomes above 1.25 times the poverty level, total space heating expenditures per household decreased by 32.9 percent between 1981 and 2001 from an average of $723 to $485.

Two space heating energy consumption and expenditures measures providing insight on the "energy burden" for a housing unit are *Heating Btu Intensity* and *Heating Dollar Intensity*. Heating Btu Intensity is a measure of the number of Btu consumed per 1,000 square feet of heated living space and heating degree-day.[23] Heating Dollar Intensity is a measure of the dollars spent per 1,000 square feet of heated living space and heating degree-day.

Heating Btu Intensity for all U.S. housing units has been decreasing since 1981, when it was 9.0, to its 2001 low of 6.4. These decreases were observed for all income groups (Table 9). Heating Btu Intensity was highest for households whose income was below the poverty level, ranging between 8.7 and 12.8,[24] and lowest for those housing units whose household income was greater than 1.25 times the poverty level, ranging between 6.1 and 8.6. Clearly, the "energy burden" is greater for households below the poverty line than for more affluent ones.

Heating Dollar Intensity for all U.S. housing units decreased from its high in 1981, when it was 9.6, to its low of 6.3 in 1993.[25] In 2001, Heating Dollar Intensity increased to 6.9. This pattern of decreases

[23] A heating degree day is a measure of how cold a location is over a period of time relative to a base temperature, most commonly specified as 65 degrees Fahrenheit. The measure is computed for each day by subtracting the average of the day's high and low temperatures from the base temperature (65 degrees), with negative values set equal to zero. Heating degree-days are summed to create a heating degree-day measure for a specified reference period. Heating degree-days are used in energy analysis as an indication of space heating energy requirements or use.

[24] The level of 12.8 for Heating Btu Intensity for households with income below the poverty threshold was reached in 1987. See "Additional Data" at the end of the text of this publication for information on how to access these data.

[25] Information on 1993 is taken from tabulations that will be published separately by the Energy Information Administration.

Table 9.
Home Space Heating Consumption and Expenditures by Selected Household Characteristics: 1981 and 2001

Characteristic	1981			2001		
	Dollars for space heating per household (inflation-adjusted U.S. dollars)	Heating Btu[1] intensity (Btus per thousand square feet and degree-day[2])	Heating dollar intensity (inflation-adjusted U.S. cents per square feet and degree-day[2])	Dollars for space heating per household (inflation-adjusted U.S. dollars)	Heating Btu[1] intensity (Btus per thousand square feet and degree-day[2])	Heating dollar intensity (inflation-adjusted U.S. cents per square feet and degree-day[2])
All households (that use either electricity, natural gas, fuel oil, kerosene, or LPG for heating	**705**	**9.0**	**9.6**	**469**	**6.4**	**6.9**
Household income						
Less than $10,000	656	11.4	12.4	372	8.7	9.8
$10,000 to $14,999	670	9.3	10.2	389	7.9	8.8
$15,000 to $19,999	692	8.7	9.6	439	7.9	8.5
$20,000 to $29,999	695	8.2	8.8	447	7.9	8.5
$30,000 to $39,999	745	8.2	8.0	448	7.2	7.7
$40,000 to $49,999	758	7.4	8.1	479	6.2	6.7
$50,000 to $74,999	887	8.1	9.0	488	5.6	5.9
$75,000 or more	1,168	8.9	8.9	585	5.3	5.5
Income relative to poverty threshold						
Income below poverty threshold	608	11.5	12.3	379	8.7	9.7
Income 1 to 1.25 times poverty	676	11.5	12.4	443	8.2	8.9
Income above 1.25 times poverty	723	8.6	9.2	485	6.1	6.5

[1]British thermal unit (Btu): The quantity of heat required to raise the temperature of 1 pound of liquid water by 1 degree Fahrenheit at the temperature at which water has its greatest density (approximately 39 degrees Fahrenheit).

[2]Heating Degree-Days (HDD): A measure of how cold a location is over a period of time relative to a base temperature, most commonly specified as 65 degrees Fahrenheit. The measure is computed for each day by subtracting the average of the day's high and low temperatures from the base temperature (65 degrees), with negative values set equal to zero. Each day's heating degree-days are summed to create a heating degree-day measure for a specified reference period. Heating degree-days are used in energy analysis as an indication of space heating energy requirements or use.

Notes: Household income is income from all sources, self-reported by the household respondent. Consumption and expenditures are for major fuels used by the household, including electricity, natural gas, fuel oil, kerosene, and liquefied petroleum gas (LPG) as applicable.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-457 A-G of the 1981 Residential Energy Consumption Survey and 2001 Residential Energy Consumption Survey.

followed by an increase was observed for all income groups. Heating Dollar Intensity (after adjusting for inflation) was highest for households whose household income was below the poverty level, ranging between 9.7 and 12.3, and was lowest for households whose income was greater than 1.25 times the poverty level, ranging between 6.5 and 9.2.

Air-conditioning

In 1981, 47.6 million households, or 57.3 percent, used electricity for air-conditioning their homes. In 2001 this number increased to 80.8 million or 75.5 percent.[26]

Despite the fact that air-conditioning Btu consumption per household rose by 8.5 percent over the 1981–2001 period, annual per household expenditures (after adjusting for inflation) fell by 16.5 percent from $231 per year in 1981 to $193 per year in 2001 (see Table 10). This result reflects the fact that the cost, in inflation-adjusted dollars, of electricity, the principal source of energy for air-conditioning, decreased 22.5 percent over this period.

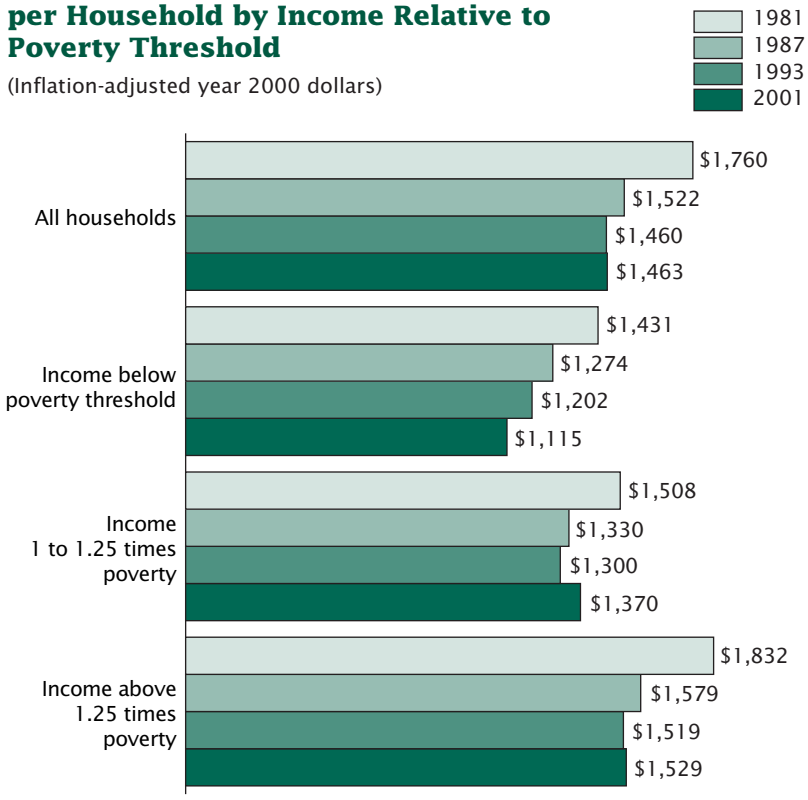
[26] Unpublished tabulations from the RECS.

Annual per household expenditures for air-conditioning were positively related to income relative to the poverty level. Annual expenditures by households with incomes below the poverty level were lower than those by households with incomes greater than 1.25 times the poverty level. The 1981–2001 decrease in expenditures among households below the poverty level was 26.4 percent, compared with 15.5 percent among more affluent households.

Cooling Btu Intensity for all U.S. housing units has been decreasing since 1981, when it was 4.5, to its 2001 low of 2.8. Decreases were observed for all income groups. Cooling Btu Intensity was higher for households whose household income was below the poverty level, ranging between 4.8 and 3.4, than for households whose household income was greater than 1.25 times the poverty level, ranging between 4.5 and 2.8.

As was the case with Cooling Btu Intensity, *Cooling Dollar Intensity* (after adjusting for inflation) also decreased from its high of 14.6 in 1981 to its 2001 low of 7.1. These decreases were observed for all income groups. Cooling Dollar Intensity (after adjusting for inflation) was highest for households with incomes below the poverty level, ranging between 15.7 and 8.2, and lowest for households whose household incomes were greater than 1.25 times the poverty level, ranging between 14.7 and 7.0.

Figure 6.
Total Inflation-Adjusted Energy Expenditures per Household by Income Relative to Poverty Threshold
(Inflation-adjusted year 2000 dollars)



Sources: Energy Information Administration: 1981, 1987, 1993, and 2001 Residential Energy Consumption Surveys.

TWO DECADES OF CHANGE

This report has presented measures of material well-being from three separate survey programs, covering the period from 1981 to 2002. During the 1990s, improvements were observed in the possession of most types of consumer durables, in most housing and neighborhood conditions, and in meeting basic needs. Possession of consumer durables continued to climb through 2002.

Notable growth was observed in the possession of newer goods such as microwaves, computers, and VCRs during the entire 1992 to 2002 period. On the other hand, no clear trend appeared in perceptions of crime and safety during the period 1992 to 1998. Some crime and safety indicators rose during the period while at least one fell; people were more likely to have stayed at home out of concern for safety in 1998 than in 1992.

Nearly all groups participated in the gains in possession of consumer durables from 1992 to 2002. During this period, the CE data showed that the lowest expenditure decile maintained or increased its rate of possession of 13 types of durables. According to SIPP data, groups defined by age, sex, race, Hispanic origin, education, and household type (married or unmarried, with or without children) increased their possession of consumer durables, reported fewer housing problems, and had less difficulty meeting basic needs between 1992 and 1998. In contrast, households with a disabled working-age adult showed lower gains than the rest of the population in the possession of consumer durables and freedom from the fear of crime.

Table 10.
Home Space Cooling Consumption and Expenditures by Selected Household Characteristics: 1981 and 2001

Characteristic	1981			2001		
	Dollars for air conditioning per household (inflation-adjusted U.S. dollars)	Cooling Btu[1] intensity (Btus per thousand square feet and degree-day[2])	Cooling dollar intensity (inflation-adjusted U.S. cents per thousand square feet and degree-day[2])	Dollars for air conditioning per household (inflation-adjusted U.S. dollars)	Cooling Btu[1] intensity (Btus per thousand square feet and degree-day[2])	Cooling dollar intensity (inflation-adjusted U.S. cents per thousand square feet and degree-day[2])
All households (that use electricity for central air-conditioning)	**231**	**4.5**	**14.6**	**193**	**2.8**	**7.1**
Household income						
Less than $10,000	170	4.3	14.2	126	3.1	7.7
$10,000 to $14,999	190	4.4	14.0	132	3.0	7.3
$15,000 to $19,999	196	4.8	15.2	159	3.2	7.9
$20,000 to $29,999	240	4.5	14.8	143	2.9	7.1
$30,000 to $39,999	263	4.7	14.7	170	3.1	7.8
$40,000 to $49,999	324	4.4	13.8	187	2.8	6.9
$50,000 to $74,999	383	4.7	16.0	230	2.9	7.2
$75,000 or more	444	5.3	19.5	280	2.6	6.7
Income relative to poverty threshold						
Income below poverty threshold	193	4.8	15.7	142	3.4	8.2
Income 1 to 1.25 times poverty	161	3.7	13.4	170	3.4	8.1
Income above 1.25 times poverty	239	4.5	14.7	202	2.8	7.0

[1]British thermal unit (Btu): The quantity of heat required to raise the temperature of 1 pound of liquid water by 1 degree Fahrenheit at the temperature at which water has its greatest density (approximately 39 degrees Fahrenheit).

[2]Cooling degree-days (CDD): A measure of how warm a location is over a period of time relative to a base temperature, most commonly specified as 65 degrees Fahrenheit. The measure is computed for each day by subtracting the average of the day's high and low temperatures from the base temperature (65 degrees), with negative values set equal to zero. Each day's cooling degree-days are summed to create a cooling degree-day measure for a specified reference period. Cooling degree-days are used in energy analysis as an indication of air-conditioning energy requirements or use.

Notes: Household income is income from all sources, self-reported by the household respondent. Consumption and expenditures are for electricity used for central air-conditioning.

Source: Energy Information Administration, Office of Energy Markets and End Use, Forms EIA-457 A-G of the 1981 Residential Energy Consumption Survey and 2001 Residential Energy Consumption Survey.

Lower income or expenditure households increased their possession of many consumer durable items. Quality of consumer durables was not observed in these surveys, but an aspect of quality could be observed in the energy efficiency and cost of heating and cooling of their homes. Households with low incomes had higher costs associated with heating and cooling on a per-square-foot and per-degree-day basis; these costs fell greatly over the period 1981 to 2001, and to about the same extent as for other households.

Lower-income households gained ground on higher-income households in the possession of consumer durables. Over the period from 1992 to 2002, the ownership of most consumer durables became more equally distributed across expenditure deciles, which meant that the share going to the lowest-expenditure households increased. The association of material well-being measures with poverty over this period was not examined.

Further evidence on areas of material well-being other than consumer durables from SIPP data collected in 2003 will be available later.

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APPENDIX A: DATA SOURCES

The Survey of Income and Program Participation

The data in Tables 1 to 3 and in Figures 1 and 2 in this report were collected from three panels of the Survey of Income and Program Participation (SIPP). Data for 1992 were collected from two panels: the 1991 panel third wave (interview) and the 1992 panel sixth wave. Data from both these panels were collected in the same months: September to December of 1992. These data do not include imputations for item nonresponse, therefore frequencies are based on actual responses. For the most part, nonresponse levels for these questions were in the range of 1 to 2 percent. Data from the 1996 panel were collected during August through November 1998 in the eighth wave. Unlike the data from the 1991 and 1992 panels, these data include imputations for nonresponse. The comparison of numbers of households in Table 2 is affected by the change in handling of missing responses. However, the imputations have little impact on comparisons of percentages.

The SIPP is a longitudinal survey conducted at four-month intervals. The population represented (the population universe) is the civilian noninstitutionalized population living in the United States. The institutionalized population, which is excluded from the population universe, is composed primarily of the population in correctional institutions and nursing homes (91 percent of the institutionalized population [4.1 million] in Census 2000).

Statistics from sample surveys are subject to sampling and nonsampling error. All comparisons presented in the sections of the report using SIPP data have taken sampling error into account and are significant at the 90-percent confidence level. This means the 90-percent confidence interval for the difference between the estimates being compared does not include zero. Nonsampling errors in surveys may be attributed to a variety of sources, such as how the survey was designed, how respondents interpret questions, how able and willing respondents are to provide correct answers, and how accurately answers are coded and classified. The Census Bureau employs quality control procedures throughout the production process, including the overall design of surveys, testing the wording of questions, reviewing the work of interviewers and coders, and conducting statistical review of reports, to minimize the chance of errors.

The SIPP employs ratio estimation, whereby sample estimates are adjusted to independent estimates of the national population by age, race, sex, and Hispanic origin. This weighting procedure partially corrects for bias because of undercoverage, but how it affects different variables in the survey is not precisely known. Moreover, biases may also be present when people who are missed in the survey differ from those interviewed in ways other than the categories used in weighting (age, race, sex, and Hispanic origin). All of these considerations affect comparisons across different surveys or data sources.

Information on the source of data and the accuracy of estimates from the 1991 and 1992 panels of the SIPP, including the use and computation of standard errors, is available in the "Source and Accuracy Statement for the 1992 Public Use Files From the Survey of Income and Program Participation," at <www.sipp.census.gov/sipp/sourceac/S&A92_puf.pdf>. Information on the source of data and the accuracy of estimates from the 1996 panel is available in the "Source and Accuracy Statement for the 1996 Public Use Files From the Survey of Income and Program Participation," at <www.sipp.census.gov/sipp/sourceac/s&a96_040501.pdf>. For further information on statistical standards and the computation and use of standard errors, contact John L. Boies, U.S. Census Bureau, Demographic Statistical Methods Division, at 301-763-4150 or via Internet e-mail (*John.L.Boies@census.gov*).

The Consumer Expenditure Survey

The current Consumer Expenditure (CE) Survey program began in 1980. The Census Bureau conducts the survey for the Bureau of Labor Statistics. The principal objective of the survey is to collect information on the buying habits of consumers living in the United States. The survey consists of two components:

- A Diary, or recordkeeping, survey completed by participating consumer units for two consecutive one-week periods.[27]
- An Interview survey in which expenditures of consumer units are obtained in five interviews conducted every three months; the inventory information analyzed in this study are from the Interview survey.

Survey participants report dollar amounts for goods and services

[27] For a definition of consumer units, see footnote 19.

purchased during the reporting period, regardless of whether payment is made at the time of purchase. Expenditure amounts include all sales and excise taxes for all items purchased by the consumer unit for itself or for others. Excluded from both surveys are all business-related expenditures and expenditures for which the consumer unit is reimbursed.

Each component of the survey queries an independent sample of consumer units that is representative of the U.S. population. In the Diary survey, about 7,500 consumer units are sampled each year. Each consumer unit keeps a diary for two one-week periods, yielding approximately 15,000 diaries a year. The Interview sample is selected on a rotating-panel basis, surveying about 7,500 consumer units each quarter. Each consumer unit is interviewed once per quarter, for five consecutive quarters. Data are collected on an ongoing basis in 105 areas of the United States.

The Interview survey is designed to capture expenditure data that respondents can reasonably recall for a period of three months or longer. In general, the data captured are relatively large expenditures, such as spending on real property, automobiles, and major appliances, or expenditures that occur on a regular basis, such as spending on rent, utilities, and insurance premiums. Including global estimates of spending for food, it is estimated that about 95 percent of expenditures are covered in the Interview survey. Expenditures on nonprescription drugs, household supplies, and personal care items are excluded, but are collected in the Diary survey. The Interview survey also provides data on expenditures incurred on leisure trips. The Diary survey is designed to capture expenditures on small, frequently purchased items that are normally difficult for respondents to recall. Detailed records of expenses are kept for food and beverages (both at home and in eating places) tobacco, housekeeping supplies, nonprescription drugs, and personal care products and services. Expenditures incurred away from home overnight or longer are excluded from the Diary survey. Although the diary was designed to collect information on expenditures that could not be recalled easily over a given period, respondents are asked to report all expenses (except overnight travel expenses) that the consumer unit incurs during the survey week.

The Residential Energy Consumption Survey

The Residential Energy Consumption Survey (RECS) is the Energy Information Administration's (EIA) benchmark national survey providing data on energy consumption and expenditures in conjunction with characteristics of housing units and their residents. The RECS is conducted every 4 years, most recently for data year 2001, the eleventh time the survey was conducted. Data are collected via voluntary computer-assisted personal interviews with a probability sample of about 5,000 housing units nationwide, and via mandatory follow-up mail collection of energy data from the sample households' energy suppliers. Almost all of the housing unit data are provided by a responsible householder, but the interviewer does measure the floor space of the housing unit, which is a crucial variable explaining energy use.

The RECS estimates are based on a statistical sample using an area probability sampling design. The sampling unit is the housing unit. The information obtained in the RECS is used to construct a database on the household sector describing the consumption and use of energy and the characteristics of the consumers. Publications and electronic data files can be viewed and downloaded from the Internet through the EIA Home Page <www.eia.doe.gov> or more directly at <www.eia.doe.gov/emeu/recs>.

The survey is conducted in two phases. In the first phase, the energy-related characteristics of the household and data on the fuels and equipment used in the housing unit are collected during a personal interview with an eligible adult member of the household. Building and energy characteristics for rental units are collected from rental agents, landlords, and apartment managers during telephone interviews. The second phase of RECS collects data on fuel consumption and expenditures by housing unit from the suppliers of energy to the housing units in the RECS sample.

The RECS also collects data for the U.S. Department of Health and Human Services (HHS) Administration for Children and Families (ACF). In 2001, ACF funded a supplemental survey of 500 Low Income Housing Energy Assistance Program (LIHEAP) recipient households residing in the areas targeted for sampling. Prior to 2001, the RECS collected LIHEAP data from a supplemental sample of approximately 800 low-income households.

Among the household characteristics collected are the number of household members and total household income from all sources. These data permit the construction of identifiers of household income relative to the poverty line and an identifier for eligibility for federal assistance (i.e., LIHEAP). The former identifiers are the basis for the tables and figures presented in this report.

APPENDIX B: CONCENTRATION INDEXES FOR DURABLE GOODS

The Concentration Index is computed as one minus twice the area under the concentration curve (defined below). This is similar to the equation used to compute the Gini coefficient; however, the Gini is based on the area under the Lorenz curve.[28] The curves represent cumulative probability distributions (CPD).

Consider a variable, *y*, that is some function of total expenditures, *x*; i.e., $y = g(x)$, and consumer units are ranked in ascending order of *x*—their total expenditures in this case. The concentration curve for *y* is defined as the share of total *y*, for example the total percentage of consumer units who own a television, for consumer units with total expenditures of *x* or less, $F_i[g(x)]$, graphed against the population share of those with total expenditures no greater than *x*, $F(x)$. The concentration index is one minus twice the area under the concentration curve; i.e.,

$$C_Y = 1 - 2 \int_0^x F_i \, [\, g\,(x)\,]\, d\, F\,(\, x\,) \quad (1)$$

The concentration index lies between –1 and +1. It could be negative if low-income people had a higher ownership rate than high-income people. This is in contrast to the Gini coefficient that lies between zero and one.

Using percent ownership

To produce the concentration indexes for ownership, the percent ownership rates by decile are transformed into a discrete probability distribution and replace *y* in equation 1. This is shown in equation 2:

$$p_{ji} = r_{ji} \Big/ \sum_{i=1}^{10} r_{ji} \quad (2)$$

where p_{ji} is the fraction of all households that own durable good j that are in total expenditure decile i and r_{ji} is the actual ownership rate of good j for the *i*th decile. By construction, the sum of the p_{ji}s is equal to one. For goods that have ownership rates that are relatively equal across deciles, regardless of the level of the ownership rate, the probability distributions are fairly flat with values for p_{ji} close to 0.1. For goods that are more concentrated among the affluent households, the probability distributions tend to rise across the income deciles.

Using average number owned

When using the concentration index to describe the distribution of average number of durable goods owned, the computation is the same as in equation 2 except that the percent ownership in each decile is replaced by the average number owned in each decile.

Using average value

For each decile, the average expenditure on durable goods for those consumer units that purchased a durable good is calculated. This amount is multiplied by the average number of vehicles owned (by decile). This yields a proxy for the value of the vehicles owned by each decile.

[28] The Gini coefficient (or index of income concentration) is a statistical measure of income equality ranging from 0 to 1. A measure of 1 indicates perfect inequality; i.e., one person has all the income and the rest have none. A measure of 0 indicates perfect equality; i.e. all people having equal shares of income. For a more detailed discussion, see U.S. Census Bureau, 1980.

APPENDIX C: STATISTICAL APPROACHES TO COMPARING TRENDS IN MATERIAL WELL-BEING

This appendix discusses several approaches that can be taken to compare the relative performance of households with income above and below the poverty threshold, with a focus on the example of computer ownership by poverty status in 1992 and 1998.

Relative performance of households is not as easily described as absolute performance, because relative performance can be described in different ways. Percentage point change in the percent of households having a particular material well-being indicator is the percent having an indicator in 1998 minus the percent having that indicator in 1992. The prevalence of computers in households with income at or above poverty grew from 23 percent to 45 percent from 1992 to 1998, while the corresponding growth in households with income below poverty was from 7 percent to 18 percent (Table 11). The percentage-point shift in possession of computers is the 1998 percentage minus the 1992 percentage, or 23 percentage points for households above poverty and 11 percentage points for households below poverty (see the first two columns of Table 12).

Another common measure of comparative growth is the percent change in the proportion of households having a material well-being indicator. Using the same example, the proportion of households with income at or above poverty possessing computers doubled during the 1992 to 1998 period (23 percent to 45 percent), for a 100 percent gain. Over the same period, households with income below poverty increased their rate of computer ownership by 2.6 times (7 percent to 18 percent), for a 161 percent gain.

The two methods for examining the relative increase in computer ownership by households with income at or above poverty and households with income below poverty yield opposite conclusions. The 23 percentage-point gain in computer ownership by households at or above the poverty level was larger than the 11 percentage-point gain of households below poverty. At the same time, the 100 percent gain in proportions owning a computer of households at or above the poverty level was smaller than the 161 percent gain of households below poverty.

To address these complications, statisticians have proposed the odds ratio as a possible way to represent these relationships (Fienberg, 1980; Agresti, 2002). "Odds" compare the probability that an event will occur to the probability it will not, and the "odds ratio" is the ratio of two odds. The odds of a household with income at or above the poverty level having a computer in 1992 was the percentage that had a computer (23 percent) divided by the percentage that did not have a computer (77 percent), or 0.29. The odds of a household with income below the poverty level having a computer in 1992 was the percentage that had a computer (7 percent) divided by the percentage that did not have a computer (93 percent) or 0.08. The odds ratio favoring computer ownership among households with income at or above poverty in 1992 was 0.29 divided by 0.08, or 3.9. In other words, households with income at or above poverty had almost 4 times the odds of having a computer as households with income below poverty.

The odds ratio of 3.9 shows greater prevalence of computers among households with income at or above poverty than among households with income below poverty, and confirms what was stated above using simpler statistics: households with income at or above poverty were more likely to own computers. Where the odds ratios provide additional insight is in the examination of changes between 1992 and 1998. In 1998 the odds ratio favoring computer ownership among households with income at or above poverty was 3.7, not statistically different from the value of 3.9 observed in 1992. In other words, as measured by the odds ratio, the relative computer ownership by households with income at or above poverty and households with income below poverty did not change between 1992 and 1998.

Across all 12 items on which odds-ratio comparisons between 1992 and 1998 were made (Table 12), none showed a statistically significant change. Despite the absolute increase in 8 of these material well-being indicators by households with income below poverty, there was no increase or decrease in their position relative to households at or above poverty during this period.

Table 11.
Percentage of Households With Selected Measures of Material Well-Being by Poverty Status: 1992 and 1998

Indicator	All households		At or above poverty		Below poverty	
	1992	1998	1992	1998	1992	1998
Stove	98.9	98.7	99.2	99.0	97.1	96.7
Enough of food wanted	97.6	97.8	98.6	98.5	91.1	92.4
Telephone	94.7	96.2	96.7	97.5	81.1	87.0
No smoke or odors in neighborhood	92.6	95.1	93.1	95.4	89.7	93.2
No unpaid rent or mortgage	92.2	94.6	93.8	95.7	81.4	86.8
No unmet need for doctor	92.3	93.9	93.4	95.0	84.2	85.9
No roof or ceiling leaks	91.4	93.1	92.1	93.7	85.5	89.1
No abandoned houses in neighborhood	89.6	92.0	90.6	92.6	83.3	88.3
No unmet essential expenses	85.9	86.0	88.4	88.3	68.4	69.3
Air conditioner	68.7	77.7	71.1	79.1	52.6	67.7
Dishwasher	49.3	56.0	53.4	60.3	20.0	25.7
Computer	20.7	42.0	22.6	45.3	7.1	18.4

Source: U.S. Census Bureau, Survey of Income and Program Participation, 1991, 1992, and 1996 panels.

Table 12.
Comparison of Indicators of Material Well-Being of Households by Poverty Status Using Three Measures—Percentage Point Change, Percent Change in Proportions, and Odds Ratio: 1992 and 1998

	Percentage point change in households, 1992 to 1998		Percentage change in proportion of households, 1992 to 1998		Odds ratio of households above poverty and below poverty[1]	
	At or above poverty	Below poverty	At or above poverty	Below poverty	1992	1998
Stove	–0.3	–0.4	-0.3	–0.4	3.9	3.2
Enough of food wanted	–0.1	1.3	-0.1	1.4	7.0	5.5
Telephone	0.7	5.9	0.8	7.3	6.9	5.7
No smoke or odors in neighborhood	2.3	3.6	2.4	4.0	1.6	1.5
No unpaid rent or mortgage	1.9	5.4	2.0	6.7	3.5	3.4
No unmet need for doctor	1.5	1.7	1.6	2.1	2.7	3.1
No roof or ceiling leaks	1.5	3.6	1.7	4.2	2.0	1.8
No abandoned houses in neighborhood	2.0	5.1	2.2	6.1	1.9	1.6
No unmet essential expenses	–0.1	0.9	-0.1	1.3	3.5	3.3
Air conditioner	8.0	15.1	11.2	28.7	2.2	1.8
Dishwasher	6.9	5.7	12.9	28.6	4.6	4.4
Computer	22.7	11.4	100.0	161.2	3.9	3.7

[1] For definition of odds ratio, see text.

Source: U.S. Census Bureau, Survey of Income and Program Participation, 1991, 1992, and 1996 panels.

ADDITIONAL DATA

Tables with additional information on the topics covered in this report are available from each of the three contributing agencies. The Census Bureau has produced several reports on measures of material well-being, including detailed tables, which are available at <www.census.gov/population/www/socdemo/wellbeing.html>.

Additional tables on possession of consumer durables and related information from the Consumer Expenditure Survey are available from the Bureau of Labor Statistics at <www.bls.gov/cex/home.htm>.

Also, the Energy Information Administration has produced a set of detailed tables on energy use by households, energy efficiency of heating and cooling, and other topics, at <www.eia.doe.gov/emeu/recs/contents.html>.

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