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Not fun for young and old alike: how the youngest and oldest consumers have fared in recession and recovery

Recessions are disruptive by nature. While affecting all consumers, the oldest and youngest consumers are particularly vulnerable. For example, older consumers may have limited assets to start, and little opportunity to recover, from market volatility. Younger consumers also tend to have limited assets and increased difficulty finding a job during economic downturns. This study examines how the youngest (under 25) and oldest (75 and older) consumers fared during the onset of, and recovery from, the recession of 2007–09. Using data produced by various U.S. Bureau of Labor Statistics programs, such as on unemployment, prices, and consumer expenditures, these groups are compared with each other, to see who fared worse, and with those in the middle (ages 25 to 74), to see whether those older or younger experienced more or less severe consequences than the bulk of the U.S. population.

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The bottom of any business cycle is difficult for all consumers, but the oldest and youngest can be particularly hard hit. Older adults, especially retirees, often rely on accumulated assets, such as savings or stocks, the values of which are usually negatively affected.[1] They also have trouble entering or reentering the workforce to supplement diminished assets, even if they do not suffer poor health or face mobility or other constraints that limit or preclude their ability to work. For young adults, a recession can have much longer lasting consequences. For example, young adults have more difficulty than usual entering the workforce or maintaining a job held at the onset of a recession. Any delay in employment can reduce asset accumulation over their lifetimes. And young adults today may be even harder hit than in previous generations because they carry more student loan debt, on average, than previous generations of young adults.[2] At the same time, results of the Consumer Expenditure Surveys (CE)[3] show that the youngest consumer units[4] (those with reference person[5] under 25) and the oldest consumer units (those with reference person 75 or older) have, on

average, smaller family sizes than those with reference person ages 25 to 74.[6] Accordingly, there tend to be fewer other adults within the consumer unit on whom to rely for mutual support.

This article analyzes expenditure patterns for three age groups: consumer units with reference persons under 25 years old, 25 to 74 years old, and 75 and older. CE data are examined to ascertain how these groups fared from 2004 through 2015 (hereinafter referred to as "the study period"). This period is particularly interesting because it included both a *housing bubble* (i.e., a period of rapidly increasing housing prices)[7] and the economic slump popularly known as the "Great Recession." During the housing bubble, there was continuous economic growth[8] and increasing wealth, as measured by housing prices.[9] According to the National Bureau of Economic Research, the recession lasted from December 2007 through June 2009.[10] While the previous recession started and ended in 2001, the study period begins in 2004 because this is the first year for which incomes were imputed in the CE, so the data presented in all figures are consistent for the periods covered.[11] Also, the 2004 start point allows one to examine, among the three groups, interesting trends observed during the peaking of the housing bubble. The study period ends in 2015 because this was the most recent year for which CE data were available at the time this article was first drafted. In this article, expenditure patterns for the three groups are compared in order to determine whether the effects of the recession differ by age groups or whether these groups have experienced similar changes to their well-being.

For this article, groups are categorized by age rather than by generation (e.g., "Millennial" or "GI" generation) in order to maintain consistency over time in the comparison. The expenditures studied are selected from tabular CE data available online to provide information about consumer well-being.[12] Other data supporting this analysis, such as unemployment rates, are also available from U.S. Bureau of Labor Statistics (BLS) websites.[13]

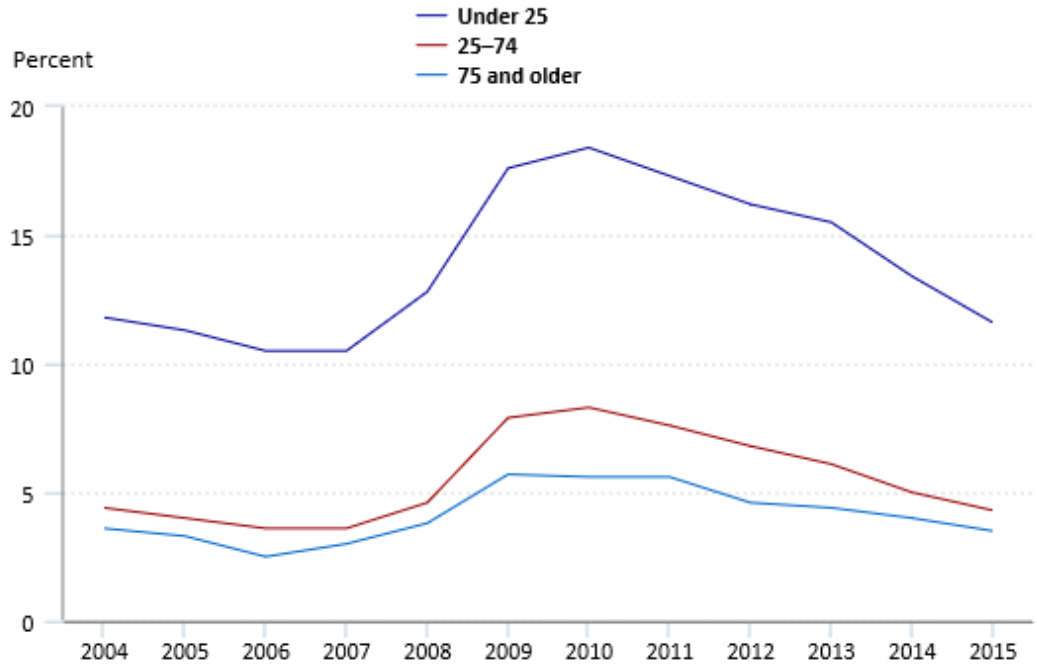
Macroeconomic factors: the unemployment rate and prices

Unemployment

How any group fares is naturally related to the state of the economy during the period studied. One way to assess economic well-being is to examine the unemployment rate for the age groups in question: the youngest group (those consumer units with reference person under 25 years old); the middle group (reference person is 25 to 74 year old); and the oldest group (reference person is at least 75 years old). Unemployment data are available from Current Population Survey (CPS) labor force statistics.[14]

A comparison of the annual rates for the three groups shows that while the rates for all three groups generally move in the same direction, the youngest group has the highest rate each year. (See figure 1.) Over the study period, all three groups experience their lowest unemployment rate in 2006; however, all have visible increases in 2008, with rates peaking by 2010. While the difference between the peak and the trough is large for all groups, the difference for the youngest group is most pronounced, rising from 10.5 percent in 2006 to 18.4 percent in 2010. Based on unemployment rates, the youngest were arguably the hardest hit.

Figure 1. Unemployment rates, by age group, 2004–15



Source: U.S. Bureau of Labor Statistics.

Two articles, one published during and one published immediately after the Great Recession, support this analysis. James Marschall Borberly[15] finds that "*young workers [in 2008] were affected by poor labor market conditions more than workers aged 55 years and older were*."[16] (Italics appear in the original.) Specifically, Borberly notes that "labor force participation and employment continued to trend upward for workers aged 55 years and older, but labor market conditions weakened for workers aged 16 to 19 years, as the group's unemployment rose sharply and labor force participation and employment declined," while at the same time the "unemployment rate for young adults (20 to 24 years) also rose during 2008, increasing by 2.7 percentage points, to 11.3 percent."[17] This contrasts with a smaller increase (1.7 percentage points) and unemployment rate (4.8 percent) for those 55 or older.[18] Similarly, Stephen F. Hipple[19] finds that in 2009, "teen labor force participation rate fell…to a record-low 35.8 percent,"[20] while for those 20 to 24, the "unemployment rate…rose…4.2 percentage points, to 15.7 percent."[21] Again, the increase in the unemployment rate (2.3 percentage points) and the level it reached (7.1 percent) were lower for those 55 and older.[22]

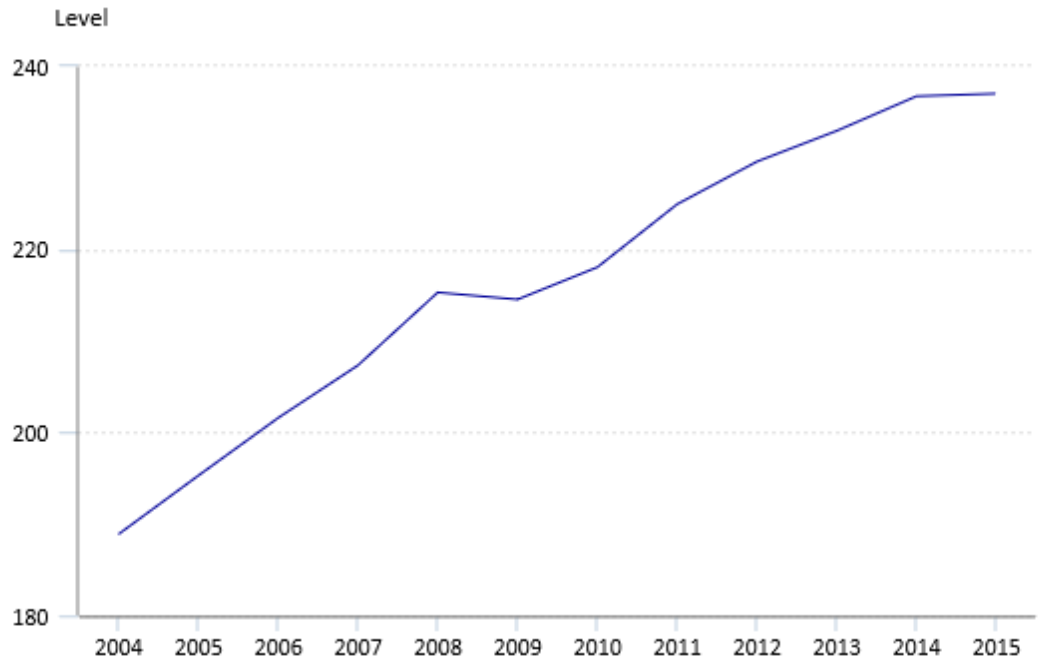
Prices

Price levels also have an effect on consumer well-being, especially during an economic downturn. For example, those who are unemployed face even greater economic burdens when prices rise. Rising prices discourage saving, as consumers are motivated to make immediate purchases to avoid price increases. Rising prices hurt all age groups; they generally cause younger consumers to save less and older consumers to spend their savings at a faster rate.

Some programs, such as Social Security, provide benefits to older consumers based on changes in price levels, as measured by the Consumer Price Index (CPI).[23] Therefore, older consumers receive some protection from price increases that are generally not available for younger consumers.[24] The CPI program does not publish an official age-based index.[25] Nevertheless, the general price level is useful in assessing how price changes affect consumers of different ages differently for the reasons just described.

As measured by the CPI, prices generally rose steadily, though moderately, from 2004 through 2015. (See figure 2.) Prices dipped slightly in 2009, the only year of decline, then rose in 2010 to a higher level than had been attained in 2008. Price increases ranged from a low of 0.1 percent in 2015 to a high of 3.8 percent in 2008. This peak occurred in 2008, a year in which gasoline prices rose from $3.10 per gallon in January to $4.14 per gallon in July—the highest recorded in the CPI since their first publication in 1978—only to fall to $1.74 by December.[26] Undoubtedly, these fluctuations influenced the CPI either directly or indirectly, as the price increases for gasoline may have caused prices of other goods to rise and remain high, even after gasoline prices fell. (Long-term contracts negotiated at a time when gasoline prices were high might include higher costs than if they had been negotiated at another time.)

Figure 2. Annual levels of the Consumer Price Index, 2004–15



Source: U.S. Bureau of Labor Statistics.

Rising prices presumably affected both the youngest and oldest groups, but arguably affected the youngest group more. This is partly because price increases reduced consumers' ability to afford goods and services, especially if they were unemployed, and partly because they discouraged saving, even for those who were employed. For those in the oldest group, the drop in prices in 2009 meant that Social Security benefits did not increase in 2010,[27] the first time this happened since 1975, the year in which Social Security started automatic annual

increases in benefits based on price increases.[28] However, this group received a one-time $250 payment from the Social Security program in 2009 that offset, to some degree,[29] the lack of a benefits increase in 2010.[30] Regardless of the fact that prices were rising, the mitigating factor for both groups was that price changes were moderate throughout the period and, therefore, may have had a relatively small influence on consumer well-being for these two age groups.

Consumer Expenditure Survey data

Consumption patterns, like unemployment rates and prices, can offer insight into the well-being of consumers. In this section, CE data are used in three stages to identify and describe consumption patterns.

The first stage of this analysis considers ownership of two big-ticket items—homes and vehicles. Homeownership is one of the elements of the American dream, and has traditionally been considered an important element of a family's wealth and well-being. This is because, unlike stocks or bonds, which have little utility beyond the value they hold at purchase and redemption times, a home provides both an asset that may increase in value and a service that can be consumed, namely, shelter. Vehicle ownership is often important to consumers because, while a vehicle is usually a depreciating asset, it provides a valuable service, transportation. In each year of the study period, no less than 87 percent of all consumer units owned or leased at least one vehicle.[31]

The second stage compares levels of expenditures on selected goods and services for the three groups. In this article, goods and services are identified as basic or luxury. Basic products are those generally considered to be necessities of life, and include food (at home), shelter, and clothing. Luxury items as defined herein are those generally deemed to be discretionary, and include food (away from home), entertainment, and cash contributions. The extent to which one group is more or less likely than another to cut back on luxury spending is an indicator of relative well-being.

The final stage examines expenditure shares for the three groups. The proportion of total expenditures allocated to basic and luxury items is a standard measure of well-being in an economist's toolkit.[32] A change in these proportions can reflect a change in well-being.

Before examining expenditures, however, a brief discussion of income is in order as, without income, there is no basis to make expenditures.

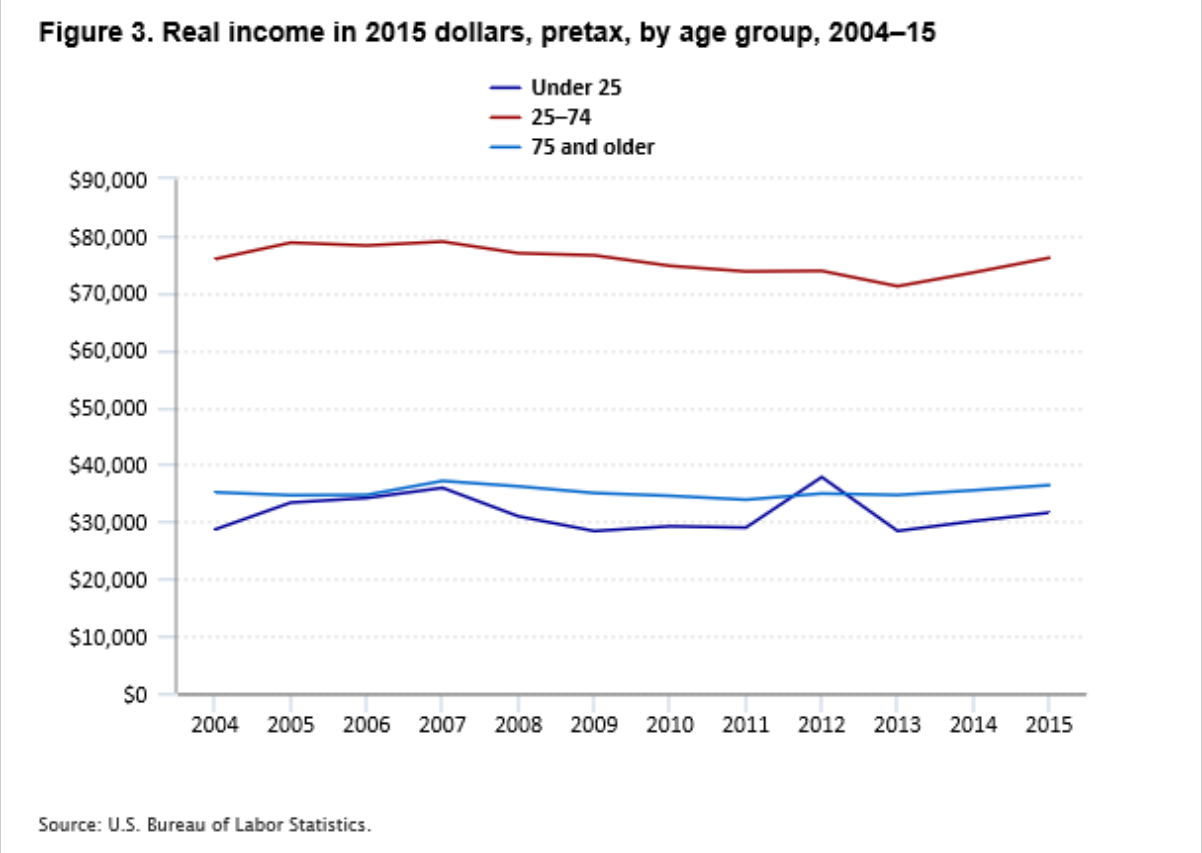
Income

The CE program collects income from several different sources (e.g., wages and salaries, self-employment, interest and dividends), aggregates them to a category called "total income before taxes," and publishes tables showing the average annual income (total and subcategories) for all consumer units within the group of interest (e.g., by age of reference person). Arguably, some of the subcategories of income are important to analyze separately, as they are generally expected to be more important to total income for some age groups than others. For example, wages and salaries are expected to account for a larger share of total income for the youngest group than for those in the oldest group, while the opposite is expected of retirement income (e.g., pensions) and investment income (the aforementioned interest and dividends, along with items like rental property income). However, for this article, only total income before taxes ("income" henceforth) is considered.[33]

It is important to recognize that rising prices make goods and services less affordable, and therefore a dollar in income goes further on day 1 than it does on day 2 when prices increase. Furthermore, even if incomes also rise, if the percent increase in incomes is less than that of prices, then consumers are still less well off on day 2 than on day 1.[34] To adjust for this, the analysis that follows is based on *real income*. To calculate real income, one uses the CPI to convert the income reported in a particular year (called *nominal income*) to the amount needed to purchase the same basket of goods in the subject year, 2015 for the analyses following in this article.[35]

Once real-dollar adjustments are made, real incomes are interpreted in the same way as nominal incomes generally are. That is, an increase or decrease in real income from one year to the next indicates an increase or decrease in relative economic well-being. So in 2005, when real income for members of the youngest group averaged $33,367, they were better off than they were in 2004, when real income was $28,658. However, in 2009, when their average real income fell to $28,387, they could no longer afford the same basket of goods that they had been able to purchase in 2004. This underscores the importance of comparing real incomes over time, as nominal incomes for those under 25 were *higher* in 2009 ($25,695) than in 2004 ($22,840).[36]

With this background, the first finding of note is that, despite differences in its composition, the youngest and oldest groups had very similar real incomes throughout the study period. (See figure 3.) That is, real incomes ranged from $28,387 to $37,824 for the youngest group, and from $33,870 to $37,150 for the oldest group. Notably, the oldest group had a more stable income range. The youngest group generally had lower incomes. The lone exception occurred in 2012, when income for the youngest group was $2,876 higher than that of the oldest group. However, this appears to be the result of a one-time anomaly for the youngest group that resulted from sharp upticks (followed in 2013 by similar downticks) in three income categories: wages and salaries; interest, dividends, rent income, and property income; and Social Security, private, and government retirement.[37] In all other years, the oldest group earned $550 to $6,509 more than the youngest. Regardless of year, both groups received substantially less income than the middle group, whose income ranged from $71,206 to $79,009 throughout the study period.

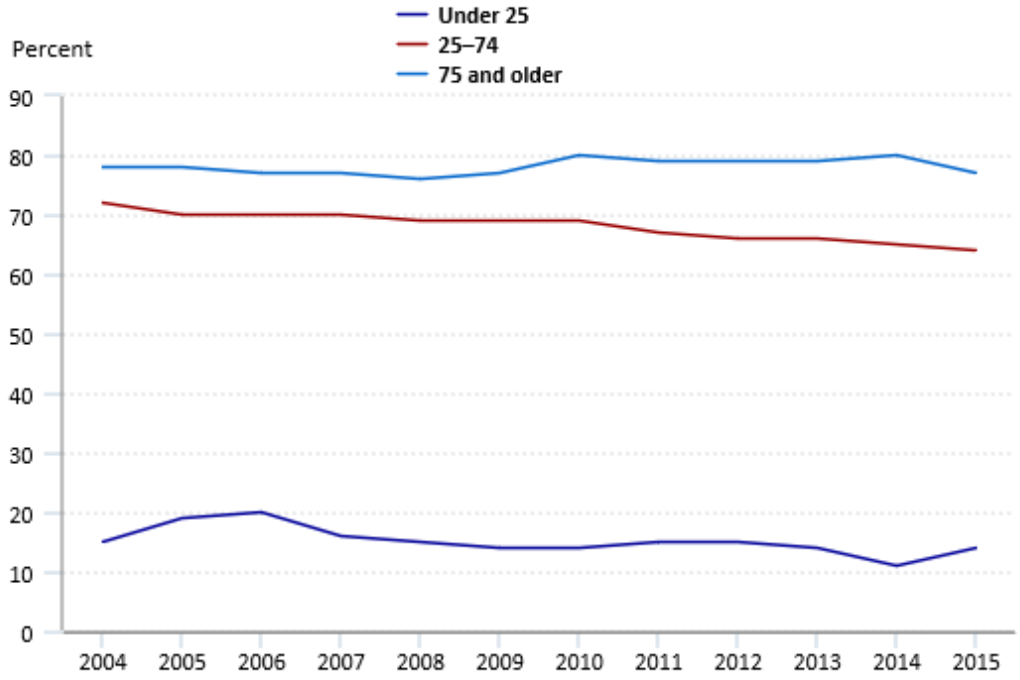


As noted, an interesting difference between the youngest and oldest groups is the relative stability of income for the older group. That is, real income for the youngest group rose by about 25 percent, from $28,658 in 2004 to $35,943 in 2007. This gain was eliminated only 2 years later, as real income fell to $28,387 in 2009. Income for the youngest group recovered some by 2015, rising to $31,606, but was still 12 percent lower than it was at its peak in 2007. In contrast, for the oldest group, the gap between the lowest and highest real annual income was less than 10 percent. The gap for the middle group was about 11 percent.

Home and vehicle ownership

The bursting of the housing bubble affected the youngest consumers more than the oldest. The homeownership (with or without a mortgage) rate for the youngest group rose from 15 percent in 2004 to 20 percent in 2006. By 2009, the final year of the recession, it had fallen to 14 percent. The rate remained at 14 or 15 percent in each of the following years, with one notable exception—a dip to 11 percent in 2014. (See figure 4.) When those who own without a mortgage are excluded from the analysis, the difference is even more pronounced: after rising from 9 percent in 2004 to 13 percent in 2006, it fell to half that rate—7 percent—by 2013, and remained there through 2015.

Figure 4. Homeownership rates, by age group, 2004–15



Source: U.S. Bureau of Labor Statistics.

For the oldest group, the homeownership rate started to fall, and bottomed out, one year earlier (2005 to 2008). However, when the rate for this group did drop (78 percent to 76 percent), it did so by a smaller amount than that for the youngest group (2 percentage points versus 6 percentage points). The rate for the oldest group rebounded from 76 percent in 2008 to 80 percent by 2010, stayed between 79 and 80 percent through 2014, then fell to 77 percent in 2015.

Not surprisingly, most homeowners in the oldest group owned without a mortgage. For example, in 2004, when 78 percent of the oldest group consisted of homeowners, 68 percent of the oldest group owned without a mortgage, amounting to 87 percent of homeowners in this group (i.e., 68/78 = 87 percent). As a result, the pattern for the total homeownership rate in this group is driven by the pattern for owners without mortgages. More interesting is that the portion of this group that owns with a mortgage increased over time—from about 1 in 8 (13 percent) in 2004 to more than 1 in 6 (18 percent) in 2014. In 2015, the rate dipped slightly, to more than 1 in 7, or 16 percent. After the housing bubble burst, those in the youngest group were less likely to own a home at all, while those in the oldest group were more likely to hold their mortgages longer. Accordingly, more people in the oldest group were still paying off this debt well past the traditional retirement age.

Interestingly, homeownership rates for the middle group exhibited a different pattern. Rather than rising through 2006 and falling thereafter, the rates for the middle group fell continually, from a peak of nearly three-quarters (72 percent) in 2004 to less than two-thirds (64 percent) in 2015. While the rate for those who owned without a mortgage varied slightly (22 to 24 percent) over the study period, the change for those who had mortgages was

noticeable. The rate remained at about 49 percent through the preburst years (2004 through 2007), then fell steadily thereafter, hitting a low of 40 percent in 2015.

Vehicle ownership rates remained steady for the middle and oldest groups, while the youngest group experienced the most change. (See figure 5.) For the middle group, the rate of vehicle ownership remained between 90 and 91 percent for every year studied except 2015, when it fell to 89 percent. For the oldest group, the rate was most volatile from 2004 to 2007, ranging from 76 to 79 percent. Thereafter, it remained between 79 and 80 percent every year except 2013 (78 percent) and 2014 (81 percent). However, for the youngest group, the rate averaged 72 percent from 2004 through 2006, then steadily declined, ending the study period with an average of 65 percent over the final 3 years. One possible explanation for the decrease in vehicle ownership for the youngest group is increased student loan debt. Many vehicle buyers fund their purchases using loans, for which they may be less likely to apply, or even qualify, if they have large student loan obligations. Because CE did not start collecting student debt as a separate liability until 2013,[38] the impact of student loans over the course of the study period cannot be adequately addressed with the data used for this article.

Figure 5. Vehicle ownershhip rates, by age group, 2004–15

Source: U.S. Bureau of Labor Statistics.

Expenditures

As with income, it is useful to adjust expenditures for price changes before conducting analyses. In the section that follows, each expenditure category is converted from a nominal expenditure to a real expenditure in 2015 dollars, using the CPI for all goods and services. This conversion does not control for quantity purchased within the allocation of expenditures. To understand why, consider expenditures for a specific good, such as apples. The nominal expenditure is the current price of apples multiplied by the amount purchased. Therefore, if real

expenditures on apples are computed using a CPI derived only from apple prices, then if those real expenditures on apples rise or fall, the change must be due to an increase or decrease in the quantity purchased, as the apple price index adjusts for apple price change.[39] However, the CPI includes more expenditures than apples alone. Therefore, using the CPI to compute real expenditures does not directly adjust for quantity, but it does adjust the expenditure in relative terms. For example, if apple expenditures for a particular consumer rise from $2.00 to $4.00 in real (CPI adjusted) dollars, and real income is unchanged, that consumer has less to spend on other goods and services, regardless of whether the increase in expenditure is due solely to quantity change, to price change, or to some combination. In any case, after converting all expenditure categories to real 2015 dollars, the findings are described below, first for total expenditures and then for selected expenditure categories.

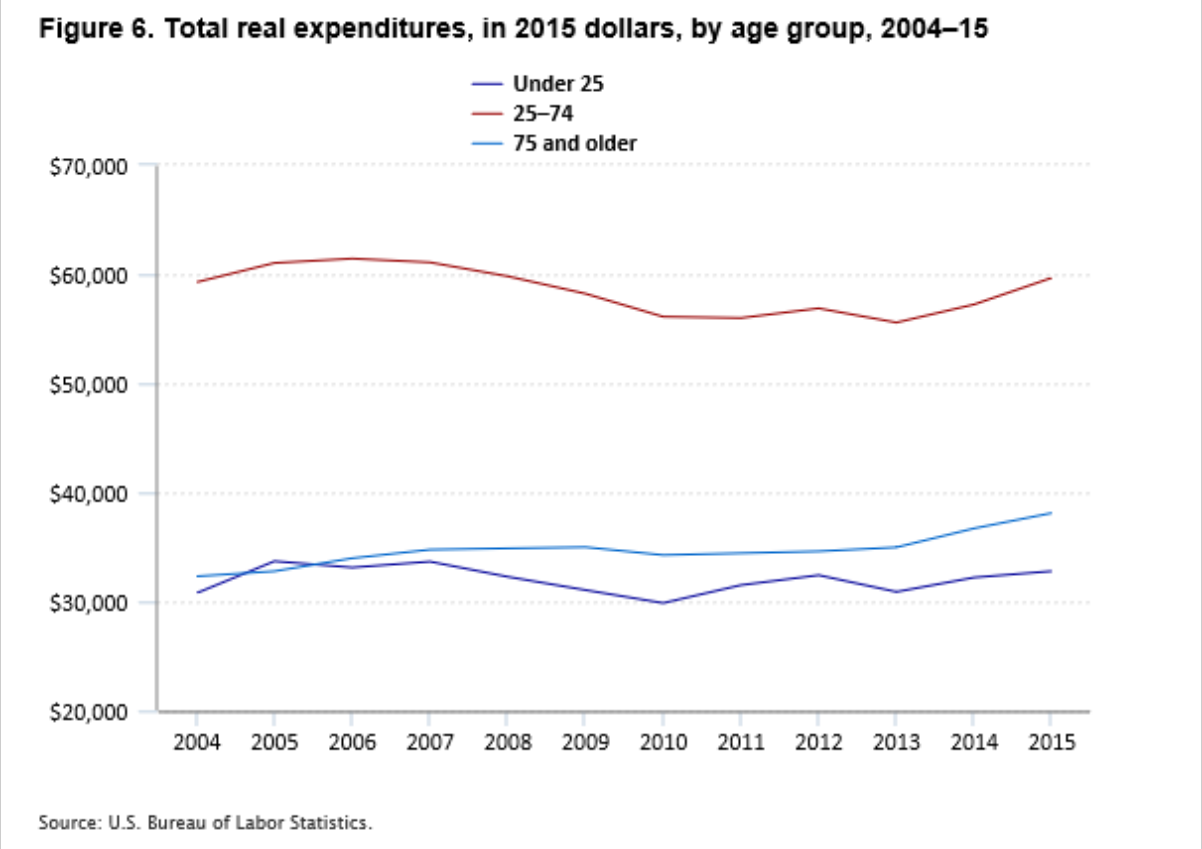
Total real expenditures

Total real expenditures for the middle group were clearly affected by the recession. After rising 4.5 percent from 2004 through 2006, expenditures slid steadily through 2011, went up in 2012, then bottomed out in 2013. The decline from the 2006 peak of $56,901 to the 2011–13 average of $52,490 was about 8 percent; in fact, it was nearly 9 percent when compared with the actual minimum in 2013 ($51,991). By 2015, total expenditures ($55,978) were higher than they were in 2004 ($54,449), but they had not returned to the 2006 peak.

For the youngest group, the pattern was similar to that of the middle group, but less pronounced. First, the youngest group spent less, on average, than the middle group. This is consistent with the fact that average real income for the youngest group was less than half that of the middle group in each year examined. As was true of the middle group, real total expenditures for the youngest group peaked before income did. However, while both groups experienced peak income in 2007, expenditures peaked a year earlier for the youngest group (2005) than for the middle group (2006). Expenditures for the youngest group were lowest in 2010 ($29,873) and failed to return to their peak value of $33,673 by 2015 ($32,797).

For the oldest group, real expenditures were nearly unaffected by the recession. Expenditures increased every year from 2004 ($32,325) through 2009 ($34,995), before falling by about 2 percent in 2010 ($34,443). Nevertheless, they rose again each year thereafter, nearly matching the 2009 peak in 2013 ($34,981) and reaching a new high in 2015 ($38,123).

Comparing the oldest and youngest groups directly reveals that the recession hit the youngest group harder than the oldest group. From 2004 through 2007, total expenditures for both the youngest and oldest groups were similar. However, in 2008, expenditures for the youngest group fell, then remained lower than those of the oldest group through the end of the study period. (See figure 6.)

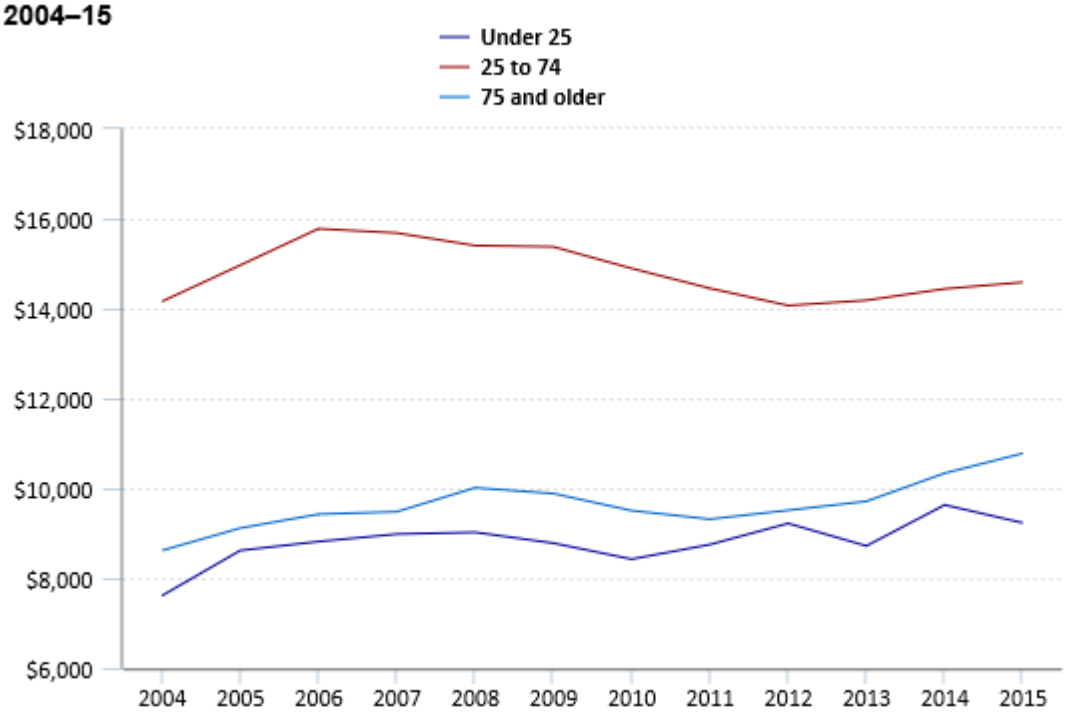


Shelter and utilities

Shelter and utilities is a basic expenditure that includes expenses for owned dwellings, rented dwellings, and utilities. For this article, the other lodging component captured in the CE publication definition of shelter is excluded because that definition includes items such as owned vacation homes, housing while attending school, and lodging on out-of-town trips, none of which are generally considered basic shelter. In addition, utilities are combined with shelter because they are an important part of basic housing services (e.g., water and heat are two necessities provided by basic housing) and are recurring expenditures. Also, because utilities are included with rent for some renters, combining utilities with shelter ensures consistency when comparing renters across groups and over time.

Shelter and utilities real expenditures follow a pattern similar to that of total real expenditures. (See figure 7.) This is not surprising, partly because the growth and “bursting” of the housing bubble and the recession were so closely associated, and partly because shelter and utilities compose a substantial share (14.0 to 28.5 percent) of total expenditures for the three groups in each year of the study period. Most notably, for the middle group, these expenditures were at their lowest point in 2004, the first year of the study period. They reached their peak in 2006, then declined, nearly returning to the 2004 level in 2012. After 2012, expenditures rose slightly each year, but had only increased by 3.7 percent by 2015.

Figure 7. Shelter and utilities expenditures, in 2015 dollars, by age group, 2004–15



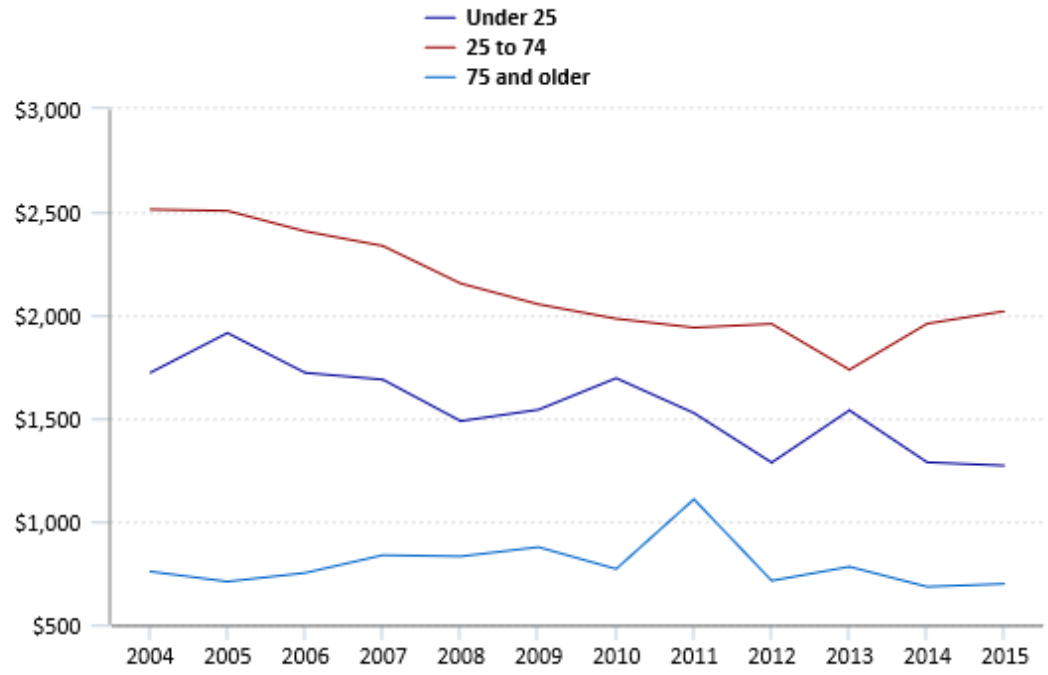
Source: U.S. Bureau of Labor Statistics.

Shelter and utilities expenditures were similar for the oldest and youngest consumers, both in levels and patterns. From 2004 to 2008, expenditures rose for both groups. After 2008, these expenditures declined through 2010 for the youngest group and through 2011 for the oldest group. However, for both groups, the percent increase from their lowest values to their 2015 values was greater than that of the middle group: almost 10 percent greater for the youngest group and nearly 16 percent greater for the oldest group. A look at the final 4 years of the study period shows that these expenditures for the youngest group barely changed (0.1 percent increase), while the oldest group still experienced a much larger increase (13.3 percent) than the middle group (3.7 percent).

Apparel and services

Real expenditures on apparel and services were highest for the middle group, while they were lowest for the oldest group. (See figure 8.) This is not surprising for two reasons. First, the middle group had the largest family size in each year of the study period, while the oldest group had the smallest family size.[40] Second, members of the oldest group have aged well into the traditional retirement years and are therefore less likely to need work apparel. Additionally, many in the oldest group face other constraints (e.g., lack of mobility), which could also limit their ability to shop for and purchase new apparel.[41]

Figure 8. Apparel and services expenditures, in 2015 dollars, by age group, 2004–15



Source: U.S. Bureau of Labor Statistics.

More interesting than the ranking of the expenditures (middle group spends most, oldest group spends least in each year) are the trends these expenditures exhibit. Throughout the study period, the middle group experienced continual decline in real expenditures for apparel and services. Expenditures decreased every year from 2004 through 2011 and, except for a downward blip in 2013, were stable thereafter. For the youngest group, the pattern was less straightforward, but downward nonetheless. For the oldest group, expenditures actually rose steadily from 2004 to 2009, then dropped by 14 percent in 2010, from $876 to $770. In 2011, they increased dramatically, to $1,108. They dropped again in 2012 and remained relatively stable through the end of the study period, with a low of $684 in 2014 and a high of $781 in 2013.[42]

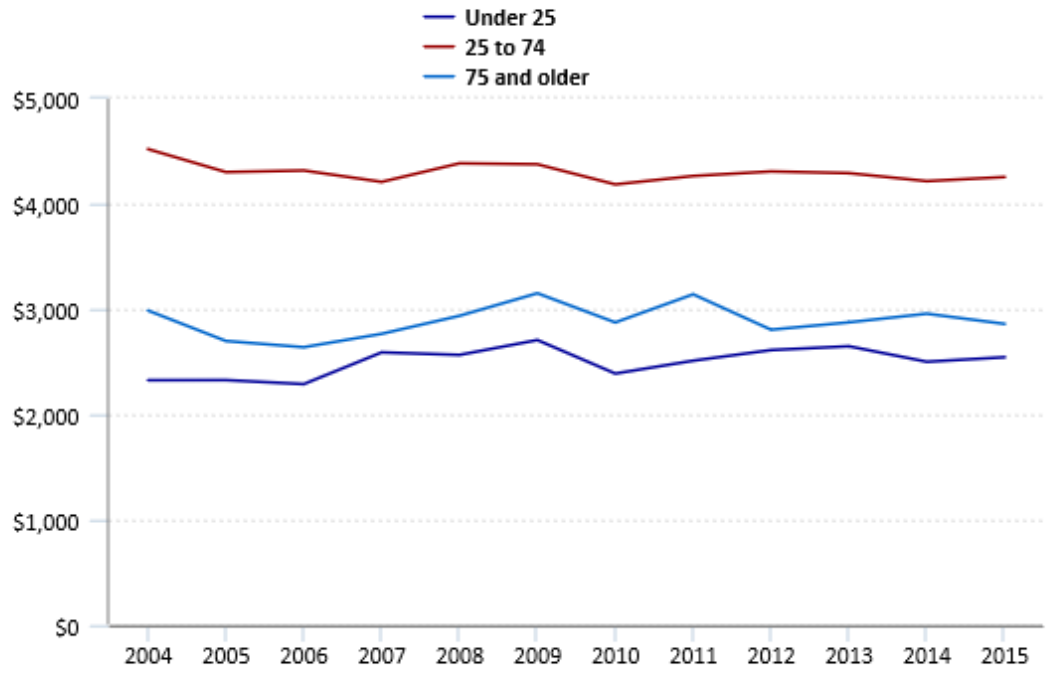
Food at home

Food at home is the last of the basic categories examined in this article. Although listed as nearly the first category on the published tables (after total expenditures and total food), this is discussed last among basic categories for a more direct juxtaposition with the first of the luxury expenditures, food away from home.

Real expenditures for food at home are generally countercyclical for most groups. That is, these expenditures fall when the economy is growing and rise when it is not. Intriguingly, this countercyclical pattern was most evident for the oldest group; their food at home expenditures fell sharply by 11.7 percent from 2004 to 2006, before increasing dramatically, by 19.4 percent through 2009. From 2010 on, food at home expenditures for the oldest group were substantially lower—6.2 percent to 11.0 percent—than their peak in 2009, except in 2011, when they were little changed (down 0.3 percent).

The story was different for the youngest group. Their real food at home expenditures were stable from 2004 to 2006, but rose to a peak in 2009. While these expenditures fell again in 2010, they then rose steadily through 2013. In 2014 and 2015, the expenditures dropped again, nearly returning to the 2011 level. Nevertheless, the youngest group was the only group with larger real expenditures for food at home in 2015 than it had in 2004. (See figure 9.)

Figure 9. Food at home expenditures, in 2015 dollars, by age group, 2004–15



Source: U.S. Bureau of Labor Statistics.

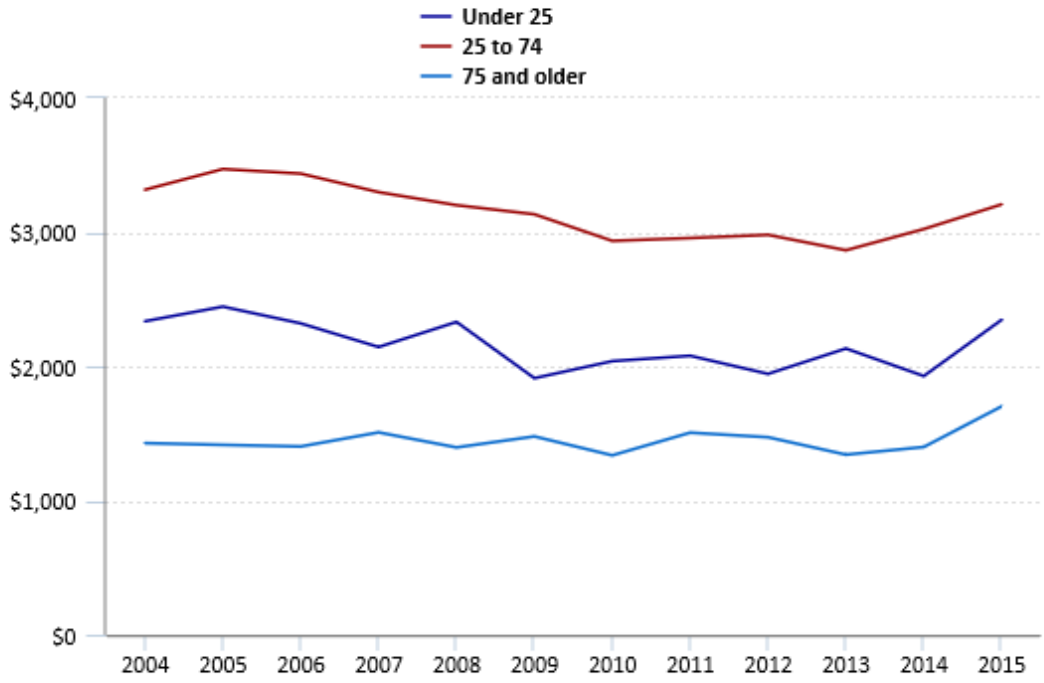
Food away from home

Food away from home is the first of the luxury categories to be examined in this article. Food away from home is considered a luxury because it is relatively easy to substitute this item with food at home. For example, a person who usually eats lunch at a restaurant with coworkers could, instead, bring lunch prepared at home. The same person may also make substitutions *within* the food at home budget by purchasing less expensive foods. But for the purposes of this article, the aggregate level of food expenditure is more important than substitution within a category. That is, it appears that even if consumers are choosing less expensive food at home items during economic downturns, they are purchasing more food at home generally (and thus have higher expenditures for this category) and purchasing less food away from home. As a result, in contrast to food at home, the pattern for food away from home is procyclical. That is, expenditures rise when the economy is growing and fall when it is shrinking.

Real expenditures for food away from home peaked for the middle group in 2005 and 2006, then fell steadily through 2010, before stabilizing in 2011. These expenditures experienced a slight dip in 2013, and then rose again in 2014. While less pronounced, the pattern was similar for the youngest group. Notably, the oldest group alone

had substantially higher expenditures in 2015 ($1,704) than they had in 2004 ($1,428). This was also the only group whose food away from home expenditures were mostly stable throughout the study period. So it is not clear whether 2015 represented a one-time blip, as was observed with other expenditures, or was part of a larger trend for this group. (See figure 10.)

Figure 10. Food away from home expenditures, in 2015 dollars, by age group, 2004–15

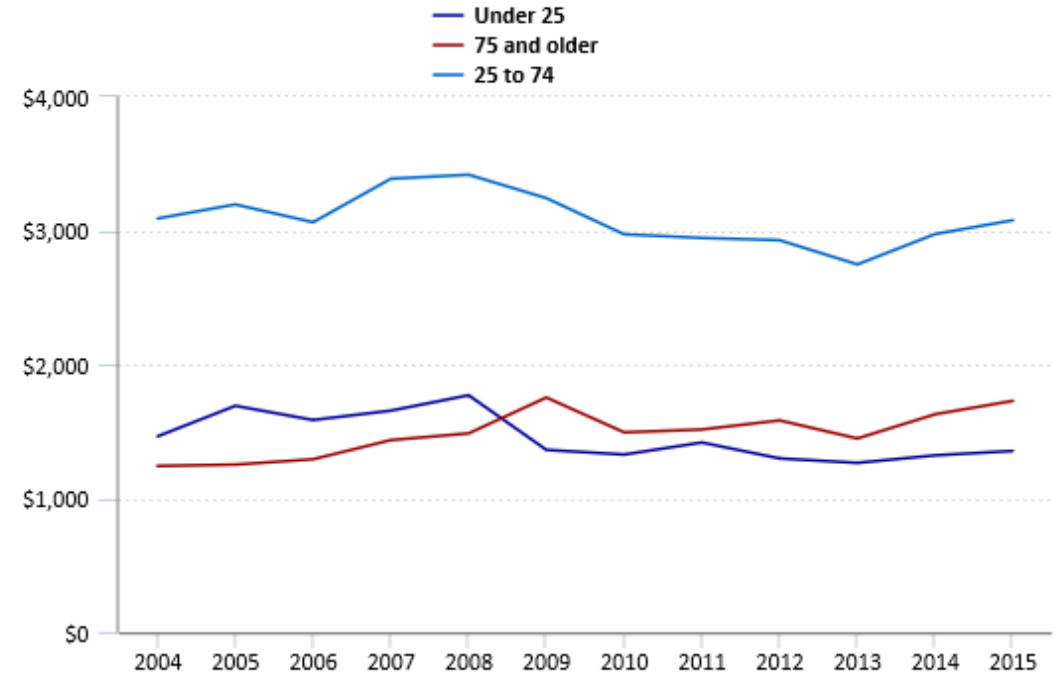


Source: U.S. Bureau of Labor Statistics.

Entertainment

For real expenditures on entertainment, the pattern for the middle group is the easiest to describe. After a period of relative stability from 2004 to 2006, entertainment expenditures for 25- to 74-year-olds rose sharply at the start of the recession and peaked in 2008. Expenditures then fell through 2010 and remained stable through the end of the study period, except for one downward blip in 2013. However, during the postrecession period (2010–15), the average was always lower than it was in any of the prerecession years examined (2004–06). (See figure 11.)

Figure 11. Entertainment expenditures, in 2015 dollars, by age group, 2004–15



Source: U.S. Bureau of Labor Statistics.

The expenditure pattern for the youngest group is similar to that of the middle group. Expenditures rose from 2006 to 2008, fell in 2009 and 2010, and remained below prerecession (2004 through 2006) levels thereafter.

The pattern for the oldest group is most interesting. In 2004, their entertainment expenditures were lower than those of the youngest group. But they rose steadily and, in 2009, surpassed those of the youngest group for the first time. Their expenditures remained higher than those of the youngest group through the remainder of the study period. The oldest group alone had higher entertainment expenditures in 2015 than they had in the prerecession period. The increase for the oldest group was substantial: it averaged $1,262 in the prerecession period), then rose to $1,728 in 2015, an increase of 37 percent.

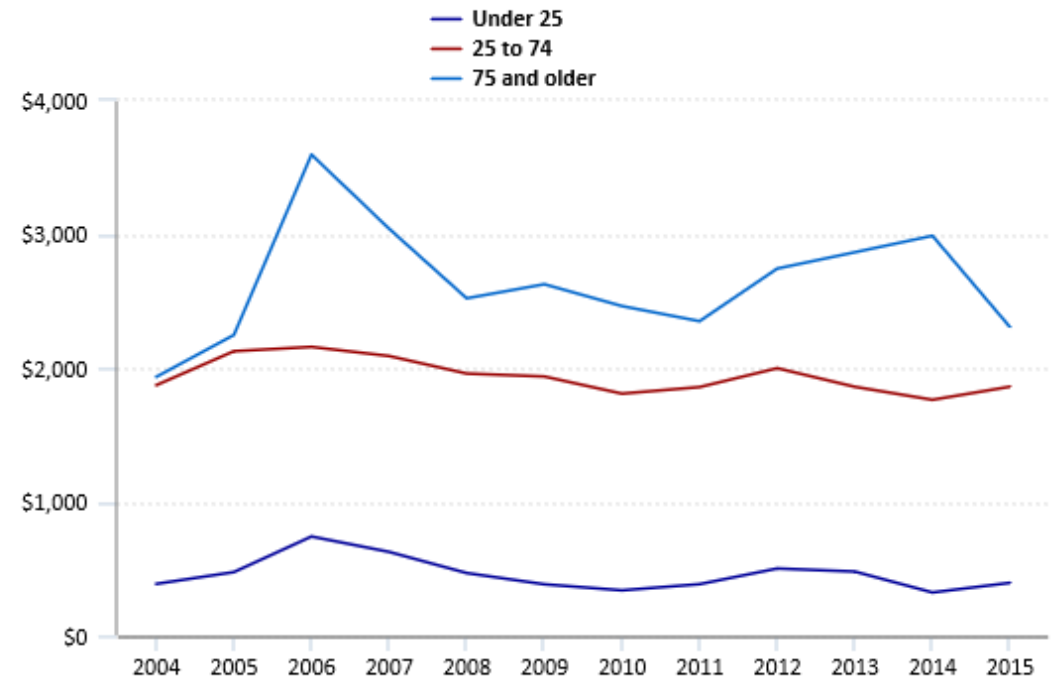
Cash contributions

While cash contributions include both discretionary items (e.g., contributions to charities and other organizations) and nondiscretionary items (e.g., alimony and child support), prepublication results for 2015 suggest the vast majority of the spending in this category is elective.[43] The same is presumably true of the earlier years in the study period. For this reason, contributions are classified as a luxury, rather than basic, expenditure.

In general, all groups follow similar patterns for cash contribution spending. (See figure 12.) For each group, the peak occurred in 2006 and the trough occurred in either 2010 or 2011. In each year, the oldest group spent the most on cash contributions and the youngest group spent the least. The oldest group had the most noticeable peak, rising sharply from 2005 to 2006, then declining rapidly over the next 2 years, but never falling below the 2005 level. For both the youngest and the middle group, expenditures were lower in 2014 than they had been in

2004, while increasing in 2015. While the oldest group was the only group to have increased cash contributions from 2012 through 2014, it was also the only group to have decreased these expenditures in 2015.

Figure 12. Cash contribution expenditures, in 2015 dollars, by age group, 2004–15



Source: U.S. Bureau of Labor Statistics.

Expenditure shares

Another way to analyze the effects of a recession is to examine changes in *total expenditure shares*. A total expenditure share is the ratio of expenditures for a particular item or category to the sum of expenditures on all items. For example, in 2015, those in the youngest group spent, on average, $4,890 of their $32,797 total expenditures on food (both at home and away from home).[44] Therefore, the group's expenditure share for food was 14.9 percent, or $4,890/$32,797.

Total expenditure shares for food are often used as a measure of consumer well-being, a practice dating back to an 1857 finding called Engel's law. Ernst Engel, while head of the Prussian Statistical Bureau, found that as income increases, the share of income allocated to food decreases, even if food expenditures increase in actual levels. This relationship emerges when income increases by a larger percentage than food expenditures increase. Total expenditure shares for food can be used as a welfare indicator because food is an absolute necessity of life (and therefore requires at least some minimal expenditure), and the smaller the proportion of income allocated to food, the larger the remaining portion of income available to be allocated to everything else.[45] In the analysis that follows, total expenditure shares for food and other items are compared across groups and over time to see what they indicate about consumer welfare before, during, and after the recession. For convenience, the shares are

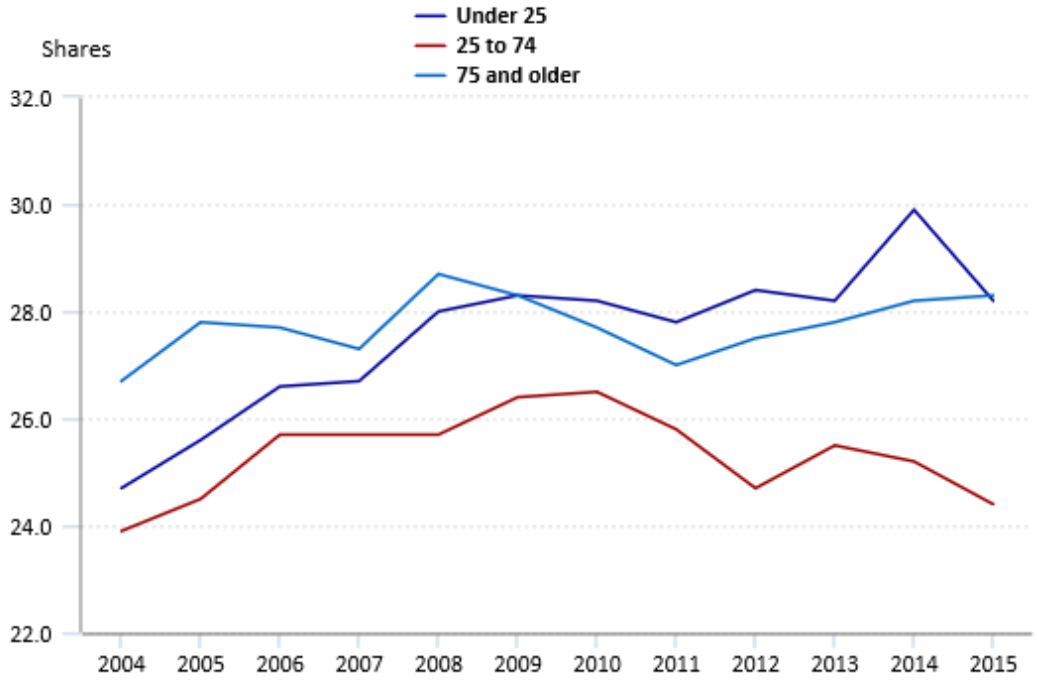
computed using ratios of real 2015 dollars, but this is not necessary, as the index adjustment factor “cancels out,” yielding the same results as ratios of nominal dollars.[46]

Shelter and utilities shares

For the middle group, the shelter and utilities expenditures share increased from 2004 through 2007. This is unsurprising because, over that period, housing prices rose faster than the CPI. Accordingly, if all other expenditures remained equal, the share for housing[47] would have to go up because the percent increase for total expenditures (i.e., the sum of housing and nonhousing expenditures) would be smaller than the percent increase for housing expenditures.[48] The expenditures share for the middle group continued to grow through 2010, and was lower every year thereafter, hitting its trough in 2015. The decline was continual, except for a one-time anomaly in 2012–13; the share declined sharply in 2012, and rebounded in 2013, but was still lower in 2013 than in 2011. This pattern indicates that the middle group experienced a decrease in consumer welfare during the recession, but started to recover thereafter.

The shares for both the youngest and oldest groups were similar, rising throughout most of the study period. The shares stabilized for the youngest group immediately after the housing bubble burst, hovering around 28 percent through most of the post-bubble study period, with a jump to 29.9 percent in 2014. For the oldest group, the share declined from 28.7 percent in 2008 to 27.0 percent in 2011, then increased each year thereafter, nearly returning to the 2008 level by 2015 (28.3 percent). Shares for the oldest group were slightly higher than that of the youngest group from 2004 through 2008, and either about the same or less from 2009 to 2015.[49] This suggests that the oldest and youngest groups were more profoundly affected by the recession, and felt the effects for a longer period, than the middle group. (See figure 13.)

Figure 13. Shelter and utilities shares, in 2015 dollars, by age group, 2004–15



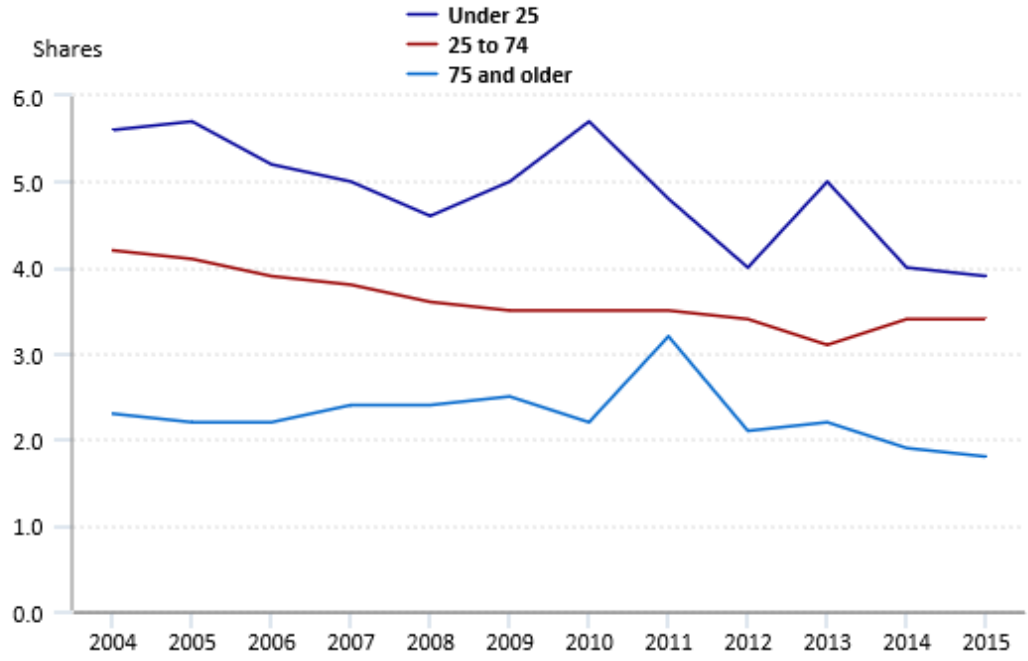
Source: U.S. Bureau of Labor Statistics.

Apparel and services shares

Remarkably, *shares* for apparel and services display patterns almost identical to those of expenditure *levels* for apparel and services. Shares for all three groups were lower in 2015 than they were in 2005, indicating a general improvement in consumer welfare during this period. The countercyclical nature of the change shows that consumer welfare rose and fell with the state of the economy at a more noticeable rate for the youngest group than it did for the oldest. Again, as with levels, the share declined steadily for the middle group.

One interesting difference in levels and shares is that the middle group had the highest expenditure *levels* in each year, but its expenditure *shares* fell between those for the youngest group (highest share each year) and those for oldest group (smallest share each year). (See figure 14.) The highest level of expenditures may be related to family size, as the middle group had the most members per consumer unit on average in each year. However, the fact that this group's expenditure share was lower than that of the youngest group indicates a higher level of economic welfare for the middle group.

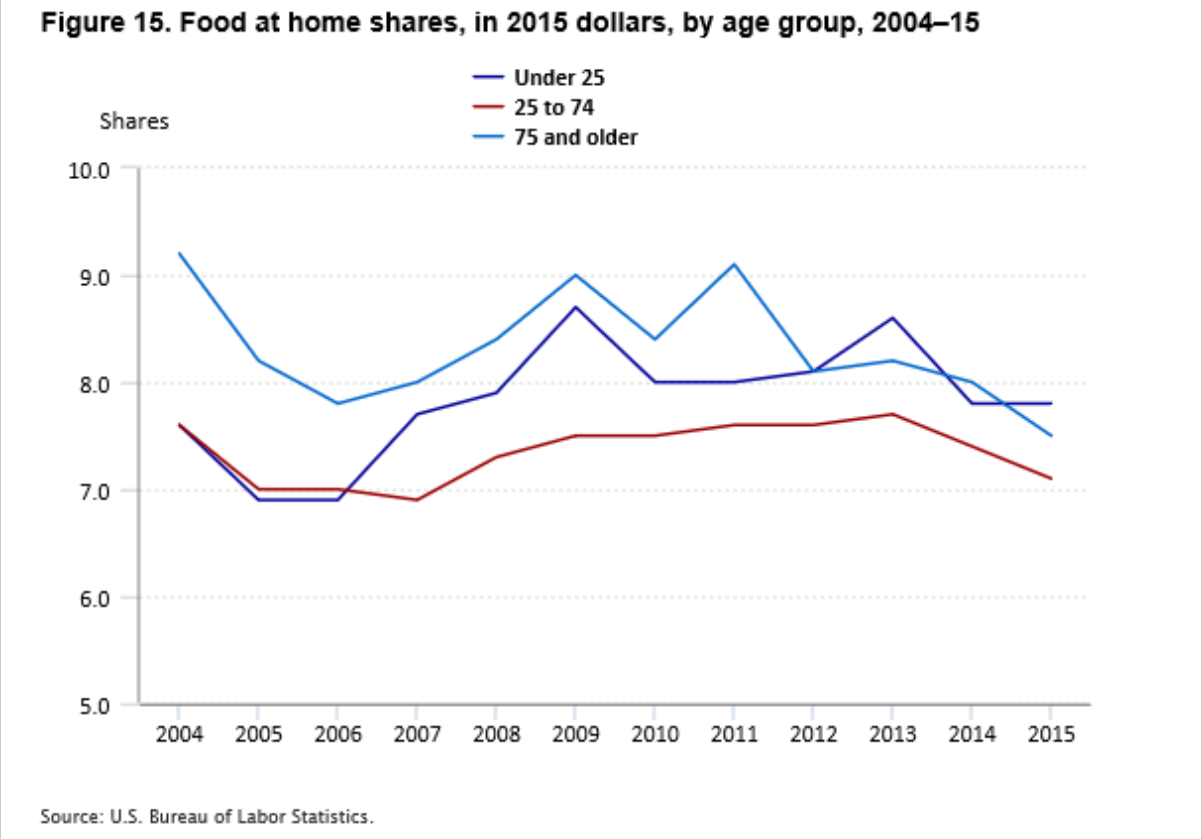
Figure 14. Apparel and services shares, in 2015 dollars, by age group, 2004–15



Source: U.S. Bureau of Labor Statistics.

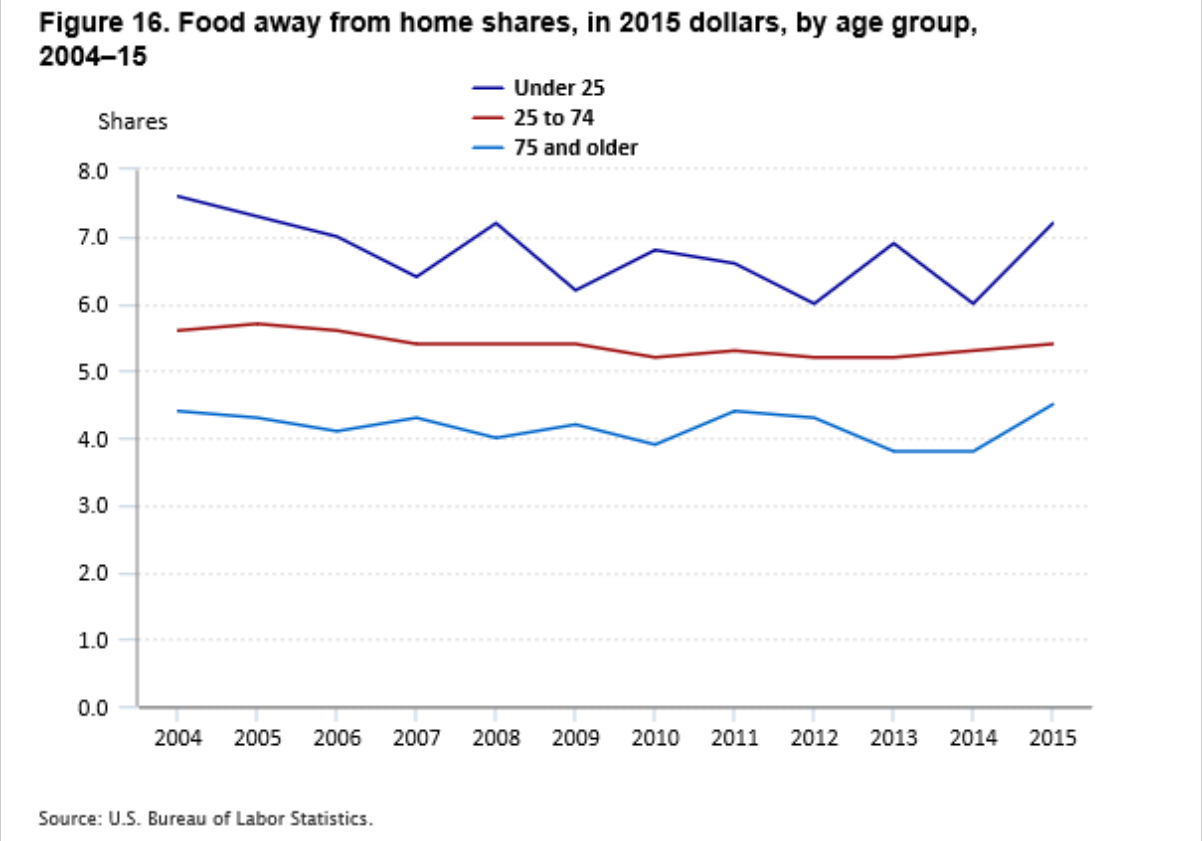
Food at home shares

Shares for food at home show the expected countercyclical pattern for each group, generally falling each year before the recession and rising during the event. (See figure 15.) While the food at home expenditures shares for the oldest and middle groups were lower in 2015 than in 2004, such expenditures were slightly higher for the youngest group in 2015 (7.8 percent) than in 2004 (7.6 percent). Starting in 2007, the share for the middle group was the smallest each year, and the share for the oldest group was the highest from 2004 to 2011. Prior to 2007, the middle group had shares nearly identical to the youngest group. From 2012 onward, shares for the oldest group nearly matched those of the youngest group. Based on the changes in shares, the oldest group experienced the largest increase in economic welfare over the study period, whereas the youngest group actually became worse off during this period, particularly from 2007 through 2009, when the recession took place.



Food away from home shares

For the middle group, expenditure shares for food away from home varied little throughout the study period, from a low of 5.2 percent in many years to a high of 5.7 percent in 2005. (See figure 16.) After the 2005 peak, expenditure shares slowly declined through 2010, where they remained stable (between 5.2 and 5.4 percent) through 2015. For the youngest group, the peak share of 7.6 percent occurred in the first year studied (2004), and then fell sharply over the next 3 years, to 6.4 percent in 2007. Thereafter, shares for this category were volatile, reaching their lowest point, 6.0 percent, in both 2012 and 2014, and rebounding to 6.9 percent in 2013 and 7.2 percent in 2015.



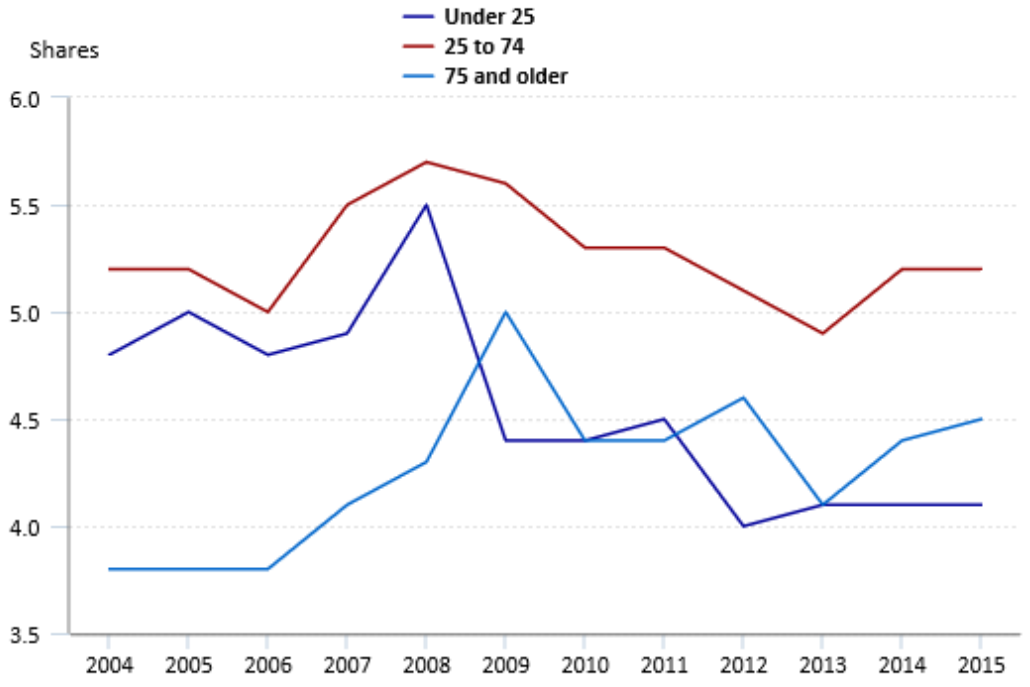
The 2004–07 period could be interpreted as a harbinger of recession. All three groups saw their shares decline beginning in that period; the decline began in 2004 for the oldest and youngest groups and in 2005 for the middle group. The volatility that occurred after 2007 is more difficult to explain. Notably, the oldest group was the only one whose expenditure shares returned to their highest predecline level, doing so in both 2011 and 2015. This indicates that a continuing recovery process was underway.

Entertainment shares

For the middle group, entertainment expenditure shares were initially stable (5.0 to 5.2 percent) from 2004 to 2006, but rose through 2008, the period when the recession began. (See figure 17.) Shares then fell each year thereafter until 2013 (4.9 percent), when they once again stabilized (5.2 percent in 2014 and 2015). The pattern for the youngest group was notably different from that of the middle and oldest groups. While shares for the youngest group were slightly lower than those for the middle group each year from 2004 to 2008, the pattern was similar to that of the middle age group. However, the fall in shares after 2008 was much sharper for the youngest group than for the middle group, reflecting a discrete drop rather than a gradual decline. Shares for the youngest group fell from 5.5 percent in 2009 to 4.4 percent in 2010, and remained there through 2011. Thereafter, they exhibited another sharp drop, falling to 4.0 percent in 2012 and remaining close to that level through 2015. The share for the oldest group, 3.8 percent from 2004 through 2006, started much lower than that of the other groups, and peaked a year later than that of the other groups, reaching 5.0 percent in 2009. From 2010 on, shares for the oldest group were nearly the same or higher than shares for the youngest group. On the basis of these figures, the youngest group was hit hardest by the recession. Their entertainment expenditures share fell the most and remained low

well into recovery. The oldest consumers fared the best by this measure, as they are the only group whose shares increased over the course of the study period.

Figure 17. Entertainment shares, in 2015 dollars, by age group, 2004–15

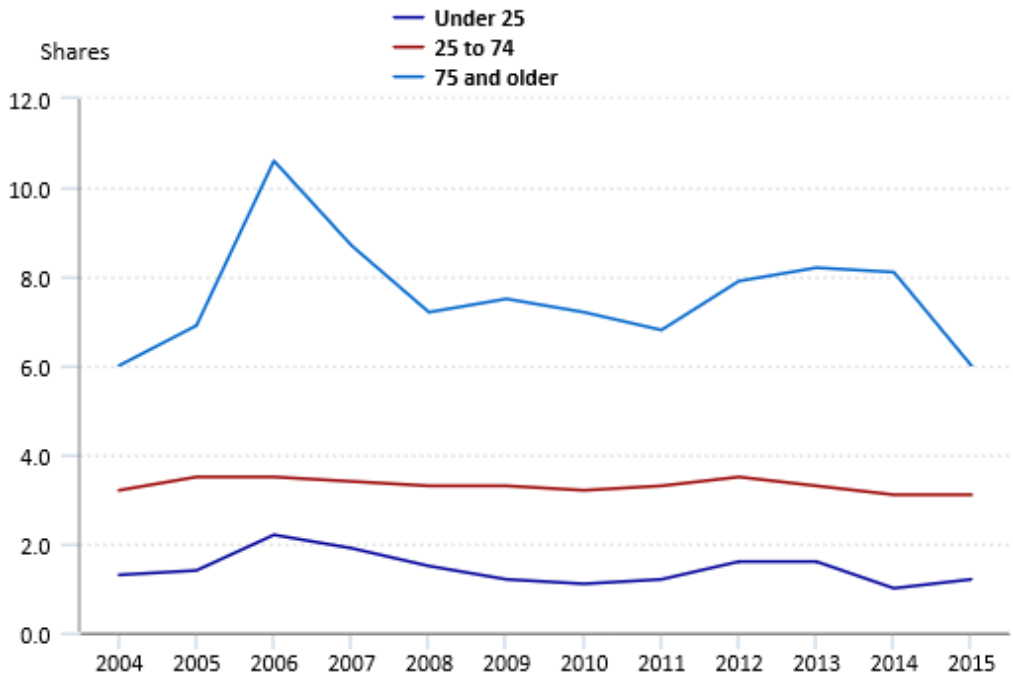


Source: U.S. Bureau of Labor Statistics.

Cash contribution shares

The cash contribution expenditure shares in figure 18 show patterns that are strikingly similar to those of cash contribution levels seen in figure 12. In each year of the study period, the oldest group had the largest shares and the youngest group had the smallest shares. As with contribution levels, the expenditure share for the oldest group rose sharply in 2006, declined through 2008, recovered slightly in 2009, declined through 2011, recovered again from 2012 to 2014, and ended with a sharp decline in 2015.

Figure 18. Cash contribution shares, in 2015 dollars, by age group, 2004–15



Source: U.S. Bureau of Labor Statistics.

However, there are some interesting differences to note as well. First, there is no discernable pattern for the middle group. While levels for this group may show a slight procyclical pattern, their shares were stable throughout, ranging from 3.1 to 3.5 percent throughout the study period. Second, the share for the middle group in each year was much closer to that of the youngest group, 1.0 percent to 2.2 percent, than it was to that of the oldest group, 6.0 percent to 10.6 percent. The middle group's expenditure levels, however, were much closer to those of the oldest group, nearly matching them in 2004 and 2005.

As with levels, the maximum share for each group was observed in 2006. Also, as with levels, shares for the youngest group fell from 2006 through 2010, rebounded slightly by 2013, fell again in 2014, then returned in 2015 to about the same levels as were present at the beginning of the study period. This pattern suggests that the youngest group was more sensitive than the middle group to changing economic conditions, allocating funds for cash contributions accordingly. While the oldest group contributed the most in both levels and shares regardless of year or economic conditions, the volatility in their patterns for both levels and shares, especially before 2007, makes the results for the group more difficult to interpret.

Conclusion

Since 2004, the U.S. economy has undergone an unusual period of change. The housing bubble, its subsequent bursting, and other factors contributed to a deep recession lasting 19 months (2007–09). The recovery has been protracted, as evidenced by BLS data on unemployment rates, real income and expenditures, ownership of physical assets (homes and vehicles), and expenditure shares.

The unemployment rates for all three age groups considered here (under 25, 25 to 74, and 75 and older) generally moved in the same direction during the years examined. However, the rate for the youngest group was the highest each year, and it also experienced the most pronounced increase during the study period. This indicates that those in the youngest group were hit the hardest by the recession, a conclusion supported by other literature examined.

In terms of real income, the figures for the oldest group were remarkably stable, while members of the middle and youngest groups experienced procyclical changes. However, comparing the latter two, the middle group experienced the slower and smaller decline (10 percent) from its peak, prerecession income in 2007 to its trough, postrecession income in 2013. While this group's income had not recovered fully by 2015, it was still higher than it was in 2004, the first year studied. For the youngest group, income rose 25 percent from 2004 to 2007, before falling 21 percent by 2009, to a value less than that observed for 2004. While the average income for this group was higher in 2015 than it was in 2004, it was still less than the 2007 peak. Between 2009 and 2013, average income for this group remained mostly flat, except for one upward blip in 2012. By these measures, young adults were also hardest hit, while the oldest were little affected by the recession.

A comparison of homeownership and vehicle ownership for the three groups over the study period yielded interesting results. While the middle group showed a steady decline in homeownership rates, the youngest group was clearly more affected by the bubble bursting than the oldest group. Furthermore, vehicle ownership rates declined for the youngest group, but not for the other two groups.

The examination of real consumer expenditures, in both levels and shares, yielded some results that were expected and others that were surprising. For example, real total expenditures for the middle group were procyclical, while their expenditure shares for food at home were countercyclical. Both patterns were expected for this group. However, real entertainment expenditures generally rose for the oldest group. In fact, the oldest group was the only group whose real entertainment expenditures were higher in 2015 than they had been in 2004, a surprising outcome. Also surprising was the similarity of shares allocated to shelter and utilities for the three groups. In all years but 2014, the largest gap across the groups never exceeded 4 percentage points.

Based on real total expenditure patterns, the youngest group fared worse than the oldest group. After having similar levels of real total expenditures at the start of the period studied, in 2008, the first full year of recession, expenditures for the youngest group fell below those of the oldest group, and then remained lower for the rest of the period studied. Similarly, within the framework of Engel's law, the youngest group experienced a decrease in economic welfare between 2004 and 2015, while the middle and oldest groups experienced an increase in welfare over the study period. Specifically, while all age groups experienced an increase in the share of total expenditures allocated to food at home during the recession and a decrease in share after, both the oldest group and the middle group had smaller shares in 2015 than in 2004, while the youngest group saw its share increase over this period, especially during the recession.

Taken together, the unemployment rates, home and vehicle ownership rates, and income and expenditure patterns for the three groups over the study period suggest that the youngest group was the most vulnerable to the recession and its aftermath. As those in this group age and gain work experience, it will be interesting to see whether these effects are lasting or not.

SUGGESTED CITATION

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NOTES

1 Savings are affected because interest rates are usually adjusted as a countercyclical measure (i.e., cut during economic downturns and raised during upturns), while values of stocks or similar investments generally decline for some period, usually at the onset of the downturn, and may not recover for some time.

2 According to the Federal Reserve Bank of New York, “Student loan debt is the only form of consumer debt that has grown since the peak of consumer debt in 2008.” The report shows that for adults under 30 years of age, the average student loan debt increased from $13,340 in the first quarter of 2005 to $21,402 in the fourth quarter of 2012, an increase of more than 60 percent. In comparison, the Consumer Price Index (CPI), which measures price change in the U.S. economy, rose from an average of 191.9 to 230.38 over the same period, an increase of 20 percent. See “Student loan debt by age group” (Federal Reserve Bank of New York, March 29, 2013), https://www.newyorkfed.org/studentloandebt/index.html.

3 For information on the CE program, see www.bls.gov/cex.

4 As defined by the CE, a consumer unit comprises either: (1) all members of a particular household who are related by blood, marriage, adoption, or other legal arrangements; (2) a person living alone or sharing a household with others or living as a roomer in a private home or lodging house or in permanent living quarters in a hotel or motel, but who is financially independent; or (3) two or more persons living together who use their income to make joint expenditure decisions. Financial independence is determined by the three major expense categories: housing, food, and other living expenses. To be considered financially independent, at least two of the three major expense categories have to be provided entirely, or in part, by the respondent. See https://www.bls.gov/cex/csxgloss.htm.

5 In the CE, a reference person is the first member mentioned by the respondent when asked to "Start 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 the relationship of the other consumer unit members is determined.” See https://www.bls.gov/cex/csxgloss.htm.

6 Data extracted and analyzed from the BLS website, using the “Multiscreen data search” tool, available from https://www.bls.gov/cex/. Demographic data “Number of people in CU” by “Age of reference person” 2004 through 2015. For the most recent of these years, i.e., 2015 only, see https://www.bls.gov/cex/2015/combined/age.pdf.

7 For details about this period and its relationship to consumer expenditures, see Geoffrey Paulin, “Housing and expenditures: before, during, and after the bubble,” *Beyond the Numbers*, June 2018, vol. 7, no. 10, https://www.bls.gov/opub/btn/volume-7/housing-and-expenditures-before-during-and-after-the-bubble.htm.

8 According to the National Bureau of Economic Research, “a peak in economic activity occurred in the U.S. economy in December 2007. The peak marks the end of the expansion that began in November 2001 and the beginning of a recession. The expansion lasted 73 months,” and thus includes 2004 through 2007. See “Business Cycle Dating Committee, National Bureau of Economic Research,” http://www.nber.org/cycles/dec2008.html.

9 The U.S. Census Bureau shows sharp rises in both median housing prices (up 12.2 percent) and average housing prices (up 14.2 percent) from 2004 to 2007, with sharp drops (6.4 and 6.7 percent) in each from 2007 to 2008. After falling again in 2009, both figures recovered slightly in 2010, the most recent year for which data are available on the table examined, but were still substantially below (10.5 and 13.0 percent) their 2007 peaks. See https://www.census.gov/.

10 See “U.S. business cycle expansions and contractions,” (National Bureau of Economic Research), http://www.nber.org/cycles.html.

11 Prior to the publication of the 2004 results, income data were published for "complete income reporters," respondents who reported values for at least one major source of income. For a definition of complete income reporters, see the CE glossary (https://www.bls.gov/cex/csxgloss.htm). For the meaning of imputed income data for the typical user, see the "Frequently asked questions" (https://www.bls.gov/cex/csxfaqs.htm, especially question 22: "I understand that, beginning with publication of the 2004 tables, the Consumer Expenditure Survey results include imputed income data. What does this mean for the typical user?")

12 For tables by age of reference person for 2012 through 2015, see https://www.bls.gov/cex/csxcombined.htm. For data from 2004 through 2011, see https://www.bls.gov/cex/csxstnd.htm. To examine trends (2004–15) in expenditures by age group, see www.bls.gov/cex. Under "CE Databases," click "MultiScreen Data Search" to find the tool from which the data are gathered. Select "EXPEND Expenditures"; the expenditure(s) of interest; "LB04 Age of reference person"; and the age groups of interest.

13 Website addresses provided subsequently, where supporting data of interest are discussed.

14 For data on these three groups, visit the BLS website (www.bls.gov), click the "Data tools" tab, then click the link for "Unemployment." Annual rates are available from the monthly, nonseasonally adjusted series for each rate. Data for people ages 16–24 years and those 75 years and older are available directly. The unemployment rate for the 25–74-year-old group is computed from data on unemployment levels and the size of the civilian labor force by subgroups (25–54, 55–64, 65–69, and 70–74). To calculate, sum the unemployment levels for these groups, and divide by the sum of the civilian labor force for these groups. For an explanation of unemployment, civilian labor force, and unemployment rate, and how the unemployment rate is calculated, see "How the government measures unemployment," *Current Population Survey technical documentation* (U.S. Bureau of Labor Statistics, June 2014), p. 10, https://www.bls.gov/cps/cps_htgm.pdf.

15 James Marschall Borbely, "U.S. labor market in 2008: economy in recession," *Monthly Labor Review*, March 2009, pp. 3–19, https://www.bls.gov/opub/mlr/2009/03/art1full.pdf.

16 Ibid., p. 4.

17 Ibid., pp. 4–5.

18 Ibid., pp. 5–6.

19 Stephen F. Hipple, "The labor market in 2009: recession drags on," *Monthly Labor Review*, March 2010, pp. 3–22, https://www.bls.gov/opub/mlr/2010/03/art1full.pdf.

20 Ibid., p. 4.

21 Ibid., p. 5.

22 Ibid.

23 The figures cited in this article are from the Consumer Price Index for All Urban Consumers (CPI-U). However, the Social Security Administration actually uses the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W) to calculate annual Social Security benefit increases. (See the Social Security Administration's cost-of-living adjustment information for 2019, https://www.ssa.gov/news/cola/, especially "History of automatic cost-of-living adjustments (COLA).") The CPI-W is based on a subset of the CPI-U population, and includes households with at least one earner who has been employed for 37 of the last 52 weeks. (See Consumer Price Index, Frequently asked questions, "Whose buying habits does the CPI reflect?" https://www.bls.gov/cpi/questions-and-answers.htm.) Nevertheless, using the CPI-U for all age groups considered in this study is a reasonable approach. For the period studied herein (2004–15), the annual changes in the CPI-U and CPI-W were similar in magnitude and direction, except that the CPI-W dipped slightly (0.4 percent) in 2015, while the CPI-U increased slightly (0.1 percent). As a net result, the overall change in these indexes from 2004 to 2015 was virtually indistinguishable: 25.5 percent increase for the CPI-U, and 25.6 percent increase for the CPI-W. (Computed from databases available at https://www.bls.gov/cpi/data.htm.)

24 According to an unpublished table available on request from the CE program, in 2015, 93 percent of consumer units in the 75-and-older group reported "Social Security and railroad retirement" as a source of income, while only 3 percent of consumer units in the under-25 group reported the same.

25 The CPI program produces an experimental index for the elderly, called the CPI-E, that calculates a price index for Americans 62 years of age or older. However, in addition to being experimental, the CPI-E does not match up with the age groups of interest for this article (i.e., under 25, 25–74, and 75 or older). Therefore, the CPI-E is not examined in this work. For more information on the CPI-E, see Kenneth J. Stewart, "The experimental consumer price index for elderly Americans (CPI-E): 1982–2007," *Monthly Labor Review*, April 2008, https://www.bls.gov/opub/mlr/2008/04/art2full.pdf.

26 CPI data for the series titled "Gasoline, all types, per gallon/3.785 liters in U.S. city average, average price, not seasonally adjusted," available by clicking the "Multiscreen data search" option associated with "Average price data" on the CPI databases page (https://www.bls.gov/cpi/data.htm).

27 See fact sheet for 2010 Social Security changes (https://www.ssa.gov/news/press/factsheets/colafacts2010.pdf).

28 For a history of the annual percent increase in benefits from 1975 to 2019, see https://www.ssa.gov/news/cola/, especially "Automatic cost-of-living adjustments received since 1975."

29 The increase in Social Security benefits is in percent terms. Therefore, the degree to which the $250 payment offset the lack of increase depends on the level of benefits a particular recipient received in 2009, and what the percentage increase in 2010 might have been had prices increased at a typical rate in 2009.

30 The CE program added special questions to the interview component of the 2009 CE to collect information on how these $250 payments were used (e.g., spending, saving, paying off debt). For more information on the questions and results, see Geoffrey Paulin, "How consumers used the 2009 economic recovery payments of $250," *Beyond the Numbers* (U.S. Bureau of Labor Statistics, March 2011), https://www.bls.gov/opub/btn/archive/how-consumers-used-the-2009-economic-recovery-payments-of-250.pdf.

31 Source of data: online tool from the CE website (www.bls.gov/cex). Under "CE databases," click "Multiscreen data search" to find the tool from which the data are gathered. Select "CUCHARS consumer characteristics"; "TITLEPD percent distribution:"; "980350 At least one vehicle owned or leased"; "LB04 Age of reference person"; "01 All Consumer Units"; and select the years 2004 through 2015.

32 Nevertheless, luxury items as defined herein are not defined in accordance with the strict economist's definition. That is, in economics, luxury goods are those for which income elasticity exceeds 1.0. Income elasticity is the percent increase (or decrease) in quantity purchased (or expenditure made, when prices are fixed) in response to a 1-percent increase (or decrease) in income. For example, if a good or service has an income elasticity of 2.5, this means that quantity purchased rises by 2.5 percent when income rises by 1 percent. However, accurate estimates of income elasticity require microdata, and are therefore beyond the scope of this article to compute. For this reason, the formal economic definition of "luxury" is not used in this article, and it is possible that at least some of the luxury categories examined have income elasticities of less than 1.0 for at least some of the age groups under study, or even for the population as a whole.

33 This is, in part, because categories like wages and salaries are expected to be closely related to the unemployment rate. That is, average wage and salary income is expected to decline when unemployment rates increase, which occurs most noticeably for young adults. A different type of analysis would be necessary to obtain meaningful results: that is, what happens to average wage and salary income for those who are actually employed in wage and salary positions? To compute this value from the tabular data, the percent reporting wage and salary income each year for each age group is necessary. However, this figure is not in the online tool on which this analysis is based. Therefore, only a brief overview of income is provided to serve as background for the expenditure analyses to follow.

34 In economics, a person believing himself to be better off because his income rose despite prices having risen by a greater percentage is said to be experiencing "money illusion." The term dates back at least to 1928, when economist Irving Fisher published his book of the eponymous title *The Money Illusion* (The Adelphi Company, 1928), pp. 3-245, https://babel.hathitrust.org/cgi/pt?id=mdp.39015020847706;view=1up;seq=267.) In it, Fisher tells the story of "one very intelligent German woman," a shopkeeper who, in 1922, sells a shirt for 150 marks and believes she has made a profit, as she bought the shirt for 100 marks in 1921. However,

Fisher explains, 150 marks in 1922 had the same purchasing power as 90 marks in 1921, so the shopkeeper actually took a loss. (See pp. 6-9, incl. Chart 1.)

35 For example, if a pound of apples costs $1.00 on day 1 and $2.00 on day 2, the price has risen 100.0 percent over this period. Therefore, a price index with a "base day" of day 1 would equal 100.0 because apples on day 1 cost 100 percent of what they cost on day 1. A price index with a base day of day two would equal 200.0 because apples cost 200 percent of what they cost on day 1. Therefore, an "apple budget" of $3.00 on day 1 is equal to an apple budget of $6.00 on day 2, because it would take $6.00 to purchase the same amount of apples on day 2 as were purchased on day 1. This is calculated by multiplying the day-1 budget ($3.00) by the ratio of the indexes (day 2 to day 1, or 200.0/100.0), to convert the day-1 nominal dollars ($3.00) to day-2 real dollars ($6.00).

Using the formula above, incomes are converted from nominal dollars for the year reported to real dollars for 2015 on the basis of the CPI for All Urban Consumers (CPI-U) for All Items. In 2004, when the CPI-U was 188.9, the average young consumer unit reported $22,840 in income. In 2015, when the CPI-U was 237.017 (as the published precision of the CPI-U increased from one to three decimal places in 2007). Therefore, it would have cost $28,658 in 2015 to purchase the same basket of goods that could be bought for $22,840 in 2004 ($22,840 × [237.017/188.9] = $28,658).

36 Nevertheless, nominal income in 2009 for those under 25 ($25,695) was lower than it had been in 2007 ($31,443), leading to the correct conclusion that those under 25 were worse off at the end of the recession than before it. But once again, nominal income understates the loss of economic welfare for this group. While the decline in nominal income was 18 percent, the decline in real income was 21 percent ($35,943 to $28,387).

37 While the Social Security, private, and government retirement category may seem unusual for the under-25 age group, it is possible for young adults to receive Social Security benefits. Surviving children of Social Security beneficiaries and people who become disabled at a young age qualify for benefits. For more information, see https://www.ssa.gov/planners/survivors/onyourown4.html.

38 Prior to 2013, student loan debt was included with "other" debt.

39 That is, a nominal expenditure equals price in the current period times quantity purchased in the current period (P1 × Q1). If nominal expenditures in the second period (P2 × Q2) are different from the first period, this could be because of changes to P, Q, or both. However, in the real expenditure, P2 is adjusted by the price index so that the expenditure is equal to P1 x Q2. Therefore, the change in expenditure is because Q2 is different than Q1.

40 Consumer units in the youngest group had between 1.9 and 2.1 members in each of the years examined, while those in the oldest group had 1.5 to 1.6 members in each of the years. When examined for the population as a whole, all consumer units had exactly 2.5 members each year. Because consumer units in the oldest and youngest groups had fewer members than those in the population as a whole each year, it is obvious without performing any further calculation that the middle group must have more than 2.5 members each year, as the smaller numbers for the other groups will deflate the mean.

41 While some may engage in online shopping, this is not a perfect substitute for purchasing in a store where the purchaser can check for size, view the actual color of the garment, etc.

42 These results must be interpreted with caution. The changes are not tested for statistical significance, as the proper test requires microdata to perform. However, standard published tables for the years 2009 through 2011 show that the mean expenditure for apparel and services is more variable for the 75-and-older group than for the population as a whole (which, of course, includes those 75 and older). That is, the coefficient of variation (CV), defined by CE as the ratio of the standard error to the mean for a particular expenditure, is 10 percent in 2009 and 13 to 14 percent in 2010 and 2011 for the 75-and-older group. For all consumer units, the CV is less than 3 percent in 2009 and about 4 percent in 2010 and 2011. Because of the larger CV, changes in the mean for this expenditure for the oldest group are less surprising than they would be if observed for the population as a whole, or for another group with a smaller CV. (Note that the tables show CVs for nominal, not real, expenditures. However, the adjustment factors used herein to convert nominal to real expenditures apply to both the means and the standard errors; therefore, the factor cancels out in the CV computation, as the same factor appears in the numerator and denominator of the CV.)

43 According to an unpublished table available on request from the CE program, in 2015, the highest proportion of cash contribution expenditures for the youngest group was for child support, which accounted for 22 percent of the total. For all consumer units (which includes the youngest and oldest groups, but is the closest approximation available for the 25- to 74-year-old group), child support accounted for 12 percent of total cash contributions. Except for alimony for the youngest group, the only age group for which no such data were reported in 2015, and child support (22 percent, as just described), the shares for the other items (alimony, child support, and support for college students) ranged from 0.7 to 5.8 percent of cash contributions, regardless of type of contribution or age group with which it is associated. For the middle and oldest group, alimony, child support, and support for college students ranged from 0.7 to 5.8 percent of cash contributions. The youngest group had no reports (so 0 percent by definition) for alimony, and for child support, a very large share (22 percent) in comparison to the other age groups.

44 See https://www.bls.gov/cex/2015/combined/age.pdf.

45 For more on Ernst Engel and his findings, see https://www.britannica.com/biography/Ernst-Engel; and D. Perthel, "Engel's law revisited," *International Statistical Review*, vol. 43, no. 2, 1975, pp. 211–218, especially p. 211.

46 As noted previously, the price adjustment is computed by multiplying nominal expenditures by the ratio of the second period index (I2) to the first (I1). Therefore, "real" total expenditures (T) are equal to T × (I2/I1). Similarly, "real" food expenditures (F) are equal to F × (I2/I1). In taking the ratio of "real" food expenditures to "real" total expenditures, the price adjustment factor (I2/I1) cancels out, yielding the same result as F/T.

47 While housing in this article includes utilities, the influence of utilities on the finding that the share for housing would increase if all other expenditures remained equal while housing prices rose faster than other prices is minimal. This is evident when examining the general price level and the price level for utilities. That is, the price indexes for all goods and services and for "fuel and utilities" are separated by less than 11 points or less in most years from 2006 to 2015. (The gap is larger in 2004 and 2005.) The maximum gap (10.6 points) occurred in 2012, when the index for all goods and services was 229.594, and the index for fuels and utilities was 218.986. The gap was a small percentage (less than 5 percent) of either index in that year. Furthermore, for all other years in the 2006 to 2015 range, the absolute value of the gap ranged from 2.1 to 7.8 points. Finally, from 2006–15, both price indexes rose about 18 percent.

48 Suppose that in period 1, housing expenditures are $H and nonhousing expenditures are $N, and both are positive. Then total expenditures equal H + N, and the housing expenditure share is H/(H + N). Now suppose that in period 2, housing expenditures double, but all other expenditures are constant. The new share is 2H/(2H + N). Note that the numerator doubled, but the denominator did not. If it had, period 2 total expenditures would be 2H + 2N, and they are not so long as N is positive. In any case, since the numerator doubled but the denominator rose by a factor of less than 2, the share in period 2 is greater than the share in period 1.

49 Although not shown, non-shelter-and-utilities expenditures (i.e., total expenditures less shelter and utilities) are stable for the oldest group from 2006 to 2013, after which they increase. For the youngest adults, these expenditures slowly declined from 2005 through 2010, rose (2011–12 and 2013–14) and fell (2012). While they did go up from 2013 onward, they still had not reached their 2005 level by 2015.

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