

The Consumer Price Index: How It Impacts the Federal Budget and Social Security Benefits

- ✓ The Consumer Price Index (CPI) tracks changes in the cost of living over time.
- ✓ The Bureau of Labor Statistics produces four different indexes that differ in how they measure inflation.
- ✓ The CPI for Urban Wage Earners and Clerical Workers is used to adjust Social Security benefits to account for changes in the cost of living. No adjustment to Social Security benefits is projected for the years 2010 and 2011.

Introduction

The Consumer Price Index (CPI) measures the average change over time in prices paid by urban consumers for a representative market basket of goods and services. It is an important economic indicator that tracks changes in the cost of living over time. The uses of the CPI directly affect the income of many Americans. The CPI is used to adjust income payments, such as Social Security benefits; to adjust income eligibility levels for government assistance programs; to adjust tax brackets and many features of the individual income tax; and to provide cost-of-living wage adjustments in the private sector.

This fact sheet describes four price indexes published by the Bureau of Labor Statistics (BLS) and discusses differences in the methodology used to derive them. These differences can have a large effect on federal revenues and outlays, including Social Security benefits. These effects are detailed below. This fact sheet also discusses projected cost-of-living adjustments to Social Security benefits through 2011.

CPI-U and CPI-W

The two most widely used indexes are the Consumer Price Index for All Urban Consumers (CPI-U) and the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W). The CPI-U, introduced in 1978, is the more extensive of the two commonly used price indexes. The CPI-U represents the spending of roughly 87 percent of the population, including the self-employed, the unemployed, professionals, the poor, and retired people.¹

The CPI-W was established in 1919 and represents the spending of 32 percent of the population.² The population represented in the CPI-W is a subset of the CPI-U population. The CPI-W is restricted to households that derive more than half of their income from clerical or wage occupations and where at least one earner has been employed for 37 weeks in the previous year.

What Is in the Market Basket of Goods and Services?

The market basket of goods and services used to calculate the CPI is developed from expenditure information provided by a sample of families and individuals in the Consumer Expenditure Survey

(CES). The CPI market basket weights are updated every two years based on this survey. The market basket includes about 200 categories of goods and services—such as breakfast cereal, televisions, and physicians’ services—that are divided into eight major groups. (See table 1.) Expenditure weights derived from the CES indicate how the average consumer spends his or her money on each good or service. For example, because people generally spend more on housing costs than on telephone charges, housing costs receive a higher weight in the calculation of the CPI. The CPI may overstate or understate the inflation experience of families and individuals whose expenditure patterns differ substantially from the average consumer.

How Are the Prices of the Goods and Services Determined?

The BLS collects price information from retail outlets each month. They record prices of a scientifically selected sample of the goods and services in the market basket, the prices paid by consumers for roughly 100,000 items. If an item is no longer available for purchase or the quality has changed—for example, if the number of pieces sold in a pack has decreased—a new item is selected or the change is recorded. Lastly, specialists review all the price data for accuracy and make adjustments to account for quality changes or other value changes.³

Calculating the CPI

The BLS uses a geometric mean estimator to average prices within about 61 percent of the weight of the CPI item categories in the market basket. This formula accounts for substitution within item categories in response to price changes, such as substituting one type of apple for another. The remaining categories are calculated using a Laspeyres formula, which measures changes in costs of a fixed market basket,

Groups	Examples of Categories
Food and Beverages	breakfast cereal, milk, coffee, chicken, wine, full-service meals, snacks
Housing	rent of primary residence, owners’ equivalent rent, fuel oil, bedroom furniture
Apparel	men’s shirts and sweaters, women’s dresses, jewelry
Transportation	new vehicles, airline fares, gasoline, motor vehicle insurance, public transportation
Medical Care	prescription drugs and medical supplies, physicians’ services, eyeglasses and eye care, hospital services
Recreation	televisions, toys, pets and pet products, sports equipment, admissions
Education and Communication	college tuition, postage, telephone services, computer software and accessories
Other Goods and Services	tobacco and smoking products, haircuts and other personal services, funeral expenses

Source: Bureau of Labor Statistics, “Consumer Price Index: Frequently Asked Questions.” Accessed at www.bls.gov/cpi/cpifaq.htm.

and therefore does not account for substitution.

The CPI-U and CPI-W are thought to overstate inflation because of several biases in the calculation of the CPI. These biases relate to consumer substitution, quality change, and the introduction of new goods.⁴ The geometric mean formula accounts for substitution of products in response to relative price changes that occur within

CPI categories, but it does not account for overall substitution of products that occurs across item categories. This biases the CPI upward.

The CPI is also limited in how well it can account for changes in the quality of goods over time or as a result of older goods being discontinued. This can result in upward or downward bias, depending on how well BLS is able to adjust for or factor out changes in quality.

Finally, new goods, like cell phones, may not be added to the market basket quickly enough to capture the drop in price after their initial introduction. If this drop is not captured, inflation may be overstated.

CPI-E

The BLS also produces the CPI-E, an experimental CPI for consumers 62 years of age and older. The population included in the CPI-E includes unattached individuals age 62 and older, members of families where the reference person or spouse is age 62 or older, and unrelated persons living in a household where the reference person is age 62 or older. The CPI-E expenditure weights reflect the spending behavior of the population age 62 and older. For example, medical expenses receive a higher weight in the CPI-E than they do in the other indexes.

In comparison to the CPI-U and CPI-W, the CPI-E has tended to grow faster most years (see table 2). The spending behavior of older Americans contributes to this increased growth; the population age 62 and older tends to spend more money on items for which prices increase more quickly, like medical expenses. The BLS warns that caution should be used when drawing conclusions from CPI-E data because of the following methodological limitations:

- Expenditure weights for goods and services used in the CPI-E are estimated from the spending behavior of a much smaller sample of the households in the CES, resulting in higher sampling error.
- The CPI-E uses the same geographical areas and retail outlets as the CPI-U, and the retail outlets frequented by the elderly may differ in location and type from the outlets frequented by the rest of the population.
- While the expenditure weights of the CPI-E differ from other CPI indexes, the items priced for the CPI-E are determined based on the purchases of the total urban population. Thus, the items priced for the CPI-E may not be representative of the population age 62 and older.

Table 2.
12-Month Percentage Change for CPI-E, CPI-U, CPI-W, and C-CPI-U, 1999-2008

Year	Dec. 1999	Dec. 2000	Dec. 2001	Dec. 2002	Dec. 2003	Dec. 2004	Dec. 2005	Dec. 2006	Dec. 2007	Dec. 2008
CPI-E	2.8	3.6	1.9	2.6	2.1	3.4	3.6	2.7	4.0	0.5
CPI-U	2.7	3.4	1.6	2.4	1.9	3.3	3.4	2.5	4.1	0.1
CPI-W	2.7	3.4	1.3	2.4	1.6	3.4	3.5	2.4	4.3	-0.5
C-CPI-U	n.a.	2.6	1.3	2.0	1.7	3.2	2.9	2.3	3.7	-0.5

Note: The percentage change in the C-CPI-U from December 2007 to December 2008 is based on the interim release. Data for the C-CPI-U are not available prior to 2000.

Source: CPI-U, CPI-W, CPI-E, and C-CPI-U data series from the Bureau of Labor Statistics.

- Prices in the CPI-E do not account for discounts available to older Americans.⁵

C-CPI-U

The chained CPI-U (C-CPI-U), introduced in 2002, is a monthly price index that accounts for substitution across item categories in response to relative price changes. The C-CPI-U uses the average of the expenditure weights for two adjacent periods to calculate price changes and thus reflects changes in the composition of the market basket (substitution across categories).⁶ The CPI-U and CPI-W, however, use only expenditure weights from the base period to compute price change over time, and therefore can only account for substitution within item categories. (See the appendix for a more detailed description of calculating the CPI.) For example, the C-CPI-U can account for consumers choosing to substitute beef for pork in response to an increase in the price of all pork while the price of beef remains constant. However, the CPI-U and CPI-W do not account for this type of substitution since pork and beef are in different item categories. While the C-CPI-U accounts for substitution across item categories, it does not account for the quality change or new goods biases that are associated with all CPI indexes.

Because the C-CPI-U can better account for substitution within and across categories, it tends to trend lower than the other indexes. The BLS initially estimated that the C-CPI-U would increase at an average annual rate of 0.1 to 0.2 percentage points less than the CPI-U. However, since 2005, the growth rate of the C-CPI-U has been between 0.2 and 0.6 percentage points less than that of the CPI-U. (See table 2.)

CPI and the Federal Budget

Application of the different price indexes can have large impacts on the federal budget because they measure inflation differently. For example, various sections of the individual income tax code, including the standard deduction, rate brackets, and certain exemptions, are indexed to the CPI-U. The CPI also is used to adjust payments under various federal programs, such as Social Security and military and federal civil service pension payments. If the CPI-U overestimates inflation, it will reduce federal tax revenues and increase expenditures.

The Congressional Budget Office (CBO) has estimated the impact of using the C-CPI-U instead of the CPI-U to index various individual income tax items. This change would result in a net revenue increase of \$800 million in 2010. The revenue gain would increase to \$8 billion in 2014, and total revenue would increase by \$22 billion over the five-year period. The CBO has estimated that if the C-CPI-U were used for all indexed federal benefit programs, including Social Security, federal expenditures would be reduced by \$20 billion between 2010 and 2014.⁷

Social Security Cost-of-Living Adjustments and the CPI

Prior to 1975, Congress adjusted Social Security benefits on an ad hoc basis. Legislation passed in 1972, and implemented in 1975, ensured that Social Security benefits are inflation-protected by automatically adjusting benefits to keep pace with inflation. The annual Social Security cost-of-living adjustment (COLA) is based on increases in the CPI-W from the third quarter of the previous year to the third quarter of the current year. For example, the average CPI-W for the third quarter (July–September) of 2007 was 203.596,

and for the same quarter in 2008, the average was 215.495. Thus, the December 2008 COLA was:

$$(215.495 - 203.596) / 203.596 \times 100 = 5.8 \text{ percent.}^8$$

In years where there is no positive inflation from one third quarter to the next, there is no COLA. Social Security benefits are not decreased in years where there is negative inflation.

Alternative Indexes for Adjusting the COLA

Other indexes, including the CPI-U and CPI-E, have been suggested as alternatives to indexing benefits to the CPI-W. The CPI-W population includes wage earners and clerical workers, but by definition it excludes families and individuals whose income comes primarily from pensions or Social Security benefits. The CPI-U and CPI-E better represent the beneficiary population.

Although the CPI-E does target the population age 62 and older, currently it is an experimental index with several methodological limitations. The experimental CPI-E tends to grow faster than any of the other indexes, but because of methodological limitations it is unclear whether this growth reflects the true inflation experience of older Americans. The population of the CPI-E also does not include nonelderly Social Security beneficiaries, and may not reflect the inflation experience of the beneficiary population.

The CPI-U currently is a better alternative to the CPI-W, because even though it does not specifically represent those age 62 and older it represents a much larger share of the beneficiary population than the CPI-W. The CPI-U also does not suffer from all of the methodological limitations of the CPI-E. The CPI-U could be implemented quickly, while using the CPI-E would

require additional resources to allow the BLS to correct the methodological limitations associated with the CPI-E.

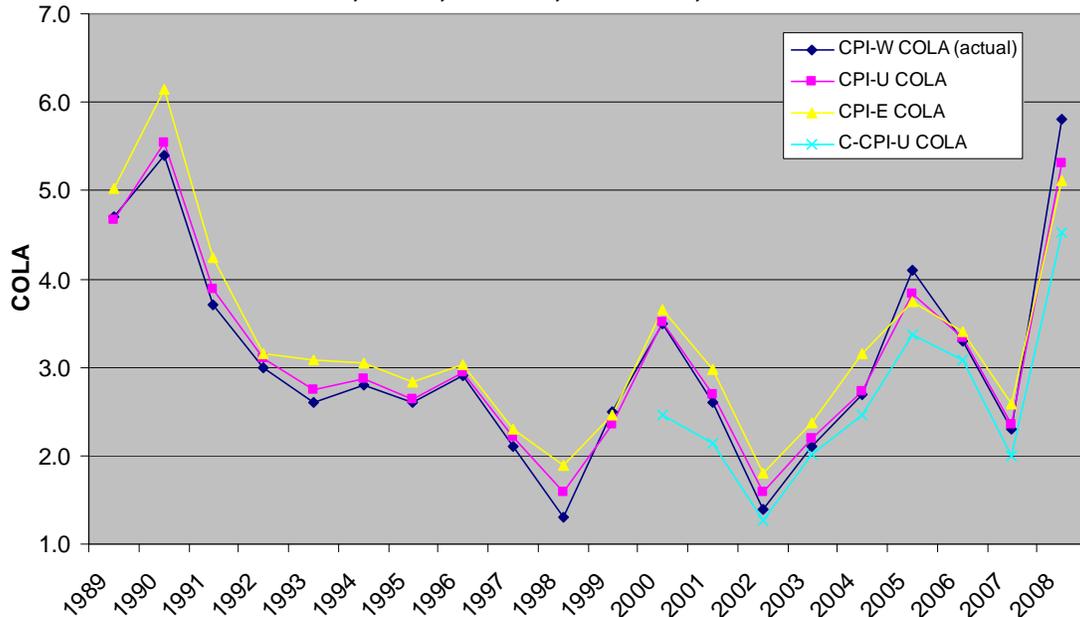
Indexing Social Security Benefits to the C-CPI-U

One of the primary options for containing Social Security's growth and promoting solvency is to curtail benefits relative to contributions. Upward bias in the CPI used to adjust benefits for inflation can have a significant effect on Social Security's outlays and its solvency. It should be noted that the use of an index that would eliminate the overstatement of inflation in the CPI-W would not reduce the living standards of beneficiaries.

One option for containing benefits is to use the C-CPI-U instead of the CPI-W (which can overstate inflation) to calculate the annual Social Security COLA. (See figure 1.) The CBO estimates that the C-CPI-U on average is likely to grow 0.3 percentage points more slowly than the CPI-W over the next 10 years. The CBO estimates that using the C-CPI-U instead of the CPI-W would reduce Social Security outlays by \$15 billion over the next 5 years and by \$108 billion over the next 10 years.⁹

Another option for containing benefits and using an index that better targets the population of Social Security beneficiaries (see discussion below) is to develop a chained CPI for the elderly, as has been done with the CPI-E. Using an index that specifically reflects the spending habits of the elderly ensures that the COLA reflects the inflation experience of the beneficiary population. However, a newly developed chained CPI for the elderly would need to be more robust than the current CPI-E; otherwise conclusions drawn from such an index would be unreliable.

Figure 1
Social Security Cost-of-Living Adjustments Using the
CPI-W, CPI-U, C-CPI-U, and CPI-E, 1989-2008



Source: CPI-U, CPI-W, CPI-E, and C-CPI-U data series from the Bureau of Labor Statistics.

Note: For 1999, the COLA based on the CPI-W was 2.4 percent, but, pursuant to Public Law 106-554, the COLA effectively was 2.5 percent.

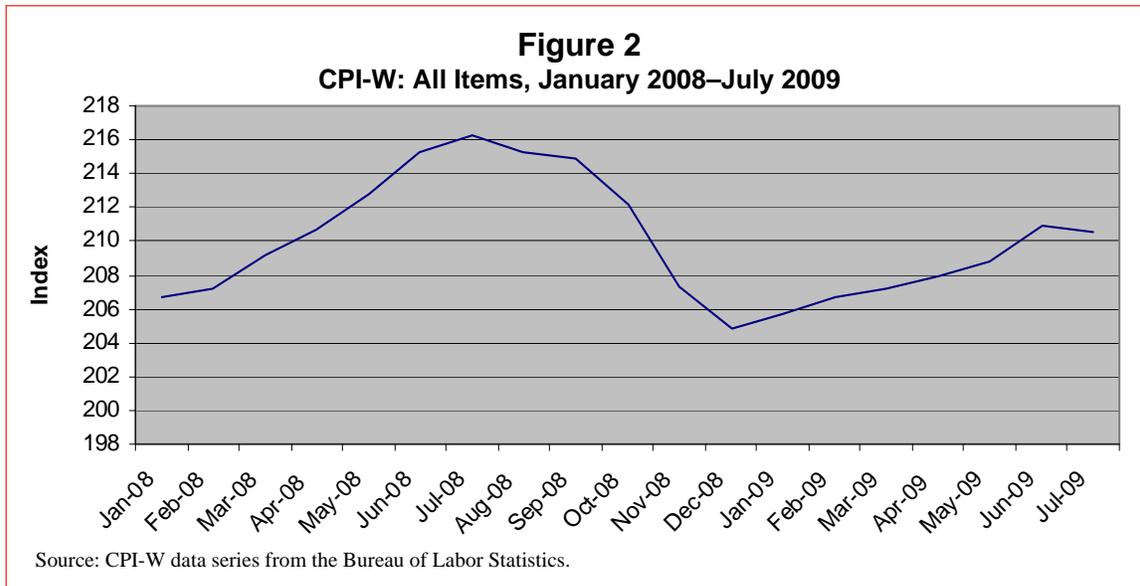
No Inflation, No COLA

The Social Security Administration and the CBO project that there will be no COLA in 2010 and 2011 because there is no projected inflation for those years relative to the third quarter of 2008.¹⁰ The 2009 COLA increase of 5.8 percent was the largest increase in 25 years. The third quarter of 2008 saw a dramatic increase in prices over the previous third quarter. However, this increase was followed by a dramatic drop in prices in the fourth quarter (October, November, and December) of 2008 because of the recession and the decline in oil prices.¹¹ (See figure 2.) Prices are expected to remain below the 2008 third-quarter level until the third quarter of 2011. As a result, the Social Security Administration projects no COLA for the next two years and a modest 1.4 percent increase in benefits for 2012.

The lack of a Social Security COLA presents a problem for certain Medicare

beneficiaries and for state budgets. Current law specifies that the Medicare Part B premiums of all beneficiaries must account for 25 percent of estimated program costs for the aged, and Medicare costs continue to rise.¹² In a typical year, almost all beneficiaries receive a COLA large enough to offset the increase in monthly Part B premiums. A hold-harmless provision caps Medicare Part B premium increases from being larger than the COLA, so that the premium increases do not cause Social Security benefits to decrease from one year to the next. Most beneficiaries, therefore, will not see an increase in their Part B premiums for the years when there is no COLA. However, roughly 25 percent of Medicare beneficiaries are not protected by the hold-harmless provision.

The Medicare beneficiaries not held harmless fall into one of the following groups:



- Low-income beneficiaries eligible for both Medicare and Medicaid. States pay a share of low-income beneficiaries' Part B premiums through the federal-state Medicaid program. The combined federal-state Medicaid subsidy would pay for the entire increase in Part B premiums for low-income beneficiaries. This group represents 17 to 18 percent of Medicare beneficiaries.
- Higher income beneficiaries with a modified adjusted gross income above \$85,000 for individuals or \$170,000 for couples who pay income-related Part B premiums.¹³ This group represents 5 percent of Medicare beneficiaries.
- New beneficiaries receiving Social Security or Medicare for the first time in 2010. In the following year, these beneficiaries would be protected by the hold-harmless rule. This group represents 2 percent of Medicare beneficiaries.

The beneficiaries not held harmless would bear the total cost of the increase in aggregate Medicare Part B premiums.

These beneficiaries would see projected monthly premium increases of \$8 in 2010, \$16 in 2011, and (if there is no COLA in 2012) \$50 in 2012.¹⁴ Once COLAs resume, most beneficiaries will again share in the cost of the Medicare premiums. Thus, higher income beneficiaries and newer beneficiaries may see their premiums fall, states may pay less for premiums for low-income beneficiaries, and most of those previously held harmless will be subject to an increase in premiums. The increase in premiums cannot, by law, exceed the COLA for those eligible to be held harmless.

Even some beneficiaries who are held harmless may feel as though they are worse off without a COLA. This is because Social Security beneficiaries who enroll in the Medicare Part D drug benefit may elect to have their premiums deducted from their Social Security payments. Part D premiums are expected to rise in 2010 and 2011, and beneficiaries are not held harmless for Part D premium increases.

Conclusions

The Consumer Price Indexes have a major impact on the federal budget and

on the income of many Americans, particularly those who are older. Thus, it is important that the BLS continues to examine how to improve the accuracy and timeliness of the indexes, and that the index or indexes that best reflect inflation of the elderly and nonelderly populations be used to determine adjustment to tax parameters and benefits. In the case of the Social Security program, the CPI-U is clearly a better choice for adjusting benefits than the CPI-W because it is more representative of the beneficiary population. In addition to studying the chained CPI-U, the Bureau of Labor Statistics should consider developing a chained CPI for older Americans to more accurately account for their expenditure patterns.

Appendix on Calculation of the CPI¹⁵

The CPI is constructed in two steps. First, the U.S. is divided into 38 geographic areas and data (including prices and quantities purchased) for 211 categories of goods and services are obtained. Then average price changes for the 8,018 item-area combinations are computed. In the second step, the average price changes for the 8,018 item-area combinations are aggregated to produce overall indexes for all items and all geographic areas. Data on prices are collected by BLS employees who call or visit thousands of retail outlets to obtain price information each month. Data on quantities purchased by a representative sample of consumers are derived from the Consumer Expenditure Survey.

All of the current price indexes (CPI-U, CPI-W, CPI-E and C-CPI-U) account for substitution within most item categories to some extent, by using a geometric mean formula in the first stage of constructing the indexes.¹⁶ The geometric mean formula holds the share of total spending for a category (price multiplied by quantity) attributed to a particular item

constant. Thus, when the price of an item rises, the quantity of the item purchased is implicitly assumed to fall.

In aggregating across categories to produce overall CPI-U, CPI-W and CPI-E indexes, BLS uses a Laspeyres formula. This formula is based on quantities purchased in one period only. Because it holds the quantities purchased fixed, the Laspeyres formula does not account for substitution. The quantity data are updated every two years.

BLS uses a Törnqvist formula to construct the aggregate C-CPI-U. The Törnqvist formula uses expenditure data in adjacent time periods to account for substitution across categories in response to relative price changes. Expenditure data in both time periods are not immediately available; thus, the C-CPI-U is not published concurrently with the other indexes. Initial and interim C-CPI-U indexes are produced using a geometric mean formula for both the basic and aggregate indexes. Then a final C-CPI-U is computed, using the Törnqvist formula for the aggregate index.

¹ Bureau of Labor Statistics, “Consumer Price Index: Frequently Asked Questions” www.bls.gov/cpi/cpifaq.htm.

² See note 1. Indexes are published from 1913 forward.

³ Bureau of Labor Statistics, “The Consumer Price Index—Why the Published Averages Don’t Always Match an Individual’s Inflation Experience” www.bls.gov/cpi/cpifact5.htm.

⁴ David S. Johnson et al., “Price Measurement in the United States: A Decade after the Boskin Report,” *Monthly Labor Review*, Vol. 129, No. 5, May 2006.

⁵ Kenneth J. Stewart, “The Experimental Consumer Price Index for Elderly Americans (CPI-E): 1982–2007,” *Monthly Labor Review*, Vol. 131, No. 4, April 2008.

⁶ Robert Cage et al., *Introducing the Chained Consumer Price Index* (Washington, DC: Bureau of Labor Statistics, May 2003).

⁷ Congressional Budget Office, *Budget Options: Volume 2, "Revenue Option 6"* (Washington, DC: August 2009).

⁸ Social Security Administration, "Latest Cost-of-Living Adjustment," www.ssa.gov/OACT/COLA/latestCOLA.html.

⁹ Congressional Budget Office, *Budget Options: Volume 2, "Spending Option 650-4"* (Washington, DC: August 2009).

¹⁰ Board of Trustees, Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds, *The 2009 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Disability Insurance Trust Funds* (Washington, DC, March 2008).

Congressional Budget Office, *The Budget and Economic Outlook: An Update*, "Appendix A: Changes in CBO's Baseline Since March 2009" (Washington, DC: August 2009).

¹¹ See note 10.

¹² Congressional Research Service, *How Would Medicare Part B Premiums Be Affected if There Is No Social Security COLA?* (Washington, DC: May 4, 2009).

¹³ Tricia Neuman and Juliette Cubanski, *The Social Security COLA and Medicare Part B Premium: Questions, Answers, and Issues* (Washington, DC: Kaiser Family Foundation, May 2009).

¹⁴ See note 12.

¹⁵ This discussion draws heavily from Bureau of Labor Statistics, "The Consumer Price Index," Chap. 17 in *BLS Handbook of Methods* (Washington, DC: June 2007) and Brian W. Cashell, *The Chained Consumer Price Index: How Is It Different?* (Washington, DC: Congressional Research Service, February 24, 2006).

¹⁶ BLS uses a Laspeyres formula for computing the base indexes in the initial stage for 13 items, including selected shelter categories, utilities, and medical services. Substitution behavior is considered to be limited for these items. See Bureau of Labor Statistics, "Planned Change in the Consumer Price Index Formula" www.bls.gov/cpi/cpigm02.htm.

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Written by Selena Caldera
AARP Public Policy Institute,
601 E Street, NW, Washington, DC 20049
www.aarp.org/ppi
202-434-3970, ppi@aarp.org
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