



How Inflation Has Affected Households at Different Income Levels Since 2019

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Summary

Inflation affects households differently depending on the mix of goods and services that they consume and the income that they have available to pay for that consumption. In this report, the Congressional Budget Office examines how inflation has affected households at different income levels and compares inflation since 2019 with the growth in household income over the same period.

For this analysis, the agency used data about households' consumption in 2019, before the coronavirus pandemic. To focus on the effects of changes in prices, CBO held quantities of consumption constant by considering an average bundle of goods and services purchased in that year by households in each quintile (or fifth) of the income distribution. CBO used two measures of income: market income and income after transfers and taxes. Market income consists of labor income, business income, capital income, and other income from non-governmental sources.¹ Income after transfers and taxes accounts for additional factors such as cash payments from the government (or transfers) and federal taxes. Both measures were adjusted to remove the cost of health care benefits that people receive from the government or their employer because CBO does not have comparable data about prices, quantities, or subsidies for such benefits.

CBO found that the effects of inflation have changed over time and varied by income group and income measure. The two income measures have followed different paths. Total adjusted income after transfers and taxes increased more than prices in 2020 and 2021, but such income is projected to fall in 2022 in real terms (that is, after the effects of inflation are removed), primarily because temporary fiscal policies related to the pandemic ended.

1. Capital income is income that is derived from capital rather than labor. Examples include stock dividends, realized capital gains, an owner's profits from a business, and the interest paid to holders of debt.

By contrast, total adjusted market income increased more than prices in every year of the 2020–2022 period, CBO estimates.

Using adjusted income after transfers and taxes to measure the effects of inflation, CBO found the following:

- From 2019 to 2022, the share of such income that households would use to pay for their 2019 consumption bundle *decreased*, on average, for households in every income quintile because, over that three-year period, such income grew faster than prices.
- In 2022, as inflation accelerated, the outcome differed from the outcomes in the previous two years. The share of such income that would purchase a 2019 consumption bundle *increased*, on average, for households in all income groups, primarily because temporary federal fiscal policies enacted in response to the pandemic ended, reducing households' income.

The outcomes differed for households in some quintiles when adjusted market income was considered:

- Since 2019, the share of such income that households would use to purchase a 2019 consumption bundle has increased for households in the lowest income quintile because prices have grown faster than their income, on average; that share decreased for all other households, whose income gains outpaced price increases.
- In 2022, the share of such income that would purchase a 2019 consumption bundle increased for households in the second, middle, and fourth quintiles because prices rose faster than their income; that share decreased for households in the lowest and highest income quintiles, whose income grew faster than prices.

The changes in those shares reflect the combined effects of inflation on the cost of consumption and changes in

the income available to pay for consumption—both of which are important contributors to households' purchasing decisions. The relative importance of those effects also differed by income. For example, lower income households have experienced a larger increase in the price of their 2019 consumption bundle over the past three years than higher income households have.

Effects of Inflation on the Share of Income That Households Would Use to Purchase 2019 Consumption Bundles

To assess changes in the prices of goods and services commonly consumed by households, CBO used 2019 consumption bundles because they represent consumption in a typical year; the pandemic changed households' consumption in 2020 and 2021, making the consumption bundles from those years less representative. To assess the effect of inflation on households at different income levels, CBO estimated the change in the share of income that would purchase the 2019 consumption bundle for each income quintile by using the framework that it regularly uses to measure the distribution of income and transfers and federal taxes.²

For this analysis, CBO adjusted its measures of income to account for the resources for consumption that were available to households by removing the cost of health care benefits that people receive from the government or their employer, because consumption of those benefits is not included in household consumption as measured by the consumer price index for all urban consumers (CPI-U).³

Changes in Shares Since 2019

CBO estimates that adjusted income after transfers and taxes grew more than the price of consumption from 2019 to 2022 for all income groups, so the portion of income that households would use to purchase the same bundle of goods and services declined (see Figure 1).⁴ For

households in the lowest income quintile, CBO estimates, the share of their adjusted income after transfers and taxes that would purchase their 2019 consumption bundle decreased by 0.6 percent, the smallest decline of any quintile; for households in the top income quintile, that share declined by 7.4 percent, the largest decline of any quintile. The difference in those percentage changes reflects the following two factors: Price increases were greater for the typical basket of goods and services purchased by households with lower income than they were for higher-income households' consumption bundles, and the income of households in the highest income quintile grew more in percentage terms than did that of other households.

The share of adjusted market income necessary for households in the lowest income quintile to purchase their 2019 consumption bundle increased from 2019 to 2022, CBO estimates.⁵ For households in all other income quintiles, that share fell—and by more, in percentage terms, than did the share of adjusted income after transfers and taxes necessary to purchase the 2019 consumption bundle.

Changes in Shares in 2022

In 2022, CBO estimates, the share of adjusted income after transfers and taxes that households would use to purchase the 2019 consumption bundle rose for all income groups because the rate of inflation increased and, for most quintiles, adjusted income declined. The increase was greater, in percentage terms, for households with less income (see Figure 2). In CBO's estimate, the increase was largest for households in the lowest income quintile for two reasons: In percentage terms, the price of their consumption bundle rose the most of all groups' bundles in 2022, and their adjusted income after transfers and taxes declined the most. The reduction in adjusted income largely reflects the ending of temporary pandemic-related fiscal policies such as direct cash payments, expanded unemployment insurance, and tax credits.

The changes in the share of adjusted market income that households would use to purchase their 2019 consumption bundle in 2022 are estimated to be smaller for all groups than the changes in the shares of adjusted income after transfers and taxes. The share of adjusted market income that would purchase the bundle declined for households in the lowest and highest income quintiles

2. For details on the measures of household income that CBO uses in its analyses of the distribution of household income, see Congressional Budget Office, *The Distribution of Household Income, 2018* (August 2021), www.cbo.gov/publication/57061. For that report, CBO used a confidential sample of income tax returns that provided more detailed information than the public-use data used for this analysis.
3. Such in-kind health care benefits include employment-based health insurance, Medicare and Medicaid benefits, and the premium tax credit.
4. CBO defines adjusted income after transfers and taxes as income after transfers and taxes minus employers' cost for employment-based health insurance, the cost of Medicare and Medicaid benefits, and the premium tax credit.

5. CBO defines adjusted market income as market income minus employers' cost for employment-based health insurance.

Figure 1.

Change Since 2019 in the Share of Income That Households Would Use to Purchase a 2019 Consumption Bundle, by Income Quintile

Percent



In 2022, the average household in each income group could purchase the same bundle of goods and services that it purchased in 2019 using a smaller portion of its adjusted income after transfers and taxes because such income increased more than prices from 2019 to 2022.

Adjusted market income also increased more than prices for all households but those in the lowest income quintile; the average household in that quintile had to spend a larger portion of its market income in 2022 than it did in 2019 to purchase the same consumption bundle.

Data source: Congressional Budget Office. See www.cbo.gov/publication/58426#data.

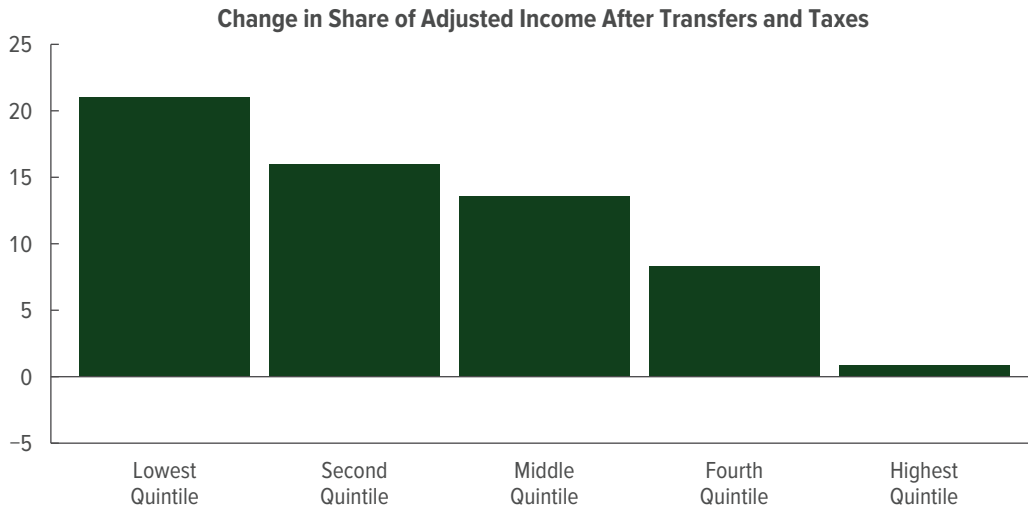
Market income consists of labor income, business income, capital income, and other nongovernmental income. Income after transfers and taxes accounts for additional factors such as cash payments from the government and income taxes. Both measures were adjusted to remove the cost of health care benefits that people receive: Adjusted market income does not include employers' cost for employment-based health insurance, and adjusted income after transfers and taxes does not include employers' cost for employment-based health insurance, the cost of Medicare or Medicaid benefits, or the premium tax credit.

Income groups were created by ranking households by income after transfers and taxes, adjusted for household size. Each quintile (fifth) contains approximately the same number of people. The lowest quintile does not include households with negative income.

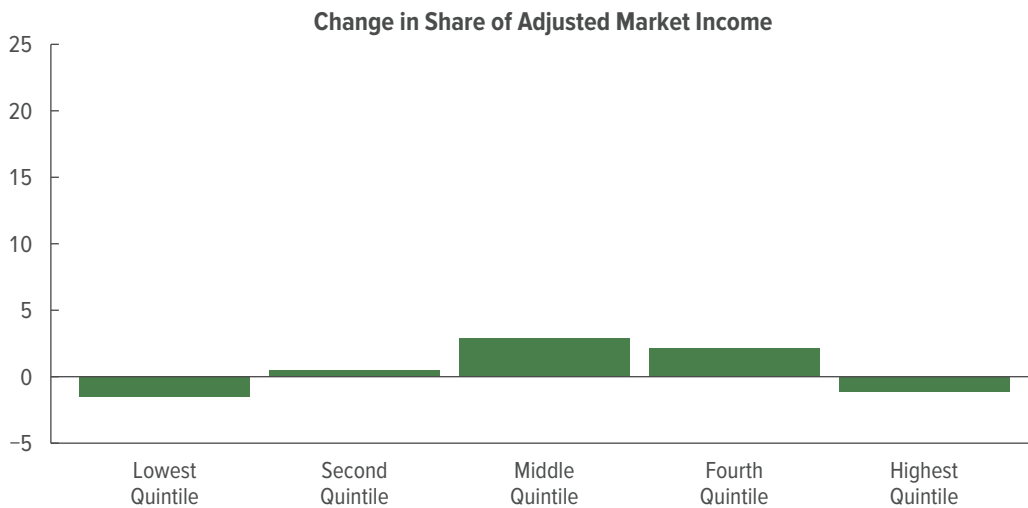
Figure 2.

Change in 2022 in the Share of Income That Households Would Use to Purchase a 2019 Consumption Bundle, by Income Quintile

Percent



For the average household in each quintile, purchasing the same bundle of goods and services required a larger share of its adjusted income after transfers and taxes in 2022 than it did in 2021. The increase was greater for households in lower income groups, primarily because temporary fiscal policies related to the coronavirus pandemic ended.



The share of adjusted market income required to purchase the same bundle changed by less than the share of adjusted income after transfers and taxes did from 2021 to 2022—increasing for the average household in some income quintiles and decreasing for the average household in others.

Data source: Congressional Budget Office. See www.cbo.gov/publication/58426#data.

Market income consists of labor income, business income, capital income, and other nongovernmental income. Income after transfers and taxes accounts for additional factors such as cash payments from the government and income taxes. Both measures were adjusted to remove the cost of health care benefits that people receive: Adjusted market income does not include employers' cost for employment-based health insurance, and adjusted income after transfers and taxes does not include employers' cost for employment-based health insurance, the cost of Medicare or Medicaid benefits, or the premium tax credit.

Income groups were created by ranking households by income after transfers and taxes, adjusted for household size. Each quintile (fifth) contains approximately the same number of people. The lowest quintile does not include households with negative income.



and increased slightly for households in the other income quintiles.

Inflation and the Growth of Real Household Income Since 2019

Consumer prices rose by less than adjusted income after transfers and taxes did from 2019 to 2021, but CBO projects that in 2022 consumer prices will increase by more than adjusted income after transfers and taxes. CBO estimates that, in real terms, aggregate adjusted income after transfers and taxes increased, on net, over the entire three-year period.

Inflation

The average annual growth in the CPI-U since 2019 is estimated to be 4.4 percent. The CPI-U increased by 1.2 percent in 2020 and by 4.7 percent in 2021. This year, inflation has been higher than CBO anticipated it would be in its May 2022 forecast. In that forecast, which was based on information available through early March 2022, CBO projected that this year the CPI-U would grow by 6.1 percent, and the core CPI-U (which excludes food and energy prices) by 5.1 percent.⁶ In light of the higher-than-expected inflation that has occurred since March, CBO adjusted those values for this analysis by using the latest projections of overall and core inflation from the Survey of Professional Forecasters.⁷ As a result, for this analysis the CPI-U is estimated to increase by 7.5 percent in 2022 and core inflation by 5.9 percent.

In CBO's estimate, the prices of the noncore components of the CPI-U (namely, food and energy) have risen more than those of the core components (such as shelter and other non-energy services) since 2019 (see Figure 3). From 2020 to 2022, the average annual growth in the noncore CPI-U is estimated to be 7.2 percent, and the average annual growth in the core CPI-U, 3.7 percent.

Growth of Real Household Income

Over the 2020–2022 period, the average annual growth of real adjusted income after transfers and taxes is estimated to be 2.3 percent, and that of real adjusted market income, 3.0 percent (see Figure 4).

Both measures of income rose in real terms in 2020 and 2021. Real adjusted income after transfers and taxes grew by 8.0 percent in 2020 and by 3.8 percent in 2021, and real adjusted market income increased by 0.9 percent in 2020 and by 6.5 percent in 2021, CBO estimates.

Whereas CBO estimates that real adjusted market income will continue to grow in 2022—by a total of 1.7 percent—real adjusted income after transfers and taxes is projected to *fall* this year—by 4.4 percent.⁸ That different path of growth reflects pandemic relief measures (such as economic impact payments and temporarily more generous unemployment insurance) that were introduced in 2020 and that were no longer in effect in 2022.

Effects of Inflation on the Price of 2019 Consumption Bundles

Over the past three years, inflation has increased the price of households' 2019 consumption bundles. For example, the price of the consumption bundle of households in the middle income quintile is estimated to have increased at an average annual rate of 4.5 percent since 2019, thereby reducing the purchasing power of those households by an average of roughly \$2,900 annually. (Over the same period, CBO estimates, those households' adjusted income after transfers and taxes rose by an average of \$3,100 annually, and their adjusted market income, by an average of \$3,300.)⁹

6. See Congressional Budget Office, *The Budget and Economic Outlook: 2022 to 2032* (May 2022), www.cbo.gov/publication/57950.

7. See Federal Reserve Bank of Philadelphia, *Survey of Professional Forecasters: Third Quarter 2022* (August 12, 2022), <https://tinyurl.com/3e69pdsr>.

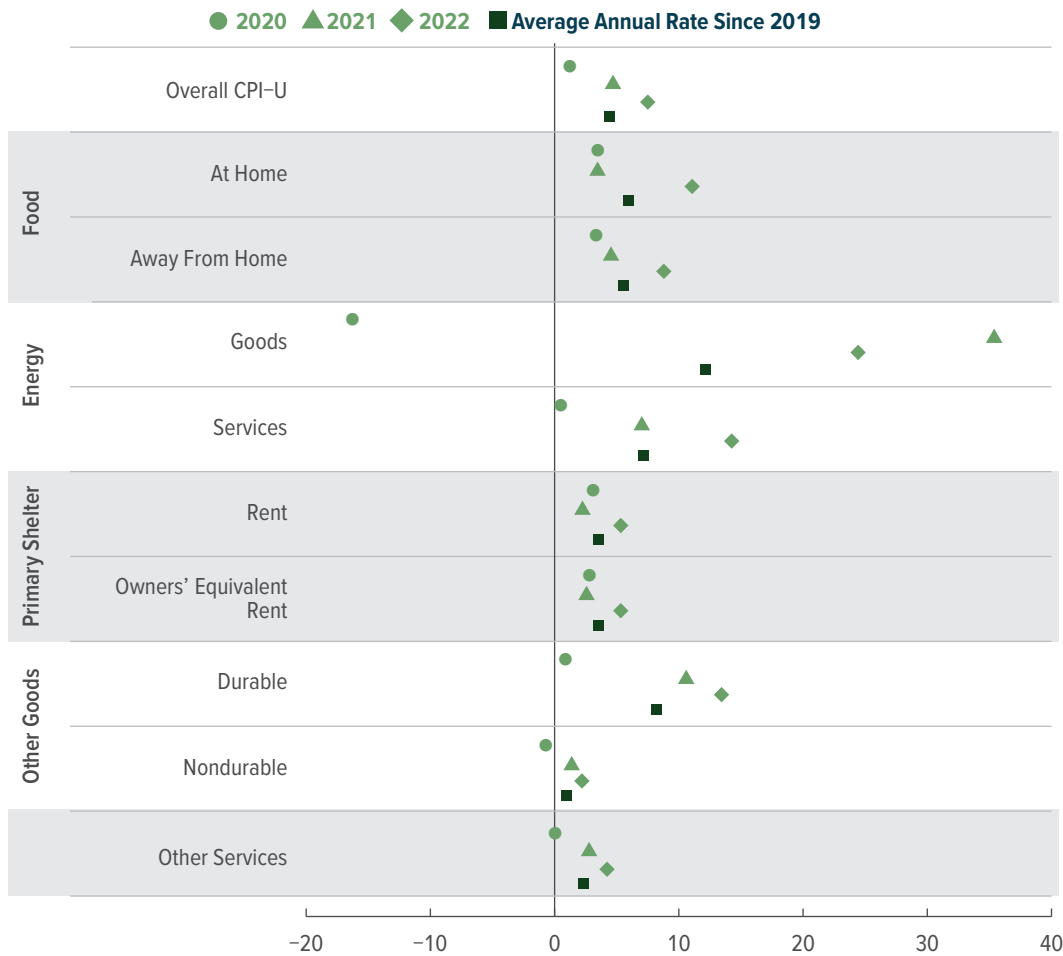
8. Income growth followed similar paths in the estimates that CBO produced using historical data from the national income and product accounts that extend through the first half of 2022. In those estimates, real personal income excluding current transfers fell by 0.5 percent in 2020 before rising by 3.2 percent in 2021 and by 1.4 percent in 2022; real disposable personal income—that is, income after accounting for transfers and taxes and for inflation—grew by 6.2 percent in 2020 and by 2.3 percent in 2021 before falling by 5.5 percent in 2022. See Bureau of Economic Analysis, *National Income and Product Accounts (NIPA)*, Table 2.1, https://apps.bea.gov/iTable/index_nipa.cfm. The Bureau of Economic Analysis adjusts for inflation by using the price index for personal consumption expenditures.

9. In 2022, CBO estimates, the price of the 2019 consumption bundle of households in the middle income quintile will increase by 7.7 percent, amounting to a reduction in purchasing power of about \$5,500. (Those households' adjusted market income is estimated to increase by an average of about \$3,000 that year, and their adjusted income after transfers and taxes is estimated to decline by an average of about \$4,000. The difference in those changes primarily reflects the ending of temporary federal fiscal policies enacted in response to the pandemic.)

Figure 3.

Annual Growth in the Consumer Price Index Since 2019, by Type of Good or Service

Percent



Inflation as measured by the CPI-U was greater in 2021 and 2022 than it was in 2020. Prices of energy goods and services and of durable goods rose at the fastest rates over the 2020–2022 period.

Data source: Congressional Budget Office, using data from the Bureau of Labor Statistics and Federal Reserve Bank of Philadelphia, *Survey of Professional Forecasters: Third Quarter 2022* (August 12, 2022), <https://tinyurl.com/3e69pdsr>. See www.cbo.gov/publication/58426#data.

Annual growth rates in the CPI-U for 2020 and 2021 were calculated using historical average annual CPI-U indexes published by the Bureau of Labor Statistics (BLS); when those series were unavailable, series of several components of the CPI-U and the weights assigned by BLS to those components were used. Annual growth rates for 2022 were calculated using information from CBO’s May 2022 economic forecast and the forecasts of year-to-year CPI-U and core CPI-U inflation published by the Survey of Professional Forecasters in August 2022.

Energy services include electricity and utility gas service. Primary shelter includes the rent and the owners’ equivalent rent (OER) of primary residences. Other goods include durable and nondurable goods other than food and energy goods; alcoholic beverages, apparel products, and personal care products are examples of such nondurable goods. Other services include services other than primary shelter and energy services, such as lodging away from home, the OER of secondary residences, transportation services, and motor vehicle maintenance and repair services.

CPI-U = consumer price index for all urban consumers.

The effect of inflation on the price of the 2019 consumption bundle varied by income group: The price of lower-income households’ bundle increased by more than that of higher-income households’ bundle from 2019 to 2022 (see Figure 5). The average annual growth in the price of the lowest income quintile’s 2019 consumption bundle over the 2020–2022 period is estimated to be

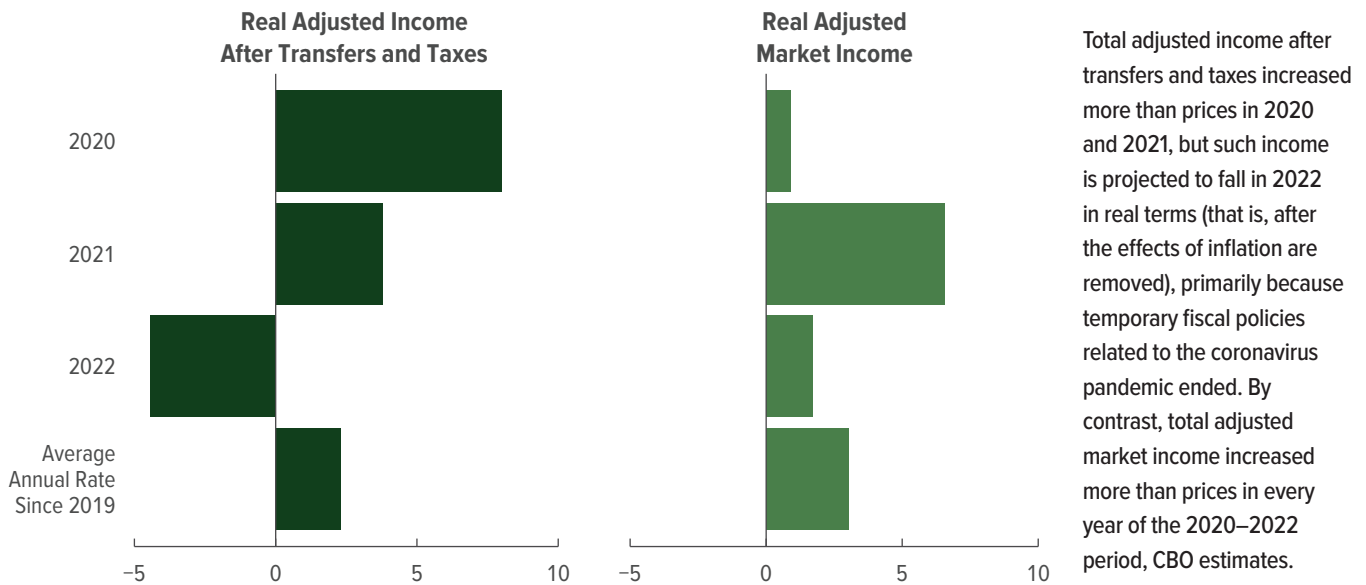
4.6 percent, and the average annual increase in the price of the highest income quintile’s bundle, 4.3 percent; the average annual growth of the CPI-U is estimated to be 4.4 percent. That discrepancy reflects differences in the composition of the income quintiles’ consumption bundles. Energy and food—categories whose prices rose by relatively large amounts over the period—account for



Figure 4.

Annual Growth in Real Household Income Since 2019

Percent



Data source: Congressional Budget Office. See www.cbo.gov/publication/58426#data.

Market income consists of labor income, business income, capital income, and other nongovernmental income. Income after transfers and taxes accounts for additional factors such as cash payments from the government and income taxes. Both measures were adjusted to remove the cost of health care benefits that people receive: Adjusted market income does not include employers’ cost for employment-based health insurance, and adjusted income after transfers and taxes does not include employers’ cost for employment-based health insurance, the cost of Medicare or Medicaid benefits, or the premium tax credit.

Real values for income were calculated by using the consumer price index for all urban consumers to adjust nominal values.

larger shares of lower-income households’ total consumption than they do of higher-income households’ consumption; by contrast, “other services” (namely, those other than rent and owners’ equivalent rent (OER) of primary residence and energy services)—whose prices rose by comparatively small amounts—account for smaller shares of lower-income households’ consumption than they do of higher-income households’ consumption (see Table 1).

Because this analysis is based on the average consumption bundle of households in each income quintile, the estimates presented here reflect the effects of inflation on an average household in each quintile. If the composition of a household’s consumption differed from that of an average household in its income quintile, the effects of inflation on that household would differ from the estimate. For example, a household in the bottom quintile that consumed more energy goods than the average household (that is, a household for whom energy goods accounted for a larger share of its total consumption)

would face a larger increase in the price of its consumption bundle than the average household.¹⁰

How CBO Conducted This Analysis

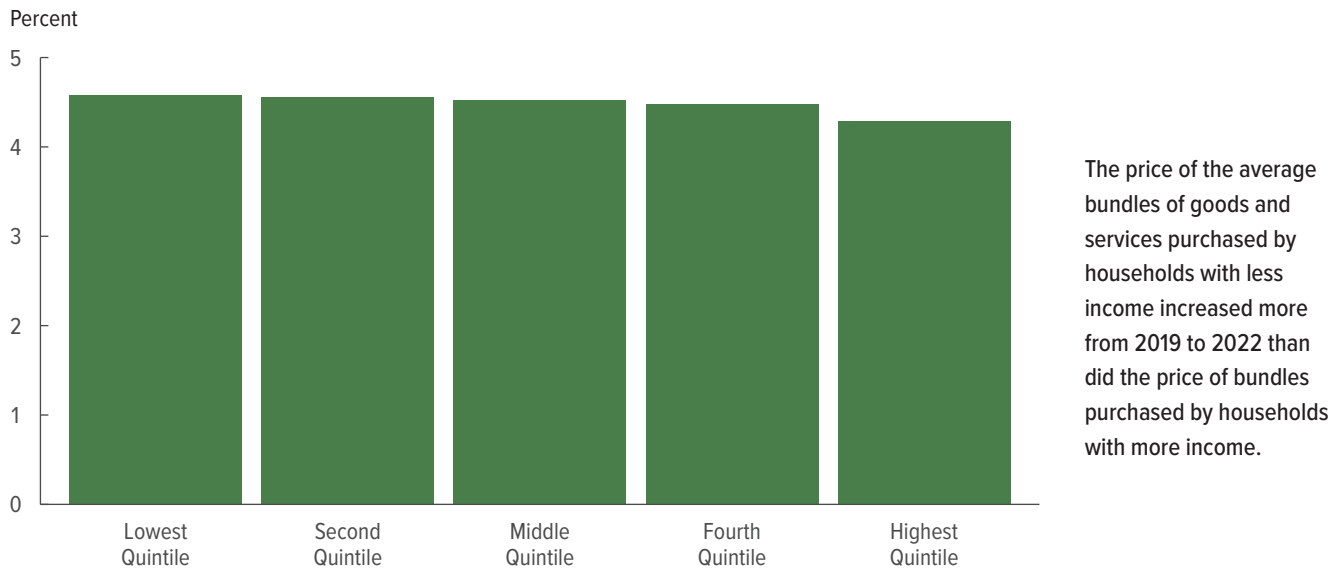
To estimate the effect that higher consumer prices would have on households at different income levels, CBO used a sample of income tax returns filed in 2014. That sample contained the most recent public-use data with detailed information about tax returns that was available when the agency began this analysis. CBO adjusted that sample to account for changes in the population and in the economy since 2014 by using its microsimulation tax model, which yielded samples of tax returns for each year from 2019 to 2022. Those samples reflect income and demographic

10. Such differences in consumption bundles could, for example, relate to where households reside. CBO has previously estimated differential price and wage growth for households living in rural and urban areas. See Congressional Budget Office, letter to the Honorable Jason Smith regarding price and wage growth in rural areas (January 31, 2022), www.cbo.gov/publication/57794.



Figure 5.

Average Annual Growth in the Price of a 2019 Consumption Bundle Since 2019, by Income Quintile



Data source: Congressional Budget Office. See www.cbo.gov/publication/58426#data.

Income groups were created by ranking households by income after transfers and taxes, adjusted for household size. Each quintile (fifth) contains approximately the same number of people. The lowest quintile does not include households with negative income.

characteristics of the population in each year that are consistent with CBO's May 2022 baseline projections.¹¹

Because household consumption is not included in those samples, CBO imputed it by using the most recent information available from the Consumer Expenditure Survey, which the Bureau of Labor Statistics uses to calculate the weights it assigns to the different components of consumption included in the CPI-U.¹² Thus, the consumption bundle that CBO used in this analysis included all the components of consumption that are measured in the Consumer Expenditure Survey and the CPI-U. That

bundle does not include households' consumption of in-kind health care benefits.¹³

When comparing households in different income quintiles, CBO relied on measures of income that it has regularly used in previous reports.¹⁴ For this analysis, CBO ranked households on the basis of quintiles of income after transfers and taxes, adjusted by household size. In CBO's assessment, that measure of income most closely captures the resources available for household consumption.

CBO calculated year-to-year changes in consumer prices from 2019 to 2022 by using data about inflation in 2020 and 2021 as measured by the CPI-U and core CPI-U as

11. For details about CBO's projections of household income, see Congressional Budget Office, *Projected Changes in the Distribution of Household Income, 2016 to 2021* (December 2019), www.cbo.gov/publication/55941. That report was based on a sample of income tax returns that contains more detailed information than the public-use data used for this analysis.

12. For details about CBO's imputation method, see Dorian Carloni and Terry Dinan, *Distributional Effects of Reducing Carbon Dioxide Emissions With a Carbon Tax*, Working Paper 2021-11 (Congressional Budget Office, September 2021), www.cbo.gov/publication/57399.

13. In-kind health care components of consumption are included in the price index for personal consumption expenditures. See Bureau of Labor Statistics, "Comparing Expenditures From the Consumer Expenditure Survey With the Personal Consumer Expenditures: Results of the CE/PCE Concordance" (accessed August 24, 2022), www.bls.gov/cex/cepceconcordance.htm.

14. For details on the measures of household income that CBO uses in its reports on the distribution of household income, see Congressional Budget Office, *The Distribution of Household Income, 2018* (August 2021), www.cbo.gov/publication/57061.

Table 1.

Composition of Households’ 2019 Consumption Bundles, by Income Quintile

Percent

| | Income Quintile | | | | |
|-------------------------|-----------------|--------------|--------------|--------------|--------------|
| | Lowest | Second | Middle | Fourth | Highest |
| Food | | | | | |
| At home | 12.6 | 11.2 | 9.9 | 8.9 | 7.3 |
| Away from home | 5.1 | 5.5 | 5.7 | 6.1 | 6.6 |
| Subtotal | 17.6 | 16.7 | 15.6 | 15.1 | 13.8 |
| Energy | | | | | |
| Goods | 4.0 | 4.0 | 3.8 | 3.6 | 2.6 |
| Services | 4.2 | 3.8 | 3.3 | 3.0 | 2.4 |
| Subtotal | 8.2 | 7.8 | 7.2 | 6.6 | 4.9 |
| Primary Shelter | | | | | |
| Rent | 15.6 | 12.2 | 8.6 | 6.0 | 3.8 |
| Owners’ equivalent rent | 15.9 | 18.8 | 21.6 | 23.4 | 25.3 |
| Subtotal | 31.5 | 30.9 | 30.1 | 29.4 | 29.1 |
| Other Goods | | | | | |
| Durable | 11.4 | 12.0 | 12.7 | 13.1 | 12.8 |
| Nondurable | 8.8 | 8.3 | 7.9 | 7.6 | 7.7 |
| Subtotal | 20.2 | 20.3 | 20.6 | 20.7 | 20.4 |
| Other Services | 22.5 | 24.4 | 26.5 | 28.3 | 31.7 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

Data source: Congressional Budget Office. See www.cbo.gov/publication/58426#data.

Income groups were created by ranking households by income after transfers and taxes, adjusted for household size. Each quintile (fifth) contains approximately the same number of people. The lowest quintile does not include households with negative income.

Energy services include electricity and utility gas service. Primary shelter includes the rent and the owners’ equivalent rent (OER) of primary residence. Other goods include durable and nondurable goods other than food and energy goods; alcoholic beverages, apparel products, and personal care products are examples of such nondurable goods. Other services include services other than primary shelter and energy services, such as lodging away from home, the OER of secondary residences, transportation services, and motor vehicle maintenance and repair services.

well as the Survey of Professional Forecasters’ latest forecasts for those measures for 2022. CBO projected price changes for components of consumption in 2022 by using estimates from its May 2022 forecast and rescaling the growth rates of these nine components of consumption to match the overall results of that survey: food at home, food away from home, energy goods, energy services, rent of primary residence, owners’ equivalent rent of primary residence, durable goods, nondurable goods other than food and energy goods, and services other than primary shelter (that is, rent and OER of primary residence) and energy services (which include electricity and utility gas service).

Composition of Household Consumption in 2019, by Income Quintile

In 2019, CBO estimates, food, energy goods, energy services, and primary shelter accounted for larger shares of lower-income households’ consumption than they did of higher-income households’ consumption (see Table 1). By contrast, services other than rent and OER of primary residence and energy services accounted for larger shares of higher-income households’ consumption than they did of lower-income households’ consumption. “Other goods” (that is, goods other than food and energy goods) accounted for roughly similar shares of consumption among all income quintiles, although durable goods constituted a larger share of higher-income households’ consumption and nondurable goods a larger share of lower-income households’ consumption.



Effects Not Accounted for in the Estimates

The estimates in this report do not account for the effects of inflation on the price of consumption that is not measured by the CPI-U, such as in-kind health care benefits. Furthermore, because the analysis focuses on the price changes of households' 2019 consumption bundles, the estimates do not account for changes in the composition of consumption or in the overall level of consumption that have occurred since 2019.

In addition, this analysis does not account for inflation's effects on wealth, including the differential effect that inflation has on lenders and borrowers by changing

the values of their assets and liabilities. For example, when inflation exceeds the rates that were anticipated when debt was issued at a fixed interest rate, some of the value of that debt (and its purchasing power) is transferred from lenders to borrowers. As a result, when their income rises with inflation, borrowers can spend a smaller share of their income repaying money that they borrowed in the past.

Finally, although some state-level means-tested transfers are included in this analysis, most state and local fiscal policies are not.

The Congressional Budget Office prepared this report in response to interest expressed by Members of Congress. In keeping with CBO's mandate to provide objective, impartial analysis, the report makes no recommendations.

Dorian Carloni prepared the report with guidance from Edward Harris, John McClelland, and Joseph Rosenberg. Bilal Habib and Omar Morales contributed to the analysis. Tess Prendergast fact-checked the report.

Robert Arnold, Chandler Lester, and Christine Ostrowski offered comments. Jeffrey Kling and Robert Sunshine reviewed the report. Bo Peery edited it, and R. L. Rebach created the graphics and prepared the text for publication. The report is available at www.cbo.gov/publication/58426.

CBO seeks feedback to make its work as useful as possible. Please send comments to communications@cbo.gov.



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