



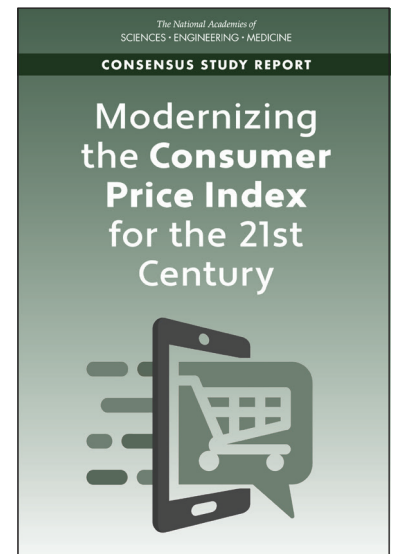
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Modernizing the Consumer Price Index for the 21st Century

The Consumer Price Index (CPI), produced by the Bureau of Labor Statistics (BLS), measures the average change in prices paid by households for goods and services and is the most widely used measure of inflation in the United States. The CPI is used to determine annual cost-of-living allowances for Social Security retirees and other recipients of federal payments, in the calculation of changes in the nation's economic output and living standards, to adjust the federal income tax system for inflation, and to provide the yardstick for U.S. Department of the Treasury inflation-indexed bonds. The CPI also influences the nation's monetary policy.

In recent decades, the marketplace for consumer goods and services and the data available for characterizing it have changed dramatically. Price measurement has also become more complex, placing greater demands on the data needed to attain accuracy, coverage, and timeliness. In the process, the survey infrastructure supporting the CPI has been pushed beyond its capacity to meet the statistical needs of stakeholders. The CPI has traditionally relied on field-generated data, such as prices observed in person at grocery stores or retailers. However, as these data have become more challenging and expensive to collect in a way that reflects an increasingly dynamic marketplace, statistical agencies and researchers have begun turning to opportunities created by the vast sources of digital consumer price data that have emerged. The enormous economic disruption of the COVID-19 pandemic, including major shifts in consumers' shopping patterns, presented a perfect case study for the need to rapidly employ new data sources for the CPI.

Recognizing these challenges, BLS asked the National Academies of Sciences, Engineering, and Medicine to assemble a committee of experts whose expertise included economics, statistics, and social and economic policy to provide guidance on how the CPI might be improved through various approaches that blend multiple data sources, among others. The committee's report—*Modernizing the Consumer Price Index for the 21st Century*—presents recommendations to BLS on ways to expand the use of nontraditional data sources in the CPI as the agency embarks on a strategy of accelerating and enhancing the use of scanner, web-scraped, and digital data directly from retailers in compiling the CPI.



PRICE AND QUANTITY DATA

Given that it has performed reliably for decades, the survey-based methodology underlying the CPI has long been viewed as the gold standard for estimating price changes. However, as with other economic statistics rooted in the application of a 20th-century, survey-centric system, the resulting estimates have been affected by falling survey response rates and increasing costs. Accordingly, the data collection model of statistical agencies, both in the United States and internationally, has begun to shift. To fully capitalize on the expanding opportunities to incorporate data that improve the quality and timeliness of the CPI, a paradigm shift at BLS is required that lessens the reliance on older survey-based approaches.

With the availability of near-real-time information, coupled with an ever-increasing dynamic economy, the collection and dissemination of timely data have become basic expectations of researchers, policy makers, and the public who use products of the statistical agencies. Within this context, the future of price measurement will likely rely on multiple nontraditional data sources including point-of-sale data, household-generated home scanner data, and data scraped from the web. These data are generated for a wide range of consumer goods and services and, in some cases, provide the price, source outlet, quantity, and characteristics of an item. The need to shift toward alternative data sources has been particularly highlighted during the COVID-19 pandemic lockdowns when collecting information about consumer purchases was significantly limited.

SHIFTING CONSUMER BEHAVIOR

A key motivation driving data modernization toward these nontraditional sources is the potential to improve the timeliness of price statistics and provide greater detail about what consumers are buying and from where. While the composition of what consumers buy is always evolving, the shifts were especially dramatic during the pandemic. Spending on travel, food away from home, and clothing worn outside the home declined dramatically, while demand for computer and communications equipment needed for remote work and home deliveries surged. Improving the ability to track such shifts has become an essential goal of price measurement programs.

This report recommends specific strategies to more accurately estimate the composition of households' expenditures—also known as market basket shares or weights—by updating this information more frequently and using innovative survey techniques, such as implementing a household-based scanner recording program that would capture prices, quantities, and item characteristics of purchases made by respondents.

Investments should also be made by BLS to facilitate collecting comprehensive information on consumers' spending using electronic means of payments such as credit/debit cards or electronic payment processors such as Paypal and Stripe. Initially, these new data could be applied to the chained CPI-U, which takes into account consumer shopping responses to price changes, or to a new experimental index. After an adequate period of study, estimates of consumer expenditure shares on various goods and services could be derived by blending data from surveys, timely private sources, and the national accounts that also calculate consumption expenditure shares.

CONSUMER PRICES BY INCOME GROUP

The report also discusses the policy and research value of developing price indexes to track different inflation rates experienced by population subgroups. Research and policy making stand to benefit a great deal if the underlying trends in price inflation faced by different population groups can be more accurately measured and, in turn, better understood. Most notably, because of the urgency of issues related to income and wealth inequality, the report also recommends that BLS identify data sources that would enhance its capacity to publish price indexes for population subgroups defined by place on the income distribution. To progress in this direction, the agency will need to identify data sources that would allow it to estimate price indexes that can be linked to a household's characteristics. This measurement goal suggests the need for an approach that blends multiple data sources—survey data that cover the full consumption basket, including item categories for which electronic transaction data are still incomplete, and commercial data sources that allow deep analyses of prices paid and product details—in a way that accounts for the full range of consumer expenditures.

DIFFICULT-TO-MEASURE PRICE CATEGORIES

Beyond the broad discussion of price and quantity data opportunities, the report provides targeted guidance for integrating new data sources to improve the CPI's estimation of changes in the prices of housing and medical

care services, two consumer expenditure categories that have traditionally been difficult to measure. Housing services are particularly important because they represent the largest component of most consumers' cost of living; owner-occupied housing accounts for about three-fourths of the shelter category. The report suggests that BLS continue to estimate the cost of housing for owners by establishing rental equivalents, but that it should also look for new data sources—such as property tax data—to capture more accurate and detailed information about the sometimes rapid changes in the price of housing services.

Medical care is another large, growing, and rapidly changing consumer expenditure category. Within medical care, health insurance is the largest expenditure made by consumers. The report recommends that BLS continue using its current method of estimating changes in the cost of health insurance, in which it blends the price of medical care services with retained earnings data from insurance providers, but that it should also consider improvements to this method. Part of the recommended strategy involves expanding the use of price data from large companies that self-insure to provide health insurance to employees, and continued evaluation of how to incorporate insurance claims data and hospital data to track changes in medical care services and drug prices paid by consumers.

ORGANIZATIONAL CONSIDERATIONS

In addition to the methodological challenges—such as coverage, representativeness, and scope of variables present—practical considerations complicate development of a mixed data infrastructure that includes public, private, survey, and nonsurvey data. Legal constraints, privacy concerns, and high data acquisition costs—acutely present for the U.S. case—have slowed the incorporation of commercial and administrative data sources into social and economic statistics. To navigate these complexities, and to establish organizational authority and accountability within BLS, the report recommends that the agency build data modernization into its organizational structure.

BLS should, for example, designate a single person at the deputy commissioner level to lead data transformation efforts. This position would focus on data acquisition and serve as a point person for coordination among other U.S. statistical agencies that are engaged in data modernization initiatives. In addition, the report suggests that BLS extend collaborations with statistical agencies outside the United States to better understand their data transformation efforts and experiences and enhance interactions with outside experts to leverage the latest advances in price measurement research.

Because confidence in and understanding by data users of official statistics are critical, successful modernization of the CPI will require that the agency provide clear and consistent communication to stakeholders such as the user and research communities about how the CPI is formulated—such as posting advance notice of changes or updates on project timelines in an easy-to-find location on its website.

Panel on Improving Cost-of-Living Indexes and Consumer Inflation Statistics in the Digital Age

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For More Information . . . This Consensus Study Report Highlights was prepared by the Committee on National Statistics based on the Consensus Study Report *Modernizing the Consumer Price Index for the 21st Century* (2022). The study was sponsored by the U.S. Department of Labor. Any opinions, findings, conclusions, or recommendations expressed in this publication do not necessarily reflect the views of any organization or agency that provided support for the project. Copies of the Consensus Study Report are available from the National Academies Press, (800) 624-6242 or <https://nap.nationalacademies.org/26485>.

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