

# Data Quality

Federal statistical agencies exist to provide high-quality information to policymakers and the public. Although quality information is traditionally defined as accurate information with little error, it means much more.

According to the Federal Committee on Statistical Methodology (FCSM), data quality has 11 dimensions grouped within 3 domains—see Box G-1. Foundational documents for statistical agencies—the Foundations for Evidence-Based Policymaking Act of 2018 (Evidence Act) and *Principles and Practices for a Federal Statistical Agency* (see Supporting Materials: D)—single out 5 dimensions closely related to those from the FCSM framework:

- ✓ *Relevance.* Are the data useful for current policy, planning, and research purposes? As an example, information on harness makers but not car part manufacturers would not meet this test.
- ✓ *Timeliness.* Are the data produced soon after they are collected and on a frequency (monthly, annual, etc.) that users require?
- ✓ *Accuracy, reliability, and impartiality.* Do the data measure what they purport to measure? Are data errors (e.g., variability due to sampling or bias due to differences in nonresponse among groups and areas) well contained, and are the methods chosen to produce the data impartial?
- ✓ *Credibility.* Are the data adequately explained and documented so users are assured that they were collected using sound methods and that the choice of methods was not politically driven?
- ✓ *Confidentiality.* Are the data adequately protected against reasonable disclosure risks in a manner that preserves data utility and accessibility, acknowledging that confidentiality protection always impairs data quality to some extent?

## Box G-1

# FCSM Data Quality Framework

**UTILITY**—Relevance, accessibility, timeliness, punctuality, granularity

**OBJECTIVITY**—Accuracy and reliability, coherence

**INTEGRITY**—Scientific integrity, credibility, computer and physical security, confidentiality

SOURCE: A Framework for Data Quality, [https://www.fcsm.gov/assets/files/docs/FCSM.20.04\\_A\\_Framework\\_for\\_Data\\_Quality.pdf](https://www.fcsm.gov/assets/files/docs/FCSM.20.04_A_Framework_for_Data_Quality.pdf)

With limited resources, we could not undertake a comprehensive review of data quality attributes across the principal statistical agencies. Such an endeavor would be a herculean job, given the volume of federal statistics and statistical programs and that key quality indicators (e.g., response rates) are not uniformly accessible or even available on every agency’s website. For this assessment, we focused on three challenges to data quality where there are also opportunities to improve quality. The challenges are (a) declining survey response rates, which can increase error; (b) long-running data series becoming out of date; and (c) increasing threats of disclosure risk or privacy loss leading statistical agencies in some instances to reduce data availability and

usability. Opportunities for improvement include blending survey data with other data sources to bolster accuracy and relevance of estimates; obtaining resources for investment and multiyear funding authority to make timely changes to long-running data series; and legislation and other actions to promote a better balance of confidentiality protection and data accuracy and accessibility. Our investigation of these three areas, summarized in the main report, yielded three findings. The main report also describes threats to credibility and objectivity from undue political influence.

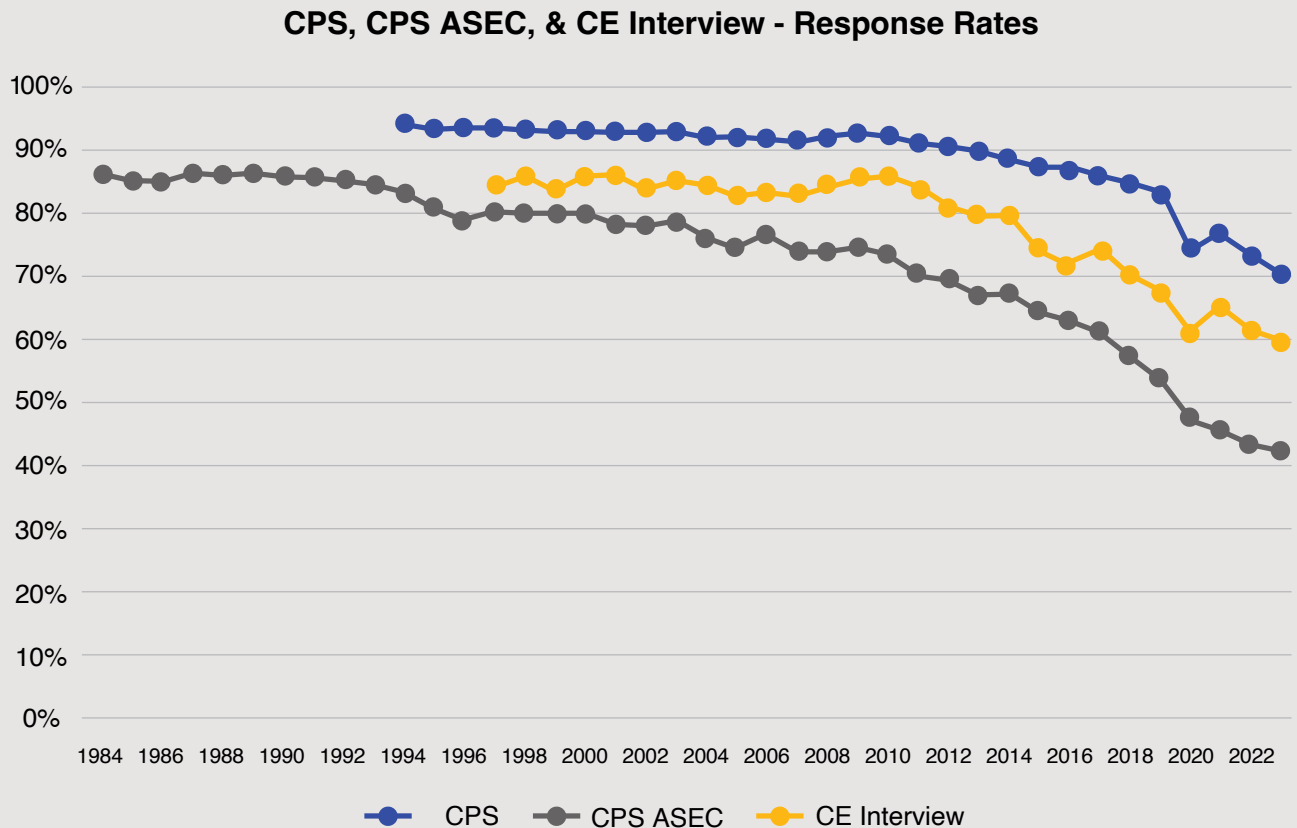
## **DECLINING SURVEY RESPONSE**

Survey responses many years ago were uniformly high, but those days are long gone. One study estimated that refusals and noncontacts (nonresponse) in government surveys here and abroad increased 2 percent every three years from the mid 1980s through the late 1990s (de Leeuw and de Heer, 2002; see also National Research Council, 2013b). Bearing in mind that federal surveys generally get higher rates of response than commercial surveys, Figure G-1 shows a significant acceleration of nonresponse rates in the last 10–15 years for three major household surveys—the Bureau of Labor Statistics (BLS) Current Population Survey (CPS), used for monthly unemployment rates; the Census Bureau CPS Annual Social and Economic Supplement (CPS ASEC), used for annual income, poverty, and health insurance rates; and the BLS Consumer Expenditure Survey (CE), used for annual expenditure estimates. Response rates have also declined for business surveys and for other household surveys—see Figure G-2 for response rates for

the Bureau of Justice Statistics (BJS) National Crime and Victimization Survey (NCVS) household and person interviews and the National Center for Health Statistics (NCHS) National Health Interview Survey (NHIS) household and sample adult interviews as illustrations. These patterns of nonresponse occur worldwide and affect surveys on a wide range of topics. Reasons are not clear, although the saturation of the public with surveys and, for telephone surveys, the ubiquity of cell phones, which can block and filter calls more readily than landlines, likely contribute to nonresponse. For federal government surveys, increasing distrust in government institutions may also play a role (see Box G-2).

### FIGURE G-1

Household Response Rates for the Current Population Survey (CPS), CPS Annual Social and Economic Supplement (CPS ASEC), and Consumer Expenditure (CE) Interview Survey, 1984–2023

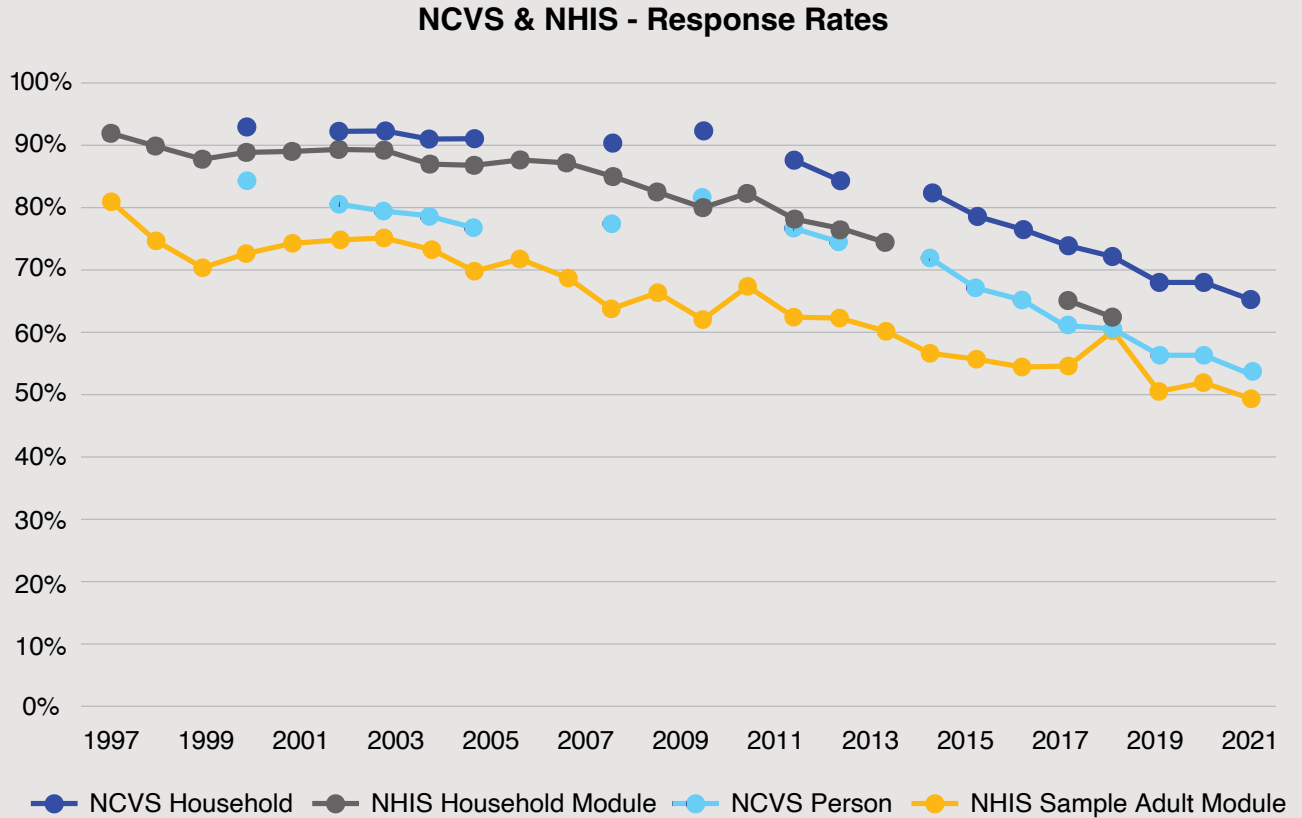


NOTE: Rates for the CE Interview Survey are for consumer units, which closely approximate households.

SOURCE: Rates compiled by Katherine Abraham and David Johnson from Census Bureau and BLS staff. (Response rates for the CPS and CE Interview Survey beginning in 2014 are available at: <https://www.bls.gov/osmr/response-rates/#chart1a>. See also [https://www.bls.gov/cps/methods/response\\_rates.htm](https://www.bls.gov/cps/methods/response_rates.htm) for CPS response rate concerns and steps that BLS and the Census Bureau are taking to improve response.)

**FIGURE G-2**

Response Rates for the National Crime Victimization Survey (NCVS) Household and Person Interviews and the National Health Interview Survey (NHIS) Household and Sample Adult Modules, 1997–2022



NOTE: The NCVS person and NHIS sample adult module response rates are unconditional; that is, they account for household nonresponse as well as person nonresponse within responding households. Cooperation rates (not shown) for persons (i.e., responding persons as a percentage of responding households) are higher than the household rates.

SOURCE: Rates compiled by Constance Citro from BJS and NCHS publications

BOX G-2.

## Public Trust In Government 1958–2023

According to *Public Trust in Government: 1958-2023* | Pew Research Center:

Public trust in the federal government, which has been low for decades, has returned to near record lows following a modest uptick in 2020 and 2021. Currently, fewer than two-in-ten Americans say they trust the government in Washington to do what is right “just about always” (1%) or “most of the time” (15%). This is among the lowest trust measures in nearly seven decades of polling. Last year, 20% said they trusted the government just about always or most of the time....

In 1958, about three-quarters of Americans trusted the federal government to do the right thing almost always or most of the time. Trust in government began eroding during the 1960s, amid the escalation of the Vietnam War, and the decline continued in the 1970s with the Watergate scandal and worsening economic struggles. Confidence in government recovered in the mid-1980s before falling again in the mid-1990s. But as the economy grew in the late 1990s, so too did confidence in the government. Public trust reached a three-decade high shortly after the 9/11 terrorist attacks but declined quickly thereafter. Since 2007, the share saying they can trust the government always or most of the time has not surpassed 30%.

There is also evidence that people are less willing to answer all the questions on a survey than in the past. As one example, the CPS ASEC collects data each spring for estimates of poverty, health insurance coverage, median household income, and many other important aspects of economic well-being. Some people who answer the regular monthly employment questions on the main CPS do not answer any of the CPS ASEC questions. Some other people answer some but not all of the CPS ASEC questions. In particular, many people fail to report income they received, or they indicate a type of income but not the amount, or they provide an inaccurate amount. At present, over 40% of estimated income from the CPS ASEC is imputed rather than reported (compared to about 20% three decades ago).<sup>1</sup> Even with imputations, income from property and transfers is significantly underreported.

Although nonresponse may lead to reducing the target number of respondents, survey nonresponse does not necessarily indicate that estimates are biased in some way. Nonresponse often varies by population group and geographic area. To bolster response, statistical agencies have experimented with question design, messaging to respondents about the importance of their participation, and sophisticated procedures for weighting responses to the full population. They have also spent more money per case to increase responses. However, resources to increase response rates are limited. To date, survey response rates appear to be in a holding pattern at best.

<sup>1</sup> See [https://www.bea.gov/system/files/2020-05/Rothbaum-BEA-5-15-20\\_0.pdf](https://www.bea.gov/system/files/2020-05/Rothbaum-BEA-5-15-20_0.pdf), slide 10. See also National Academies (2023d).

## OPPORTUNITIES FOR BLENDED DATA

Opportunities abound, with sufficient resources and staff, to use administrative records and other data with survey responses to create “blended data,” with each source compensating for problems in the other source to generate higher-quality estimates. Committee on National Statistics reports outline and endorse this approach (National Academies, 2023b, c; 2024b). Here are a few examples:

- *National Experimental Wellbeing Statistics (NEWS)*—NEWS is a Census Bureau project to provide high-quality distributions of household income, using administrative records to correct for nonresponse and underreporting of income in the CPS ASEC. The first available estimates are for 2018 for money income (this concept excludes tax credits and in-kind benefits such as SNAP); they show (Bee, et al., 2023, Table 16) an increase of \$4,000 or 6 percentage points in household median income, mostly due to the use of administrative records for retirement and investment income for the elderly. The project could benefit from greater access by the Census Bureau to tax return data from SOI and state administrative records. If NEWS had additional resources, the program could make faster progress toward the goal of releasing production estimates of pre- and post-tax-and-transfer income for households every fall for the preceding calendar year.
- *Use of administrative records in the American Community Survey (ACS)*—The Census Bureau plans to use administrative records to replace the ACS question on property acreage and one or more income questions.<sup>2</sup> To facilitate use of income records, the Census Bureau is testing the previous calendar year as the reference period rather than the previous 12 months. This work is important to reduce respondent burden (which has led to complaints to Congress about the survey) but is proceeding at a slow pace.
- *Use of administrative records for health care provider data*—In 2012, NCHS replaced two surveys (the National Nursing Home Survey and the National Home and Hospice Care Survey) with administrative data from the Centers for Medicare & Medicaid Services (CMS) on the nursing home, home health, and hospice sectors. NCHS has also replaced surveys for inpatient rehabilitation facilities and long-term care hospitals with CMS administrative data. The use of administrative data has allowed NCHS to provide more frequent and more geographically detailed publications of the characteristics of these providers and service users, at modest costs, than was possible with the previous sample surveys. NCHS currently conducts surveys for adult day care and residential care communities because of the lack of comprehensive nationally representative administrative data for these types of care.<sup>3</sup>
- *Replacing import/export price data from surveys with administrative data*—BLS is in the process of replacing its survey-based import/export price data with administrative data from the Commerce Department. Response rates dropped substantially for the surveys during the Covid-19 pandemic, but the trade data from Commerce are proving to be a satisfactory substitute in many instances.<sup>4</sup>

<sup>2</sup> Barth, D. (2023, October 4). Using Administrative Records in the American Community Survey: Overview. FCSM Research and Policy Conference, College Park, MD. [https://www.fcsm.gov/assets/files/docs/2023-conference-docs/C4.1\\_Barth.pdf](https://www.fcsm.gov/assets/files/docs/2023-conference-docs/C4.1_Barth.pdf)

<sup>3</sup> See NPALS 2022 Survey Methodology for the Adult Day Services Center and Residential Care Components, <https://www.cdc.gov/nchs/data/npals/NPALS-2022-survey-method-doc.pdf>

<sup>4</sup> See MXP Research, <https://www.bls.gov/mxp/data/research.htm>



**Finding:** Surveys remain invaluable because some information (e.g., self-reported health or crime victimization) can only be obtained by asking people questions. Yet, declining response and rising costs to address the decline raise significant concerns for their future. As the Committee on National Statistics documents, opportunities exist to combine surveys with administrative records and other sources to improve quality, although there are challenges in properly blending data sources, accounting for the uncertainty in estimates from them, and using them for estimates when that was not their original intent. Statistical agencies will need adequate resources to evaluate and implement, as appropriate, blending approaches for the future and to continue research into ways to improve the cost-effectiveness of surveys. Congress, OMB, parent agencies, and statistical agencies can do more to support blended data programs, as appropriate. Some examples include supporting legislation to enable easier and more extensive data sharing; providing resources and staffing to make the most of multiple data sources and to redesign processing and publication systems to accommodate different data streams; and encouraging the cultivation of innovation within and among statistical agencies (see Recommendations in main body of report).

### **KEEPING LONG-RUNNING SURVEYS UP TO DATE—TIMELINESS AND FREQUENCY VS. RELEVANCE**

What if federal agencies could provide unemployment and labor force participation data quarterly instead of monthly—being 2.5

months old rather than 3 weeks old when released? Markets, the Federal Reserve Board, Congress, and the executive branch would find shifting from monthly to quarterly unacceptable. Yet, this is the standard in many European Union countries (e.g., Belgium, Ireland, France, Croatia, Latvia, Poland, Slovenia, and Slovakia). In contrast, BLS issues unemployment and labor force participation rates every month like clockwork, with only a 3-week lag after data collection by the Census Bureau in the monthly Monthly CPS.<sup>5</sup>

Many other U.S. “principal federal economic indicators” are issued monthly for the preceding month (see Box G-3) by such agencies as NASS, BEA, BLS, and the Census Bureau. The EIA issues a weekly natural gas storage report every Thursday for the preceding Friday. In addition, NCHS provides continuously updated provisional estimates of deaths due to Covid-19 and other causes with about a 1-week lag and provisional estimates of births with about a 1-month lag. Other important social, economic, and demographic data are released annually for the preceding calendar year. Some examples include income, poverty, and health insurance coverage estimates from the CPS ASEC by the Census Bureau; food security estimates from an annual supplement to the CPS by the Economic Research Service (ERS), U.S. Department of Agriculture (USDA); and various health statistics from the NHIS by NCHS. In fact, NCHS has had an early release program since 2001 for key statistics from the NHIS, publishing quarterly estimates absent final data editing and weighting about four months after the reference quarter.<sup>6</sup>

<sup>5</sup> The private sector produces some data series more frequently than the corresponding federal series, but often the private series depends on the federal series for representativeness, has less distributional detail, and is proprietary. For example, ADP develops proprietary weekly and public monthly estimates of nonfarm payroll jobs from its database of payroll processing clients. The ADP series uses BLS data to make the estimates more representative. The detail in the weekly and monthly series is less than the BLS monthly payroll job series. See ADP® Employment Report, <https://adpemploymentreport.com/>.

<sup>6</sup> See NHIS Early Release Program, <https://www.cdc.gov/nchs/nhis/releases.htm>

Box G-3

# Principal Federal Economic Indicators From Statistical Agencies

## **Bureau of Economic Analysis**

Personal Income and Outlays—monthly for prior month

Gross Domestic Product—advance, second, and third estimates issued each month of a quarter

Corporate Profits—quarterly for prior quarter

U.S. International Trade in Goods and Services—monthly for two months' prior (joint with Census Bureau)

U.S. Imports for Construction of Steel Products—preliminary monthly (joint with Census Bureau)

U.S. International Transactions—quarterly for prior quarter

## **Bureau of Labor Statistics**

The Employment Situation—monthly for the prior month

Producer Price Index—monthly for the prior month

Consumer Price Index—monthly for the prior month

Real Earnings—monthly for the prior month

Productivity and Costs—quarterly (preliminary and revised)

Employment Cost Index—quarterly for the prior month

U.S. Import and Export Price Indexes—monthly for the prior month

## **Census Bureau**

Construction Put in Place—monthly for two months' prior

New Residential Construction—monthly for prior month

New Residential Sales—monthly for prior month

Monthly Wholesale Trade—monthly for two months' prior

Advance Monthly Retail and Food Services—monthly for prior month

Manufacturing and Trade: Inventories and Sales—monthly for two months' prior

Manufacturers' Shipments, Inventories, and Orders—monthly for two months' prior

Advance Report on Durable Goods—Manufacturers' Shipment, Inventories and Orders—monthly for prior month

Quarterly Financial Report, Manufacturing, Mining, and Wholesale Trade—quarterly for prior quarter

Quarterly Financial Report, Retail Trade—quarterly for prior quarter

Housing Vacancies—quarterly for prior quarter

Quarterly Services—quarterly for prior quarter

## **Energy Information Administration**

Natural Gas Storage Report—weekly for the prior week

## **National Agricultural Statistics Service**

Agricultural Prices—monthly for the prior month

Crop Production—monthly for the first of the month

Grain Stocks—monthly for the first of the month

Cattle on Feed—monthly for the first of the month

Hogs and Pigs—quarterly for the first of the month

Plantings—first half of March and June

NOTE: The Federal Reserve Board, Foreign Agricultural Service, and World Agricultural Outlook Board also release principal federal economic indicators.

SOURCE: [Schedule of Release Dates 2024](#) ([whitehouse.gov](http://whitehouse.gov))



The track record of the principal federal statistical agencies in releasing key indicators month after month, quarter after quarter, year after year is virtually unblemished. In the 21st century, government shutdowns are the only cause for delayed release of monthly principal federal economic indicators—not the Great Recession or the Covid-19 pandemic.<sup>7</sup>

The U.S. economy and society depend on these key data series and additional detailed data from the statistical agencies. They often take for granted that tight schedules will be met with quality indicators. Informed decision-making is at risk should statistical agencies lack sufficient staff and budget to release key socioeconomic indicators and other important data series on a timely schedule as well as to continuously improve and modernize their series to keep pace with economic, social, and technological change.

Not all data are released on a timely basis. Even allowing that particularly complex surveys (e.g., the National Center for Science and Engineering Statistics (NCSES)'s longitudinal Survey of Doctorate Recipients) can legitimately take up to two years to produce data. There are surveys that have taken even longer, such as the National Survey of College Graduates (conducted by the Census Bureau for NCSES). Investigation would be required to determine the impact of factors such as inadequate funding and staffing, or bottlenecks in various stages of data production and analysis, which may reflect a lack of attention by the agency. Dramatic improvements in delivery time over the past 10 years for microdata files from the Census Bureau's Survey of Income and Program Participation (SIPP)

are due to a concerted effort to give timeliness greater priority after implementing a major redesign (see Box G-4). Due to holdups by the director appointed in the Trump administration, BJS experienced major delays in previously timely products during the late 2010s. The affected data series are now being produced on schedule.

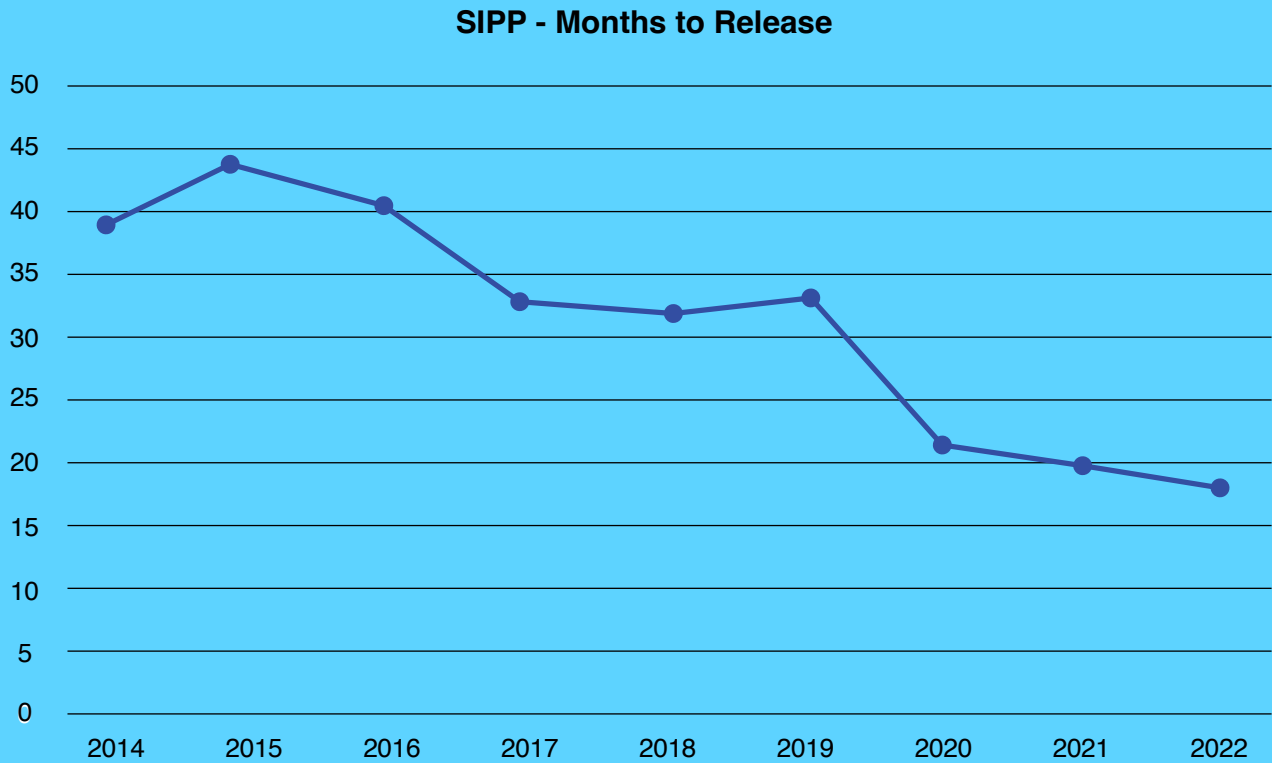
For key data series with a smooth production process, there may still be insufficient staff and budget resources to continue testing, piloting, and consulting with data users to ensure the series stays up to date. Resources may also be lacking to run overlapping series (e.g., producing estimates of consumer prices using current and new methods for some months), which are essential for users to assess and deal with the impact of changes. Ideally, resources for testing, piloting, and engaging in user dialogue would accompany adequate production budgets year after year to ensure improvements could occur in frequent, smaller increments rather than big changes at long intervals. Without a steady stream of such resources—ideally, including multiyear funding authority—data series become and stay outmoded for longer periods, and change is more disruptive to users even with overlapping series.

With few exceptions (one is the ACS—see Box G-5), statistical agency budgets do not explicitly include resources for continuous testing and piloting. Instead, important changes are infrequent and may take a long time to fully implement. Below are three case studies in point for the monthly CPS, CE, and NHANES.

<sup>7</sup> See, e.g., <https://www.nytimes.com/2023/09/28/business/economy/shutdown-government-data.html>.

Box G-4

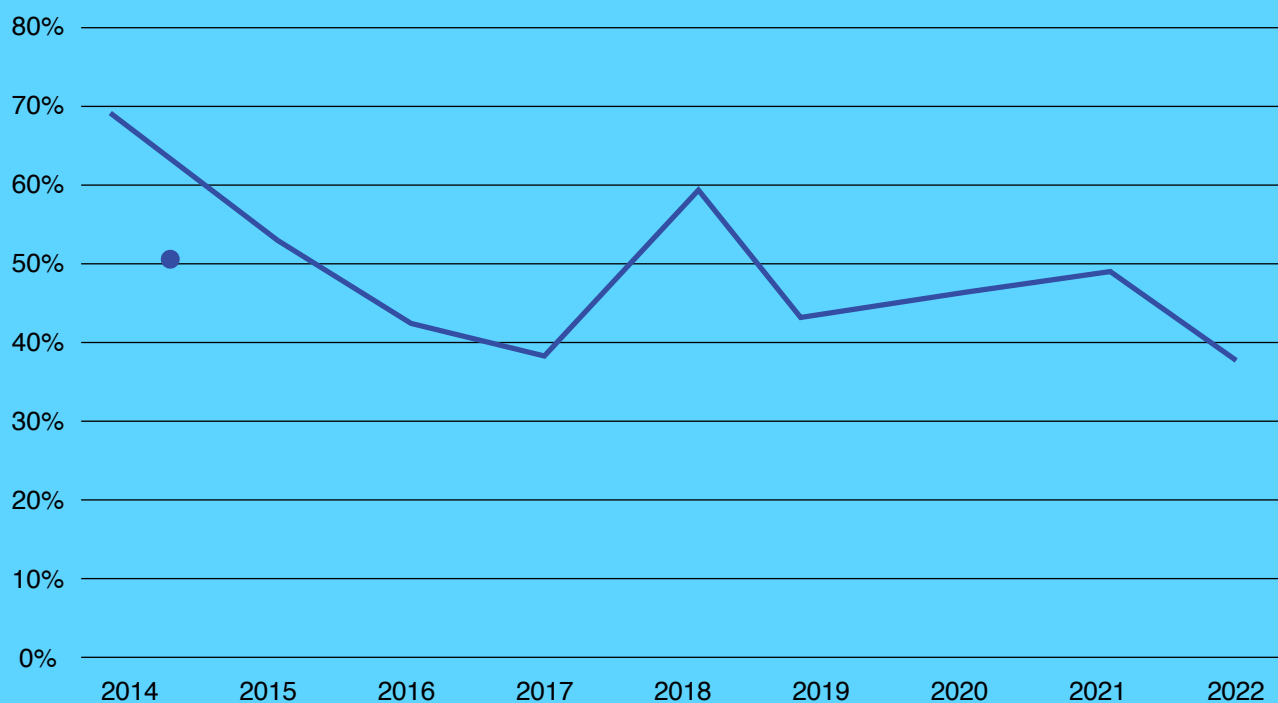
# Survey of Income and Program Participation



NOTES: Number of months is measured from the end of the reference period to the release of a microdata file (e.g., it took 39 months—until March 2017—to release the 2014 file, for which the reference period ended in December 2013). There were two reissues of the 2014 file to correct problems (the second in March 2018).

SOURCE: U.S. Census Bureau (September 2023), *2022 SIPP Users' Guide*, Figure 1-2. *2022 Survey of Income and Program Participation* ([census.gov](https://www.census.gov))

## SIPP - Wave 1 Response Rates for Eligible Households



NOTE: New panels began in 2014, 2018, and each year since 2019.

SOURCE: Compiled by Constance Citro from SIPP User's Guides for each year.

**SIPP in Brief.** SIPP is an important survey for policy analysis and evaluation of people's income, employment, and participation in such programs as Social Security, unemployment compensation, housing vouchers, and subsidized school meals. Just two examples of policy-relevant findings from research with SIPP data are (see National Academies, 2024a, p. 42):

- Substandard housing (e.g., ceiling cracks, holes in the floor, pests, plumbing problems) is associated with poorer health status, higher medical use, and higher likelihood of hospitalization even after controlling for such factors as disability; and
- Higher-income households pay more, but lower-income households pay a higher proportion of their income in healthcare costs.

After extensive testing and piloting, the Census Bureau inaugurated the SIPP in the fall of 1983. The SIPP follows samples of people for two to four years, asking them for monthly or quarterly information on jobs, earnings, program participation, family composition, and many other topics. The survey is complex because the U.S. safety net is complex, with many programs with different rules for participation and benefits. Even in the short span of a few years, people may change jobs, graduate from school, retire, marry, divorce, have children, and so on.

The Census Bureau has redesigned the SIPP several times to be more cost-effective and timely. A major redesign in 2014 changed the interviewing from every four months to every year. Yet the Census Bureau experienced long delays in releasing the SIPP research data files, as shown above (SIPP does not produce regular reports except for a report on wealth that began annual publication in 2022). The Census Bureau finally achieved timely release for SIPP with the 2020 file.

Unfortunately, declining response rates and flat budgets threaten the future of SIPP. For 2024, the sample size will be only 35,000 households, compared with 53,000 in 2023. On March 8, 2024, Congress provided additional funding for FY 2024 to restore the SIPP sample. However, it is unclear when that funding will become available, given that 2024 SIPP interviewing is well underway. The Census Bureau is working to redesign the SIPP once again to include an internet response option, change from annual to semiannual interviews, and streamline the questionnaire, among other changes. The target date for implementation is 2030, including an 18-month period of overlap in data collection with the current SIPP design, assuming budget is forthcoming (see [SIPP SEAMLESS: Modernizing the Survey of Income and Program Participation](#)).

Box G-5.

## American Community Survey Methods Panel

The ACS replaced the decennial census “long-form” sample, last included in the 2000 Census, by collecting similar demographic and socioeconomic information on a continuous basis. In 2005, the ACS began monthly data collection and has since produced data products every fall for the prior calendar year. The products include microdata samples and tables produced from 12 months and 60 months of data (one-year and five-year estimates, respectively—the latter provide information for small geographic areas). The sample size is about 2 million interviewed households every year. (See National Research Council, 2007; National Academies, 2015.)

Early in its history, the ACS established “methods panels,” comprising large samples of households to test new and revised survey content, questionnaire design, mailings to boost response, and other aspects of this large-scale, continuous measurement survey. For some testing, subsamples of the production ACS compose the test panel. For content testing, separate samples are selected. The current methods panel costs about \$4 million per year (see [American Community Survey Methods Panel Tests - OMB 0607-0936](#)). That amount represents a modest investment in continuous improvement for the largest household survey conducted in the United States, currently costing \$235

million a year (about \$120 per interviewed household, see [PRA ICR Documents](#)), which supports federal, state, and local government planning, fund allocation, voting rights, and many other purposes.

Since its inception, the ACS, based on methods panel testing, has dropped questions on business on property and flush toilet; added questions on the fields of bachelor's degree (used to draw the sample for the NCSES National Survey of College Graduates), computer use, internet accessibility, internet subscription, and health insurance premium and subsidy; and revised about 16 questions. (See [Chapter 5: Content Development Process](#), Table 5-2.)

**Case Study #1: CPS.** The monthly CPS, begun in 1940 and conducted by the Census Bureau for BLS, is the basis for the official unemployment rate. It has made several changes each decade, but most of them reflect standard readjustments of population weights, the sample design, and industry and occupation codes following a decennial census or changes in demographic categories (e.g., race/ethnicity) to meet OMB standards. Other significant changes since 1990 include:

- *Questionnaire changes:* January 1994—Revised questionnaire with enhanced editing features and some new and modified questions (some in response to recommendations of the 1979 Levitan Commission), designed for computer-assisted telephone/personal interviewing (CATI/CAPI), introduced following four years of experimentation and running

concurrent series; 2015—questions added on certifications and licenses; 2020—questions added to help gauge the effects of the Covid-19 pandemic on the labor market (since deleted); 2022—questions added on telework or work at home for pay (ongoing)

- *Data collection changes:* 2020—R&D begun on an internet response option, announced in October 2024, with a target of 2027 to implement; 2023–2027—Blaise CAPI/CATI system being phased out
- *Data publication changes:* 1948—BLS published two definitions of unemployment (U1 and U3); 1967—BLS adopted the current U3 definition as its flagship statistic and began publication of U2; 1984—BLS added U4–U6 definitions
- *Changes in response to unexpected conditions that hindered data collection:* BLS made changes to operate the CPS during Hurricane Katrina in 2005 and Covid-19 in 2020. BLS also cut the sample in 1996 due to budget cuts (sample was restored in 2000 but is being cut again for 2025).

The CPS has been later than other surveys in developing a web instrument because of the complexity of the questionnaire and a relatively short collection period. The basic questionnaire does not yet adequately reflect the increase in alternative work arrangements (e.g., driving for Uber, et al.). Until recently, data on alternative work arrangements has been collected sporadically (six times in a supplement between 1995 and 2017—see [National Academies, 2020](#)). A revised supplement was conducted in 2023 and is to be conducted biennially beginning in 2025. Terminology and concepts for classifying

people in various statuses (e.g., unemployed) and survey interview questions need updating (e.g., Census interviewers and BLS analysts misclassified workers who potentially would have been classified as laid off in the early months of the Covid-19 pandemic and were classified as “employed but not at work,” which understated the unemployment rate—see [Impact of the coronavirus \(COVID-19\) pandemic on The Employment Situation for May 2021: U.S. Bureau of Labor Statistics](#)). Also, whether U3 is the best “official” definition of unemployment is debatable. Finally, there has been no outside review of the CPS since the 1979 Levitan Commission. See FESAC (2023) for a compelling argument for a much more thoroughgoing redesign, which would require resources—ideally, multiyear resources.

**Case Study #2: CE.** BLS fielded the first survey of consumer expenditures in 1888, four years after BLS was established as a federal statistical agency. BLS conducted expenditure surveys at irregular intervals (eight in all) until 1980, when the Consumer Expenditure (CE) survey became continuous. BLS currently publishes 12-month consumer unit expenditure estimates every six months from the CE survey. The Census Bureau conducts the survey, which consists of two separate samples. The first is the Interview Survey (samples of households interviewed 4 times every 3 months that provide estimates of expenditures by category). The other is the Diary Survey, which contains samples of households that provide two 1-week diaries of detailed expenditures. The results of these surveys provide the market basket for the Consumer Price Index (CPI), such as how much weight to give to housing, food, and other goods and

services. The results also inform the public and policymakers. For example, telling the public that households spend considerably less on food and beverages as a percent of total spending today than they did 60 years ago, but that lower income households are constrained to spend proportionately more of their budget on food and beverages.

The CE is costly and burdensome and has experienced substantial declines in response rates (see Figure G-1 above). Some expenditure categories are underreported because households learned not to indicate that they spent money on things like clothing or travel because they would then be asked detailed questions about their purchases. In 2003, the Interview and Diary Surveys were converted from paper questionnaires to CAPI. In 2009, BLS launched the Gemini project to thoroughly test a redesigned CE to reduce cost and burden. BLS reached an initial redesign decision in 2013 but determined through testing that it was not an improvement over the current design. In 2018, BLS decided to pursue a more incremental approach. To date, an online option for the diary survey (necessitated by Covid) has been built into the CE, and the Interview Survey questionnaire has been simplified by combining related topics and reducing detail (e.g., for clothing). Yet the estimated respondent burden remains about the same as it has been for the past 20 years (about an hour per household). Before then, the estimated burden was about 1.5 hours. In the future, pending availability of resources for further testing, the CE may interview households twice at one-year intervals instead of four times every three months, and the samples for the Interview Survey and Diary Survey may be



combined. This is a clear example of a slow pace of change for this important survey program.<sup>8</sup>

**Case Study #3: NHANES.** The current, continuous National Health and Nutrition Examination Survey (NHANES) is a series of national examination studies conducted in the United States by NCHS under the authority of the 1956 National Health Survey Act. It represents a landmark innovation in survey methodology because of the collection of actual physical and biological measurements in a lab-type setting together with questionnaires. The first National Health Examination Surveys (NHES) were fielded in the 1960s. A large nutrition component was added to the basic design in 1970, and NHES was renamed NHANES. Three NHANES were conducted in the period of 1971–1994, along with a special study of Hispanic people. NHANES became continuous in 1999, with each round of data collection covering two years. Covid-19 interrupted NHANES, so that there are data combined for 2017–March 2020 and a new round of collection covering August 2021–August 2023.

NHANES collects data via traditional interviews plus medical examinations and testing in specially designed and outfitted medical examination centers (MECs). The MECs are tractor-trailer units (to be replaced by trucks in the next round, beginning in January 2025), which rove around the country. For the post-Covid 2021–2023 data collection round, NHANES dropped oversampling by race, ethnicity, and income to reduce the number of households that had to be screened. The length of the household interview was reduced from 90

minutes to 60 minutes. For the round beginning in 2025, the sample sites will be more spread out around the country, which may permit releasing one year’s worth of data instead of data aggregated over two years.

Uses of NHANES data are many and consequential—for example, informing federal policies to fortify grain and cereal products with iron, eliminating lead in gasoline, setting safety standards for maximum airplane passenger loads, and increasing awareness of diabetes. However, NHANES is a demanding survey on respondents, field personnel, and data editing and analysis staff. It is also very costly for a small sample size of about 5,000 people interviewed and examined at about 15 sites (\$46 million in FY 2024, or about \$9,000 per interviewed/examined person). Funding for the survey depends on contributions from other agencies (e.g., ERS/USDA, NIH). The current amount of support is 45% of total funding but can vary from year to year. NHANES had high response rates for many years but in recent years, the response rates have declined considerably since 2011–2012 (see Figure G-3). Methodological innovation is challenging given the constant flow of data to be collected, edited, and analyzed as well as the need to maintain time series. Although NHANES has a solid record of adding new tests and exams to respond to stakeholder needs, NHANES is hard-pressed to respond to growing demands for more detailed information on population groups and geographic areas.

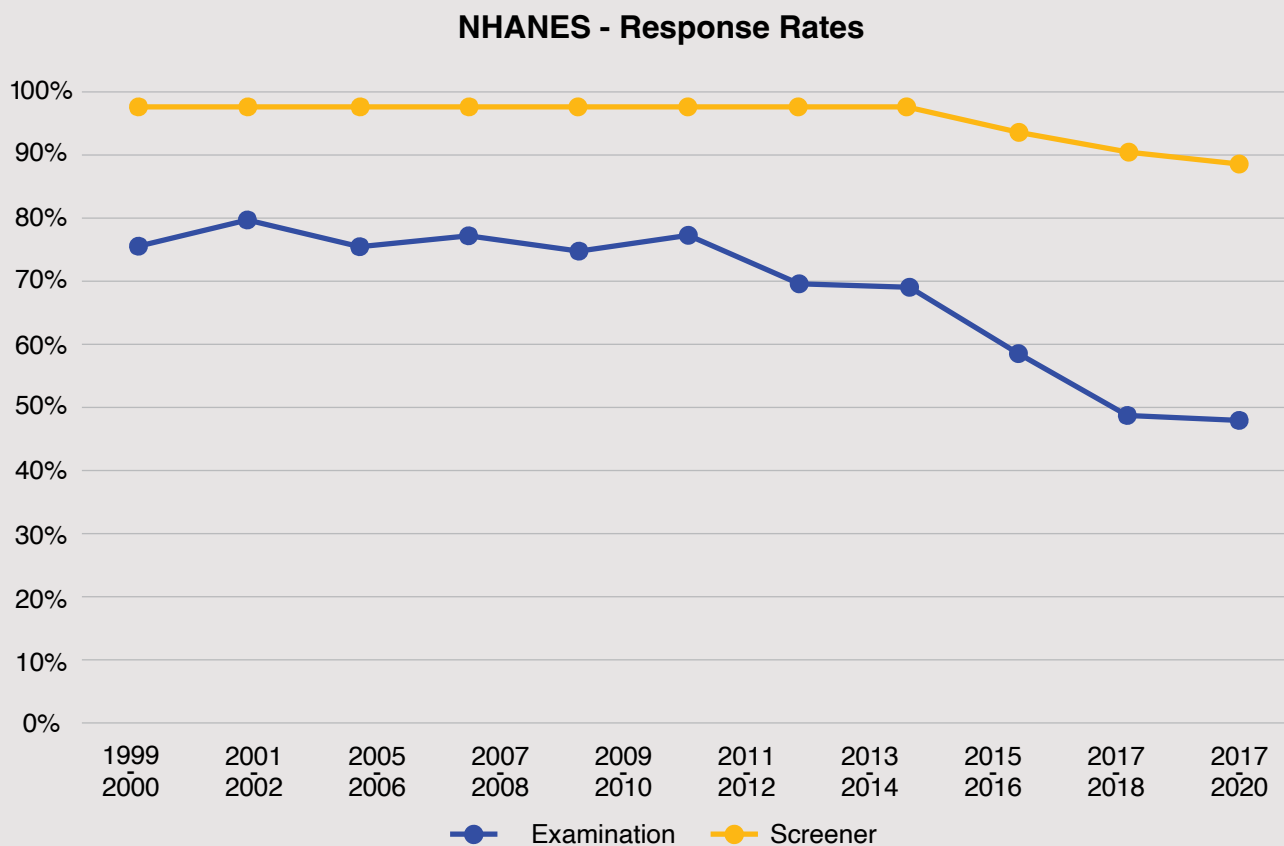
There have been calls to reimagine NHANES in various ways. For example, Taylor et al. (2023) provide an overview of possible options to consider, one of which is to use electronic health

<sup>8</sup> See [Gemini Project to Redesign the Consumer Expenditure Surveys: U.S. Bureau of Labor Statistics \(bls.gov\); Plain language](#); National Research Council (2013a).

records and certified lab results for some or all sample members in place of examinations. When the survey began, the MECs provided standardized, state-of-the-art testing, in contrast to the variable quality and extent of testing in the medical care arena. At this time, it would be worth assessing the potential for using records to a greater or lesser extent. Resources would be required to investigate the possibilities and how to handle the fact that some portion of the population does not use medical care services. The potential gains in sample size and the reductions in costs and respondent burden could justify the investment.

**FIGURE G-3**

National Health and Examination Survey (NHANES) Household Screener and Examination Response Rates



SOURCE: [NHANES Response Rates and Population Totals \(cdc.gov\)](https://www.cdc.gov/nchs/nhanes)

**Finding:** Long-running data series on important social and economic topics, which generally meet high standards of timeliness, are susceptible to becoming outmoded in content, accuracy, and efficiency. Reasons include the costs to run overlapping data series to enable users to changeover from the old to the new, inertia and hesitation to change on the part of agency staff and the user community, and the lack of adequate (ideally multiyear) funding for continuous testing and implementation of improvements.

### **BALANCING DATA ACCESS AND USABILITY WITH CONFIDENTIALITY PROTECTION**

Statistical agencies promise confidentiality to respondents under the Confidential Information Protection and Statistical Efficiency Act (CIPSEA), first enacted in 2002 and folded into Title III of the Evidence Act in 2018—see Supporting Materials: D) and other legislation (e.g., Title 13, which pertains to the Census Bureau, and Title 26, which pertains to SOI). The reason is to encourage response and to guard against misuse of individual data for nonstatistical purposes such as enforcement or determination of eligibility for programs. CIPSEA imposes stiff penalties for statistical agency staff should they make individually identifiable information available to the public (up to five years in prison and up to a fine of \$250,000).

Statistical agencies take their mandate to protect respondent confidentiality seriously. In recent years, with the increase in data for individuals on the internet and the availability of sophisticated web scraping and data linkage tools, agencies have worried that heretofore publicly available microdata and tabular data could be reengineered to identify specific

respondents. Agencies use a variety of methods to guard against such reidentification (e.g., specifying minimum cell sizes for table entries). They also have established means for analysts to access confidential data in secure enclaves, such as the Federal Statistical Research Data Centers (FSRDCs). NCSES is piloting demonstration products for a potential National Secure Data Service (NSDS) with funding from the CHIPS and Science Act of 2022. The NSDS is intended to provide a means to conduct policy research and program evaluation (as stipulated in the Evidence Act) in a secure environment in which data linkages are performed and analytic results (appropriately protected) are returned to users, but neither the original nor linked data sets are stored or shared.

Some agencies have turned to new computer science–based confidentiality protection methods, most notably algorithms that satisfy a theory called “differential privacy,” which is designed to inject statistical noise into every statistic to guard against any attack (currently known or not), even if low probability. The Census Bureau decided at a late stage in planning for the 2020 Census to use such algorithms for the 2020 census data products. This late start led to a series of problems, which resulted in delays of key data products. More importantly, the data for many small governmental units and population groups were impaired in accuracy and usability by the noise injection (see National Academies, 2023a, Ch. 11).

SOI is supporting work on synthesizing highly sensitive tax return data for research use (see, e.g., studies by Raj Chetty and his colleagues of economic mobility in the United States).<sup>9</sup> Users would run preliminary analyses on a synthesized

public use file (PUF), submit their analysis code to a “validation server,” which, in turn, would run the code on the “real” data and then protect the output with a differentially private algorithm. Should this approach prove feasible, SOI would be able to make data files available that it stopped releasing 10 years ago because of the increased threats to confidentiality. The Census Bureau is working on a similar approach for the ACS public use microdata sample (PUMS) files—namely, a synthetic file with validation and confidentiality protection obtained through use of a validation server. However, the risk of disclosure for the ACS PUMS file has not been established under realistic attack scenarios, and whether a validation server could handle the volume of requests from the wide community of ACS users in a timely fashion is not clear.

Across the statistical agencies, there is a heightened movement to provide “tiered access” to data. For example, one tier could provide a limited set of public products, with traditional confidentiality protection methods applied (e.g., assigning a broad upper category for sensitive values, such as income); the next tier could provide public products with additional noise applied and perhaps a requirement for users to register; another tier could allow users access to synthesized products with a validation server and confidentiality protection applied to specific outputs; and finally, the last tier could provide access after a rigorous screening and approval process to confidential data in a secure environment such as one of the FSRDCs or the NSDS, once established.

A subcommittee of the Interagency Council on Statistical Policy is developing a Data Protection

Toolkit.<sup>10</sup> The toolkit is intended to cover topics such as assessing disclosure risk, methods and approaches to reducing disclosure risk (e.g., including tiered access), and tools and reference materials for statistical agencies to use to promote data access while protecting confidentiality.

Responding to Section 3583 of the Evidence Act, the ICSP and the FSRDC network established a standard application process (SAP) and website to make it easier for researchers and other users to locate and apply to use confidential data sets from statistical agencies in a secure setting (e.g., an FSRDC or comparable facility at a statistical agency). The site, ResearchDataGov.org, developed and operated by the Inter-university Consortium for Political and Social Research (ICPSR) at the University of Michigan under contract to NCSES, has come a long way since it was first launched on a pilot basis in December 2019. The SAP provides a catalog of datasets potentially available from 16 principal statistical agencies and recognized statistical units, a common application form, standards for criteria and timeliness of agency review, and metrics on status of applications received since December 2022 when the portal became fully functional. The SAP, however, does not address the time required for additional steps beyond approval to begin work with the data (e.g., to obtain security clearances for the researchers). It also does not solve the problem that a “seat” in an FSRDC typically costs thousands of dollars. Its timeliness metrics measure the status of all applicants since 2022 without differentiating when applications were submitted.

The SAP’s annual report for 2023 provides average times by agency to accept and reject

<sup>9</sup> See Opportunity Insights, <https://opportunityinsights.org/paper/>

<sup>10</sup> See Data Protection Toolkit, <https://nces.ed.gov/fcsm/dpt>

projects—SOI exceeds the standard review time of 84 days for both acceptances and rejections, and the Census Bureau exceeds the standard review time for acceptances. The report does not provide historical data for comparison, either for numbers of applications or review times.<sup>11</sup> It will likely be time-consuming to conduct analyses within the NSDS as well. The SAP also places considerable administrative burden on agencies that have highly sought data with no additional funding to support agency work on SAP requests.

While increased threats to confidentiality are real, the statistical agencies exist to provide accurate, accessible, and usable information to the public and policymakers. The challenge is to devise a confidentiality protection approach that is sufficiently protective while not impairing the accuracy and usability of public data products with extensive noise injection or pulling more and more datasets into restricted access environments.<sup>12</sup> State and local governments, non-governmental organizations (NGOs), and members of the public may find it difficult to use statistical agency data with noise injection and precluded, because of time and expense, from use of synthesized files with a validation server, let alone from working with restricted files that are in an FSRDC. There are a limited number of these facilities, and the closest one could be hundreds of miles away. Secure remote access is sometimes possible but not generally for first-time users and not for all datasets.<sup>13</sup>

The Evidence Act and the Year 2 Report of the Advisory Committee on Data for Evidence

Building (ACDEB, mandated by the Evidence Act) provide relevant guidance. The Evidence Act (44 U.S.C. § 3582) requires statistical agencies, “to the extent practicable,” to “expand access to data assets [to] develop evidence while protecting such assets from inappropriate access and use,” tasking the U.S. Office of Management and Budget with issuing regulations to enable statistical agencies to carry out those requirements.

The ACDEB Year 2 Report (2022, p. 34) provided a list of guiding principles, which it recommends the mandated OMB regulations (not yet issued) reflect, including that:

- (1) disclosure risk is on a continuum and is not binary,
- (2) not all data are equally sensitive, (3) there is shared responsibility between the statistical agency and users for protecting and not disclosing or re-identifying data, and (4) there is a need to protect good faith actors (i.e., data providers and users who take all precautions appropriate for known risks).

One approach to restoring a balance in statistical agencies’ thinking regarding confidentiality protection versus access and utility is to pass legislation to make confidentiality protection a shared user-agency staff responsibility, as recommended in several reports from the National Academies (1993, Chs. 4–5; 2005, pp. 73–74; 2023a, Ch. 11; 2024b, pp. 245–246). An amendment to the Evidence Act could apply the penalties imposed on agency staff to users who willfully disclose individual identities by reengineering a statistical dataset. “Users” would include not only people in the private sector

<sup>11</sup> Available at Standard Application Process, <https://nces.nsf.gov/about/standard-application-process>

<sup>12</sup> In this regard, Hotz et al. (2022) call for cost-benefit analysis in decisions about an appropriate confidentiality protection system for a census or survey, with explicit consideration of the loss to society from data that are unusable or only marginally useful due to noise injection.

<sup>13</sup> See Standard Application Process, which includes a question on remote access: <https://www.census.gov/topics/research/guidance/restricted-use-microdata/standard-application-process.html>



and academia, but also people in government agencies and their contractors (e.g., such a provision would preclude reengineering statistical data products for criminal justice or immigration enforcement).

The Education Sciences Reform Act of 2002 provides relevant language (20 U.S.C., section 9573), which NCES cites on its website for specific datasets and which could be extended to all federal statistical data:

Any person who uses any data provided by the Director, in conjunction with any other information or technique, to identify any individual student, teacher, administrator, or other individual and who knowingly discloses, publishes, or uses such data for a purpose other than a statistical purpose [or otherwise violates these provisions], shall be found guilty of a class E felony and imprisoned for not more than five years, or fined [or] both.

Laws of member states that implemented the European Union’s General Data Protection Regulation of 2018 also provide relevant language. For example, Section 171 of the UK Data Protection Act of 2018, “Re-identification of de-identified personal data,” states “(1) It is an offense for a person knowingly or recklessly to re-identify information that is de-identified personal data.”<sup>14</sup>

**Finding:** Because of increased threats that traditional publicly available data products

could be reverse engineered to identify individual respondents, statistical agencies are experimenting with newer confidentiality protection methods that inject noise into every data output. They are also considering making some data products available only through secure enclaves or through use of “synthesized” data products with subsequent validation. The challenge is how to balance confidentiality protection with the agencies’ mission to provide accurate, usable data to users in all sectors—Congress, federal, state, and local governments, businesses, NGOs, academia, the media, and the general public. Solutions may require legislation to make confidentiality protection a shared responsibility of statistical agencies and data users.

<sup>14</sup> See <https://www.legislation.gov.uk/ukpga/2018/12/section/171/enacted>



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