




UNITED STATES DEPARTMENT OF COMMERCE
U.S. Census Bureau
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May 17, 2024

To: Jay Breidt
Chair, Census Scientific Advisory Committee

From: Robert L. Santos 
Director, U.S. Census Bureau

Subject: Recommendations to the Census Bureau from the Census Scientific
Advisory Committee Fall 2023 Meeting

The U.S. Census Bureau thanks the Census Scientific Advisory Committee for its recommendations. We are responding to the committee recommendations submitted during its 2023 Fall Meeting on September 21-22, 2023.

Your feedback is welcomed to ensure that the Census Bureau continues to provide relevant and timely statistics used by federal, state, and local governments, as well as business and industry, in an increasingly technologically oriented society.

Attachment

To: Robert Santos
Director, U.S. Census Bureau

From: Jay Breidt
Census Scientific Advisory Committee (CSAC) Chair

Date: September 22, 2023

Subject: Recommendations and Comments to the Census Bureau from the Census Scientific Advisory Committee Fall 2023 Meeting

Introduction

The Census Scientific Advisory Committee (CSAC) thanks the US Census Bureau for all their work in preparing the Fall 2023 CSAC meeting, the first in-person meeting since Fall 2019. We recognize the challenges of transitioning back to an in-person meeting while maintaining a hybrid format to allow CSAC, the Bureau, and the public to participate at a distance. CSAC thanks all the Bureau staff who made this meeting possible.

CSAC appreciated the updates from the Director and the Deputy Director on a range of activities of the Bureau and the careful preparation and presentation of slides on each of the agenda topics. The agenda for the Fall 2023 meeting correlated well with past requests by CSAC on topics of interest to us and we appreciate the opportunity to provide advice to the Director on these topics. One challenge that we regularly face on CSAC is that even slides with considerable content are often lacking in some details that eventually are provided during the oral presentation. CSAC is very interested in having any additional technical details that can be provided to us in whatever form they may be available. If every presentation were supported by a polished technical report, then CSAC's reactions would probably be too late to be of use to the Bureau. But even a small amount of additional detail, such as speaker notes that provide further background on the slides, would be very useful to CSAC as we prepare our discussions in advance of the meeting.

Artificial Intelligence (AI) was discussed in the Deputy Director's remarks and in presentations. CSAC feels that there is a significant opportunity, and risk, for the Bureau in the adoption of AI. Specifically, artificial intelligence can help users access and understand data and it can create efficiency in data production. However, the Bureau's strategy around AI is unclear and its specific current/planned uses were not clearly articulated. CSAC would appreciate a more focused briefing on AI initiatives in a future meeting.

Introducing the Statistical Product First Approach

CSAC commends the Bureau for its Statistical Product First Approach, and its goal of “flipping the focus” from data releases to the development of statistical products based on the Bureau’s data resources. The focus on model-based extensions of design-based data elements recognizes the diverse applications of Census Bureau data products. The Statistical Product First Approach will serve as an important bridge between the Bureau’s extensive data collection infrastructure and its broad network of regional, state, and local users. The Statistical Product First Approach focuses on developing statistical products as a documented set of shared ingredients for decision- and policymaking, rather than viewing data releases as ends in themselves. With this goal, the Statistical Product First Approach aims to engage a range of potential users to define exemplary use cases. These use cases will add to a set of initial demonstration projects, illustrating the potential of statistical products provided by the Bureau (e.g., the Household Pulse Survey and Community Resilience Estimates). The Statistical Product First Production Cycle is ambitious, and CSAC looks forward to updates regarding ongoing developments of this initiative in future meetings.

Regarding immediate next steps with the Statistical Product First, CSAC makes the following recommendations:

- 1. CSAC recommends that the Bureau collect recommendations from other federal, state, tribal, and local entities to ensure the delivery of services and statistical data products meet their local and public policy decision-making needs, such as including data of offspine geographies and important historically-available data products that are no longer available.**

Census Bureau Response: The Census Bureau accepts this recommendation. The Census Bureau welcomes recommendations from all its stakeholders on any topic that pertains to the Bureau's authorized work. This includes recommendations regarding topics to be considered for the Bureau's Statistical Product First initiative. As part of the initiative, there will be elicitation and continual engagement with stakeholders to include federal, state, local, and tribal entities. While the Bureau cannot ensure the delivery of all services and statistical products that meet their local and public policy decision-making needs, the Bureau plans to explore the use of all data assets it has available to it and is authorized to use for the development and dissemination of statistical products that are consistent with the Bureau's authority and requirements under 13 U.S.C.

- 2. CSAC recommends that the Statistical Products First Approach team outline plans for providing education, communication, and workforce development to ensure that the data user community can properly use the statistical data products and teach others in their community to use these statistical data products.**

Census Bureau Response: The Census Bureau accepts this recommendation. A comprehensive plan is being developed for realizing the Statistical Product First workflow, internally and externally of the Bureau. Part of the plan is the creation of a data user ecosystem to facilitate engagement in the development of products under the Census Bureau's 13 U.S.C. authorities as well as to inform the dissemination modalities of these products. The Statistical Product First approach is being designed to meet users where they are and provide tools to support the use of these products. We will share the plan with CSAC at a future meeting.

- 3. CSAC recommends the Statistical Products First Approach team update CSAC at its next meeting on the outcomes of its meetings with American Indian and Alaska Native communities planned for the fall of 2023.**

Census Bureau Response: The Census Bureau accepts this recommendation.

- 4. CSAC recommends that the statistical data products include more diverse languages to involve different demographics (e.g., Asian Americans, Latinos, and American Indians and Alaska Natives who speak and read other languages) to discuss their needs and provide suggested products that they would find helpful as well as feedback and information about their communities.**

Census Bureau Response: The Census Bureau accepts this recommendation. We will incorporate and evaluate to what extent language barriers need to be addressed in our elicitation of purpose and use needs and continued stakeholder engagement through our 13 U.S.C. authorized product development and dissemination.

- 5. CSAC recommends the Census Bureau research how to measure the error in the final statistics, investigating both modeling error and error due to disclosure avoidance techniques. This process would be more transparent for the end user to understand the accuracy of the final products and the lowest level of geography possible.**

Census Bureau Response: The Census Bureau accepts this recommendation. All statistical product dissemination will include proper technical documentation. Where needed, additional research will be done to characterize modeling error and error due to disclosure avoidance techniques. In addition, we will follow the [Census Bureau's Statistical Quality Standards](#) including the dissemination of associated uncertainties.

- 6. CSAC recommends the Census Bureau develop a set of citation guidelines (e.g., the Dataverse Best Practices: <https://dataverse.org/best-practices/data-citation>) and models for citation of statistical products, code, and other outputs. This recommendation includes a suggestion that the Census Bureau review existing guidelines for data and code citation and evaluate their potential utility for release and versioning of Bureau statistical products.**

Census Bureau Response: The Census Bureau accepts this recommendation. Furthermore, there are already efforts underway to achieve these goals. The recently introduced Open Census initiative aims to incorporate industry best practices into the Census Bureau's research and data ecosystems. Open Census brings us into alignment with efforts from the Office of Science and Technology Policy to advance Open Science and directives requiring free and immediate access to federally funded research. Open Census will provide Census researchers, developers, and statisticians with repositories to develop, publish, and share their work conveniently and intuitively. It will also provide standards and best practices for cataloging published products, including metadata, Persistent Identifiers, and Digital Object Identifiers. These measures should increase peer review, collaboration, citations, and the reuse of Census Bureau-funded research.

- 7. CSAC recommends that the Bureau involve current and past state and local demographers (and others with relevant experience) and provide them with access and resources necessary to act as representatives for their (downstream) data users, to act as product development partners with access to non-public information, and to aid in drafting methodologies.**

Census Bureau Response: The Census Bureau accepts this recommendation. As noted in the presentation and discussion, one of the first Statistical Product First demonstrations will involve state demographers and state data centers with a focus on products that support their purposes and uses to better help their constituents. In the process we will seek to engage a full spectrum of external expertise to help in the development of the new products under the Census Bureau's 13 U.S.C. authorities.

- 8. CSAC recommends that the Bureau outline a tiered access plan based on demonstrated needs and use cases for detailed discussion at the next CSAC meeting. The tiered access plan should consider a full spectrum of tiers to add between the two extremes of direct access and public data/statistics. This spectrum will open up product development to a wider group of interested parties. Further, the tiered access plan should address issues relating to disclosure avoidance and how the Bureau intends to evaluate the proposed methods to minimize disclosure of individual responses.**

Census Bureau Response: The Census Bureau accepts this recommendation. Our early demonstration projects paralleling the FSRDC infrastructure will include some forms of tiered access. This will help us understand implementation complexities and barriers, as well as support (e.g., data concierge services) needed for the demonstration projects' users. We will build from there to develop a comprehensive tiered access plan, and to address the issues CSAC notes. We will share the plan with CSAC at a future meeting.

- 9. CSAC recommends the Bureau set up a working group (perhaps drawing from Census Bureau advisory committees) to outline relevant equity issues relating to solicitation and development of statistical products and provide an update at the**

next CSAC meeting. This working group should engage external entities from a broad spectrum of coalitions to suggest priority products. The working group would consider all aspects of equity, including but not limited to data representation, data access, data analysis, data dissemination, and data research. Finally, the governance and decision-making process of this working group should be transparent.

Census Bureau Response: The Census Bureau thanks you for this recommendation. However, we are unable to agree to establishing a formal working group at this time. In this first phase of our effort, we are reaching out to Census users via the existing infrastructure already in place (i.e., through the approximately 40 offices that actively engage with external users). As part of this work (and noted in our presentation), we are prioritizing State Data Centers and State Demographers given their known broad reach and the communities they serve. This initial phase will inform the future design of a systematic approach that aims to ensure the solicitation and development of statistical products happens equitably, to better inform what we collect and produce under our Title 13 statutory authorities. After we complete this initial phase, we will determine if a working group can help achieve equity throughout the Statistical Product First approach.

Index of Economic Activity (IDEA)

The Index of Economic Activity (IDEA) is an index that summarizes 15 different economic data sets. CSAC commends the Bureau for producing an intuitive, visually appealing, and highly usable interactive website to present the index. Validation of indices that measure complex latent variables, like “Economic Activity,” is difficult because direct observation of the latent variable is not possible. Thus, CSAC evaluated the index using six criteria:

Theoretical consistency: Does the index successfully measure the thing it aims to assess? Is there clear correspondence between the index’s conceptual framework and measurable inputs?

Practicality: Does the index use readily available information? That is, can one easily obtain the necessary ingredients to make (or validate) the index?

Transparency: Are construction and application methods transparent and replicable?

Interpretability: Does the indicator translate a complex concept into an easily communicable measure? Is it easily interpreted by experts and non-experts?

External consistency: Do the indicator’s results align with other similar measures?

Internal consistency and robustness: Does the index produce consistent results? Does it do so under sensitivity analyses?

IDEA is designed to be a summary of 15 different economic data sets produced by the Bureau, however CSAC struggled with the interpretability of the index. Using the six criteria as the basis for an evaluation, and considering the methodology used to produce the index, CSAC has the following recommendations:

- 10. CSAC recommends that the Census Bureau more clearly articulate the purpose of IDEA and how it differs from other similar indices available to the public. One approach to achieving this goal is to provide scenarios for the index in IDEA's user guide.**

Census Bureau Response: The Census Bureau appreciates and accepts this recommendation. We will continue to conduct analysis that compares IDEA to similar indices available to the public, such as the Chicago Fed's National Activity Index or the New York Fed's Weekly Economic Index, expanding upon the existing research presented in the IDEA Working Paper (<https://www.census.gov/library/working-papers/2023/econ/building-the-census-bureau-index-of-economic-activity-workingpaper.html>). Continuing to improve our documentation for data users is an important part of understanding the IDEA.

- 11. The index uses weights determined by principal components analysis (PCA) and these weights in turn imply a weighting for various sectors of the economy. Certain sectors of the economy are not represented (Services) and other sectors seem to be over or under weighted relative to their share of economic activity in the U.S. CSAC recommends that the Census Bureau explain and justify the sector weights and the data selected for the index.**

Census Bureau Response: The Census Bureau appreciates and accepts this recommendation. The series currently included were chosen because they are widely used and frequently monitored by public data users, ensuring relevance, and they are produced in-house, allowing us to have access to subject matter experts. We are currently working on researching the feasibility of a quarterly index, which will cover the service sector since it will include data from the Quarterly Services Survey. More information on the weights calculation is available in the IDEA Working Paper (<https://www.census.gov/library/working-papers/2023/econ/building-the-census-bureau-index-of-economic-activity-workingpaper.html>), and we can make this information more accessible to data users using the website.

- 12. CSAC recommends that the Bureau provide more detailed information about the PCA used to construct the index. How much of the variance is explained by the first component, and what information is embedded in the other components? What is lost by focusing exclusively on the first component? At a minimum, an examination of subsequent principal components may aid in interpretation of IDEA, the first principal component, by showing what IDEA is not.**

Census Bureau Response: The Census Bureau appreciates and accepts this recommendation. We will conduct an analysis of the subsequent principal components as suggested.

- 13. CSAC recommends that the Census Bureau provide guidance to users on the interpretation of the index. What does an index value of 0, 1, or -1 mean? How are**

changes in the index interpreted (e.g., a month-over-month move from +1 to +2)? Inclusion of some strategically selected use cases would be of great help to users.

Census Bureau Response: The Census Bureau appreciates and accepts this recommendation. Continuing to improve our documentation for data users is an important part of understanding the IDEA.

- 14. CSAC recommends that the Bureau consider questions around the maintenance of the index. Specifically:**
- a. The Bureau should develop a plan for updating the weights applied to the various input data sets. Ensure that this plan can account for changes in the structure of the economy.**
 - b. The Bureau should develop a plan for handling how such updates are captured by the index. CSAC recommends either versioning the index and/or re-estimating the entire time series, as is done with some economic indices.**

Census Bureau Response: The Census Bureau appreciates and accepts this recommendation. The team has already started looking into this and plans to update the weights using a longer time span that incorporates more recent data. We will be determining an ongoing schedule of weight updates with this work. We will ensure the historic estimates of the index are kept in our datasets, and re-estimating the full index time series will be part of the weighting update.

American Community Survey Content Test

CSAC commends the Census Bureau for its desire to keep the American Community Survey (ACS) current, to reflect recommendations of key stakeholders, to employ best practices in the design of questions and response categories, and to take an evidence-based approach to evaluating possible changes based on the ACS Content Test. The ACS Content Test focused on the household roster and a range of questions including educational attainment, income, employment, Supplemental Nutrition Assistance Program (SNAP) receipt, disabilities, health insurance, electric vehicles, solar panels, and sewer connections. It is evident that stakeholders are attentive to changes in response to energy transitions. Future content tests could be expanded to include other aspects of population and housing characteristics as they relate to climate change more broadly. The Bureau considered changes in question wording, reference period, question order, instructions, and response categories as well as some new questions. These changes were carefully evaluated based on benchmarks, missing data patterns, response distributions, reliability, and bias.

- 15. CSAC recommends that the Bureau publish the details of the content testing and results, including but not limited to timing of data collection during the calendar**

year, sample sizes for the different conditions, benchmarks used, item missing data rates, response distributions, and response reliability and bias.

Census Bureau Response: The Census Bureau accepts this recommendation. Consistent with previous ACS Content Tests, reports will be produced for each topic tested. The reports will cover the test methodology including the sample design, data collection methods, and timing. The results will cover pre-established metrics used to evaluate the topic including benchmarks, item missing data rates, response distributions, response reliability metrics, and other metrics as appropriate. Once available, the reports will be published online in the [ACS Content Test Evaluation Reports Library \(census.gov\)](https://www.census.gov/acscontenttest/).

16. Because content changes in the ACS may affect some groups differently than others, CSAC recommends that the Bureau undertake and broadly disseminate analyses of variability in the test results, e.g., by race/ethnicity.

Census Bureau Response: The Census Bureau partially accepts this recommendation. Analysis plans for each topic report were developed by subject matter experts, focusing on evaluating the issue being addressed in the test. Subgroup analysis was conducted when there was a particular concern and when the sample size supported the analyses. These analyses will be included in published reports as described in question 15 above.

The past 12-month reference period for income questions asks respondents to perform a complicated calculation that few are likely to be able to perform, yet a substantial majority of ACS respondents do report dollar amounts. What they report is not well understood. It is possible that those interviewed early in the calendar year tend to report their income for the preceding calendar year, as the proposed new reference period would request. Those interviewed later in the year may tend to report amounts based on their current salaries or benefit receipts (for example, annualized Social Security benefits based on current receipts, which incorporate the annual inflation adjustment that the Social Security Administration introduces each January). While the content test data, which were collected in the months of October to December, do not allow comparisons of the current and test versions across the full calendar year, the annual ACS data would support an administrative records-based assessment of reported income by interview month. This could provide a useful addition to the content test results.

17. CSAC recommends that the Census Bureau evaluate the reporting of income by survey month using the full ACS data for the same calendar year as the ACS content test. Such an evaluation should include a comparison of reported amounts by calendar month as well as an assessment using administrative records. Further, CSAC recommends that additional tests of data quality be performed focused on the timing of data collection through the year, before decisions are made regarding the reference period for the income, labor force, and SNAP questions.

Census Bureau Response: The Census Bureau partially accepts this recommendation. Evaluating data quality from the ACS content test using linkages to administrative records is the first step in considering a change in the reference period. We anticipate additional analyses will be undertaken before a final decision on changing the reference period. To the extent feasible, based on resources and competing priorities, we will use administrative records to assess data quality at the monthly level. However, as many administrative records are not available on a monthly basis, this analysis will require a number of assumptions. Preliminary analysis has shown it is not straightforward to discern what reference period respondents are using when they respond. Evaluating recall bias and untangling presumed reference periods are areas of future research that will be undertaken before implementing a reference period change.

The proposed change in the reference period of the income measure from prior 12 months to prior calendar year affects measures of poverty, which would then relate income from the prior calendar year of persons who are current household members to a threshold based on current household membership. There is a potential mismatch due to changes in household membership. To be sure, this mismatch exists for poverty measures based on CPS Annual Social and Economic Supplement (ASEC), but the difference is less. Whereas CPS ASEC is collected in February, March and April, the ACS is conducted on a rolling basis through the year.

- 18. CSAC recommends that the Bureau carefully assess and share with stakeholders the potential effects of the shift in the reference period from the prior 12 months to the prior calendar year in the income question for poverty measures based on the ACS. If the Census Bureau opts for the calendar year retrospective period for the income measure in the ACS, CSAC recommends that the Bureau document the consequences for 5-year averages at the local level (e.g., tract), provide a crosswalk, and share the information widely.**

Census Bureau Response: The Census Bureau partially accepts this recommendation. Before implementing a change to the reference period, Census would engage in substantial stakeholder engagement and assessment of impacts on poverty. However, the feasibility of creating a crosswalk or evaluating tract-level poverty rates depends on actual implementation and timing of changes.

- 19. CSAC acknowledges that the shift to the Test Version of the disability questions has the potential to produce estimates of disability prevalence that are lower than those currently produced. Nevertheless, CSAC recommends moving forward with the Test Version using Definition 1 (i.e., no difficulty, a lot of difficulty, cannot do at all).**

Census Bureau Response: The Census Bureau appreciates this recommendation but cannot accept it as written. The Census Bureau plans to retain the current ACS disability questions for collection year 2025 based on the public feedback received from the October 2023 Federal Register notice. This was noted in a February 2024 blog from

the Census Bureau Director, Robert Santos (<https://www.census.gov/newsroom/blogs/director/2024/02/next-steps-on-acs-disability-questions.html>). The Census Bureau is committed to engaging with stakeholders and communities to better understand challenges with identifying and accessing data for the disability community. We are currently planning a stakeholder meeting, which will take place this Summer.

- 20. If the Bureau adopts the revised disability measures, CSAC recommends that the change and likely consequences be communicated widely to stakeholder groups making sure to give sufficient attention to those at the local level, including health officials, urban planners, etc. Although the two approaches reflect very different concepts, users will still want to understand the consequences for geographical and temporal patterns. To the extent possible, CSAC recommends control and test estimates be published in parallel so that the two sets of measures can be compared.**

Census Bureau Response: The Census Bureau appreciates this recommendation but cannot accept it as written. The Census Bureau plans to retain the current ACS disability questions for collection year 2025 based on the public feedback received from the October 2023 Federal Register notice. This was noted in a February 2024 blog from the Census Bureau Director, Robert Santos (<https://www.census.gov/newsroom/blogs/director/2024/02/next-steps-on-acs-disability-questions.html>). The Census Bureau is committed to engaging with stakeholders and communities to better understand challenges with identifying and accessing data for the disability community. We are currently planning a stakeholder meeting, which will take place this Summer and will continue our ongoing stakeholder engagement with the federal agencies and the disability community. The Census Bureau is committed to robust stakeholder engagement for content development.

- 21. CSAC recommends the adoption of the Test Version for Educational Attainment, Test Version 2 for Health Insurance, the Test Version for Sewer, Test Version 2 for Electric Vehicles, and the Test Version for Solar Panels.**

Census Bureau Response: The Census Bureau accepts this recommendation contingent on OMB approval of a change to the content.

National Experimental Wellbeing Statistics (NEWS) Project

As unit and item response rates decline, survey estimates of income and poverty are increasingly forced to rely on weighting adjustments and imputation to properly represent the population and provide complete data. Also, underreporting of program participation, which has persisted for years, and more general misreporting of income raise concerns about the overall quality of data on income and poverty. Administrative records and commercial (third-party) data provide an alternative source of information on income and program participation, although these sources are not without their own issues of coverage and bias. Decennial census data provide more complete and precise demographic data than survey or administrative data.

Linking administrative data and decennial census data to survey data provides a possible way to address the quality issues with survey data.

Individual sources of error in survey estimates have been studied separately and contributed much to our understanding of the strengths and weaknesses of survey data, but these studies show that different error sources may produce biases in different directions. NEWS is intended to address multiple sources simultaneously and, in so doing, create the most accurate estimates of income and poverty that are available currently. CSAC commends the Census Bureau team for its tremendous effort in bringing together multiple sources of data, overcoming significant technical and bureaucratic hurdles, and producing an initial set of improved income and poverty estimates under NEWS. CSAC notes, at the same time, that NEWS is assessing economic well-being, not well-being as it is more broadly construed.

A major source of administrative data used in developing NEWS is data from the tax system. These data include not only the tax returns filed by individuals, but the reports submitted to the Internal Revenue Service (IRS) by employers, investment firms, and state and federal agencies that provide income support through multiple programs. The Census Bureau presentation acknowledges several limitations of tax data with respect to coverage, completeness, and accuracy. CSAC calls attention to several additional limitations of these data:

- In addition to excluding employees' pre-tax earnings used to pay health insurance premiums, the earnings reported on employee W-2 forms exclude a variety of other pre-tax deductions that can add up to a sizable fraction of gross earnings. Among these are dependent care deductions that are reported in a W-2 field that the Census Bureau does not receive and transportation and medical flexible spending account deductions that are not reported on the W-2 at all.
- While "information documents" (for example, 1099s) provide data on the receipt of income for filers and non-filers alike, representing an important data source on the latter, family units cannot be constructed from these documents, unlike tax returns.
- Underreporting of self-employment/sole proprietor business income is a major contributor to the "tax gap," the aggregate underpayment of federal taxes.
- The addresses reported on tax returns and information documents may not correspond to where filers actually live.

CSAC commends the Census Bureau for recognizing that the earnings reported by employers often fall short of gross earnings—the amount that its surveys seek to measure—and expending considerable effort to include in NEWS the gross earnings that employers report to their state employment security agencies. These gross earnings are available to Census Bureau researchers through its Longitudinal Employer-Household Dynamics (LEHD) program. While the coverage of jobs in the state systems is far from complete, the Bureau researchers show that for covered jobs the LEHD earnings exceed W-2 earnings (including deferred compensation, which is reported on the W-2 but not on tax returns) by at least 3 percent on one-fifth of all jobs for which both earnings sources could be linked. These findings provide unique information on the extent to which taxable earnings fall short of gross earnings—a point that would be reinforced by repeating the comparison but with deferred compensation excluded from W-2 earnings. Bureau staff are uniquely positioned to document the difference between gross earnings and taxable earnings because of their ability to access both the W-2 data and the state

data included in the LEHD data. Direct access to the state earnings data for research purposes is highly restricted.

The Census Bureau appreciates the CSAC's interest in this subject and its recommendations on the matter. At the outset, it should be noted that the Bureau's use of IRS data for the NEWS Project has all been approved by the IRS and is subject to Census Bureau 13 U.S.C. approved projects. The Bureau now responds to each of your specific recommendations below.

22. CSAC recommends that the Census Bureau repeat and expand its comparison of linked LEHD and W-2 earnings but exclude deferred compensation from the W-2 data. This comparison should include examining differences by level of earnings, as certain pre-tax deductions will account for a greater share of gross earnings at low- to middle-income levels. This will provide the research community with currently unavailable information on the full extent of the gap between taxable earnings and gross earnings and in so doing will underscore the important role that surveys play in collecting gross earnings.

Census Bureau Response: The Census Bureau accepts this recommendation. We have provided some detail along these lines in the initial NEWS release (related to differences between W-2 and LEHD earnings for those with and without employer-provided health insurance), but plan to expand those comparisons in future work.

Efforts such as NEWS that use linked survey and administrative data to improve the quality of income and poverty data face several additional challenges that must be addressed:

- Title 26 (the Internal Revenue Code) restricts how the Census Bureau may use tax data to complement survey estimates and the decennial census. Direct substitution of tax data for survey data is generally not permitted. Currently, the Census Bureau receives a very limited set of tax items for purposes that do not involve collaboration with the IRS.
- Both access and allowed use of program administrative data are also limited.
- The quality of commercial data is uncertain and undoubtedly highly variable. The proprietary nature of such data limits quality assessment. Additionally, the consent under which such data are collected or shared may sometimes be questionable.
- Conceptual differences between survey and administrative definitions of income can be sizable, making it difficult to compare survey and administrative estimates. For example, the Current Population Survey Annual Social and Economic Supplement (CPS ASEC) includes, in theory, interest and dividends from retirement accounts, whereas tax data do not. In addition, the CPS ASEC is not entirely clear on the reporting of withdrawals from retirement accounts whereas tax data include all withdrawals (separating taxable withdrawals from total withdrawals).
- A common type of misreporting of income in surveys is rounding, which affects accuracy at the household level but may contribute little, if anything to overall bias. Rounding of income can affect whether an individual family is classified as in poverty or not but may not affect the poverty rate.

The Census Bureau has identified several areas of interest in its future research plans under NEWS but must prioritize these areas due to limits on available resources. The Census Bureau has asked CSAC to address priorities for these future plans, which include:

- Producing NEWS estimates for additional years to supplement 2018
- Expanding the set of subnational geographies (beyond census regions and degree of urbanization); this would require using the American Community Survey (ACS) with its more limited income data in place of the CPS ASEC
- Expanding the number of income and resource concepts to include taxes, credits, and in-kind transfers and extending poverty measurement to the Supplemental Poverty Measure (SPM)
- Addressing more sources of measurement error, such as self-employment earnings and income at the very top of the distribution (such as the top 0.1% or top 0.01%)
- Further investigating the modeling assumptions as well as issues for additional subgroups of interest such as non-citizens, the homeless/unhoused (or, more broadly, those with unstable living arrangements), and those living in group quarters
- Providing feedback into surveys in order to improve survey questions and survey data processing.

The SPM represents a key application of income data and one designed to provide a more comprehensive measure of resources relative to needs than the official poverty measure. Extending the NEWS methodology to the SPM would require linking additional administrative sources to the CPS ASEC and extending the NEWS imputation enhancements to additional variables, but the potential benefits would appear to warrant the additional investment.

While self-employment income is already addressed in NEWS, additional improvement is likely to be needed. The concept of self-employment is ambiguous and poorly defined in survey questions. As a result, survey estimates vary widely. Adding to the measurement challenge, the IRS definition of self-employment (income required to be reported on Schedule C) is broader than the way survey respondents may view their employment. The growth in contract employment (for example, ride-sharing services) increases the importance of improving measurement. Unfortunately, self-employment income is also one of the most underreported sources in tax data. NEWS already uses administrative estimates derived ultimately from Schedule C filings with Form 1040, so improving the NEWS estimates will require a new approach. Collaboration with IRS staff in the Taxpayer Compliance Program could potentially provide Census Bureau staff access to insights developed over the years through IRS studies of compliance and to IRS data not routinely available to Census Bureau researchers.

23. CSAC recommends that the highest priority among the Census Bureau's future plans be assigned to:

- a. Extending NEWS to the Supplemental Poverty Measure (SPM) and, if possible, the Health Inclusive Poverty Measure, recommended by a recent panel of the Committee on National Statistics. This extension to the SPM should include improving estimates of the Earned Income Tax Credit and in-kind transfers, which are important components of the SPM.**

Census Bureau Response: The Census Bureau accepts this recommendation. We plan to integrate improved tax modeling, improved imputation for partially available program data, and adjustments for disagreements between tax units, means-tested benefit case units, and survey households (i.e., what is the value of SNAP benefits to a child in a SNAP case that doesn't match their survey household?) into the next release of NEWS.

- b. Improving estimates of self-employment income, which should include identifying such income that may be misreported as earnings and reducing overall underreporting, perhaps through collaboration with staff at the IRS who are knowledgeable about underreporting of self-employment income.**

Census Bureau Response: The Census Bureau accepts this recommendation, conditional on funding availability. We believe addressing self-employment income underreporting is an area of critical importance to address. However, this work may still take longer than other work (such as a NEWS estimate of SPM poverty) because the research needed is greater. For example, much of the work necessary for a NEWS SPM estimate has been completed in prior or in-progress papers and the challenges are conceptually simpler than for addressing self-employment underreporting in the absence of available data on initial reported income on tax filings compared to the final audited amount that is linkable to survey respondents.

The ACS provides much greater geographic detail than the CPS ASEC and includes the group quarters population excluded from the CPS ASEC sample. Taking advantage of both would greatly enhance the NEWS estimates. However, the ACS presents significant challenges in applying the NEWS methodology. Most notably, the ACS collects much less detailed income information and combines many of the smaller sources into groups, making it more difficult to correct individual sources. In addition, the ACS residence rules resemble the decennial census rules, which count college students who are away at school in their dormitories or off-campus housing. This necessitates excluding many such students from the universe for poverty measurement or basing their poverty status solely on their personal income rather than their family income, as is done in the CPS ASEC. These challenges must be weighed in assigning a priority level for obtaining the enhancements that extending NEWS to the ACS would enable.

- 24. CSAC recommends that mid-level priority among the Census Bureau's future plans be assigned to applying NEWS to the ACS in order to expand the geographic detail for which estimates can be provided and extend NEWS estimates to segments of the group quarters population in order to encompass most of the aged population who are excluded from the Current Population Survey Annual Social and Economic Supplement (CPS ASEC) universe.**

Census Bureau Response: The Census Bureau accepts this recommendation. We plan to give higher priority to work on the CPS ASEC, SPM poverty and post-tax and transfer income, and self-employment than to transitioning to the larger sample of the ACS, and the greater ability to estimate sub-national income and poverty.

Ideally, the NEWS methodology will demonstrate that it has high value and will become less resource-intensive to implement. In that case the production of estimates on a regular basis will become both desirable and feasible. At this point, adding another year of estimates is less important than developing a better understanding of the strengths and limitations of the initial results and producing the enhancements and extensions recommended above. In addition, the Covid pandemic had significant, detrimental effects on the quality of CPS ASEC and ACS data, and both the pandemic and the government response introduced anomalies into federal and state programs that would be reflected in program administrative data. Producing NEWS estimates for the pandemic years before the methodology is fully settled is likely to be less useful as an aid to understanding the value of NEWS than other uses of Census Bureau resources.

There is no question that income at the extreme top of the distribution—for example, the top 0.1%) is poorly measured in Census Bureau surveys—primarily because of high unit nonresponse among the highest income households. While item nonresponse and underreporting common throughout the income distribution may also be substantial among the highest income households that do participate, another factor affecting the quality of income reporting is that the complexity of income among these households is not fully captured in sets of income questions designed for broad applicability. Moreover, were the estimates to be markedly improved, little of the improvement could be reflected in public use data because of the disclosure limitation methods that would have to be applied to protect the confidentiality of highly sensitive data.

While it is possible that comparisons of NEWS and survey estimates by source of income may facilitate improvements in survey questions, the limited number of income questions included in most federal surveys suggests that the potential benefits of such improvements may be confined to a very small number of surveys. The same limitations would likely apply to improvements in survey data processing inspired by the NEWS methodology.

25. CSAC recommends that the lowest priority be assigned to:

a. The development of NEWS estimates for additional years.

Census Bureau Response: The Census Bureau partially accepts this recommendation. While we recognize that there is greater value in improving estimates for a given year (such as the current NEWS estimates for 2018), we believe there is considerable value in producing more timely estimates. For example, we believe a higher priority should be given an imperfect (due to less than complete administrative data availability), but timely estimate for income and poverty for a given year. For example, BEA's initial, more timely GDP estimates are of great interest to the public, relative to the improved estimates with complete data that are available years later. While we do hope to provide estimates prior to the currently available estimates for 2018, we agree that those should be given a lower priority than other work, except to the extent that working with earlier data will allow us to evaluate our methods and validate their robustness to changes in reporting quality over time and across the business cycle.

- b. The improvement of estimates at the extreme upper tail of the income distribution.**

Census Bureau Response: The Census Bureau accepts this recommendation.

- c. The application of NEWS findings to improve survey income questions and the processing of survey income data.**

Census Bureau Response: The Census Bureau partially accepts this recommendation. While this is not the highest priority for the NEWS project, there may be time-sensitive opportunities where input from our work will be useful to those working on redesigns to the CPS ASEC instrument or ACS content tests.

In addition to the future plans identified by the Census Bureau, CSAC has identified other areas of NEWS research that the Census Bureau should consider. These are focused on potential methodological enhancements as well as a better understanding of the implications of the results to date.

The Census Bureau finds that the survey and NEWS estimates of household income in 2018 differ little at ages under 55 while NEWS estimates are substantially higher at ages 65 and older.

The latter findings are consistent with an underreporting of Social Security benefits and retirement income more broadly, demonstrating the value of NEWS, but the under-55 findings would appear to limit the appeal of NEWS, given the effort required to produce these estimates. Is it correct to conclude that the CPS ASEC is doing quite well with the under-55 population (which would be a welcome finding), or is NEWS missing some critical elements in its adjustments? Would the SPM with its broader definition of resources show a greater impact of NEWS on this population?

- 26. CSAC recommends that the Census Bureau explore possible reasons for the limited improvement that NEWS appears to provide over the CPS ASEC in the population under 55 and, when NEWS estimates of the SPM become available, investigate whether the expanded resource accounting in the SPM provides more favorable results for NEWS within this population.**

Census Bureau Response: The Census Bureau accepts this recommendation.

While NEWS and survey estimates of average household income and the poverty rate differ little among persons under age 55, the corrections introduced by NEWS may provide more accurate estimates of income and poverty at the micro-level, affecting who in the survey population is classified as in poverty or not. These micro-level improvements may be important if such changes are associated with characteristics that are of interest to policy researchers, such as program eligibility and participation. For example, the NEWS data may yield closer agreement between estimated program eligibility and participation. While micro-level comparisons of households and families between the CPS ASEC and NEWS may be limited by

aspects of the NEWS methodology (in particular, if CPS ASEC households with minimal reported data are removed from NEWS), changes in relationships between income or poverty and other variables will be observable.

27. CSAC recommends that the Census Bureau explore ways to assess the quality improvements that NEWS introduces at the microlevel and the impact of these improvements on relationships between income or poverty and other characteristics, such as program participation, that have policy interest.

Census Bureau Response: The Census Bureau partially accepts this recommendation. We hope to be able to explore these relationships in more detail, resources permitting. Furthermore, through our goal of code transparency and data availability, we hope to make it possible for RDC researchers to further investigate these relationships.

Currently, the Census Bureau receives reported income amounts for only two types of information returns: W-2 and 1099-R (retirement income). For other information returns the Census Bureau receives only an indicator that there is income. Obtaining the income amounts for other types of information returns would enable the Census Bureau to improve, potentially, the NEWS estimates of additional CPS ASEC income sources.

28. CSAC recommends that the Census Bureau explore with the IRS the possibility of obtaining the income amounts reported on all the information returns it receives.

Census Bureau Response: The Census Bureau accepts this recommendation. The Census Bureau will consider and try to ascertain whether this would be possible.

The undercounting of young children remains a persistent problem in surveys and the decennial census. Survey weighting to population controls that more fully account for young children effectively hide this undercount in surveys by distributing the missing children across all households with children. How this affects estimates of poverty among children is unclear. School districts collect extensive data on school-age children, and while these are not the ages with the highest undercounts, school-age children are the survivors of the children who were most severely undercounted. It is possible that the data collected by schools have the potential to be informative about the undercounted children and their distribution across communities by economic status.

29. CSAC recommends that the Census Bureau explore the potential contribution of data collected by schools to improving the NEWS estimates of young children and, in particular, the distribution of young children across families by income and poverty level.

Census Bureau Response: The Census Bureau partially accepts this recommendation. We agree that there is potential in other data sources beyond those we currently utilize. We would be happy to integrate publicly available data on school district attendance and income. However, we do not know of such readily available data

that we could integrate and would be happy for more guidance to expand the data we use along these lines.

The Census Bureau has also asked CSAC for its thoughts on how best to engage the research community in providing feedback to help improve the NEWS methods and estimates. The Census Bureau notes that it already has plans to present findings at several research conferences, including the National Bureau of Economic Research (NBER) Summer Institute and the Joint Statistical Meetings as well as the meetings sponsored by the Association for Public Policy Analysis and Management and the Allied Social Sciences Associations.

30. CSAC recommends that the Census Bureau consider presentations at the following additional conferences:

- a. **The National Tax Association's annual conference**
- b. **The annual IRS-Urban-Brookings Tax Policy Center Joint Research Conference**
- c. **The National Bureau of Economic Research (NBER) Conference on Research in Income and Wealth**
- d. **The annual meeting of the Population Association of America**
- e. **The National Association for Welfare Research and Statistics**

31. CSAC also recommends that the Census Bureau consider presentations to the Social Security Administration's Retirement and Disability Research Consortium and the NBER's Labor Studies and Public Economics programs and seek additional suggestions from the authors of related work on income and poverty measurement cited in the NEWS working paper.

Census Bureau Response: The Census Bureau accepts recommendations 30 and 31. We plan to submit to and present our work at these venues. From the above list, we have already presented or are on the program for the NBER CRIW SI and NTA (recommendation #30). We will prioritize the other meetings noted in recommendations 30 and 31.

Another aspect of engaging the research community is through access to the NEWS data. Currently, linked data of the kind represented by NEWS and its inputs can be accessed by researchers outside the Census Bureau only through mechanisms that require Special Sworn Status, which is needed to access data through the Federal Statistical Research Data Centers (FSRDCs). Broader engagement of the research community is likely to require alternative modes of access. One possibility that could be considered is through the National Secure Data Service (NSDS), whose development was recommended by the Committee on Evidence-Based Policymaking and subsequently authorized by Congress. The NSDS will be established within the National Center for Science and Engineering Statistics in the National Science Foundation.

32. CSAC recommends that the Census Bureau explore alternatives to the Federal Statistical Research Data Centers (FSRDCs) for researchers to access NEWS data.

One option to consider is tiered access, such as the National Secure Data Service, which is currently in development.

Census Bureau Response: The Census Bureau partially accepts this recommendation. When the National Secure Data Service is available, we will pursue sharing code and data through it, conditional on approval by the various federal and state agencies and commercial data providers whose data is used as inputs to the NEWS project.

The statistics produced in this effort can potentially be improved with better access to IRS and other administrative data. While direct sharing of this data by the IRS and other federal and state agencies may be difficult, there may be technological solutions that can address certain aspects of this problem within the constraints imposed by Title 26 and other federal and state regulations. Indeed similar challenges appear when financial institutions need to collaboratively detect fraud without sharing raw data (c.f. https://doi.org/10.1007/978-3-642-03549-4_20), and in several other cross-silo federated learning applications. Recent advances in computing on encrypted data can allow the Census Bureau and the IRS (or other federal or state agency) to jointly run a computation where the matching between the two datasets takes place in an encrypted form, with only the final aggregate statistics being decrypted. Additionally, disclosure limitation techniques can be applied to the encrypted data itself, so that the result of the joint computation is a (slightly noisy) income distribution. These technologies have been recently making the leap from being wildly impractical to reasonably feasible, and there have been recent applications of these technologies at medium scale.

33. CSAC recommends that the Census Bureau explore the use of privacy enhancing technology, such as cross-silo federated learning and secure multiparty computation, to address the challenges of data sharing.

Census Bureau Response: The Census Bureau partially accepts this recommendation. Given the limited resources available to the NEWS project, we have limited expertise in these privacy enhancing technologies. When they are available more broadly we hope to pursue making our code and data more broadly available. An additional caveat is that the Census Bureau will not use any disclosure avoidance methodologies that the Census Bureau has not thoroughly vetted and approved for its own use.

Introducing the Continuous Count Study

CSAC commends the Bureau for pursuing enhanced use of administrative records to help generate population estimates on a continuous basis. This parallels in some ways the Bureau's development of a continuously updated Master Address File (MAF), which is a relatively recent innovation that has proven to be critically important to not only the decennial census but the Bureau's household surveys. The stated goal that drove the creation of this project is "to demonstrate how adding key new data sources can improve decennial census coverage and

quality; develop baseline for feasibility of using administrative records to supplement self-response and improve other counting operations, such as imputation.”

Since administrative records play such a big role in so many different aspects of what the Census Bureau does now, this project makes a great deal of sense. CSAC members are excited about the prospects that the Continuous Count project will improve the decennial census accuracy and efficiency; that it will provide another method, along with the PES, to measure the coverage of the decennial census; and that it will expand the scope and use of administrative records for many other Bureau projects not related to the decennial census. This work should pay particular attention to data sources, such as birth and death records from the Vital Statistics system, that provide information about young children and older adults (particularly those over age 85), respectively.

The U.S. Census Bureau is not alone in tapping governmental records to enhance the accuracy and increase the efficiency of population censuses. Similar projects are underway in Canada, New Zealand, Australia, and Great Britain (and undoubtedly in other countries as well). CSAC appreciates that the Census Bureau is familiar with what similar agencies in other countries around the world are doing, and that the Bureau is willing to adopt some of the ideas and methods that these other countries are using—something like “international best practices” for using administrative data to improve census estimates.

The initial reference dates for this project are April 1, 2020 and July 1, 2021 which allow comparisons to the decennial census and 2021 population estimates, respectively. Initially the results are focused on national and state estimates, though some lower levels will also be processed, and we assume that eventually lower-level estimates will be made for all states. Besides the total population, the demographic domain is limited to Voting Age Population and Race and Ethnicity.

34. CSAC recommends that the Census Bureau acquire individual record information such as birth and death statistics, as well as Medicaid and CHIP data, to provide more information on the inclusion of children with expanded use of data only available from the Social Security Administration NUMIDENT file.” CSAC recommends that the Census Bureau both acquire information about additional sources of relevant information and report back to CSAC on this concern. Is NUMIDENT a file of children with Social Security numbers? Can Vital Statistics data also be used? CSAC would also like more information about the Census Bureau’s plans to perform “research on the undercount of young children using administrative data” and what data they will draw on to do so. Would Medicaid and/or CHIP data be helpful? Is including children from the Social Security data system part of the effort to address the undercount of young children?

Census Bureau Response: The Census Bureau accepts this recommendation. The Census Bureau is attempting to acquire additional information such as birth, death, Medicaid, CHIP and other sources. This will also include exploring the efforts necessary to make these potential data sources usable. The NUMIDENT is a file of Social Security

Number applications and updates. The Census Bureau can keep CSAC informed on the progress of the Continuous Count Study and also the research on the undercount of young children using administrative data.

- 35. CSAC recommends that the Bureau test the use of administrative records as a precursor to field operations to evaluate whether the household and housing unit expectations are met by respondents and field operations for basic demographic and housing characteristics. This process would provide a real-time evaluation of both direct data collection efforts and administrative data and a feedback loop for improvement of both efforts.**

Census Bureau Response: The Census Bureau accepts this recommendation. The Census Bureau will continue to evaluate the demographic and housing characteristics reported by direct data collection and information available from administrative data. This feedback loop is part of our vision for Near Real Time processing for the 2030 Census.

- 36. CSAC recommends that the Bureau explore the use of administrative records to enhance the MAF updating process and subsequent survey and census data collections. This would be accomplished through the addition of non-city-style street addresses as a form of contact for the collection of physical locations that are most important to improve the coverage and reduce the cost of collection for populations living in rural areas and those who are mobile.**

Census Bureau Response: The Census Bureau accepts this recommendation. The Census has and will continue the use of administrative records like the United States Postal Service Delivery Sequence File to enhance the MAF updating process and subsequent survey and census data collections. The Census Bureau will continue to research how administrative records can be used to improve the coverage and linkage of non-city-style street addresses.

It will be interesting to see what blend of various data sources the Census Bureau ends up using for this project. CSAC encourages the Bureau to explore many different data sources and different methods of combining and weighting these sources to produce the best population estimates.

CSAC would like to be kept informed as this project develops and we would be interested in seeing more specifics with regard to what types of records are being used and to what extent these records allow the Bureau to generate high quality estimates at multiple levels of geography.

Confidentiality concerns: What methods is the Census Bureau considering? In particular, one of the slides mentions "some lower geographic and/or demographic estimates [may not] be released." Do the Census Bureau plan on exploring the data equity issues for certain groups that might be suppressed?

CSAC would like to know more about the imputation process and sources for imputed values for the Continuous Count Project, especially for Demographic records.

For the coverage estimation for the decennial census using Administrative Records, are the sources for administrative records between the decennial and the Continuous Count coverage estimation independent?

The problem of controlling the disclosure risk while publishing multiple reports on a slowly changing dataset, as needed for the Continuous Count Project, has been studied in the Differential Privacy literature under the name “Differential Privacy under Continual Release”, and recent works (see <https://arxiv.org/abs/2307.08970> and references therein) give algorithms that improve on the classical *tree-based aggregation* method.

37. CSAC recommends that the Bureau evaluate the use of differentially private/formally private methods for continual release as subroutines in the 2020 Disclosure Avoidance System to limit the disclosure risk from the additional releases.

Census Bureau Response: The Census Bureau accepts this recommendation. The Census Bureau will evaluate the use of differentially private/formally private methods for continual release of information. The Census Bureau thanks the CSAC for the suggestion of the relevant literature for this topic. While the Census Bureau will evaluate the methods, the implementation solution may not necessarily be a subroutine in the 2020 Disclosure Avoidance System.

Update on the Base Evaluation and Research Team (BERT)

The Population Estimates program provides valuable data for several use cases, and CSAC applauds the efforts of the Base Evaluation and Research Team (BERT) to update the population base to address pandemic-related and other inaccuracies in the 2020 Census.

The BERT team has presented compelling evidence that a larger rate of proxy responses led to age “heaping” in the 2020 responses, and correcting for these inaccuracies will make the population base more accurate. From the presented data, it is evident that the 1990 Census had a similar level of age heaping as 2020. If that heaping was addressed in the 1990 population base, the BERT team may benefit from building on the approach used back in 1990.

The presented data also shows an undercount of the under-five population in the 2020 Census. Given that the under-five population has traditionally been hard to count, understanding the reasons for this undercount will be useful. Having someone at the October meeting on Vintage 2023 who will address this undercount is appreciated. Improvements to the roster question related to inclusion of young children, which are being explored with the ACS, may help to address this undercount, although the initial evidence is not encouraging. CSAC looks forward to getting more detailed information. In addition, it is important that qualitative as well as

quantitative analyses of whether the roster probe improves the count of young children should be conducted with varied race/ethnicity and education subgroups.

- 38. CSAC recommends that the Census Bureau evaluate and report to CSAC their efforts to reduce the undercount of the under-five population in the 2020 Census, understand why those efforts did not fully succeed, and use those lessons as they plan for the next decennial census. Qualitative methods may provide insights as to how parents read and interpret the questions.**

Census Bureau Response: The Census Bureau accepts this recommendation. In 2022, the Census Bureau organized the Young Children Working Group (YCWG), which is a cross-directorate team focused on the undercount of young children and improving data on this population. The YCWG has developed a research agenda that uses various methods and approaches including machine learning, administrative records, focus groups, and community-based participatory research to understand why young children are missed in the decennial census. The YCWG and would be available to update the CSAC about this work at a future meeting.

The 2020 decennial data also shows an overcount of the 18-22 age population. This is likely a result of the unique circumstances of the 2020 Census—specifically, that due to the pandemic, most college students were at their parents’ homes rather than at school, where they were supposed to be counted. Many may have been counted in both places. The use of alternate estimates, such as those based on the 2020 Demographic Analysis (DA) and the Vintage estimates, is a reasonable choice for this population.

For the 8-18 age range, the 2020 Census and the DA seem consistent with each other, with the Vintage 2020 estimates being an outlier, likely due to the undercount of children in 2010. The collective experience of the Census Bureau statisticians should allow them to form hypotheses on the reasons for this inconsistency and attempt to understand which of these estimates are more accurate.

There is also some divergence between the DA estimates and the Vintage estimates in the males 35-60 age category, but not among females in this age group. Understanding this should help pick the right approach to use, both at the national and state level.

- 39. CSAC recommends that the Bureau work on explaining these inconsistencies amongst the three estimates (2020 decennial census, 2020 Vintage estimate and Demographic Analysis) across different demographics and use those explanations to guide the choice of which estimates to use at each level.**

Census Bureau Response: The Census Bureau accepts this recommendation. As part of future research, BERT will be investigating the feasibility of developing and applying coverage adjustments to subpopulations, including specific age groups. Part of this work will inherently include examining and seeking to explain differences across benchmark data sources.

Documenting and sharing the findings of these investigations can help the user community better evaluate the fitness for use of each of these data sources for their specific use cases.

- 40. CSAC recommends that the BERT team share the results of their investigations in the form of a research paper.**

Census Bureau Response: The Census Bureau accepts this recommendation.

- 41. CSAC recommends additional research in the Hispanic Origin Modified File and the Race Modified File to include changes in the coding between 2010 and 2020, individual race/ethnicity change rates, as well as changes in race definition caused by proxy responses (which are caused by both general enumeration practices and by the householder representation of their household members), into the cohort component analysis. Unlike age, race and ethnicity have additional methods to join and leave the cohort that need to be included with births, deaths, and in/out migration.**

Census Bureau Response: The Census Bureau partially accepts this recommendation. BERT will investigate the impact of changes in coding, self-identification, and other factors on representation by race and Hispanic origin in the base population and will make recommendations regarding where adjustments may be warranted. Whether the most appropriate means of accounting for change over time is via the cohort-component method will need to be determined by research.

- 42. CSAC recommends BERT change from using 2010 modified race/ethnicity codes and a 2020 census population base to instead using 2020 modified race/ethnicity codes to generate estimates for 2021 to 2029 with the 2020 census population blended base. The practice of the decennial population estimates program has been to start with the last decennial census as the coding base and generate annual estimates during the decade.**

Census Bureau Response: The Census Bureau partially accepts this recommendation. Presently, the Population Estimates Program is collaborating with the Science Team in the Center for Enterprise Dissemination-Disclosure Avoidance to develop a 2020 modified race file which features both adequate disclosure avoidance measures to protect confidentiality, as well as an acceptable level of accuracy. When this file is finalized and approved by the Census Bureau's Data Stewardship Executive Policy Committee, it will be subject to evaluation by BERT subject-matter experts to determine whether the variable-specific detail on the file represents an improvement relative to what is presently in the latest iteration of the blended base. Where that is the case, the Population Estimates Program will act on BERT's recommendation to test incorporating that detail into the estimates base.

- 43. CSAC recommends that the Bureau present the impact that the new race definitions (when formalized by the Office of Management and Budget) have on the estimation process and the final statistics.**

Census Bureau Response: The Census Bureau accepts this recommendation.

The suggested reasons for biases in age, as well as Hispanic origin in the 2020 Decennial data seem to be reasonable, and CSAC thanks the Bureau for explaining their reasoning behind using alternate data sources to attempt to correct for these biases. It would be valuable to understand if, and why, the BERT team expects the responses to be biased in terms of sex, and explain the choice of using the Vintage data at the state and county level. More broadly, for attributes where there are no good reasons to expect bias in the 2020 Census data, one may consider averaging the three estimates instead of selecting one. An additional, though related, source of estimates is the Noisy Measurement File that the Bureau released in June 2023. Given that this source removes some of the statistical bias that comes from the post-processing of the TopDown Algorithm, it may in some cases be a useful data source to look at for attributes where the 2020 decennial measurements are not expected to have large inaccuracies.

- 44. CSAC recommends that the Census Bureau evaluate the Noisy Measurement File as an additional source of data for these population estimates.**

Census Bureau Response: The Census Bureau accepts this recommendation.

Outreach to various stakeholder groups as the team works on this effort is extremely important. CSAC applauds the efforts that the Bureau has already taken in this direction.

- 45. CSAC recommends that the BERT team also seek input from the National League of Cities, National Association of Counties, American Planning Association, National Association of Welfare Research Statistics, National Association of Metropolitan Planning Organizations, and other local government entities as well as demographic advocacy groups (e.g., race/ethnicity, sexual orientation, children, rural communities, and veterans).**

Census Bureau Response: The Census Bureau thanks CSAC for these recommendations. The Census Bureau plans to seek input from a variety of stakeholders consistent with applicable law.

The Bureau explained that some of these updates to the base would require going back to the microdata file, and making fresh measurements to correct for inaccuracies, e.g., in age. Naively, this would create additional disclosure risk, since this would lead to new measurements on the same underlying data.

- 46. CSAC recommends that the Bureau conduct research on how this modeling interplays with disclosure risk and report their findings. Specifically CSAC recommends evaluating the new methods using reconstruction attacks of the kind**

the Bureau has done before, as well as newer ones (Dick et al.) referenced in the recent Proceedings of the National Academy of Sciences paper by John Abowd and Sallie Ann Keller.

Census Bureau Response: The Census Bureau accepts this recommendation.

47. CSAC recommends that the Bureau seek input from experts on advanced reconstruction attacks, such as authors of the aforementioned paper in recommendation 46, and to the National Academies ad hoc committee on Approaches for Data Governance and Protecting Privacy, to ensure that the new releases do not increase this reconstruction and reidentification risk beyond what the Bureau considers acceptable.

Census Bureau Response: The Census Bureau accepts this recommendation.

48. CSAC recommends that the Census Bureau conduct education and communication activities to inform and receive feedback from stakeholders, including but not limited to those listed in recommendations 45 and 47, about the privacy loss budget for differentially private/formally private approaches.

Census Bureau Response: The Census Bureau accepts this recommendation.