

Exhibit 6

**UNITED STATES DISTRICT COURT FOR THE
MIDDLE DISTRICT OF ALABAMA
EASTERN DIVISION**

THE STATE OF ALABAMA, *et al.*,

Plaintiffs,

v.

UNITED STATES DEPARTMENT OF
COMMERCE; GINA RAIMONDO, *et al.*,

Defendants.

CASE NO. 3:21-cv-00211-RAH-ECM-KCN

DECLARATION OF DR. STEVEN RUGGLES

I, DR. STEVEN RUGGLES, pursuant to 28 U.S.C. § 1746, Federal Rule of Civil Procedure 26(a)(2)(B), and Rules 702 and 703 of the Federal Rules of Evidence, declares as follows:

1. I am over the age of 18 and competent to make this declaration.
2. I am the Regents Professor of History and Population Studies at the University of Minnesota and I direct the University's Institute for Social Research and Data Innovation.
3. I received a PhD from the University of Pennsylvania in 1984 with a focus on historical demography, and subsequently undertook postdoctoral training in demography at the University of Wisconsin-Madison.
4. I have over 35 years of experience in the areas of demography and populations studies, including the study and use of both U.S. and international census data.
5. I have been the principal investigator on various census related research projects including, but not limited to, a study on the Implications of Differential Privacy on Decennial Census Data Access and Utility, which received funding from the Sloan Foundation.
6. My research focus is on methods of census curation, census data dissemination, the history of the U.S. Census, disclosure control in statistical databases (including differential privacy), and long-run demographic trends. I have published extensively on these topics.
7. I am currently the Director of the Institute for Social Research and Data Innovation and the Director of the International Integrated Public Use Microdata Series ("IPUMS") Center for Data Integration. Between 2000 and 2016, I was the Director of the Minnesota Population Center.
8. I have never previously been qualified as an expert witness in federal court.
9. I have contributed to several *Amici Curiae* briefs related to recent Census Bureau litigation.

10. Plaintiffs requested that I assess the Census Bureau's decision to use of differential privacy, including assertions made by Dr. Abowd in his declaration. To that end, I analyzed the following: (1) differential privacy's use as a disclosure avoidance technique; (2) the threat, or lack thereof, posed by database reconstruction attacks; (3) the fitness for use of census data after differential privacy is applied; and (4) differential privacy's use in the context of historic Census Bureau practice.

11. I am being compensated \$300 an hour for my time in connection with this matter. I am not being compensated for any specific opinion.

12. Attached and incorporated by reference to this declaration is my expert report in this matter and my curriculum vitae. The report is attached hereto as Appendix A. My curriculum vitae is attached to the expert report as Appendix 1.

13. My curriculum vitae lists, among other things, my qualifications, and a list of all publications published over at least the last ten years. I have neither testified in federal court nor have I given a deposition.

14. I declare under penalty of perjury that the foregoing, including any appendices, are true and correct according to the best of my knowledge, information, and belief.

Dated: April 20, 2021



Dr. Steven Ruggles

Appendix A

1. Introduction and Qualifications

The plaintiffs in Alabama vs the Department of Commerce have retained my services to analyze various assertions that have been made by the defendant in this case. Specifically, I have reviewed the pleadings, including but not limited to, the complaint, defendants' answers to plaintiffs' requests for admissions, plaintiffs' motion for preliminary injunction, and defendants' response. The opinions I set forth below are based on these pleadings and informed by my work in the field of demography as explained below and in my curriculum vita. I am being compensated 300 dollars per hour for this work.

I am Regents Professor of History and Population Studies at the University of Minnesota and I direct the University's Institute for Social Research and Data Innovation. I received a PhD from the University of Pennsylvania in 1984 with a focus on historical demography, and subsequently undertook postdoctoral training in demography at the University of Wisconsin-Madison.

I developed the world's largest census database, known the Integrated Public Use Microdata Series (IPUMS), which has been used by over 200,000 investigators to conduct demographic and economic research. I have authored more than 100 publications on methods of census curation, census data dissemination, the history of the U.S. Census, disclosure control in statistical databases (including differential privacy), and long-run demographic trends. My research has appeared in, among other outlets, *Demography*, *Population and Development Review*, *Population Studies*, *American Sociological Review*, *Annual Review of Sociology*, *American Historical Review*, *Journal of American History*, and *Privacy in Statistical Databases*. I have served as Principal Investigator or Co-Principal Investigator on 57 grants to digitize, curate, analyze, and disseminate census data, including a Sloan Foundation grant to investigate the impact of differential privacy on the accuracy of the census.

My work has been recognized by the Sharlin Award (Social Science History Association), the Goode Award (American Sociological Association), the Lapham Award (Population Association of America), and the Miller Award (Inter-university Consortium for Political and Social Research). I have been elected President of three national scholarly associations: The Population Association of America, the Association of Population Centers, and the Social Science History Association.

I have served on several relevant national committees, including the Census Scientific Advisory Committee (U.S. Census Bureau); the Advisory Committee on Cyberinfrastructure (National Science Foundation); the Committee on Education for Digital Curation (National Research Council Board on Research Data and Information); and the Advisory Committee for the Social, Behavioral, and Economic Sciences (National Science Foundation). I chaired the Working Group on Open Access to Data in the Social and Behavioral Sciences for the National Science Foundation.

I have participated in several *Amici Curiae* briefs related to recent Census Bureau litigation but have never previously served as an expert witness. These briefs are listed in my CV, attached hereto as Appendix 1.

2. Overview of Census Bureau disclosure control

From 1970 through 2010, the Census Bureau used a variety of techniques, including table suppression (1970–1980), blank and impute (1990), and swapping (1990–2010) to protect the confidentiality of respondents. To implement these methods, the Bureau identified potentially disclosive variables and then found cells with small counts based on those variables. They then suppressed tables with these small counts or swapped households matched on key demographic characteristics between geographic units (McKenna 2018).

Traditional statistical disclosure control techniques introduced uncertainty into published data. Whole table suppression withheld information about certain aspects of the population. Swapping introduced error into some counts because households would not match on all demographic characteristics. The disclosure control methods used prior to 2020 did not, however, alter the counts of total population and voting age adults at any geographic level. Some noise was introduced on other characteristics, but the Census Bureau concluded that “the impact in terms of introducing error into the estimates was much smaller than errors from sampling, non-response, editing, and imputation” (McKenna 2018: 24).

The traditional Census Bureau disclosure control strategy has focused on ensuring that the responses of identified persons cannot be determined from census publications. The Census Bureau implemented targeted strategies to prevent re-identification attacks so that an outside adversary cannot positively identify which person provided a particular response. The protections in place—sampling, swapping, suppression of geographic information and extreme values, imputation, and perturbation—have worked extremely well to meet this standard (Lauger, Wisniewski, and McKenna 2014). Indeed, *there is not a single documented case of anyone outside the Census Bureau revealing the responses of a particular identified person using data from the decennial census.*

The defendants deny that there is no documented case of outsiders identifying the responses of a particular identified person (see Defendants’ Responses to Plaintiffs’ First Request for Admissions, no. 6). They do not, however, document any such case of disclosure. In their sole justification for the denial, the defendants cite McKenna (2019), “U.S. Census Bureau Reidentification Studies.” That citation is puzzling, since McKenna does not describe *any* reidentification attempts conducted outside the Census Bureau. Moreover, McKenna does not

discuss any attempted reidentification of decennial census data. McKenna does describe an attempted attack on the American Community Survey, which concluded that just 0.005% of the population was vulnerable to identification. The great majority—78%—of the attempted identifications, however, were incorrect, and no identifications could be confirmed without access to internal identified data. McKenna’s discussion therefore supports the statement that there is not a single documented case of anyone outside the Census Bureau uncovering the responses of a particular identified person using either the Decennial Census or the American Community Survey.

Despite the proven effectiveness of traditional statistical disclosure control, the Census Bureau has announced that it will be replaced for the 2020 census with an entirely new approach known as differential privacy. The use of differential privacy will reduce the accuracy of the census and may increase disclosure risk. Differential privacy is not designed to prevent the disclosure of the identities of census respondents and cannot guarantee absolute protection against such identification.

Implementations of differential privacy generally involves calculating cross-tabulations from “true” data and injecting noise drawn from a statistical distribution into the cells of the cross-tabulation. There are two significant consequences of this approach:

- The noise introduced into each cell is independent of the original value of the cell. Therefore, even if the noise is small relative to the average cell value, distortions in small cell values are often proportionally large. For example, the error introduced in the population of small towns can be proportionally large, sometimes exceeding 100% of the town’s true population.

- Simple random noise can produce logical inconsistencies, such as negative population counts or household counts that exceed population counts. If the data producer wishes to maintain logical consistency or preserve some noise-free counts, they must use a post-processing algorithm to adjust totals after noise injection, and this post-processing introduces additional types of error and systematic biases. In the preliminary Census Bureau demonstration datasets using differential privacy, such systematic biases are ubiquitous.¹

Accordingly, differential privacy imposes high costs on the usability of data with no compensating benefits.

3. Database reconstruction does not pose a realistic disclosure threat

The Census Bureau justifies the need for differential privacy by claiming that the confidentiality of census responses is threatened by “database reconstruction.” Database reconstruction is a process for inferring individual-level responses from tabular data. John Abowd, the primary architect of the Census Bureau’s new approach to disclosure control, argues that database reconstruction “is the death knell for public-use detailed tabulations and microdata sets as they have been traditionally prepared” (Abowd 2017).

¹ To enable the research community to assess the consequences of differential privacy for the research and policy communities, the Census Bureau has released several demonstration datasets. The Census Bureau also released the source code that had been used to implement differential privacy, enabling investigators to experiment on their own. Over the past three years, multiple investigators seized these opportunities to understand the impact of differential privacy on census accuracy and usability. There have been several workshops and meetings devoted to the topic, including IPUMS Differential Privacy Workshop (August 15-16, 2019), the Harvard Data Science Review Symposium (October 25, 2019), the Committee on National Statistics Workshop on 2020 Census Data Products: Data Needs and Privacy Considerations (December 11-12, 2019), and the 2020 Privacy in Statistical Databases conference (September 23-25, 2020). Additional work has appeared as working papers, as well as a few early publications. The following discussion draws on insights of this research.

Although Census Bureau staff members have repeatedly invoked database reconstruction to justify the use of differential privacy in public presentations, they have never, to my knowledge, produced a full description of their experiment, and some details remain obscure. There are no peer-reviewed publications explaining their methodology, and the experiment has not been replicated by outside experts.² Nevertheless, the various slide decks, blog posts, and tweets produced by the Census Bureau—now supplemented with Abowd Decl. App’x B—provide overwhelming evidence that the database reconstruction experiment failed to demonstrate a realistic disclosure risk. On the contrary, the database reconstruction exercise provides compelling evidence that even with a massive investment of time, resources, and computing power, it would be impossible for an outside attacker to infer the characteristics of a particular individual respondent from the published tabulations used for the 2010 census.

The Census Bureau conducted a database reconstruction experiment that attempted to determine the age, sex, race, and Hispanic or Non-Hispanic ethnicity for the population of each of the 6.3 million inhabited census blocks in the 2010 census. According to Abowd (2018a), the experiment confirmed that the individual-level census data “can be accurately reconstructed” using the published tabular census data. That assertion is false.

The “reconstructed” data produced by the experiment consists of rows of data identifying the age, sex, and race/ethnicity for each person in a hypothetical population of each census block; it does not include identifying information such as name, address, or Social Security number. Thus, for example, the hypothetical population of a given block could include a 26-year-old non-Hispanic white female. Contrary to the statements of the Census Bureau, the results demonstrated that they failed to reconstruct the individual-level characteristics of the population based on the

² The experiment has been mentioned in several publications, e.g. Garfinkel, Abowd, and Powazek (2018) and Garfinkel, Abowd, and Martindale (2018), but these publications provide few details.

published census tabulations. In fact, the Census Bureau found that *for most of their hypothetical population, there was not a single case in the real population that matched on block, age, sex, and race/ethnicity* (Abowd 2018b).

Among the minority of cases where the Census Bureau did find a match between their hypothetical population and a real person, most matches apparently occurred purely by chance.³ Remarkably, the Census Bureau does not appear to have calculated how many matches would have been expected through chance alone. To investigate the matter, I constructed a simple simulation. I estimate that randomly chosen age-sex combinations would match someone on any given block 54.9% of the time, assuming the age, sex, and block size distributions from the 2010 census.⁴ This means that, the Census Bureau would have been “correct” on age and sex 55% of the time even if they had never looked at the tabular data from 2010, and had instead just assigned ages and sexes to their hypothetical population at random.

This calculation does not factor in race or ethnicity, but because of high residential segregation most blocks are highly homogenous with respect to race and ethnicity. If we assign everyone on each block the most frequent race and ethnicity of the block, and then randomly

³ Abowd Decl. App’x B, Figure 1 shows that the “exact match rate” was positively associated with the number of people on the block: The larger the block, the more exact matches. Abowd reports that large blocks had three times the match rate of small blocks. Database reconstruction, however, ought to work best with small blocks, not large ones. The obvious explanation is that larger blocks have higher odds of including by chance any specific combination of age, sex, race, and ethnicity. A block with 10 residents is unlikely by chance to include a 26-year old white non-Hispanic woman, but if the block has 1000 residents the odds are high. Abowd *Id* p. 3 attributes the strong positive association between block size and match rate to higher swap rates for small blocks. This explanation would, however, require an implausible level of swapping that is inconsistent with the low level of noise in the 2010 data (McKenna 2018).

⁴ To estimate the percentage of random age-sex combinations that would match someone on a block by chance, I generated 1000 simulated blocks and populated them with random draws from the 2010 single-year-of-age and sex distribution. The simulated blocks conformed to the population-weighted size distribution of blocks observed in the 2010 census. I then randomly drew 1000 new age-sex combinations and searched for each of them in each of the 1000 simulated blocks. In 54.9% of cases I found someone in the simulated block who exactly matched the random age-sex combination. The simulation source code and supporting data files are available at <http://users.hist.umn.edu/~ruggles/censim.html>.

choose age-sex combinations as described above, then 42.7% percent of cases in the hypothetical database would be expected to match on all four characteristics to a respondent on the same block. That is close to the 46.48% match rate for the reconstructed data reported in Abowd Decl. App'x B Table 1. Thus, despite the Census Bureau's enormous investment of resources and computing power, the much-vaunted database reconstruction technique does not perform significantly better than a crude random number generator combined with a simple assignment rule for race and ethnicity.⁵

Undeterred by their failure to reconstruct most of the population correctly, the Census Bureau then assessed whether their hypothetical population shared characteristics with people who appeared in non-census sources. In particular, within each block they matched the age and sex of persons in the hypothetical population of each block to the age and sex of persons to "commercial data."⁶ Thus, for example, they would search the commercial data for a real 26-year-old female to match the hypothetical person in the population reconstruction. A match on race or ethnicity was not required for this experiment. Once again, the results cast doubt on the reliability of the reconstructed data. In most cases, the hypothetical individuals constructed by the Census Bureau did not share the same age, sex, and block as *anyone* in the commercial data. In just 45% of cases was there at least one person in the commercial data who matched the age, sex and block number

⁵ Calculation of the race and ethnic predicted matches was based on U.S. Census Bureau (2011). The implications of the simulated data are reinforced by newly released data from the real census. Abowd Decl. App'x B ¶ 9 reports that in the real 2010 population, 44% of the population is unique within blocks with respect to age and sex, a figure entirely consistent with my finding that a randomly chosen age-sex combination would match someone on any given block 54.9% of the time. The simulated population was virtually identical to the real census population with respect to the frequency of unique respondents: I found that 45.2% of the simulated population was unique within the block with respect to age and sex.

⁶ The commercial data consists of marketing and financial data purchased from vendors including Experian, Targus, Veteran Service Group of Illinois, InfoGroup, and Melissa Data. The Census Bureau purchased the datasets to conduct the 2010 Census Match Study, which evaluated the utility of commercial records for census enumeration. See Rastogi and O'Hara (2012), U.S. Census Bureau (2021).

of at least one row of the hypothetical database. If the commercial data were accurate and complete, this is a *lower* match rate than one would expect purely by chance.

Among the cases where there was at least one person in the commercial database who matched the age, sex, and block of a row in the hypothetical population, the Census Bureau then harvested the names from the commercial database, and attempted to match them with names on the same block as enumerated in the 2010 census. Once again, the results highlighted the unreliability of the method: they found that just 38% of the names from the commercial database were actually present on the block.

Based on this exercise, the Census Bureau claimed to have successfully “re-identified” 16.85% (38% of 45%) of the population. That claim is irresponsible. Reidentification means confirming the identity of a particular individual and revealing their characteristics without reference to non-public internal census files. It would be impossible to positively identify the characteristics of any particular individual using the database reconstruction without access to non-public internal census information. Accordingly, the Census Bureau’s database reconstruction experiment demonstrates that reidentification based on the published census tables is not feasible.

Abowd (2018b) acknowledged that the database reconstruction experiment demonstrates that “the risk of re-identification is small.” Abowd has now retracted that statement (Abowd Decl. ¶ 83), but his supervisor has not. Acting Director of the Census Bureau Jarmin actually went farther than Abowd, writing “The accuracy of the data our researchers obtained from this study is limited, and confirmation of re-identified responses requires access to confidential internal Census Bureau information ... an external attacker has no means of confirming them” (Jarmin 2019).

The database reconstruction exercise demonstrates that it is not plausible that an external attacker could use census tabulations to uncover the characteristics of a particular individual, for three reasons:

- The reconstructed data are usually incorrect.
- The reconstructed data usually do not match even the block, age and sex of anyone identified in outside commercial sources.
- In the minority of cases where a hypothetical reconstructed individual does match the block, age, and sex of someone in the commercial data, it usually turns out that the person identified in the commercial data was not actually enumerated on that block in the census.

Thus, the system worked exactly as intended. An outside attacker could not use database reconstruction to uncover the characteristics of a particular individual.⁷

Census law mandates that the Census Bureau “shall not make any publication whereby the data furnished by any particular establishment or individual ... can be identified” (Title 13 U.S.C. § 9(a)(2), Public Law 87-813). The Census Bureau’s database reconstruction experiment convincingly demonstrates that the 2010 census tabulations meet that standard. The “reconstructed” data is usually false, an intruder would have no means of determining if any inference was true, and an intruder would lack the data needed even to estimate the probability that a re-identification attempt succeeded. Therefore, positive identification of individual respondents by an outsider is impossible, and the data furnished by any particular individual cannot

⁷ Abowd Decl. App’x B ¶ 24 maintains that in a worst-case scenario (where an external attacker had data that was exactly as accurate and complete as the Census Bureau’s internal data) an attacker might be able to guess a respondent’s race and ethnicity and be correct in 58% of cases. This statement is false for the reasons I have detailed. It is worth noting, however, that such an exercise would be pointless even if database reconstruction did work as advertised. One could more accurately guess anyone’s race and ethnicity just by assigning the most frequent race and ethnic group on the block; that guess would be correct 77.8% of the time. Calculated from U.S. Census Bureau (2011).

be identified. Database reconstruction therefore poses no risk to the Census Bureau's confidentiality guarantee.

4. Census disclosure control requires the protection of identities, not concealment of characteristics

The Census Bureau argues that new methods of confidentiality protection are required by census law. The confidentiality language in census law first appeared in the 1929 Census Act:

No publication shall be made by the Census Office whereby the data furnished by any particular establishment or individual can be identified, nor shall the Director of the Census permit anyone other than the sworn employees to examine the individual reports (Reapportionment Act of 1929, CR 28 § 11).

The current statute is virtually identical, specifying that the Census Bureau “shall not make any publication whereby the data furnished by any *particular establishment or individual ... can be identified*” (Title 13 U.S.C. § 9(a)(2), Public Law 87-813) (emphasis added).

For the past nine decades, the Census Bureau has interpreted the law to mean that Census Bureau publications must protect the identity of respondents. In 2002, this interpretation was codified in the Confidential Information Protection and Statistical Efficiency Act (CIPSEA), which explicitly defined the concept of identifiable data: it is prohibited to publish “any representation of information that permits the identity of the respondent to whom the information applies to be reasonably inferred by either direct or indirect means” (Title 5 U.S.C. §502 (4), Public Law 107-347).

We have nine decades of precedent, reaffirmed thousands of times by the Census Bureau Disclosure Review Board, reinforcing the interpretation that the Census Bureau is prohibited from publication of statistics that disclose respondent identities. This means that an outsider cannot infer the response of a particular individual, match that response to another database, and have high confidence that the link is correct.

The disclosure controls that have been introduced over the past half-century are limited to attributes and circumstances likely to pose a disclosure risk through reidentification. Unlike traditional statistical disclosure control, differential privacy attempts to masking all characteristics, not just individual identities.

The Census Bureau justifies differential privacy through a novel interpretation of census law. According to Abowd (2019), “Re-identification risk is only one part of the Census Bureau's statutory obligation to protect confidentiality. The statute also requires protection against exact attribute disclosure.” Under this interpretation, the Census Bureau must not only mask the *identities* of respondents, but also their *characteristics*. Abowd (2019: 16-18), argues in particular that because the 2010 census published the exact number of people of voting age in each census block, that was an exact attribute disclosure and therefore prohibited.⁸

Under this new interpretation, the Census Bureau has been in flagrant violation of the law ever since 1929. Every tabulation of the characteristics of the population necessarily reveals the attributes of individuals. Every census from 1790 to 2010 has published attributes based on exact numbers counted in the census. It is implausible that Congress ever intended to make such exact tabulations of the census illegal.

Differential privacy is oriented to the protection of attributes, not the protection of identities. Accordingly, differential privacy perturbs every attribute tabulated by the census, not just the attributes that pose a risk of enabling re-identification. Because differential privacy focuses

⁸ The Census Bureau's theory that it is prohibited to disclose the exact number of persons or voting-age persons at the block level is a very recent development. In April 2017 the Census Bureau Disclosure Review Board determined that these counts “can continue to be published as enumerated” (Abowd Decl. App'x B p. 82). When differential privacy was proposed, it specified the publication of exact counts for block population and voting-age populations. According to Garfinkle (2017) and Dajani et. al. (2017), in 2000 the Census Bureau had entered into an agreement with the Department of Justice that required them to publish exact counts of the voting age population of each block. At some subsequent time, the Census Bureau appears to have determined not only that their agreement with the Department of Justice was no longer binding, but that publishing the counts as enumerated was now prohibited.

on concealing individual characteristics instead of protecting respondent identities, it is a blunt and inefficient instrument controlling disclosure of identities.

5. The Census Bureau has the capability to return to the 2010 methods for disclosure control

The defendants argue that there is insufficient time to revert to the 2010 standards of disclosure control. Abowd Decl. ¶ 86 states that “The 2020 Census’s system architecture is completely different than that used in the 2010 Census, and it is thus not possible to simply ‘plug in’ the disclosure-avoidance system used in 2010.”

That concern appears to be highly exaggerated. The main differences in the system architecture between 2010 and 2020 pertain to the disclosure control software itself; otherwise, the workflow is quite similar (boyd 2020). In both 2010 and 2020, an individual-level data file known as the Census Edited File (CEF) is the input to disclosure control software. The 2020 CEF will be functionally the same as the 2010 CEF. Accordingly, there should be few barriers to applying the 2010 software to the 2020 data. In 2010, the disclosure control software produced an individual-level file known as the Hundred-percent Detail File, or HDF, which was then tabulated to produce PL94-171 and the other census tables. Under differential privacy, the confidentiality protocol is much more complex and takes several steps, but the result is another individual-level file called the Microdata Detail File or MDF, which is then tabulated. In terms of structure, the MDF is equivalent to the HDF, so it is unlikely that using traditional statistical disclosure controls would slow down the tabulation phase. If there are any differences between the HDF and the MDF, the MDF could easily be reformatted.

The defendants raise a second argument that reverting to the 2010 approach to statistical disclosure control would be slow because it would require developing and testing new disclosure

control software and procedures. They maintain that it would be impossible to use the 2010 software as it stands, because it provides insufficient disclosure protection. According to Abowd “Knowing that the 2010 Census results were vulnerable to reconstruction, the Census Bureau cannot simply repeat the swapping protocols from the 2010 census,” but instead would have to develop an entirely new protocol and software for disclosure protection. *Id.* ¶ 87.

This argument lacks merit, because it is based entirely on the premise that the Census Bureau’s database reconstruction experiment showed that the 2010 census was in violation of the confidentiality guarantees governing the census. In fact, however, the database reconstruction showed exactly the opposite. The Census Bureau showed conclusively that even with a massive investment of time, resources, and computing power, it would be impossible for an outside attacker to infer the characteristics of a particular individual respondent from the published tabulations used for the 2010 census.

In sum, the Census Bureau has provided no scientifically credible evidence that reverting to the disclosure control systems used in 2010 would add to the delay in delivery of census results. Given that the most complex remaining aspect of census processing that remains to be completed is the final execution of differential privacy, it is more plausible that substituting the simpler, well-understood protocols from 2010 could actually speed the processing time.

Some computer scientists engaged in privacy research may disagree with my conclusion that database reconstruction poses no threat of re-identification. Everyone would agree, however, that by itself the redistricting file does not enable database reconstruction. As detailed by Abowd Decl. App’x B ¶ 3, the database reconstruction depends on combining data from nine different tables containing 6.2 billion statistics.

The redistricting file, also known as the PL 94-171 file, provides information on total population and voting-age population broken down by race and Hispanic/Non-Hispanic ethnicity. The Census Bureau database reconstruction experiment relied on additional tables from Summary File 1 (SF1) and Summary File 2 (SF2). These files provide greater detail than is available in the redistricting file, and they are widely used for research and planning. For the 2010 Census, SF1 came out seven months after the redistricting file, and SF2 came out 13 months after the redistricting file.

With respect to the risk of reidentification, the key sensitive tables are the ones that include age distributions: P012 (Sex by Age Group by Block, from SF1), P014 (Sex by Single-year-of-age for the Population under 20 Years by Block, from SF1), and PCT012A-N (Sex by Single-year-of-age by Tract, iterated by Race, from SF2). Without single years of age, there is no possibility for successful re-identification of reconstructed data. The easiest way to prevent attempted database reconstruction would be to withhold one or more of these tables; block-level age detail is seldom needed for research or planning. Alternatively, the Census Bureau could consider additional confidentiality protections for these tables, such as additional swapping or targeted noise infusion on age. Any of these strategies would stymie any chance of re-identification through database reconstruction; other than detailed age, there are no other variables in the census that could enable linkage to an outside source.

The sparse data available in the redistricting file is insufficient to allow database reconstruction; only in combination with other tables can database reconstruction even be attempted. Based on the data production schedules of prior censuses, it is unlikely that the Census Bureau will produce the ancillary tables needed for database reconstruction before the end of 2021, and they may not appear until well into 2022. This means that even if the Census Bureau decides

to implement even stronger protections than existed in 2010 for SF1 and SF2, there is ample time to do so, probably eight months or more.⁹

6. Differential privacy is a poor fit for the protection of census data

There is no guarantee that differential privacy reduces disclosure risk compared with traditional methods of statistical disclosure control. The core metric of privacy loss used in differential privacy is epsilon (ϵ), which is often referred to as the privacy budget. When ϵ is large, noise infusion is limited and privacy is low, and when ϵ is small, noise infusion is large, and privacy is high. It has long been recognized, however, that there is no direct relationship between the level of ϵ and the risk of disclosing identities. Indeed, McClure and Reiter (2012) demonstrated that the level of ϵ does not determine the level of disclosure risk. Because differential privacy does not target variables and circumstances that are vulnerable to attack, in some datasets with strong differential privacy (low ϵ), disclosure control can be weak.

According to Hawes and Wright (2021), the Census Bureau is currently planning $\epsilon \leq 12.3$ for the redistricting data file.¹⁰ This level is far higher than is ordinarily contemplated by privacy researchers. The range of ϵ in the differential privacy literature generally runs from 0.01 to 5.0, but many analysts argue that to guarantee privacy, ϵ should not greatly exceed 1.0 (Lee and Clifton 2011; Dwork 2011). Accordingly, one would expect that $\epsilon=12.3$ would provide a relatively low level of data security.

⁹ If the Census Bureau strategically applied additional confidentiality protection to tables that include detailed age information, it might create small inconsistencies with the redistricting file, but that would not be a cause for concern; for analysts and planners, maximizing accuracy of the data is far more important than maintaining consistency between the redistricting file and the summary files.

¹⁰ Abowd Decl. ¶ 65 indicates that the Census Bureau is planning $\epsilon=10.3$ for persons in its new demonstration product planned for April 2021.

The Census Bureau applied differential privacy to the 2010 Census and re-ran the database reconstruction attack using the differentially private data (LeClerc 2019). The results confirm that differential privacy has limited impact on the vulnerability of the data to reconstruction. With $\epsilon=12.3$, LeClerc estimates that approximately 7.5% of the noise-infused population would have “confirmed re-identification” using the same methodology as was employed in the original Census Bureau database reconstruction experiment.¹¹

The 7.5% database reconstruction rate reported by LeClerc is lower than the 16.85% rate the Census Bureau reported using only the traditional statistical disclosure control. That does not necessarily mean, however, that the differentially private census files offer greater protection from disclosure of identities than does traditional disclosure control.

The New York Times described a case that effectively illustrates the efficiency of traditional statistical disclosure control methods:

The bureau has long had procedures to protect respondents’ confidentiality. For example, census data from 2010 showed that a single Asian couple — a 63-year-old man and a 58-year-old woman — lived on Liberty Island, at the base of the Statue of Liberty.

That was news to David Luchsinger, who had taken the job as the superintendent for the national monument the year before. On Census Day in 2010, Mr. Luchsinger was 59, and his wife, Debra, was 49. In an interview, they said they had identified as white on the questionnaire, and they were the island’s real occupants.

Before releasing its data, the Census Bureau had “swapped” the Luchsingers with another household living in another part of the state, who matched them on some key questions. This mechanism preserved their privacy, and kept summaries like the voting age population of the island correct, but also introduced some uncertainty into the data. (Hanson 2018).

Because the couple lived on a census block with only two residents, the Census Bureau recognized that they were at high risk of reidentification and thus targeted them for disclosure

¹¹ As Jarmin (2019) acknowledged in his comments on the original database reconstruction experiment, none of these cases could be identified by anyone outside the Census Bureau, so referring to them as “confirmed re-identifications” is misleading.

protection. By contrast, differential privacy makes no distinctions between high-risk and low-risk cases, so it infuses noise equally across characteristics and populations. This means that to achieve a given level of disclosure control, differential privacy must introduce far more error than would be needed using traditional statistical disclosure control.

The Census Bureau's database reconstruction exercise does not simulate a realistic attack. We do not know whether realistic attacks, such as the identification of the couple on Liberty Island, would be prevented by differential privacy. Accordingly, based on the information released to date, there is no way to be sure that a differentially private census with $\epsilon=12.3$ will be as secure as a census protected by traditional disclosure controls.

The evidence supports several broad conclusions:

- The statistical disclosure controls employed by the Census Bureau over the past five censuses have proven extraordinarily effective. There is not a single documented case of anyone outside the Census Bureau uncovering the responses of a particular identified person using data from the decennial census.
- The Census Bureau's database reconstruction experiment—the chief rationale for adopting differential privacy—failed to demonstrate a credible threat to the exposure of individual identities to anyone outside the Census Bureau. The Acting Director of the Census Bureau confirmed this interpretation when he wrote “The accuracy of the data our researchers obtained from this study is limited, and confirmation of re-identified responses requires access to confidential internal Census Bureau information ... an external attacker has no means of confirming them” (Jarmin 2019).
- The Census Bureau's novel contention that census law prohibits “exact disclosure of attributes” even if identities are fully masked is an obvious misinterpretation of the intent of

Congress and contradicts centuries of precedent. Following every census since 1790, the Census Bureau has published exact attributes just as they were enumerated.

- The Census Bureau has not provided evidence that reverting to the disclosure control methods used for the 2010 Census would entail additional delays in the release of redistricting data.
- The statistical tables needed for database reconstruction do not pose the same time constraints as the redistricting data, and there is therefore ample time to implement confidentiality protocols.
- At the proposed privacy budget level, there no guarantee that the Census Bureau's new approach increases protection of identities compared with traditional statistical disclosure controls; in fact, it may provide less protection.

Differential privacy is inappropriate for disclosure control in the census, since it is a blunt and inefficient instrument that adds unnecessary error to every measure, even though most measures pose no risk of a breach of confidentiality (Domingo-Ferrer, Sánchez, and Blanco-Justicia 2020). The adoption of a new regime of disclosure protection is justified only if the benefit of increased protection of respondent identities outweighs the cost inflicted by damage to the integrity of the data. The new method alters the population count for every geographic unit below the state level and changes the counts for every population characteristic. For small populations, the error introduced can easily exceed the true population count. Post-processing for differential privacy also introduces systematic biases in respondent characteristics that can distort the relationships among variables. In short, differential privacy provides little or no documented benefit for the protection of respondent identities, but the costs are devastating.

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Appendix 1

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Education

1985 University of Wisconsin, Demography, Post-Doctoral Trainee
1984 University of Pennsylvania, History, MA, PhD
1978 University of Wisconsin, History, BA

Academic Appointments

2008- Regents Professor, History and Population Studies, University of Minnesota
2000- Distinguished McKnight University Professor, University of Minnesota
1995-2008 Professor, University of Minnesota
1988-1995 Associate Professor, University of Minnesota
1985-1988 Assistant Professor, University of Minnesota

Administrative Appointments

2016- Director, Institute for Social Research and Data Innovation, University of Minnesota
2016- Director, IPUMS Center for Data Integration
2000-2016 Director, Minnesota Population Center, University of Minnesota
1990-1999 Director, Social History Research Laboratory, University of Minnesota

Elected Offices

2017-2021 Vice President, President, and Past-President, Social Science History Association
2016-2018 President, Association of Population Centers
2013-2016 President-Elect, President, and Past-President, Population Association of America
2015-2018 Executive Committee, Social Science History Association
2014-2016 Executive Committee, Population Association of America
2001-2003 Secretary, Association of Population Centers
2000-2003 Council member, Inter-University Consortium for Political and Social Research
1999-2002 Executive Committee, Social Science History Association

Major National Committees

2019- Council on Demographic Data
2016-2018 Advisory Committee on Cyberinfrastructure, National Science Foundation
2015-2016 Chair, Working Group on Open Access to Data in the Social and Behavioral Sciences, National Science Foundation
2010-2015 Advisory Committee for the Social, Behavioral, and Economic Sciences, National Science Foundation
2012-2015 Census Scientific Advisory Committee, U.S. Census Bureau
2012-2014 Chair, Committee of Visitors, Social and Economic Sciences, National Science Foundation
2011-2015 Study Committee on Education for Digital Curation, National Research Council Board on Research Data and Information

2011-2014 Data and Surveys Committee, Social, Behavioral, and Economic Sciences, National Science Foundation

Honors and Awards

- 2020 Population Association of America Poster Award for “‘It’s None of their Damn Business’: Privacy and Disclosure Control in the U.S. Census, 1790-2020.” (with Diana L. Magnuson).
- 2017 Population Association of America Honored Member
<http://www.populationassociation.org/steven-ruggles/>
- 2016 Science Communication and Education Award. Sigma Xi Scientific Research Society.
- 2014 Named “Wonkblog-Certified Data Wizard.” Wonkblog, Washington Post.
- 2010 Population Association of America Poster Award for “Stem Families and Joint Families in Comparative Historical Perspective.”
- 2009 Warren E. Miller Award for meritorious service to the social sciences. Inter-university Consortium for Political and Social Research.
- 2009 Platinum Medallion, Delta Airlines.
- 2005 Scholar of the College, College of Liberal Arts, University of Minnesota.
- 2003 Robert J. Lapham Award, Population Association of America, for contributions to the application of demographic knowledge to policy issues.
- 1995 Named “King of Quant.” *Wired* Magazine (March 1995, 86-90).
http://archive.wired.com/wired/archive/3.03/ruggles_pr.html
- 1994 *American Historical Review* most innovative article on American history published 1992-1994 (AHR nominee for ABC-CLIO *America: History and Life* Award).
- 1989 William J. Goode Distinguished Book Award, American Sociological Association, for best book on the family.
- 1988 Allen Sharlin Memorial Award, Social Science History Association, for best publication in the field of social science history.
- 1987 McKnight-Land Grant Professorship
- 1984 National Research Service Award, National Institute of Child Health and Human Development

Major Databases

Integrated Public Use Microdata Series (IPUMS-USA and IPUMS-CPS). This database of over 750 million records provides access to integrated individual-level data from the U.S. decennial censuses of 1790 to 2010, Current Population Surveys from 1962 to the present, and the American Community Surveys from 2000 to the present. A beta-test version of IPUMS appeared in 1993, with subsequent major revisions in 1995, 1998, 2004, 2008, 2014, and 2018. IPUMS has approximately 190,000 registered users and has generated over 20,000 publications. IPUMS was described by the *Journal of American History* as “One of the great archival projects of the past two decades.” Liens-Socio, the French portal for the social sciences, gave IPUMS the only “best site” designation that has gone to any non-French website, writing “IPUMS est un projet absolument extraordinaire...époustouflante [mind-blowing]!” <http://usa.ipums.org/usa/> and <https://cps.ipums.org/cps/>.

International Integrated Public Use Microdata Series (IPUMS-International). The world's largest population database, IPUMS-International provides information on over a billion persons drawn from 473 censuses and surveys of 102 countries enumerated between 1701 and 2019. A collaboration with 112 national statistical agencies and dozens of scholars around the world, the project has preserved billions of census records, much of it endangered. The first beta release of data for seven countries was in 2002, and there have been annual releases since 2006. Dan Newlon, Director of NSF's Economics Program, remarked that "nothing like this has ever existed anywhere in the world . . . we're now able to move to a Hubble Telescope" (*St. Paul Pioneer Press*, 10/5/04). The project was the sole recipient (among 70 applicants) of NSF's Human and Social Dynamics Infrastructure Award. <http://international.ipums.org/international/>.

National Historical Geographic Information System (IPUMS-NHGIS). This database provides access to all U.S. Census summary data since 1790 and electronic boundary files describing the historical locations of counties and census tracts. The project required gathering and standardizing all surviving aggregate census data from over a million source files; developing comprehensive standardized machine-readable documentation for those data; creating high-precision historical electronic boundary files describing census tracts and counties; and developing web-based tools for disseminating statistical data, geographic data, and metadata. Of the 68 large infrastructure projects in the 2001 NSF infrastructure competition, NHGIS was ranked first, in a category of its own. NHGIS was released in 2007, with 400,000 map polygons, five million lines of tagged and structured metadata, three Terabytes of aggregate data, and a web-based data access system. In 2012, NHGIS began to release *integrated* summary files that provide comparable statistics across census years. <http://www.nhgis.org/>.

IPUMS-Terra. This project, initiated in October 2011, integrates and disseminates global-scale data on population and the environment. In particular, the project makes demographic data interoperable with global environmental data including land cover, land use and climate records. The project began as one of five projects sponsored by the National Science Foundation Office of CyberInfrastructure under the DataNet initiative. The IPUMS-Terra website was named one of GIS Geography's "[Top 10 GIS Data Sources](#)" because it is "the next generation resource that can provide researchers or anyone cutting-edge data through validated scientific workflows." [GIS Lounge](#) wrote that the project was "at the cutting edge of geospatial information systems" and can "bring people closer together to the information they need to make sense of the world around them." The [Map and Geography Libraries Journal](#) gave an article describing IPUMS-Terra its "Best Paper" award for 2016. The first data release was in June 2013. <https://terra.ipums.org/>

Special Journal Issues on Data Infrastructure Projects

"Big Data." Special issue, *Historical Methods*, 44:2 (Summer 2011).

"North Atlantic Population Project." Special issue, *Historical Methods*, 44:1 (Spring 2011).

"Building Historical Data Infrastructure: New Projects of the Minnesota Population Center." Part 1. Special issue, *Historical Methods*, 36:1 (Winter 2003).

"Building Historical Data Infrastructure: New Projects of the Minnesota Population Center." Part 2. Special issue, *Historical Methods*, 36:2 (Summer 2003).

"IPUMS: The Integrated Public Use Microdata Series." Special issue, *Historical Methods*, 32:2 (Summer 1999).

"The Minnesota Historical Census Projects." Special double issue, *Historical Methods*, 28:1-2 (Winter-Spring 1995).

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- Steven Ruggles. 1994. "The Transformation of American Family Structure." *American Historical Review* 99: 103-128. Designated best 1994 article on U.S. history in *AHR*. Ranked 15th most-cited *AHR* article (out of about 2,500 published) as of March 1, 2014, according to Oxford Journals.
- Steven Ruggles. 1994. "The Origins of African-American Family Structure." *American Sociological Review* 59: 136-151.
- Steven Ruggles. 1993. "Historical Demography from the Census: Applications of the American Census Microdata Files." In David Reher and Roger Schofield, eds., *Old and New Methods in Historical Demography*. New York: Oxford University Press, pp. 383-393.
- Steven Ruggles. 1993. "Confessions of a Microsimulator: Problems in Modeling the Demography of Kinship." *Historical Methods* 26: 161-169.
- Steven Ruggles and Ronald Goeken. 1992. "Race and Multigenerational Family Structure, 1900-1980." In Scott J. South and Stuart E. Tolnay, eds., *The Changing American Family: Sociological and Demographic Perspectives*. Boulder: Westview Press, pp. 15-42.
- Steven Ruggles. 1992. "Migration, Marriage, and Mortality: Correcting Sources of Bias in English Family Reconstitutions." *Population Studies* 46: 507-522.
- Steven Ruggles. 1991. "Comparability of the Public Use Files of the U.S. Census of Population, 1880-1980" *Social Science History* 15: 123-158.

- Steven Ruggles. 1991. "The U.S. Public Use Microdata Files as a Source for the Study of Long-term Social Change." *IASSIST Quarterly* 15: 20-27.
- Steven Ruggles. 1991. "Integration of the Public Use Files of the U.S. Census of Population, 1880-1980." *1991 Proceedings of the American Statistical Association*, Social Statistics Section. Alexandria, VA: American Statistical Association, pp. 365-370.
- Steven Ruggles and Russell R. Menard. 1990. "A Public Use Sample of the 1880 Census of Population." *Historical Methods* 23: 104-115.
- Miriam King and Steven Ruggles. 1990. "American Immigration, Fertility Differentials, and the Ideology of Race Suicide at the Turn of the Century." *Journal of Interdisciplinary History* 20: 347-369.
- Steven Ruggles. 1990. "Family Demography and Family History: Problems and Prospects." *Historical Methods* 23: 22-30.
- Steven Ruggles. 1988. "The Demography of the Unrelated Individual 1900-1950." *Demography* 25: 521-536.
- Susan DeVos and Steven Ruggles. 1987. "The Demography of Kinship and the Life Course." *Life-Span Development and Behavior* 8: 259-281.
- Steven Ruggles. 1986. "Availability of Kin and the Demography of Historical Family Structure." *Historical Methods* 19: 93-102.
- Steven Ruggles. 1983. "Fallen Women: The Inmates of the Magdalen Society Asylum of Philadelphia 1836-1908." *Journal of Social History* 16: 65-82.

Reports

- Brief of Amici Curiae Historians to the Supreme Court on the enumeration of undocumented immigrants in the census, 20-366, Donald J. Trump v. New York, Nov. 16, 2020.
- Brief of Amici Curiae Historians in Support of Plaintiffs' Motion for Partial Summary Judgment or Preliminary Injunction. United States District Court, Southern District of New York, 20-cv-05770 (JMF), State of New York v. Donald J. Trump. August 14, 2020.
- Brief of Historians and Social Scientists Margo Anderson, Andrew Beveridge, Rachel Buff, Morgan Kousser, Mae Ngai, and Steven Ruggles as Amici Curiae in Support of Respondents. 18-966, U.S. Dept. of Commerce v. State of New York, April 1, 2019.
- Task Force on Differential Privacy for Census Data. 2018. Implications of Differential Privacy for Census Bureau Data and Scientific Research. MPC Working Paper 2018-6.
<https://assets.ipums.org/files/mpc/MPC-Working-Paper-2018-6.pdf>
- Working Group on Open Access to Data in the Social and Behavioral Sciences. 2016. Public Access to NSF-Funded Research Data for the Social, Behavioral, and Economic Sciences.
[https://www.nsf.gov/sbe/reports/Public Access NSF Workshop Report Final Briefs.pdf](https://www.nsf.gov/sbe/reports/Public%20Access%20NSF%20Workshop%20Report%20Final%20Briefs.pdf)
- Jon A. Krosnick, Stanley Presser, Kaye Husbands Fealing, and Steven Ruggles. 2015. *The Future of Survey Research: Challenges and Opportunities*. Report of the Subcommittee on Advancing Survey Research, Social, Behavioral and Economic Sciences. Washington, D.C.: National Science Foundation.
- National Research Council Committee on Future Career Opportunities and Educational Requirements for Digital Curation. 2015. *Preparing the Workforce for Digital Curation*. Washington, D.C: National Academies Press.
- State Budget Trends Commission, *Commission Report to the Legislature*. January 12, 2009.

Task Force on Census 2000. *The Public Use Microdata Samples of the U.S. Census: Research Applications and Privacy Issues*. Prepared by Steven Ruggles with Catherine A. Fitch and Matthew Sobek. Report prepared for the U.S. Census Bureau, Census 2000 Users' Conference on PUMS, May 2000. Washington, D.C.: U.S. Census Bureau.

Miscellaneous Publications

Steven Ruggles and Matthew Sobek. 2019. "IPUMS." *Encyclopedia of Gerontology and Population Aging*. Springer Nature.

Steven Ruggles. 2017. "The Importance of Data Curation." Chapter 39 in the *Palgrave Handbook of Survey Research*, eds, David L. Vannette and Jon A. Krosnick. New York: Palgrave-Macmillan.

Steven Ruggles. 2017. "Metadata and Preservation." Chapter 71 in the *Palgrave Handbook of Survey Research*, eds, David L. Vannette and Jon A. Krosnick. New York: Palgrave-Macmillan.

Steven Ruggles. 2015. "Census Microdata." *International Encyclopedia of the Social and Behavioral Sciences*, Second Edition. Oxford: Elsevier, pp. 284-289.

Steven Ruggles. 2013. "New Data for the Comparative Study of Family and Household" *NCFR Report Magazine*, Summer Issue, pp. F11-F14.

Steven Ruggles. 2012. "IPUMS (Integrated Public Use Microdata Series)." In Margo J. Anderson, ed., *Encyclopedia of the U.S. Census*, 2nd Edition. Washington, DC: Congressional Quarterly Press.

Steven Ruggles. 2007. "Integrated Public Use Microdata Series." *International Encyclopedia of the Social Sciences*, 2nd Edition. Macmillan Reference USA, Thomson Gale, pp. 382-385.

Steven Ruggles. 2000. "Living arrangements and Well-Being of the Elderly in the Past." In the *Proceedings of the United Nations Technical Meeting on Population Ageing and Living Arrangements of Older Persons: Critical Issues and Policy Responses*. New York: United Nations.

Steven Ruggles. 2000. "IPUMS (Integrated Public Use Microdata Series)." In Margo J. Anderson, ed., *Encyclopedia of the U.S. Census*. Washington, DC: Congressional Quarterly Press, pp. 264-267.

Steven Ruggles. 1999. "Higher Income, Higher Taxes." *Star Tribune*, April 3 1999, p. 17A (Op-Ed).

Steven Ruggles. 1989. *DECOMP, A Program for Multiple Standardization and Demographic Decomposition: Technical Documentation and User's Guide*. Minneapolis: Social History Research Laboratory, University of Minnesota. Statistical software with 120 pp. of documentation.

Book Reviews

Arland Thornton, *Reading History Sideways: The Fallacy and Enduring Impact of the Developmental Paradigm on Family Life*. *Population and Development Review* 32 (2006), 174-176.

Michel Verdon, *Rethinking Households: An Atomistic Perspective on European Living Arrangements*. *Journal of Family History* 25 (2000), 118-120.

Stewart Tolnay, *The Bottom Rung: African American Family Life on Southern Farms*. *American Sociological Review* 105 (1999), 894-896.

David Kertzer and Peter Laslett, *Aging in the Past: Demography, Society and Old Age*. *Journal of Interdisciplinary History* 27 (1997), 497-498.

Marguerite Dupree, *Family Structure in the Staffordshire Potteries: 1840-1880*. *American Journal of Sociology* 101 (1996), 1437-1439.

Angelique Janssens, *Family and Social Change: The Household as a Process in an Industrializing Community*. *American Journal of Sociology* 100 (1994), 532-533.

Samuel Preston and Michael Haines, *Fatal Years: Child Mortality in Late Nineteenth-Century America*. *Journal of Economic Literature* 30 (1992), 2177-2178.

Elizabeth Pleck, *Domestic Tyranny: The Making of American Social Policy against Family Violence From Colonial Times to the Present*. *Journal of Interdisciplinary History* 19 (1989) 686-688.

Extramural Funding

2020-2024. Principal Investigator (with Cathy Fitch) RCN: Building an Interdisciplinary Community of Big Microdata Researcher. National Science Foundation SES 2020002, \$499,055.

2020-2024 Principal Investigator (with Phyllis Moen) Network for Data-Intensive Research on Aging. P30AG066613. \$904,740.

2019-2020 Principal Investigator, "Implications of Differential Privacy on Decennial Census Data Accuracy and Utility." Sloan Foundation, \$124,767.

2019-2024 Principal Investigator, "Microdata for Research on Aging in the Global South." R01 AG062601, \$3.1 million), National Institute on Aging. \$3,396,718. Score: 20 (9th percentile).

2019-2024 Principal Investigator, "International Integrated Microdata Series." SES-1852842, National Science Foundation, \$5,050,000.

2018-2023 Principal Investigator, "Microdata for Analysis of Early Life Conditions, Health, and Population." R01AG041831, National Institute on Aging. \$2,889,917. Score: 10 (2nd percentile).

2018-2023 Principal Investigator, "A Multigenerational Longitudinal Panel for Aging Research." R01AG057679, National Institute on Aging. \$3,396,718. Score: 10 (2nd percentile).

2018-2023 Co-Investigator, "National Spatiotemporal Population Research Infrastructure." Competing Continuation, R01HD057929, NICHD-DBSB. \$3,250,000. Priority score: 10 (2nd percentile)

2017-2022 Co-Principal Investigator, "IPUMS Terra: Global Population and Agricultural Data." National Science Foundation, \$1,473,720.

2017-2022 Principal Investigator. "Microdata for Population Dynamics and Health Research." National Institute of Child Health and Human Development, National Institutes of Health. \$3,796,565. Score: 10 (2nd percentile).

2016-2021 Principal Investigator, "Minnesota Population Center." Competing Continuation, P2C HD041023, NICHD-PDB. \$1,404,530. Priority Score: 10 (no percentile). PI status transferred to John Robert Warren.

2016-2021 Co-Investigator, "Integrated Samples of Eurasian Censuses." Competing Continuation, R01HD047283, NICHD-PDB. \$2,994,959. Priority Score: 19 (5th percentile).

- 2015-2020 Principal Investigator, “Big Microdata Expansion Project,” with Catherine Fitch and Matthew Sobek. R01HD083829. NICHD-PDB. Total award: \$3,105,210. Priority score: 12 (1st percentile).
- 2015-2020 Co-Investigator, “Models of Demographic and Health Changes following Military Conflict.” Principal Investigator: J. David Hacker. R01HD082120, NICHD-PDB. Total award: \$ 2,863,931. Priority score: 21 (11th percentile)
- 2014-2019 Principal Investigator, “International Integrated Microdata Series.” National Science Foundation, SES-1357452. Total award: \$6,699,794.
- 2014-2019 Co-Investigator, “Integrated Samples of Latin American Censuses, 1960-2003.” Competing Continuation, R01 HD044154, NICHD-DBSB. Principal Investigator: Robert McCaa. \$3,541,813. Score: 10 (5th percentile).
- 2013-2018 Principal Investigator, “Big Data for Population Research,” with Catherine Fitch and Matthew Sobek. R01HD078322 National Institute of Child Health and Human Development, Demographic and Behavioral Sciences Branch (NICHD-DBSB). \$3,185,694. Priority score: 11 (1st percentile)
- 2013-2018 Principal Investigator, “IPUMS Redesign” Competing Continuation, R01 HD43392, NICHD-DBSB. \$2,894,148. Score: 11 (3rd percentile).
- 2013-2018 Co-Investigator, “National Spatiotemporal Population Research Infrastructure.” Competing Continuation, R01HD057929, NICHD-DBSB. \$3,020,552. Priority score: 11 (3rd percentile)
- 2013-2018 Co-Principal Investigator, “National Historical Geographic Information System.” National Science Foundation SES-1324875. \$869,999.
- 2012-2014 Co-Principal Investigator, “Mining Microdata: Economic Opportunity and Spatial Mobility in Britain, Canada and the United States, 1850-1911.” Digging into Data Challenge, National Science Foundation, Economic and Social Research Council (UK), and Social Science and Humanities Research Council (Canada). SMA 1209078, \$120,901 (Minnesota component). Principal Investigator: Evan Roberts.
- 2012-2016 Principal Investigator, “Infrastructure for Population Analysis.” (1940 Census Project). National Science Foundation, SES1155572. \$750,000.
- 2012-2017 Principal Investigator, “Baseline Socioeconomic Microdata for Population and Health Research.”. R01HD073967, NICHD-DBSB. \$3,043,604. Priority score: 10 (1st percentile)
- 2012-2017 Principal Investigator, “Microdata for Analysis of Early Life Conditions, Health, and Population.” R01AG041831 National Institute on Aging. \$2,928,170. Priority score: 11 (4th percentile).
- 2011-2016 Principal Investigator, “Terra Populus: A Global Population-Environment Data Network.” Office of Cyberinfrastructure, National Science Foundation (NSF). \$7,998,550.
- 2011-2016 Co-Investigator, “Integrating, Linking, and Disseminating CPS Data.” Competing Continuation, R01 HD047283, NICHD-DBSB. Principal Investigator: John Robert Warren. \$3,111,152. Score: 18 (5th percentile).
- 2011-2016 Principal Investigator, “North Atlantic Population Project.” R01 HD052110, 2011, \$3,044,475. Score: 14 (3rd percentile).

- 2011-2016 Principal Investigator, “Minnesota Population Center.” Competing Continuation, R24 HD41023, NICHD-DBSB \$1,379,532. Score: 20 (no percentile given).
- 2011-2016 Subaward Principal Investigator, “Early Life Conditions, Survival, and Health: A Pedigree-Based Population Study.” University of Utah subcontract (NIA Prime, R01 AG022095), Ken Smith PI. Minnesota component \$669,482.
- 2009-2014 Principal Investigator, “International Integrated Microdata Series.” SES-0851414, NSF, \$5,963,296.
- 2009-2014 Co-Investigator, “Baseline Microdata for Analysis of U.S. Demographic Change.” R01HD060676, NICHD-DBSB. Principal Investigator: Evan Roberts.\$3,587,689. Score: 120 (2.1 percentile).
- 2009-2014 Co-Investigator, “Integrated Samples of Eurasian Censuses.” R01 HD047283, NICHD-DBSB. Principal Investigator: Robert McCaa. \$3,030,118. \$3,587,689. Score: 10 (2nd percentile).
- 2009-2011 Subaward Principal Investigator, “Demographic Data Sharing and Archiving.” Subcontract with the Inter-university Consortium for Political and Social Research, Ann Arbor, Michigan; prime funding agency, NICHD-DBSB U24HD048404. \$61,567 (Minnesota component). Score: 150.
- 2009-2014 Co-Investigator, “Integrated Health Interview Series.” Competing Continuation, R01 HD046697, NICHD-DBSB. Principal Investigator: Lynn Blewett. \$3,372,067. Score: 137 (11.4 percentile).
- 2009-2012 Co-Principal Investigator, “Minnesota Research Data Center” SES-0851417. NSF. Principal Investigator: Catherine Fitch. \$299,066.
- 2008-2013 Principal Investigator, “Integrated Spatio-Temporal Aggregate Data Series” R01 HD057929, NICHD-DBSB. \$2,919,725. Score: 120 (2.3 percentile).
- 2007-2012 Principal Investigator, “IPUMS Redesign” Competing Continuation, R01 HD43392, NICHD-DBSB. \$3,093,410. Score: 132 (5.8 percentile). Supplement, 2004-2007, \$216,946. Score: 161.
- 2007-2012 Principal Investigator, “New Data Resources from the 1960 Census of Population” R01 HD041575, NICHD-DBSB. \$2,375,491. Score: 120 (1.1 percentile).
- 2007-2012 Principal Investigator, “Public Use Microdata Sample of the 1930 Census.” Competing Continuation, R01 HD041575, NICHD-DBSB. \$3,256,088. Score: 126 (2.6 percentile).
- 2007-2012 Co-Investigator, “Integrated Samples of Latin American Censuses, 1960-2003.” Competing Continuation, R01 HD044154, NICHD-DBSB. Principal Investigator: Robert McCaa. \$3,100,064. Score: 105 (0.4 percentile).
- 2007-2011 Co-Investigator, “Economic Opportunity and Marriage Formation, 1960-2000” Principal Investigator, Catherine A, Fitch. NICHD-DBSB (R01-HD054643, \$596,505, Score 157, 17 percentile)
- 2007-2010 Co-Principal Investigator, “Economic Opportunity and Marriage Formation, 1960-2000” Co-Principal Investigator, Catherine A, Fitch. NSF Sociology Program (SES-0617560, \$158,706).
- 2007-2010 Co-Investigator, “Population and Health Data Manager.” R44 HD053162. NICHD-DBSB. SBIR Grant to Orlin Research, Inc. Principal Investigator, Catherine Ruggles. \$849,237. Score: 194 (no percentile given).

- 2006-2011 Principal Investigator, "Minnesota Population Center." Competing Continuation, R24 HD41023, NICHD-DBSB, \$1,440,753. Score: 140.
- 2006-2012 Co-Principal Investigator, "National Historical Geographic Information System." BCS-0648005, Geography and Regional Sciences Program, NSF. Co-Principal Investigators: John Adams, William Block, Mark Lindberg, Robert McMaster and Wendy Treadwell. \$1,034,493.
- 2006-2011 Principal Investigator, "North Atlantic Population Project." R01 HD052110, NICHD-DBSB, \$1,398,575. Score: 140 (5.4 percentile).
- 2005-2006 Co-Principal Investigator, "Uncovering the Underrepresented." Grant number 52084, Robert Wood Johnson Foundation. Principal Investigator: Michael Davern. \$350,000.
- 2004-2009 Principal Investigator, "International Integrated Microdata Series." SES-0433654, NSF, Human and Social Dynamics Infrastructure award. \$5,000,000. Sole infrastructure award of 64 applicants to the Human and Social Dynamics initiative.
- 2004-2009 Subaward Principal Investigator, "Demographic Data Sharing and Archiving." Subcontract with the Inter-university Consortium for Political and Social Research, Ann Arbor, Michigan; prime funding agency, NICHD-DBSB U24HD048404. \$437,815 (Minnesota component).
- 2004-2009 Co-Investigator, "Integrated Samples of European Censuses." R01 HD047283, NICHD-DBSB. Principal Investigator: Robert McCaa. \$3,030,118. Score: 120 (1.0 percentile).
- 2004-2009 Co-Investigator, "Integrated Health Interview Series." R01 HD046697, NICHD-DBSB. Principal Investigator: Lynn Blewett. \$2,990,745. Score: 117 (0.3 percentile).
- 2004-2007 Principal Investigator, "IPUMS Redesign" Competing Supplement, R01 HD43392, NICHD-DBSB. \$216,946. Score: 161 (no percentile given).
- 2003-2008 Principal Investigator, "Population Database for the United States in 1880." Competing Continuation. R01 HD39327, NICHD-DBSB. \$2,645,234. Score: 135 (7.2 percentile).
- 2003-2008 Principal Investigator, "Public Use Microdata Sample of the 1900 US Census of Population." R01 HD36451, NICHD-DBSB. \$2,550,000. Score: 120 (2.5 percentile).
- 2003-2006 Co-investigator, "Black Migration to the West." SES-0317254, Sociology Program, NSF; Collaborative research with SES-0317247, University of Washington. Principal Investigators: Stewart Tolnay, J. Trent Alexander, and Jason Digman. \$303,507.
- 2002-2007 Principal Investigator, "IPUMS Redesign." R01 HD43392, NICHD-DBSB. \$2,659,155. Score: 120 (1.8 percentile).
- 2002-2007 Co-Investigator, "Integrated Samples of Latin American Censuses, 1960-2003." R01 HD044154-01, NICHD-DBSB. Principal Investigator: Robert McCaa. \$2,999,934. Score: 120 (1.8 percentile).
- 2002-2007 Principal Investigator, "Public Use Microdata Sample of the 1930 Census." R01 HD041575, NICHD-DBSB. \$3,183,561. Score: 117 (0.4 percentile).
- 2001-2005 Co-Principal Investigator, "National Historical Geographic Information System." BCS-0094908, Geography and Regional Sciences Program, NSF. Co-Principal Investigators: John Adams, William Block, Mark Lindberg, Robert McMaster and Wendy Treadwell. \$4,884,447.
- 2001-2005 Principal Investigator, "Minnesota Population Center." R24 HD41023, NICHD-DBSB, 2001-2011 \$1,327,931. Score: 174.

- 2001-2005 Principal Investigator, "North Atlantic Population Project." SES-0111707, NSF. \$491,506.
- 2000-2001 Principal Investigator, "The 1880 United States Population Database" SES 9910961, Sociology Program, NSF. \$200,000.
- 2000 Principal Investigator, "Microdata Access System." Equipment grant, Sun Microsystems. \$135,000.
- 2000-2003 Principal Investigator, "Population Database for the United States in 1880." R01 HD39327, NICHD-DBSB. \$947,160. Score: 113 (0.3 percentile).
- 2000-2003 Co-Investigator, "Integrated Samples of Colombian Censuses, 1964-2000." R01 HD37508, NICHD-DBSB. Principal Investigator: Robert McCaa. \$549,160. Score: 145 (3.3 percentile)
- 1999-2004 Principal Investigator, "International Integrated Microdata Access System." SBR-9908380, Methodology, Measurement, and Statistics Program, NSF. Co-Principal Investigators: Robert McCaa, Deborah Levison, Todd Gardner, and Matthew Sobek. \$3,501,130.
- 1999-2004 Principal Investigator, "A New Public Use Microdata Sample of the 1910 US Census of Population." R01 HD37888, NICHD-DBSB. \$2,370,000. Score: 131 (7.0 percentile).
- 1998-2003 Principal Investigator, "Public Use Microdata Sample of the 1900 US Census of Population." R01 HD36451, NICHD-DBSB. \$2,100,000. Score: 107 (0.2 percentile).
- 1997-2002 Principal Investigator, "Dissemination & Support of the IPUMS database." SBR-9617820, Methodology, Measurement, and Statistics Program, NSF. \$209,762.
- 1996-2002 Principal Investigator, "Public Use Microdata Samples of the 1860 & 1870 US Censuses." R01 HD34572, NICHD-DBSB. \$1,610,000. Score: 117 (1.8 percentile).
- 1996-2000 Principal Investigator, "Electronic Dissemination of the IPUMS database." R01 HD34714, NICHD-DBSB. \$408,000. Score: 140 (11.7 percentile).
- 1995-1997 Principal Investigator, "Integrated Public Use Microdata Series." Accomplishment-Based Renewal, 1995, SBR-9422805, \$112,130.
- 1994-1996 Subaward Principal Investigator, "Oversample of the 1910 Hispanic Population." (subcontract consortium agreement with University of Texas UT95-0030). R01 HD32325, NICHD-DBSB. \$285,000 (Minnesota component).
- 1993-1998 Principal Investigator, "Public Use Microdata Sample of the 1920 Census." R01 HD29015, NICHD-DBSB. \$2,200,000. Score: 130 (2.2 percentile).
- 1992-1995 Principal Investigator, "Integrated Public Use Microdata Series." SES-9118299, NSF. \$464,913.
- 1992-1994 Co-Principal Investigator, "Public Use Microdata Sample of the 1850 Census." SBR-9210903, Sociology Division, NSF. Co-Principal Investigator: Russell Menard. \$192,203.
- 1989-1993 Principal Investigator, "Public Use Sample of the 1880 Census." R01 HD25839, NICHD-DBSB. Co-Principal Investigator: Russell Menard. \$1,287,000. Score: 125 (1.3 percentile).
- 1984-1985 Principal Investigator, National Research Service Award, National Institute of Child Health and Human Development, National Institutes of Health. \$19,608 (individual postdoctoral award).

University of Minnesota Grants and Awards

- 2008- Regents Professorship, \$50,000 annually.
- 2017- "Minnesota Population Database." \$99,999. Office of the Vice President for Research.
- 2004-2007 Scholar of the College, \$30,000.
- 2000-2004 Distinguished McKnight Professorship. Graduate School, \$100,000.
- 2000-2002 Principal Investigator, "Minnesota Population Center." New Initiatives in Interdisciplinary Research, Graduate School, \$100,000.
- 1994-1995 Principal Investigator, "Public Use Microdata Sample of the 1870 Census: Pilot Study." Grant-In-Aid of Research, Graduate School, University of Minnesota, \$22,000.
- 1992-1993 Principal Investigator, "Public Use Microdata Sample of the 1920 Census: Pilot Study." Grant-In-Aid of Research, Graduate School, University of Minnesota, \$18,000.
- 1990-1991 "Fragmentation of the Family: Living Arrangements in America, 1880-1980." Bush Sabbatical Fellowship, University of Minnesota. \$35,000.
- 1990-1991 Principal Investigator, "Integrated Public Use Microdata Series: Pilot Study." Grant-in-Aid of Research, Graduate School, University of Minnesota, \$15,000.
- 1989-1990 Principal Investigator, "Public Use Sample of the 1880 Census." With Russell R. Menard, Grant-in-Aid of Research, Graduate School, University of Minnesota, \$15,000.
- 1987-1990 McKnight-Land Grant Professorship, Graduate School & McKnight Foundation, \$68,000.
- 1987-1989 Principal Investigator, "The Transformation of American Household Structure, 1880-1980." Three Grants-in-Aid of Research, Graduate School, University of Minnesota, \$30,000.
- 1985-1987 Principal Investigator, "Life-course Transitions and American Family Structure, 1900-1950." Two Grants-in-Aid of Research, Graduate School, University of Minnesota, \$18,000.

PhD Advisees Completed

- William Block, "A Princely Gift Indeed: Agricultural Opportunity, Farm Formation, and Marriage in the United States, 1850-1990" (Ph.D. 2000). Currently Director of the Cornell Institute for Social and Economic Research, Cornell University.
- Lisa Y. Dillon, "Between Generations and Across Borders: Living Arrangements of the Elderly and their Children in Victorian Canada and the United States" (Ph.D. 1997). Currently Professor of Demography, University of Montreal.
- Catherine A. Fitch, "Transitions to Marriage in the United States, 1850-2000" (Ph.D. 2005). Currently Associate Director, Minnesota Population Center.
- Jill Frahm, "Unclaimed Flowers and Blossoms Protected by Thorns: Never-Married Women in the United States, 1880-1930." (Ph.D. 2010). Currently teaches history at the Dakota County Technical College, Rosemount, MN.
- Todd Gardner, "The Metropolitan Fringe: Suburbanization in the United States Before World War II" (Ph.D. 1998). Currently Senior Statistician, U.S. Bureau of the Census.
- Ronald Goeken, "Unmarried Adults and Residential Autonomy: Living Arrangements in the United States, 1880-1990" (Ph.D. 1999). Currently Data Services Core Director and Research Associate, Minnesota Population Center.

J. David Hacker, “The Human Cost of War: White Population in the Civil War Era” (Ph.D. 1999). Dorothy Thomas Prize, Population Association of America; Finalist for Nevins Prize, Economic History Association. Currently Associate Professor of History, University of Minnesota.

Patricia Kelly Hall, “Privileged Moves: Migration, Race, and Veteran Status in Post-World War II America” (Ph.D. 2009). Currently Research Associate, Minnesota Population Center.

Daniel C. Kallgren, “The Individual, the Family and the Community in the Rise of American School Attendance” (Ph.D. 1995). Currently Associate Professor of History, University of Wisconsin Center.

Diana L. Magnuson, “The Making of a Modern Census: The United States Census of Population, 1790-1940” (Ph.D. 1995). Currently Professor of History, Bethel College, St. Paul, Minnesota.

Ellen Manovich, “‘Is this a Real Neighborhood?’: Universities, Urban Development, and Neighborhood Change in the 20th Century United States.” (Ph.D. 2016).

Matthew Nelson, “Relieved of These Little Chores: Agricultural Neighbor Labor, Family Labor, and Kinship in the United States 1790-1940.” (Ph.D. 2018).

Evan Roberts, “The Growing Economic Independence of Women”: Married Women's Labor Force Participation in the United States, 1860-1940.” (Ph.D. 2007). Finalist for the Nevins Prize, Economic History Association. Currently Assistant Professor of Sociology, University of Minnesota.

David Ryden, “Producing a Peculiar Commodity: Jamaican Sugar Production, Slave Life, and Planter Profits on the Eve of Abolition, 1750-1807.” (Ph.D. 1999). Finalist for the Gerschenkron Prize, Economic History Association. Currently Associate Dean and Professor, University of Houston.

Chad Ronnander, “Many Paths to the Pine: Mdewakanton Dakotas, Fur Traders, Ojibwes, and the United States in Wisconsin’s Chippewa Valley, 1815-1837.” (Ph.D. 2003). Outreach Director, Hamline University.

Matt Sobek, “Work in America: Workforce participation and Occupational Attainment in the United States, 1850-1990” (Ph.D. 1997). Currently Data Integration Core Director, Minnesota Population Center, University of Minnesota.

Postdoctoral Advisees

J. Trent Alexander, Ph.D., History, Carnegie Mellon University. Currently Associate Director, Inter-University Consortium for Political and Social Research.

Albert Esteve, Ph.D., Demography, Autonomous University of Barcelona. Currently Professor and Director, Center for Demographic Studies, Autonomous University of Barcelona.

Todd Gardner, Ph.D., History, University of Minnesota. Currently Senior Statistician, U.S. Census Bureau.

Mark Geiger, Ph.D., History, University of Missouri. Currently Independent Scholar.

Ronald Goeken, Ph.D., History, University of Minnesota. Currently Data Services Core Director, Minnesota Population Center.

J. David Hacker. Ph.D., History, University of Minnesota. Currently Associate Professor of History, University of Minnesota.

Hiroimi Ishizawa, Ph.D., Sociology, University of Illinois. Currently Associate Professor of Sociology, Georgetown University.

Nathan Lauster, Ph.D., Sociology, Brown University; Currently Associate Professor of Sociology, University of British Columbia.

Carolyn Liebler, Ph.D., Sociology, University of Wisconsin. Currently Associate Professor of Sociology, University of Minnesota.

Berna Torr, Ph.D., Sociology, Brown University. Currently Assistant Professor of Sociology, California State University, Fullerton.

Selected Invited Lectures

Lund University, November 2021

Huber Lecture, the Institute for Population Research, The Ohio State University, April 2020
Center for Demography & Ecology and the Center for Demography of Health and Aging,
University of Wisconsin-Madison, March 2020.

Population Research Center, University of Texas at Austin, April 2019

Minnesota Population Center Seminar Series, April 2019

University of Pennsylvania, Population Studies Center Colloquium, February 2019

Simons Institute for the Theory of Computing, University of California, Berkeley 2019

University of Pennsylvania, Advanced Demographic Methods Workshop, February 2019

Notestein Seminar, Office of Population Research, Princeton University, November 2018

Autonomous University of Barcelona, Centre d'Estudis Demogràfics, January 2018

University of Minnesota Geography Seminar, February 2018

Center for Studies in Demography and Ecology, University of Washington, October 2017

Minnesota Population Center, March 2017

Colorado University Population Center, November 2016

MITRE Lecture, University of Michigan, March 2016.

Sigma XI, University of Minnesota, May 2016.

Rand Corporation, Santa Monica, August 2016.

Minnesota Population Center, April 2015.

Harvard Center for Population and Development Studies, March 2015

Broom Center for Demography, University of California-Santa Barbara, February 2015

California Center for Population Research, UCLA, February 2015

Stanford University, February 2015

Center for Studies in Demography and Ecology, University of Washington, January 2015

Center for Demography and Ecology, University of Wisconsin-Madison, February 2014

Federal University of Minas Gerais, CEDEPLAR, November 2013

Duke University Population Research Institute, November 2013

U.S. Census Bureau, Suitland, Maryland, 2012

Initiative in Population, The Ohio State University, 2012

Center for Demography and Ecology, University of Wisconsin, 2011

Cornell University Population Program, 2011

Institute on the Environment, University of Minnesota, Frontiers Lecture 2011

Max Planck Institute for Demographic Research, Rostock, Germany, April 2010

Notestein Seminar, Office of Population Research, Princeton University, March 2010

Arizona State University Population Program, February 2009

Carolina Population Center, University of North Carolina, November 2008

Max Planck Institute for Demographic Research, Rostock, Germany, July 2008

Population Studies and Training Center, Brown University, November 2007
Maryland Population Research Center, University of Maryland, May 2007
Sociology Colloquium, Stanford University, May 2006
International Institute for Social History, Amsterdam, March 2006
National Science Foundation, Arlington, VA, September 2005
Institut national d'études démographiques, Paris, July 2005
California Center for Population Research, UCLA, May 2005
Center for Studies in Demography and Ecology, University of Washington, April 2004
Department of Demography, University of Montreal, November 2003
Population Studies Center, University of Michigan, 1995
Graduate Group in Demography, SUNY at Buffalo, 1993
Population Studies Center, University of Texas, February 1989
Center for Demography and Ecology, University of Wisconsin, 1985

Conference Presentations

- “Disclosure Avoidance in the Census Bureau’s 2010 Demonstration Data Product.” With David Van Riper and Tracy Kugler. UNESCO Chair in Data Privacy, International Conference, PSD 2020, Tarragona, Spain, September 23–25, 2020
- “Big Microdata for Economic History,” presented at the Conference on Big Data in Economic History, Institute for Advanced Study, Toulouse. May 28 2020.
- “‘It’s None of their Damn Business’: Privacy and Disclosure Control in the U.S. Census, 1790-2020.” (with Diana L. Magnuson). Population Association of America, Washington, D.C., April 22-25, 2020.
- “Differential Privacy and Racial Residential Segregation” (with David Van Riper, Tracy Kugler, and Jonathan Schroeder) Presented at the 2020 virtual meeting of the Association for Public Policy Analysis and Management, November 11, 2020.
- “The Revival of Quantification: Reflections on the Old New Histories.” Presidential Address, Social Science History Association, Chicago, November 2019.
- “Collaboration of Genealogy and Social Science History: The Case of IPUMS.” Social Science History Association, Chicago, November 2019.
- “Building Relationships Where There Are None: Imputing Relationship Status in the 1850, 1860 and 1870 Decennial Census Files.” With Jose Pacas and Josiah Grover. Social Science History Association, Chicago, November 2019.
- “Differential Privacy for Population Data,” Association of Population Centers, Chicago, October 4, 2019.
- “Assessing the Impact of Differential Privacy on Racial Residential Segregation,” Harvard Data Science Symposium, October 25, 2019.
- “The Demography of Kinship: or, My Life as a Microsimulator.” Keynote, International Union for the Scientific Study of Population, International Seminar on Kinship and Reproduction in Past Societies. Minneapolis, August 22-23, 2019.
- “Implications of Differential Privacy for Public Data.” Keynote Roundtable, Association of Public Data Users, Washington, July 9, 2019.
- “IPUMS Multigenerational Longitudinal Panel.” Putting the Pieces Together: Promise, Programs and Pitfalls in Linking Historical and Contemporary Records, Kellogg Global Hub, Northwestern University, May 17-19, 2019.
- “Big Census Microdata: IPUMS in the Federal Statistical Research Data Centers,” with Catherine Fitch, Erin Meyer, and Todd Gardner. Population Association of America, Austin, April 10-13.

- “Imputing Relationship Status in the 1850, 1860 and 1870 Decennial Census Files,” with Jose Pacas and Josia Grover. Population Association of America, Austin, April 10-13, 2019.
- “Differential Privacy and Census Data: Implications for Social and Economic Research” Population Association of America, Austin, April 10-13.
- “Differential Privacy and Census Data: Implications for Social and Economic Research.” American Economic Association, Atlanta, January 5, 2019.
- “Census Privacy,” Privacy in the Digital Era, Institute for Humane Studies, George Mason University. January 3, 2019.
- “Implications of Differential Privacy for Census Bureau Data Dissemination.” Federal Economic Statistics Advisory Committee, Washington DC, December 14, 2018
- “Capturing the American People: Census Technology and Institutional Change, 1790-2010.” Social Science History Association, Pheonix, November 11, 2018
- “Building a National Longitudinal Research Infrastructure,” Family History Technology Workshop, Brigham Young University, Provo, Feb. 27, 2018.
- “Building the Minnesota Population Database.” Population Association of America, Denver, April 26-28, 2018.
- “Public Access to Data in the Social, Behavioral, and Economic Sciences.” National Science Foundation Workshop on Open Access to Data. Alexandria, VA, Feb. 22.
- “History of the Association of Population Centers.” Association of Population Center, Chapel Hill, NC, January 26, 2018.
- “IPUMS Data Integration.” INGRID Data Forum on Harmonization and Uses of European Microdata. European Union Research and Innovation Programme, Barcelona, Jan 18 2018.
- “Public Access to Data in the Social, Behavioral, and Economic Sciences.” National Science Foundation Workshop on Open Access to Data. Alexandria, VA, Feb. 22
- “Integrating Geographic Context with Individual Situation.” With D. Van Riper and J. Schroeder. Social Science History Association, Montreal, November 4, 2017.
- “The National Longitudinal Research Infrastructure.” Social Science History Association, Montreal, November 3, 2017.
- “Integrating and Disseminating Large-Scale Microdata.” Population Association of America, Chicago, April 27, 2017.
- “Building an National Longitudinal research Infrastructure.” Population Association of America, Chicago, April 27, 2017.
- “Building a National Longitudinal Research Structure: Historical Perspectives on Data and Technology,” Keynote Address, 2016 FSRDC Annual Research Conference, College Station, TX September 2016.
- “New Spatially Referenced Microdata.” 2016 Racial Segregation Conference, College Station, TX September 2016.
- “Data Dissemination and Archiving for the Big Three: An Update.” National Academy of Sciences, Annual Meeting of the Standing Committee on the Furture of NSF Supported Surveys, Washington D.C., October 6, 2016.
- “Microdata as a time machine: IPUMS-International population samples illuminate a world we have Gained.” With Robert McCaa, Lara Cleveland, Patricia Kelly-Hall, and Matthew Sobek. European Society of Historical Demography conference Leuven, 21-24 September 2016
- “Race Differentials in Marriage, 1960-2013.” Population Association of America, Washington, D.C., March 31, 2016.

- “Monitoring Sustainable Development Goals with Data from IPUMS International.” Population Association of America, Washington, D.C., March 31, 2016. With R. McCaa, ML King, D. Levison, M. Sobek.
- “Trends in Intergenerational Coresidence in Low and Middle-Income Countries: 1970-2010. With Sheela Kennedy. Population Association of America, Washington, D.C., March 31, 2016.
- “A Note on Data Challenges for the Development Agenda: Observations from IPUMS.” United Nations Expert Group Meeting on Strengthening the Demographic Evidence Base for the post-2015 Development Agenda.” New York, October 5-6, 2015.
- “Marriageability and the race differential in the frequency of marriage, 1960-2014.” Social Science History Association, Baltimore, November 12-15, 2015.
- “The History of Data: Technological Change and the Census, 1790-2020.” Plenary lecture, International Association for Social Science Information Services and Technology, Minneapolis, June 2, 2015.
- “Patriarchy, Power and Pay: The Transformation of American Families, 1800-2015.” Presidential Address, Population Association of America, San Diego, May 1, 2015.
- “Wage Labor and Family Systems.” International Institute of Social History, Amsterdam, December 12-13 2014.
- “The Revolution in Family Formation.” Keynote Address, Southern Demographic Association, Memphis, October 17.
- “Complete-Count Data from the U.S. Census.” Social Science History Association, Toronto, November 6-9, 2014.
- “Intergenerational mobility in Britain, Canada, and the United States, 1850-1911: New evidence from Digging into Data.” With P. Baskerville, L. Dillon, K. Inwood, E. Roberts, K. Schurer. Social Science History Association, Toronto, November 6-9, 2014.
- “Marriage, Family Systems, and Economic Opportunity in the United States Since 1850.” Family Symposium, The Pennsylvania State University, October 13-14, 2014.
- “The IPUMS-International partnership enhances the value of census microdata for both producers and users.” With R. McCaa, P. Kelly-Hall, L. Cleveland, and M. Sobek. International Association for Official Statistics, Da Nang, Vietnam, October 8-10, 2014.
- “The Decline of Marriage in the United States and Latin America.” Population Association of Latin America (ALAP) Lima, Peru, August 12, 2014.
- “Big Microdata from the U.S. Census.” With C. Fitch and M. Sobek. Population Association of America, Boston, May 1-3, 2014.
- “Trends in Intergenerational Coresidence in Developing Countries.” Poster presentation with S. Kennedy. Population Association of America, Boston, May 1-3, 2014.
- “Terra Populus: Integrated Data on Population and Environment.” Coalition for Networked Information, Washington, DC December 8-9, 2014.
- “The Family Transition in the U.S. and Latin America.” Family, Gender and Generations: A conference of the Brazilian Population Association. University of Campinas, Nov. 26-27, 2013.
- “Variance Estimation in U.S. Census Data from 1960-2010” Poster presentation with Kathryn Coursolle and Lara Cleveland, Population Association of America, New Orleans, April 11-13 2013.
- “The IPUMS big data revolution: liberating, integrating and disseminating the globe’s census microdata.” Chaire Quetelet: Demography revisited: The past 50 years, the coming 50 years. Louvain-la-Neuve, November 12-15, 2013.

- “Getting Our Message Across: Strategies and Best Practices to Ensure the Use of Statistics in Decision Making.” With Robert McCaa, Lara Cleveland, Albert Esteve, and Matthew Sobek.. International Association of Official Statistics, 12-14 September 2012.
- “Historical Census Microdata and the Future of Household Demography.” 2nd Mosaic Conference, Budapest, September 6-7 2012.
- “Data Integration, Dissemination, Sustainability, and Metadata.” Conference on Surveys and Data, National Science Foundation, November 8-9 2012.
- “The History of Historical Family Demography” Social Science History Association, Vancouver, November 1-4, 2012.
- “Terra Populus: Integrating Data on Population and the Environment.” With Catherine A. Fitch, Tracy Kugler, Jonathan Foley, Steven Manson, Matthew Sobek. Population Association of America, San Francisco, May 3-5, 2012.
- “Marriage Formation and Economic Opportunity in the United States: 1970-2000” With Catherine A. Fitch, Sheela Kennedy, and J. Michael Oakes. Population Association of America, San Francisco, May 3-5, 2012.
- “The Future of Historical Family Demography.” Keynote address, “Historical Inequality and Mobility: New Perspectives in the Digital Era,” University of Guelph, May 25-27, 2012.
- “Terra Populus: A Global Population/Environment Data Network.” Presented at Data2012: Coming Together Around Data.” Data to Insight Center, Indianapolis, January 25-27, 2012.
- “Marriage and Economic Opportunity in the United States, 1970-2000.” With Catherine Fitch and Sheela Kennedy. Social Science History Association, Boston, November 17-20, 2011.
- “The History and Future of Large-Scale Census Data.” Keynote Address, Annual Census Research Data Center Conference. Minneapolis, Sept. 15-16, 2011.
- “Terra Populus: A Global Population/Environment Data Network.” Workshop on Integrating Global Microdata, 58th International Statistical Institute, Dublin, August 20-21, 2011
- “Trends in Divorce and Union Instability in the United States since 1980.” With Sheela Kennedy. American Sociological Association, Las Vegas, August 20-23, 2011.
- “Using Restricted-Access Census Data to Study Economic Opportunity and Marriage Formation.” With Catherine Fitch and J. Michael Oakes. Population Association of America, Washington, DC, March 31-April 2, 2011.
- “Integrating International Microdata: IPUMS and NAPP.” Mosaic Workshop, Max Planck Institute for Demographic Research, Rostock, Germany, May 25, 2011.
- “Measuring Family Interrelationships.” Workshop on Poverty Measurement, Urban Institute, Washington, D.C. April 1, 2011.
- “Joint Families and Stem Families and the Northwest European Family System: A Comparative Analysis.” Poster presentation, Population Association of America, Dallas, Texas, April 15-17. Winner, 2010 PAA Poster Award.
- “When Comes Baby in the Baby Carriage? Historical Changes in Three Dimensions of Age at Parenthood.” With Ann Meier and Catherine Fitch. Population Association of America, Dallas, Texas, April 15-17, 2010.
- “Disseminating Historical Data on the Internet: The IPUMS Experience.” International Commission on Historical Demography, 21st Congress of Historical Sciences, Amsterdam, August 23-28, 2010.
- “The Decline of Quantitative History.” International Commission on Historical Demography, 21st Congress of Historical Sciences, Amsterdam, August 23-28, 2010.

- “Historical Census Data for Scientific Research and the Problem of the 1940 Census.” National Archives and Records Administration, 1940 Census Workshop. College Park, Maryland, September 13, 2010.
- “Building Dissemination Data Infrastructure.” Presented at “Future Investments in Large-Scale Survey Data Dissemination,” National Science Foundation, Arlington, VA, July 26-27, 2010.
- “Stem Families and Joint Families in Comparative Historical Perspective.” Presented at the plenary session of “The History of Families and Households: Comparative European Dimensions.” University of London, 24-26 June 2010.
- “Minnesota Families” Presented at the Annual Conference on Policy Analysis, St. Paul, October 22, 2010.
- “New Directions in Historical Family Demography.” Presented at “Nouvelles interrogations en démographie historique et histoire de la famille.” 2009 Entretiens du Centre Jacques Cartier, Lyon.
- “Intergenerational Coresidence and Family Transitions in the United States, 1850-1880.” Social Science History Association, RMS Queen Mary, Long Beach, CA November 2009.
- “Reconsidering ‘Reconsidering the Northwest European Family System’.” International Union for the Scientific Study of Population, Marrakech, Morocco, September 28-October 2 2009.
- “Building Social Science Infrastructure.” American Sociological Association, San Francisco, August 7-10 2009.
- “Reconsidering the Northwest European Family System.” Population Association of America, Detroit, April 29-May 2 2009.
- “Were Northwest Europe and North America Exceptional? An Analysis of Intergenerational Coresidence.” Social Science History Association, Miami, October 23-28, 2008.
- “The Canadian Century Research Infrastructure: International Perspectives.” Presented at “State of the World: Information Infrastructure Construction and Dissemination for Humanities and Social Science Research,” University of Alberta, Edmonton, October 3-5, 2008.
- “Intergenerational Coresidence and Economic Development: New Evidence from the International Integrated Public Use Microdata Series.” (with Misty Heggenness). Presented at “Census Microdata: Findings and Futures,” University of Manchester, 1-3 September 2008.
- “IPUMS-International Data Recovery.” Presented at “Census Microdata: Findings and Futures,” University of Manchester, 1-3 September 2008.
- “Secure Data Laboratories.” Workshop on International European Census Microdata, European Association For Population Studies, Barcelona, July 9-12, 2008.
- “Intergenerational Families in Developing Countries.” (With Misty Heggenness). Population Association of America, New Orleans, April 16-19 2008.
- “Living Arrangements of the Aged in Comparative Historical Perspective.” European Social Science History Conference, Lisbon, February 27, 2008.
- “International Censuses and Intergenerational Families.” Plenary Address, Human and Social Dynamics Conference, National Science Foundation. Arlington, VA, October 1-2 2007.
- “Intergenerational Coresidence in Developing Countries: A Comparative Historical Perspective.” Social Science History Association, Chicago, November 15-19, 2007.
- “Review of Web-Based Dissemination of the General Social Survey.” Workshop on “The General Social Survey: The Next Decade and Beyond,” National Science Foundation, Arlington, Virginia, May 2-3, 2007.
- “Using Cyberinfrastructure to Develop Databases for Social Science Research.” American Association for the Advancement of Science, San Francisco, February 16-19 2007.

- “IPUMS-International Integrated Census Microdata Extract System: Users and Uses, May 2002-March 2007.” (Robert McCaa, Steven Ruggles, and Matt Sobek). 23rd ANCSDAAP Population Census Conference, Christchurch, New Zealand, April 16-18, 2007.
- “Using Census Microdata Disseminated by IPUMS-International to Assess Millennium Development Goals of Literacy, Education and Gender Equity in the Ugandan censuses of 1991 and 2002.” (Robert McCaa, Steven Ruggles, and Matt Sobek). Scientific Statistics Conference, Kampala, Uganda, June 11-13, 2007.
- “The Relationship of Socioeconomic Status to Intergenerational Coresidence: A comparative Historical Analysis.” (Poster). Population Association of America, New York, March 29-31, 2007.
- “Using Integrated Census Microdata for Evidence-based Policy Making: the IPUMS-International Global Initiative.” (Robert McCaa, Albert Esteve, Steven Ruggles, Matt Sobek and Ragui Assaad.) Indian Association for Social Sciences and Health, Third All India Conference, New Delhi, March 16-18, 2006.
- “Disseminating Census Microdata: an Essential Component of National Strategies for the Development of Statistics.” (Robert McCaa, Steven Ruggles, and Matt Sobek). Forum on African Statistics Development (FASDEV-II), Addis Ababa, February 6-10, 2006.
- “Archiving Census Microdata: The IPUMS-International Strategy.” (Robert McCaa, Steven Ruggles, and Matt Sobek). Forum on African Statistics Development (FASDEV-II), Addis Ababa, February 6-10, 2006.
- “Decline of the Multigenerational Family in the United States.” European Social Science History Conference, Amsterdam, March 22-25 2006.
- “The Case for Open Access to Data.” Presented at “Disseminating and Analyzing Longitudinal Historical Data,” International Institute for Social History, Amsterdam, March 21 2006.
- “Big Social Science History: The Integrated Public Use Microdata Samples.” Social Science History Association, Portland, November 3-6 2005.
- “IPUMS International.” Human and Social Dynamics Conference, National Science Foundation, Arlington, VA, September 11-12, 2005.
- “Minnesota Population Center Data Integration Projects.” Invited paper, session on “Building Historical Data Infrastructure: The Data Integration Projects of the Minnesota Population Center.” American Statistical Association, Joint Statistical Meetings, Minneapolis, August 9-11 2005.
- “Intergenerational Coresidence and Economic Opportunity of the Younger Generation in the United States, 1850-2000.” Population Association of America, Philadelphia, March 30-April 2, 2005.
- “The Rise of Cohabitation in The United States: New Historical Estimates.” With Catherine A. Fitch and Ron Goeken. Population Association of America, Philadelphia, March 30-April 2, 2005.
- “IPUMS-International, IPUMS-USA, and the North Atlantic Population Project: Challenges of harmonizing census microdata across time and place.” (Steven Ruggles, Robert McCaa, and Matthew Sobek). Meeting of the International Commission for Historical Demography, Sydney, Australia, July 6, 2005. A revised version of the paper was also presented at the 2005 Biennial meeting of Official Representatives, Ann Arbor, Michigan, October 22, 2005.
- “Are Black Men Marrying Younger than Black Women? New Evidence from Census 2000.” (with Catherine A. Fitch). Population Association of America, Boston, April 1-3 2004.
- “The Microdata Revolution: A Brief History.” Simposio Homologación y diseminación de microdatos censales. Cartagena, Colombia, January 13-16 2004.

- “IPUMS-International: A Restricted Access Website Providing Anonymized, Integrated Census Microdata for Social Science and Policy Research.” (with Robert McCaa, Matt Sobek and Albert Esteve). Invited Paper Meeting 38: Microdata-managing the dilemma between access, privacy, and confidentiality, International Statistical Institute 54th Session, August 15-20, 2003, Berlin.
- “Linked Representative Samples of Nineteenth-Century U.S. Censuses.” Social Science History Association, Baltimore, November 13-16 2003.
- “Linking IPUMS Samples to the 1880 Complete Count Census Database.” International Microdata Access Group, Conference on “Longitudinal and Cross-Sectional Historical Data: Intersections and Opportunities” Montreal, November 10-11, 2003.
- “Disseminating Anonymized, Integrated Census Microdata via the Internet: the IPUMS-International Project.” 20th ANCSDAAP Population Census Conference, Ulaanbaatar, Mongolia, 19-21 June, 2002; co-authors: Robert McCaa and Matt Sobek
- “National Historical Geographic Information System.” (with John S. Adams and Catherine A. Fitch). Population Association of America, Atlanta, May 9-11 2002.
- “National Historical Geographic Information System.” (with John S. Adams, Robert McMaster and Mark Lindberg). Association of American Geographers, Los Angeles, March 2002.
- “The National Historical Geographic Information System.” Social Science History Association, Chicago, November 2001.
- “Proyecto Col-IPUMS: Harmonizing the Census Microdata of Colombia, 1964-2003.” (with Robert McCaa). Taller Col-IPUMS: Homologación de los microdatos censales de Colombia, Centro de Investigaciones sobre Dinámica Social (CIDS), Universidad Externado de Colombia. Marzo 23-24, 2001, Bogotá, Colombia.
- “Data Sources for Policy Analysis.” Third Upper Midwest Conference on Demography for Policy Makers, St. Paul, November 2001.
- “A Reality Check for IPUMS-International: Labor Force Participation of Mexican Women in Mexico-Census Microdata versus Employment Survey.” (with Robert McCaa). Census 2000 and Beyond Conference, Cathie Marsh Centre for Census and Survey Research, University of Manchester, June 22, 2000.
- “Economic Opportunity and Long-term Changes in Age at Marriage in the United States.” With Catherine A. Fitch. Social Science History Association, Pittsburgh, October 2000.
- “International Integrated Microdata Access System.” IASSIST, Evanston, Illinois, June 2000.
- “The Public Use Microdata Samples of the U.S. Census: Research Applications and Privacy Issues.” Census 2000 Users' Conference on PUMS, Alexandria, VA May 22, 2000
- “Economic Opportunity and Marriage Formation in the United States, 1940-1990.” With Catherine Fitch. Population Association of America, Los Angeles, March 2000.
- “Living arrangements and Well-Being of the Elderly in the Past.” Presented at “Population Ageing and Living Arrangements of Older Persons: Critical Issues and Policy responses.” Population Division, United Nations, New York, February 2000.
- “Historical Statistics of the United States: Family Structure.” With Susan Brower. Social Science History Association, Fort Worth, November 1999.
- “Moving Through Time: Lifetime Internal Migration Patterns of Americans, 1850-1990.” With Patricia Kelly Hall. Social Science History Association, Fort Worth, November 1999.
- “The Decline of the Multigenerational Family in the United States.” Presented at “Household and Family in Past Time: New Approaches—New Horizons.” University of the Balearic Islands, Palma de Mallorca, Spain, September 1999.

- “The Minnesota Historical Census Project.” Presented at “Swedish Population Statistics 250 Years. Comparative Perspectives on the Arrangement and Use of Population Data.” Swedish Demographic Database, Umeå University, Sweden, August 1999.
- “Microdata in the Classroom: The IPUMS model.” Presented at “2000 and Beyond: Making the Census Accessible.” Russell Sage Foundation, New York, September 1998.
- “Demographic Data and Data Dissemination in the New Millennium.” Presented at the annual meeting of the Association of Population Centers, Albany, November 1998.
- “The American Family Since 1850.” Presented at “Nordisk forskerkurs i historie.” University of Tromsø, Norway, June 1998.
- “Accessing Microdata for Public Policy Research.” Upper Midwest Conference on Demographics for Policy Makers, Minneapolis, April 1998.
- “Marriage age and Proportions Marrying in the United States, 1850-1880.” With Catherine Fitch. Presented at “The Ties that Bind: Marriage in America,” a conference of the National Institute for Child Health and Human Development, Bethesda, Maryland, July 1998.
- “Historical Trends in Marriage Formation 1850-1990.” With Catherine Fitch. Social Science History Association, November 1998.
- “Global Access to the Integrated Public Use Microdata Series.” With Matthew Sobek and Todd Gardner. IASSIST/Computing for the Social Sciences, New Haven, May 1998.
- “The Rise of Divorce and Separation in the United States.” Population Association of America, Washington DC, March 1997.
- “The Integrated Public Use Microdata Series.” Upper Midwest Conference on Demographics for Policy Makers, Minneapolis, April 1997.
- “The Impact of Welfare on Family Structure.” Social Science History Association, New Orleans, October 1996.
- “Electronic Dissemination of Historical Census Data.” With Matthew Sobek and Todd Gardner. Population Association of America, New Orleans, May 1996.
- “Disseminating Historical Census Data on the World Wide Web.” With Matthew Sobek and Todd Gardner. IASSIST/Computing for the Social Sciences, Minneapolis, May 1996.
- “The Socioeconomic Context of Marital Instability in the United States, 1880-1990.” Social Science History Association, Chicago, November 1995.
- “The Integrated Public Use Microdata Series.” Biennial meeting of the Inter-University Consortium for Political and Social Research, Ann Arbor, Michigan, October 1995.
- “Making the Integrated Public Use Microdata Series.” All-University of California Conference in Economic History on historical public-use microdata, Riverside CA, March 1995.
- “The Effects of Demographic Change on Multigenerational Family Structure.” Centre Jacques Cartier Conference, La Plagne, France, December 1994.
- “The Integrated Public Use Microdata Series: Notes on the Preliminary Release.” Population Association of America, Miami, May 1994.
- “Race Differentials in Historical Family Structure.” Second Carleton Conference on the History of the Family, Ottawa, May 1994. An earlier version of this paper was presented at the Center for Population Policy and Analysis, Humphrey Institute, December 1993.
- “Sources of Bias in Family Reconstitution.” Social Science History Association, Baltimore, November 1993.
- “Differential Fertility in 1880.” with Miriam L. King. Population Association of America, Denver, 1992.
- “Immigration and Fertility in the Late Nineteenth Century.” Social Science History Association, Chicago, November 1992.

- “Integration of the Public Use Files of the U.S. Census.” Presented at “Social History: The Challenge of Technology.” Economic and Social Research Council, Univ. of Essex, 1991.
- “The Public-Use Census Files as a Source for Social History.” Presented at “Old and New Methods in Historical Demography: A Critical Appraisal.” International Union for the Scientific Study of Population. Mallorca, Spain, June 1991.
- “Proposal for an Integrated Census Microdata Series.” International Association for Social Science Information Service and Technology, Edmonton, Alberta, May 1991.
- “Living Arrangements of the Elderly in America, 1880-1980.” Social Science History Association, New Orleans, October 1991.
- “Old Age and Multigenerational Family Structure Since 1880.” Presented at “Aging and Generational Relations.” National Institutes of Health, Center for Family Research, University of Delaware, October 1991. An earlier version of this paper was presented at the Cambridge (University) Ageing Seminar, June 1990.
- “Comparability of the Historical Public Use Samples.” American Statistical Association, Atlanta, August 1991.
- “Migration, Marriage, and Mortality: Correcting Sources of Bias in English Family Reconstitutions.” Presented at the Cambridge Group for the History of Population and Social Structure, May 1990.
- “Race and Multigenerational Family Structure, 1900-1980.” Presented at “Demographic Perspectives on the American Family: Patterns and Prospects.” The Albany Conference, SUNY-Albany, April 1990.
- “The Belated Decline of the Extended Family.” American Association for the Advancement of Science, New Orleans, February 1990.
- “Immigration, American Fertility Differentials, and the Ideology of Race Suicide.” With Miriam King. Population Association of America, New Orleans, April 1988. Various other versions of this paper were presented at the Social Science History Workshop, University of Texas, Austin, February 1989, and appeared as Center for Demography and Ecology *Working Papers* 85-13.
- “Fertility and Marriage Among Second-Generation Immigrants in the Late-Nineteenth Century.” Social Science History Association, New Orleans, November 1987.
- “Confessions of a Microsimulator: Problems in Modeling the Demography of Kinship.” Presented at a conference on demographic microsimulation sponsored by the International Institute for Applied Systems Analysis, Budapest, Hungary, November 1987.
- “The Use and Misuse of Simulation for the Historical Study of Family Structure.” Presented at “New Directions for Demographic History: A French-American Roundtable,” a Sloan Foundation conference organized by Charles Tilly and Olivier Zunz. New York, November 1986.
- “Aging and Family Structure: An Historical Perspective.” Wisconsin Congress on Aging, Madison, Wisconsin, January 1985.
- “Kinship and the Life Course.” With Susan De Vos. Am. Sociological Association, Washington, D.C., August 1985. Center for Demography and Ecology *Working Papers* 85-15.
- “Simulation and the Measurement of Historical Family Structure.” Population Association of America, Boston, March 1985. A version of this paper, “The Use of Standard Propensities for the Historical Analysis of Extended Family Structure.” Center for Demography and Ecology *Working Papers* 85-14.
- “Non-Traditional Family Structures in Post-War America.” Testimony presented before the Wisconsin Equal Opportunities Commission, Task Force on Alternative Families, Madison, Wisconsin, November 1984.

“Microsimulation and its Application to the Historical Study of Family Structure.” Social Science History Association, Nashville, October 1981.

Commenter/Panelist

Discussant, “Comparative Family Perspectives” Population Association of America, Washington, April 22-25, 2020

Organizer and discussant, “Controversies of Counting: Race, Citizenship, and Privacy in the Census.” American Sociological Association, August 9, 2020.

Organizer and Discussant, “Automatic Handwriting Recognition.” Social Science History Association, Chicago, November 2019.

Discussant, “Large Linkage Projects: New Opportunities.” Social Science History Association, Phoenix, November 9, 2018.

Chair/Organizer, “New Findings on Neighborhoods and Mobility From the Complete Count Census Microdata” Population Association of America, Denver, April 26-28, 2017.

Chair/Discussant, “Residential and Social Mobility in the United States: New Studies Using IPUMS.” Social Science History Association, Montreal, November 2, 2017.

Chair/Discussant, “Presidential Session: Interdisciplinarity in the Big Data Age.” Social Science History Association, Chicago, November 17-20, 2016.

Discussant, “Author Meets Critics: Tolnay and Bailey, Lynched: The Victims of Southern Mob Violence.” Social Science History Association, Chicago, November 17-20, 2016.

Discussant, “American Community Survey Content Review,” U.S. Census Bureau, Suitland, MD, April 2015.

Discussant, “Privacy and Confidentiality,” National Science Foundation, Arlington, October 2014.

Discussant, “Electronic Data Collection,” U.S. Census Bureau, Suitland, MD, April 2014.

Chair/Discussant, “Spatiotemporal Demographic Analysis,” Social Science History Association, Chicago November 22, 2013.

Chair/Panelist, “Talk Data to Me: A Conversation with Historians about Using Large-Scale Digital Data in Research and Teaching.” American Historical Association, Chicago, January 5-8, 2012.

Panelist, “New Developments in Data Digitization Projects.” 2nd Mosaic Conference, Budapest, September 6-7 2012.

Chair, “Spatial Variation in Residence Patterns.” Social Science History Association, Boston, November 17-20, 2011.

Panelist, “Roundtable Discussion: Daniel Scott Smith: A Tribute to and Critical Reappraisal of his Scholarship.” Social Science History Association, Chicago, November 18-21, 2010.

Discussant, “Typologies of Families and Households: New and Old Approaches.” Social Science History Association, Chicago, November 18-21, 2010.

Panelist, “Forging the Future for Sociological Research: Building Infrastructure for Disciplinary, Interdisciplinary and Multi-disciplinary Research” American Sociological Association, San Francisco, August 8, 2009.

Panelist, “Approaches and Methods for the Study of Individuals, Families, and Households.” Social Science History Association, Miami, October 23-26, 2008.

Chair, “Family Change in Historical Perspective.” Population Association of America, New Orleans, April 16-19 2007.

Chair, “Historical Demography.” Population Association of America, New York, March 30-April 1 2007.

- Panelist, "Global Family Theory: Past, Present, and Future." Theory Construction and Research Methodology Plenary Session, National Council on Family Relations. Minneapolis, November 7, 2006.
- Panelist, "At the Shrine of the Bitch Goddess: The Future of Quantitative History." Social Science History Association, Minneapolis, November 3, 2006.
- Chair, "Long-term Change in Family Life-Course Transitions." Population Association of America, March 30, 2006.
- Panelist, "Author Meets Critics: Arland Thornton, Reading History Sideways: The Fallacy and Enduring Impact of the Developmental Paradigm on Family Life." Social Science History Association, Portland, November 3-6 2005.
- Panelist, "Big Social Science History: Big Cities, Big Histories—Megaresults For Megabucks? Retrospective And Prospective Looks At Large-Scale Quantitative Urban History Projects." Social Science History Association, Portland, November 3-6 2005.
- Panelist, "Roundtable: National Variations in Historical Microdata Projects." Social Science History Association, Chicago, November 18-21 2004.
- Chair/Discussant, "The Organization and Composition of Households across Time and Space." Social Science History Association, Chicago, November 18-21 2004.
- Panelist, "Public Needs and Private Information." Census Bureau Symposium, "America's Scorecard: The Historical Role of the Census in an Ever-Changing Nation." Woodrow Wilson International Center for Scholars, Washington D.C., March 4-5 2004.
- Chair, "The Family in Historical Perspective." Population Association of America, Boston, April 1-3, 2004.
- Chair, "The Encyclopedia of Population: Concepts, Consensus, Conflict." Social Science History Association, , Baltimore, November 13-16 2003.
- Chair, "Findings from U.S. Historical Censuses." Population Association of America, Minneapolis, May 1-3, 2003.
- Chair, "Geographic Information Systems II." International Association for History and Computing, Tromsø, Norway
- Chair, "North Atlantic Population Project: Methods and Prospects." Social Science History Association, St. Louis, October 2002.
- Chair, "Census 2000: New Trends." Population Association of America, Atlanta, May 9-11, 2002.
- Chair, "Who Counts? The Politics of Census Taking in Contemporary America." Keynote session, Third Upper Midwest Conference on Demography for Policy Makers, St. Paul, November 2001.
- Panelist, "The Role of Location in Social Science History: Is There a 'Spatial Turn'?" Social Science History Association, Chicago, November 2001.
- Chair, "Census 2000: An Unparalleled Research Resource." 25th Biennial Meeting of Inter-University Consortium for Political and Social Research Official Representatives. Ann Arbor, Michigan, October 2001.
- Panelist, "Conference on Data Dissemination and Archiving." Demographic and Behavioral Sciences Branch, National Institute of Child Health and Human Development. Rockville, Maryland, October 2001.
- Chair, "Retrospective: Census Accuracy, Past and Present." Social Science History Association, Pittsburgh, October 2000.
- Chair/Discussant, "Long-Term Changes In Household and Family Structure." Social Science History Association, Pittsburgh, October 2000.
- Chair, "Historical Demography." Population Association of America, Los Angeles, March 2000

- Chair/Panelist, "The Future of Social Science History Computing in The New Millennium: A Roundtable Discussion." Social Science History Association, Fort Worth, Nov. 1999.
- Panelist, "The Future Of SSHA Program Planning On The Web." Social Science History Association, Fort Worth, November 1999.
- Rapporteur on operational issues and new technology at "Social Sciences for a Digital World: Infrastructure Needs of the Social Sciences." OECD conference, Ottawa, Oct. 6-8 1999.
- Discussant, "Methods and Models in Historical Demography." Population Association of America, Chicago, March 1998.
- Panelist, "Authors meet Critics: The Cambridge Group Family Reconstitutions." Social Science History Association, Washington DC, November 1997.
- Discussant, "Canadian Families Project" Social Science History Association, Washington DC, November 1997.
- Panelist, "Roundtable on Peter Laslett." Social Science History Association, New Orleans, October 1996.
- Discussant, "Migration and the Life Course in Comparative Perspective." Social Science History Association, Atlanta, November 1994.
- Discussant, "Studies in Family Structure and Kinship." Second Carleton Conference on the History of the Family, Ottawa, May 1994.
- Discussant, "The Problem of Migration in Family Reconstitution." Social Science History Association, Baltimore, November 1993.
- Discussant, "Studies in the History of Class and Ethnicity." Social Science History Association, Chicago, November 1992.
- Discussant, "Matrilineality and Patrilineality in Historical Perspective." University of Minnesota Conference on Matrilineality and Patrilineality, Minneapolis, May 1992.
- Discussant, "Historical Change in Aging and Life Course Patterns." Population Association of America, Washington, D.C., March 1991.
- Discussant, "Public Use Sample of the 1880 Census." Social Science History Association, November 1989.
- Discussant, "Single Parenthood in 19th Century Brazil and the United States." Social Science History Association, November 1989.
- Discussant, "New Approaches to the Measurement of Household Structure and the Life Course." Social Science History Association, November 1988.
- Discussant, "The European Peasant Family and Economy." University of Minnesota Conference on Peasant Families, Minneapolis, October 1988.
- Discussant, "Living Arrangements of the Elderly in Preindustrial Populations." Social Science History Association, Chicago, November 1985.

National and International Professional Service

- Board of Directors, Association of Population Centers, 2000-
- Selection Committee, Miller and Flanigan Awards, Inter-University Consortium for Political and Social Research, 2019.
- Nominator and presenter, Laureate Award, International Union for the Scientific Study of Population 2018
- Nominator and presenter, Warren Miller Award, Inter-University Consortium for Political and Social Research, 2017.
- Performance Monitoring and Accountability 2020 (PMA2020) Consultative Group, 2016-2017
- Population Association of America Advocacy Days, 2015, 2017

Board of Management, Mosaic Project, Max Planck Institute for Demographic Research, 2012-2016
 Committee on Government and Public Affairs, Association of Population Centers, 2017-2018
 Development Committee, Population Association of America, 2016
 Co-Chair, Program Committee, Population Association of America, 2014-2015.
 Initiatives Committee, Population Association of America, 2016
 Executive Committee, Population Association of America, 2014-2016
 Committee on Finance, Population Association of America, 2014-2016
 Committee on Government and Public Affairs, Population Association of America, 2014-2016
 International Advisory Board, Integrated Census Microdata Project (U.K.), 2009-2014
 Award Committee, Inter-University Consortium for Political and Social Research, 2010-2011.
 Chair, International Advisory Board, "Life Courses in Context." International Institute of Social History, Amsterdam (member, 2003-2011; chair, 2006-2011)
 Coalition for National Science Funding, 2011.
 Planning Committee, Workshop on Social Observatories, National Science Foundation, 2010.
 Member, State Budget Trends Commission, State of Minnesota, 2007-2009
 Co-Chair, Robert J. Lapham Award Committee, Population Association of America, 2006
 Representative, Coalition for National Science Funding. Courtesy visits with members and staff of the House of Representatives and Senate, September 13-14, 2005
 Nominator and presenter, Warren Miller Award, Inter-University Consortium for Political and Social Research, 2005.
 Chair, Allen Sharlin Award Committee, Social Science History Association (member, 2003-2005; chair, 2004-2005)
 Chair, Census 2000 Committee, Inter-University Consortium for Political and Social Research, 2000-2004
 Chair, Nominating Committee, Association of Population Centers, 2004
 Chair, Archival Development Committee, Inter-University Consortium for Political and Social Research. 2002-2003
 Nominating Committee, Inter-University Consortium for Political and Social Research, 2002-2003, 2009
 Information Technology Committee, Inter-University Consortium for Political and Social Research, 2000-2003
 Chair, Task Force on Census 2000, 1999-2000.
 Chair, Family and Demography Network, Social Science History Association, 1996-1997
 Technical Advisory Group, Immigration and Naturalization Service Backfile Rescue, 1996-1997

Editorial Boards

Demography, 2010-present
Journal of Interdisciplinary History, 2002-present
Historical Life-Course Studies, 2013-present
Social Science History, 2001-2013
 H-Demog (H-Net) 1996-2000
Historical Methods, 1996-2001
Historical Statistics of the United States, 1996-2005

Editing

Co-Editor, *Social Science History*, 1991-1996.

Peer reviewer of Grant Proposals

Austrian Science Fund (FWF); BD2K Solicitation, National Institutes of Health; Canada Foundation for Innovation; Digital Libraries Initiative Panel (National Science Foundation, National Endowment for the Humanities, and Department of Defense); Dutch Council for the Humanities; Economic and Social Research Council (UK); MacArthur Fellowship; National Institute on Aging, program project review panels (2007, 2009, 2011, chair 2013); National Institute on Aging, special panel on population aging research centers (2004, 2009, 2014); National Institute of Child Health and Human Development, Population Research Infrastructure Program Study Section; National Institute of Child Health and Human Development, program project review panel (chair, 2013); National Institutes of Health, Social Sciences and Population Studies ZRG1 HOP-B 90 S (2006, 2008); National Institutes of Health; National Science Foundation, reviews for Sociology, Economics, Measurement Methods and Statistics, and several interdisciplinary solicitations; Research Council of Katholieke Universiteit Leuven; Riksbankens Jubileumsfond, Sweden; Royal Netherlands Academy of Arts and Sciences (KNAW); Russell Sage Foundation; Nederlandse Organisatie voor Wetenschappelijk Onderzoek (NWO); Social Sciences and Humanities Research Council (Canada); Swedish Council for Planning and Coordination of Research; Swedish Research Council; Swiss National Science Foundation; Wellcome Trust (UK)

Peer Reviewer of Book Manuscripts

Cambridge University Press, Houghton-Mifflin, Kluwer Academic Publishers, MIT Press, National Academies Press, Russell Sage Press, University Press of Virginia

Peer Reviewer of Articles

Ageing & Society; American Journal of Sociology; American Sociological Review; Cahiers Québécois de démographie; Caribbean Studies; Comparative Studies in History and Society; Continuity and Change; Demographic Research; Demography; Economic Geography; European Journal of Population; European Review of Economic History; Gender & History; Harvard Review of Psychiatry; Historical Life-Course Studies; Historical Methods; International Journal of Epidemiology; International Journal of Health Geographics; International Migration Review; Journal of American History; Journal of Business and Economic Statistics; Journal of Gerontology: Social Sciences; Journal of Family History; Journal of Family Issues; Journal of Interdisciplinary History; Journal of Marriage and the Family; Journal of Official Statistics; Journal of Population Research; Journal of Sustainable Development; Journal of the American Medical Informatics Association; PLOS ONE; Population; Population and Development Review; Population Research and Policy Review; Population, Space, and Place; Population Studies; Privacy in Statistical Databases; Proceedings of the National Academy of Sciences; Professional Geographer; Religions; Research on Aging; Social Forces; Social Problems; Social Science History; Social Science Research; Social Sciences; Sociological Forum; Sociological Perspectives; Sociological Quarterly; Socius; Statistical Journal of the IAOS; The History of the Family: An International Quarterly; William and Mary Quarterly

External Reviewer for Promotion and Tenure

Binghamton University, Brown University, University of California-Los Angeles, Catalan Ministry of Universities, City University of New York, Max Planck Institute, Oklahoma State University, University of Colorado, University of Houston, University of Maryland, University of Michigan, Stanford University, University of Washington, University of Utah

Selected Conference Organizing

Social Science History Association, 2019.

Population Association of America, Program Co-Chair, 2014-2015

Population Association of America: Invited Session Organizer, ten sessions, 1999-present

Social Science History Association: Program Chair, 1998-1999; Program Committee, 1996-1999;
Session Organizer, 50+ conference sessions, 1988-present

Life Course Center, University of Minnesota: Program Committee, “Changing Lives and Changing
Times: American Life Courses in Historical Perspective” (Conference, Minneapolis 2007)

International Union for the Scientific Study of Population: Program Committee, “Space and Time in
Historical Demographic Studies,” 2005-2006

Upper Midwest Conference on Demography for Policy Makers: Organizing Committee, 1997,
1998, 2001.

Search Committees

Faculty Search in Statistical Sociology, 2018-2019

Vice President for Research, University of Minnesota, 2017-2018

Faculty search for environmental history, Department of History, 2016-2017

Division Head, Health Policy and Management, 2015-2016

Faculty search, Health Policy and Management, School of Public Health, 2006-2007

Associate Vice President for Research Administration, University of Minnesota, 2006-2007

Chair, Search Committee for Rudolph J. Vecoli Chair in Immigration History, 2004-2005

Faculty search in American History, Department of History, 1999-2000

Faculty search, Department of Political Science, 1997-1998

Faculty search, Center for Population Policy and Analysis, Humphrey Institute, 1992

Faculty search in women’s history, Department of History, 1990-1991

Service to the University of Minnesota

Administrative Council, Office of the Vice President for Research 2019-

Task Force on Data Science, College of Science and Engineering 2019-

Research Computing Internal Review Committee, 2018-2019

Grand Challenges Research Strategies Group, 2015-2016

Health Informatics Steering Committee, University of Minnesota, 2011-2015

Information Exchange Executive Oversight Committee, University of Minnesota, 2010-2015

University of Minnesota Interdisciplinary Informatics Executive Steering Committee 2011-2015

McKnight Distinguished University Professor Committee 2011-2016

Health Informatics Steering Committee, 2011-2018

U-Spatial Advisory Board, 2011-present

Minnesota Research Data Center Steering Committee, 2011-present

Chair, Data Governance and Security Committee, Academic Health Center, 2010-2014

Faculty Senate Committee on Committees, 2010-2012

Interdisciplinary Research Centers Working Group, 2008-2011

University Metropolitan Consortium, 2007-2011

Provost’s Interdisciplinary Advisory Group, 2007-2011

Chair, Research Committee, University Senate, (member, 2004-2009; chair, 2005-2007)

Joint Subcommittee on Faculty Activity Databases, Faculty Senate, 2007-2008

Provost’s Research Council, University of Minnesota, 2005-2007

Faculty Consultative Committee, University of Minnesota, 2005-2007

Faculty Senate (ex officio), University of Minnesota, 2005-2007

Task Force on Collaborative Research, University of Minnesota, 2005-2006

Graduate School Fellowship Committee, 2002-2005

Faculty Summer Research Review Committee, Graduate School, 1999-2001

Fulbright Fellowship Nominating Committee, University of Minnesota, 1997-1998

West Bank Union Board of Governors, University of Minnesota, 1987-1988

Service to the College of Liberal Arts

Interdisciplinary Collaborative Workshop Review Committee, 2017-2018

Social Sciences Working Group, 2016-

CLA Research Roadmap Group, 2014

Tenured Hire Review Committee, 2006-2012

Promotion and Tenure Committee, College of Liberal Arts, 1998-1999

Social Science Research Facilities Advisory Committee, College of Liberal Arts, 1994-2003

Information Technology Committee, College of Liberal Arts, 1994-1997

College of Liberal Arts Computing Facilities Committee, 1991-1992

Course review committee, College of Liberal Arts, 1990-1991

Service to Department of History

Promotion, Tenure, and Merit Committee, Department of History, 2013-2015 (chair), 2010-2012, 2007-2009 (co-chair), 2003-2005, 1999-2000, 1996-1998 (chair), 1993-1994, 1990-1992, 1987-1988

Merit Committee, Department of History (elected), 2016-2018.

Promotion and Tenure Committee, Department of History (elected), 2018-2020

History Department Advisory Committee (elected), 2015-2016, 2020.

Leadership Group, Carnegie Initiative on the Doctorate, Department of History, 2003-2005

U.S. Field Screener, Graduate Studies, Department of History, 1997-2000, 2002-2004

Graduate Studies Committee, Department of History, 2001-2003, 1998-1999, 1993-1994

Faculty Awards and Prizes Committee, Department of History, 2000-2001

Director, Social History Research Laboratory, Department of History, 1990-1998

Faculty Advisor, Undergraduate History Association, Department of History, 1987-1989

Director of Undergraduate Studies and Chair of Undergraduate Studies Committee, Department of History, 1986-1989

Advisory Committee, Department of History, 1986-1989, 2020-

Computer Use Officer, Department of History, 1985-1989

Curriculum Committee, Department of History, 1985-1989