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The Decennial Census: Issues for 2020

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Summary

The U.S. Constitution—Article I, Section 2, clause 3, as modified by Section 2 of the 14th Amendment—requires a population census every 10 years for apportioning seats in the House of Representatives. Decennial census data are used, too, for within-state redistricting and in certain formulas for distributing more than $450 billion annually in federal funds to states and localities. Census counts also are the foundation for estimates of current population size between censuses and projections of future size. Businesses, nonprofit organizations, researchers, and all levels of government are steady consumers of decennial and other census data.

The Constitution stipulates that every enumeration is to be conducted "in such Manner as they [Congress] shall by Law direct." Congress, through Title 13 of the *United States Code*, has delegated this responsibility to the Secretary of Commerce and, under the Secretary's purview, the Bureau of the Census (Census Bureau). Title 13 U.S.C., Section 221, requires compliance with the census and provides for a fine of up to $100 for nonresponse. In accordance with provisions of the Sentencing Reform Act of 1984, Title 18 U.S.C., Sections 3559 and 3571, the possible fine has been adjusted to not more than $5,000.

The 2020 census questionnaire, like that in 2010, will collect only the most basic population and housing information. Detailed socioeconomic data that formerly were gathered from a population sample in conjunction with the decennial census now are collected by the American Community Survey, which the bureau conducts separately from the census and at more frequent intervals.

April 1, 2020, the official date of the 24th decennial census, will mark the culmination of extensive census planning, testing, and other preparations. A key objective, as Congress has directed, is to make the census more cost-effective without jeopardizing coverage and accuracy. The total life-cycle cost of the 2010 census was about $13 billion, reportedly an all-time high. To hold the 2020 cost to approximately $12.3 billion, the Census Bureau is focusing on four innovations:

- using governmental administrative records and satellite imagery to eliminate some of the fieldwork involved in updating census addresses and maps, which are the basis for an accurate enumeration;
- maximizing early census responses, especially online, to reduce the number of nonrespondents left for the bureau to contact by telephone or personal visits after the initial census phase;
- further limiting nonresponse follow-up by using administrative records to help fill gaps in census information; and
- better using technology to streamline fieldwork.

At the same time, the bureau has a mandate to obtain the best possible accounting of all U.S. residents, regardless of their race, ethnicity, or living circumstances. The tension between funding the census sufficiently to produce good results and controlling census costs is apparent.

Concerns as the 2020 census approaches include whether the bureau's enacted appropriations have been and will be sufficient to permit complete testing and implementation of the census plan; whether technology, notably the new Census Enterprise Data Collection and Processing system, will be ready on schedule and will perform well; and whether information security will be adequate to deter cybercrimes against data, respondents, and bureau employees.

This report will be updated as developments warrant.

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Introduction

The U.S. Constitution—Article I, Section 2, clause 3, as modified by Section 2 of the 14th Amendment—requires a population census every 10 years to serve as the basis for apportioning seats in the House of Representatives. Decennial census data are used, too, for within-state redistricting and in certain formulas that determine the annual distribution of more than $450 billion in federal funds to states and localities.[1] Census counts are, in addition, the foundation for constructing intercensal estimates of current population size and projections of future size.[2] Businesses, nonprofit organizations, researchers, and all levels of government are steady consumers of decennial and other census data.

The Constitution stipulates that the once-a-decade enumeration is to be conducted "in such Manner as they [Congress] shall by Law direct." Congress, through Title 13 of the *United States Code*, has delegated this responsibility to the Secretary of Commerce and, within the Department of Commerce, the Bureau of the Census (Census Bureau). As specified in Title 15 U.S.C., Section 1501, and Title 13 U.S.C., Section 21, both the Commerce Secretary and the director of the Census Bureau are appointed by the President, by and with the advice and consent of the Senate.

The bureau's task in conducting the enumeration can be summarized in very basic terms: count each person whose usual residence is in the United States (the aim of complete census coverage); and count that person only once, at the right location, where the person lives all or most of the time (the goal of census accuracy).[3] Title 13 U.S.C., Section 221, requires compliance with the census and provides for a fine of up to $100 for nonresponse. In accordance with provisions of the Sentencing Reform Act of 1984, Title 18 U.S.C., Sections 3559 and 3571, the possible fine has been adjusted to not more than $5,000.

The resources committed to each decennial census, measured not only in large sums of public money but in years of planning, testing, and related efforts as well, serve one chief purpose: to obtain the best possible accounting of all U.S. residents, regardless of their race, ethnicity, socioeconomic characteristics, or living circumstances. To the extent that the census falls short of this goal, the allocation of House seats, other political representation, and federal dollars may be less than equitable, particularly for those whom the census is most likely to miss, and census data with myriad uses may be flawed. The tension between funding the census sufficiently to produce good results and controlling census costs is apparent. Much of this report will discuss past and recent calls for cost containment, the bureau's response for the 24th decennial census in 2020, and factors like technology and funding that could affect the census. The report also will compare estimates of coverage in the previous two censuses and note some sociodemographic factors that could complicate the count in 2020.

[1] Testimony of then-Census Bureau Director Robert M. Groves in U.S. Congress, House Committee on Oversight and Government Reform, Subcommittee on Health Care, District of Columbia, Census, and the National Archives, *The Pros and Cons of Making the Census Bureau's American Community Survey Voluntary*, hearing, 112th Cong., 2nd sess., March 6, 2012, at http://oversight.house.gov/wp-content/uploads/2012/03/3-6-12-Census-Groves.pdf.

[2] U.S. Census Bureau, "Population and Housing Unit Estimates, Methodology," at http://www.census.gov/programs-surveys/popest.html; and U.S. Census Bureau, "Population Projections," at http://www.census.gov/topics/population/population-projections/about.html.

[3] See, for example, the testimony of then-Census Bureau Director Steve Murdock, in U.S. Congress, House Committee on Appropriations, Subcommittee on Commerce, Justice, Science, and Related Agencies, *The Fiscal Year 2009 Budget*, hearing, 110th Cong., 2nd sess., April 3, 2008 (Washington, DC: 2008), p. 4.

Table 1 shows the dates for selected major 2020 census activities and several legal deadlines the Census Bureau must meet for finalizing the census questionnaire, conducting the census, and delivering apportionment and redistricting data. The 2020 questionnaire is not yet available, but, as mentioned below in the discussion of the 2015 national content test, the questionnaire will ask for only the most basic demographic, household, and housing data. The same was true in 2010. Long-form data—detailed data that formerly were collected from a population sample in conjunction with the decennial census—now are gathered by the American Community Survey (ACS). The bureau conducts the ACS separately from the census and at more frequent intervals.[4]

Table 1. Timeline for the 2020 Census

Date	Activity or Legal Deadline
September 2015-July 2019	In-office address canvassing period
April 1, 2017	Deadline for providing the 2020 census topics to Congress (13 U.S.C. §141(f)(1))
December 2017	Regional census centers scheduled to open
April 1, 2018	Deadline for providing the 2020 census questions to Congress (13 U.S.C. §141(f)(2))
January 2019	Census field offices scheduled to open
August 2019-December 2019	In-field address canvassing period
April 1, 2020	Official 2020 Census Day (13 U.S.C. §141(a))
April-August 2020	Nonresponse follow-up period
December 31, 2020	Deadline for transmitting to the President the official state population counts for House apportionment (13 U.S.C. §141(b))
March 31, 2021	Deadline for delivering redistricting data to the states (13 U.S.C. §141(c))
April 2023	End date for releasing remaining 2020 census data products

Source: U.S. Census Bureau, *2020 Census Operational Plan*, version 2.0, September 2016, pp. 50-51, at http://www2.census.gov/programs-surveys/decennial/2020/program-management/planning-docs/2020-oper-plan2.pdf.

The Goals of Census Cost Control and Complete, Accurate Coverage

The following discussion focuses on repeated calls for cost containment in the decennial count and the sociodemographic factors tending to drive up census costs as well as impede a complete, accurate enumeration.

[4] See CRS Report R41532, *The American Community Survey: Development, Implementation, and Issues for Congress*, by Jennifer D. Williams.

The Need to Contain Census Costs

The Government Accountability Office (GAO) stated in a 2016 report that, at a total life-cycle cost of about $13 billion, the 2010 census was the most expensive in U.S. history. The expense exceeded by more than 50% the 2000 census total of $8.1 billion, in 2010 dollars.[5] Indeed, as GAO pointed out, the average amount spent to count each housing unit in the United States increased "from $16 in 1970 to $94 in 2010," in 2010 dollars.[6]

Earlier GAO reports and testimony, such as in 1986,[7]1990,[8] 1992,[9] 2001,[10] 2002,[11] 2008,[12] 2011,[13] 2012,[14] 2013,[15] and 2015,[16] also noted the steadily rising price of the census after the mid-20th century and usually called for cost containment.

Congress, likewise, repeatedly has directed the Census Bureau to control its spending for the census, as in the instances cited below.

- A conference report on legislation to fund the Departments of Commerce, Justice, and State, the Judiciary, and related agencies (CJS) in FY1993 stated that "the 2000 Census Research and Development Office should direct its resources toward a cost-effective census design that will produce more accurate results than those from the 1990 census." This design should "focus on realistic alternative means of collecting data, such as the use of existing surveys, rolling sample

[5] U.S. Government Accountability Office, *2020 Census: Census Bureau Needs to Improve Its Life-Cycle Cost Estimating Process*, GAO-16-628, June 2016, p. 1.

[6] Ibid.

[7] Testimony of Gene L. Dodaro, U.S. General Accounting Office, in U.S. Congress, House Committee on Post Office and Civil Service, Subcommittee on Census and Population, *The Census Bureau's Preparations for the 1990 Decennial Census*, hearing, 99th Cong., 2nd sess., May 14, 1986 (Washington, DC: GPO, 1986), pp. 1-5.

[8] U.S. General Accounting Office, *Decennial Census: Preliminary 1990 Lessons Learned Indicate Need to Rethink Census Approach*, GAO/T-GGD-90-18, August 8, 1990, p. 4.

[9] U.S. General Accounting Office, *Decennial Census: 1990 Results Show Need for Fundamental Reform*, GAO/GGD-92-94, June 1992, pp. 2-4, 23-26.

[10] U.S. General Accounting Office, *2000 Census: Significant Increase in Cost Per Housing Unit Compared to 1990 Census*, GAO-02-31, December 2001, pp. 5-7.

[11] U.S. General Accounting Office, *2000 Census: Lessons Learned for Planning a More Cost-Effective 2010 Census*, GAO-03-40, October 2002, pp. 6, 14-17, 22.

[12] U.S. Government Accountability Office, *2010 Census: Census Bureau Should Take Action to Improve the Credibility and Accuracy of Its Cost Estimate for the Decennial Census*, GAO-08-554, June 2008, pp. 1-8.

[13] Testimony of Robert Goldenkoff, U.S. Government Accountability Office, in U.S. Congress, Senate Committee on Homeland Security and Governmental Affairs, Subcommittee on Federal Financial Management, Government Information, Federal Services, and International Security, *2010 Census: Preliminary Lessons Learned Highlight the Need for Fundamental Reforms*, hearing, 112th Cong., 1st sess., April 6, 2011, pp. 1, 5-7, at http://www.hsgac.senate.gov/subcommittees/federal-financial-management/hearings/census-learning-lessons-from-2010-planning-for-2020.

[14] U.S. Government Accountability Office, *Decennial Census: Additional Actions Could Improve the Census Bureau's Ability to Control Costs for the 2020 Census*, GAO-12-80, January 2012, pp. 1, 22-24.

[15] U.S. Government Accountability Office, *2020 Census: Progress Report on the Census Bureau's Efforts to Contain Enumeration Costs*, GAO-13-857T, September 11, 2013, pp. 1-2.

[16] U.S. Government Accountability Office, *2020 Census: Recommended Actions Need to Be Implemented before Potential Cost Savings Can Be Realized*, GAO-15-546T, April 20, 2015, p. 1.

surveys or other vehicles," and "cost considerations should be a substantial factor in evaluating" these alternatives.[17]

- In reporting legislation to fund the CJS entities for FY1995, the Senate Committee on Appropriations "strongly" recommended that the bureau use "more cost-effective means of conducting the next census." The committee observed that "Clearly, the budgetary caps and strict employment ceilings adopted by the President and Congress will not accommodate a repeat of the process used in 1990."[18]
- A conference report on FY1996 CJS appropriations legislation expressed "the conferees' continuing concerns with the inability of the Census Bureau to recognize budgetary realities." The report further noted that the House and Senate Appropriations Committees had "for several years cautioned the Bureau that the cost of the Year 2000 Census had to be kept in check, and that only through early planning and decision making could costs be controlled."[19]
- The Senate Appropriations Committee's report on FY2012 CJS appropriations legislation directed the bureau to examine "seriously" the lessons learned from the 2010 census "to create more cost-effective operations."[20] The committee then directed the bureau "to consider budgeting for the 2020 decennial census at a level less than the 2010 Census and to further consider spending less than the 2000 Census, not adjusting for inflation."[21] The committee's reports on the

[17] U.S. Congress, Conference Committee, Making Appropriations for the Departments of Commerce, Justice, and State, the Judiciary, and Related Agencies for the Fiscal Year Ending September 30, 1993, and for Other Purposes, conference report to accompany H.R. 5678, 102nd Cong., 2nd sess., H.Rept. 102-918 (Washington, DC: GPO, 1992). See also conference report, Congressional Record, vol. 138, part 19 (September 28, 1992), p. 28313.

The American Community Survey, which the Census Bureau developed in the 1990s, is the sort of rolling sample survey the conferees advised the bureau to use. See CRS Report R41532, *The American Community Survey: Development, Implementation, and Issues for Congress*, by Jennifer D. Williams.

[18] U.S. Congress, Senate Committee on Appropriations, Departments of Commerce, Justice, and State, the Judiciary, and Related Agencies Appropriations Bill, 1995, and Supplemental Appropriations Bill, 1994, report to accompany H.R. 4603, 103rd Cong., 2nd sess., S.Rept. 103-309 (Washington, DC: GPO, 1994), p. 82.

[19] U.S. Congress, Conference Committee, Making Appropriations for the Departments of Commerce, Justice, and State, the Judiciary, and Related Agencies for the Fiscal Year Ending September 30, 1996, and for Other Purposes, conference report to accompany H.R. 2076, 104th Cong., 1st sess., H.Rept. 104-378 (Washington, DC: GPO, 1996), p. 108.

[20] U.S. Congress, Senate Committee on Appropriations, *Departments of Commerce and Justice, and Science, and Related Agencies Appropriations Bill, 2012*, report to accompany S. 1572, 112th Cong., 1st sess., S.Rept. 112-78, September 15, 2011, p. 16, at http://www.gpo.gov/fdsys/pkg/CRPT-112srpt78/pdf/CRPT-112srpt78.pdf.

[21] Ibid., p. 17.

FY2013,[22] FY2014,[23] FY2015,[24] FY2016,[25] and FY2017[26] CJS appropriations bills reiterated the substance of this directive.

- In reporting FY2013 CJS funding legislation, the House Appropriations Committee cited a need for the bureau to establish 2020 census procedures that would "increase response rates while containing costs," and expressed its expectation that the total life-cycle cost of this census would not exceed the approximately $13 billion spent on the 2010 census.[27]

The Census Bureau, in turn, has acknowledged that it is seeking to control the cost of the next enumeration while preserving census quality. In 2012 congressional testimony, then-bureau director Robert M. Groves stated that "the rising cost of the decennial census" is unsustainable. Census expenditures per housing unit were 38% greater in 2010 than in 2000 and 76% more in 2000 than in 1990. Without design changes to the 2020 census, its cost is projected to increase "at a similar rate," which he called "untenable."[28]

Early in 2015, current bureau director John H. Thompson testified that "as we began this decade, the Census Bureau, with the guidance of Congress, established an important goal to design and conduct the 2020 Census in a manner that costs less per housing unit than the 2010 Census and to maintain quality."[29]

Testifying later the same year, he referred to the past several decades of census history to explain the decennial design and cost problem the bureau now faces.

> The 1970 Census was a breakthrough for its time. We built an address list and mailed questionnaires to each housing unit on the list. We asked respondents to complete and return the questionnaires through the mail. We developed automated processes to capture

[22] U.S. Congress, Senate Committee on Appropriations, *Departments of Commerce and Justice, and Science, and Related Agencies Appropriations Bill, 2013*, report to accompany S. 2323, 112th Cong., 2nd sess., S.Rept. 112-158, April 19, 2012, p. 16, at https://www.gpo.gov/fdsys/pkg/CRPT-112srpt158/pdf/CRPT-112srpt158.pdf.

[23] U.S. Congress, Senate Committee on Appropriations, *Departments of Commerce and Justice, and Science, and Related Agencies Appropriations Bill, 2014*, report to accompany S. 1329, 113th Cong., 1st sess., S.Rept. 113-78, July 18, 2013, p. 17, at https://www.gpo.gov/fdsys/pkg/CRPT-113srpt78/pdf/CRPT-113srpt78.pdf.

[24] U.S. Congress, Senate Committee on Appropriations, *Departments of Commerce and Justice, and Science, and Related Agencies Appropriations Bill, 2015*, report to accompany S. 2437, 113th Cong., 2nd sess., S.Rept. 113-181, June 5, 2014, p. 20, at https://www.gpo.gov/fdsys/pkg/CRPT-113srpt181/pdf/CRPT-113srpt181.pdf.

[25] U.S. Congress, Senate Committee on Appropriations, *Departments of Commerce and Justice, and Science, and Related Agencies Appropriations Bill, 2016*, report to accompany H.R. 2578, 114th Cong., 1st sess., S.Rept. 114-66, June 16, 2015, p. 17, at https://www.gpo.gov/fdsys/pkg/CRPT-114srpt66/pdf/CRPT-114srpt66.pdf.

[26] U.S. Congress, Senate Committee on Appropriations, *Departments of Commerce and Justice, Science, and Related Agencies Appropriations Bill, 2017*, report to accompany S. 2837, 114th Cong., 2nd sess., S.Rept. 114-239, April 21, 2016, pp. 14-15, at https://www.gpo.gov/fdsys/pkg/CRPT-114srpt239/pdf/CRPT-114srpt239.pdf.

[27] U.S. Congress, House Committee on Appropriations, *Commerce, Justice, Science, and Related Agencies Appropriations Bill, 2013*, report to accompany H.R. 5326, 112th Cong., 2nd sess., H.Rept. 112-463, May 2, 2012, p. 14, at https://www.gpo.gov/fdsys/pkg/CRPT-112hrpt463/pdf/CRPT-112hrpt463.pdf.

[28] Testimony of then-Census Bureau Director Robert M. Groves, in U.S. Congress, Senate Committee on Homeland Security and Governmental Affairs, Subcommittee on Federal Financial Management, Government Information, Federal Services, and International Security, *Census: Planning Ahead for 2020*, hearing, 112th Cong., 2nd sess., July 18, 2012, p. 6, at http://www.hsgac.senate.gov/subcommittees/federal-financial-management/hearings/census-planning-ahead-for-2020.

[29] Testimony of Census Bureau Director John H. Thompson, in U.S. Congress, Senate Committee on Homeland Security and Governmental Affairs, *2020 Census: Challenges Facing the Bureau for a Modern, Cost-Effective Survey*, hearing, 114th Cong., 1st sess., April 20, 2015, p. 1, at http://www.hsgac.senate.gov/hearings/2020-census-challenges-facing-the-bureau-for-a-modern-cost-effective-survey.

> the information on the returns. However, the task of collecting information from those households that did not self-respond required recruiting and managing an army of enumerators using paper and pencil. For each census since 1970, this paper-based process has been the standard, and it has been increasingly challenged by the growing diversity and complexity of our nation. We do not believe that a paper and pencil approach to the Census is sustainable for the 2020 or future censuses.[30]

The Goal of Complete, Accurate Census Coverage

Attempting to Reach the Goal in the Past Two Censuses[31]

The Census Bureau's goal of complete, accurate population coverage in the 2020 census is elusive, as it was in 2010 and 2000, not only because the U.S. population is large, tends to be mobile, and is distributed over a wide geographic area, but also because the nation is increasingly heterogeneous, or, in words of the bureau director quoted above, has more "diversity and complexity"[32] than in 1970. Many households consist of racial and ethnic minorities; multiple families; low-income people; inner-city residents; those whose living circumstances are atypical; international migrants to the United States who may lack English language proficiency, lack legal status in this country, or distrust governmental activities; or various combinations of these attributes. Any of them can make enumeration difficult, and some of them contribute markedly to recurrent undercounts of racial and ethnic minorities. Overcounts of some population groups, on the other hand, can occur to the extent that the Bureau receives multiple census forms from the same people or households, then does not capture and eliminate the duplications. A husband and wife, for example, might own a vacation home and fill out a questionnaire at that address as well as at their usual residence. Another example would be parents who erroneously list a child on the form for their household when the child actually is away at college and has been correctly enumerated there.[33]

The bureau's 2010 Census Coverage Measurement (CCM) program showed the 2010 census to have been roughly, but not entirely, comparable to the 2000 census in net percentage undercount and overcount estimates.[34] Both censuses continued the historic tendency toward unintentionally overcounting the majority non-Hispanic white population and undercounting racial minorities and Hispanics. The estimates indicated a net percentage overcount of

- 0.01% for the total population (compared with the net overcount estimate of 0.49% in the 2000 census);

[30] Testimony of Census Bureau Director John H. Thompson, in U.S. Congress, House Committee on Oversight and Government Reform, Subcommittee on Government Operations and Subcommittee on Information Technology, *Preparing for the 2020 Census: Will the Technology Be Ready?*" hearing, 114th Cong., 1st sess., November 3, 2015, p. 1, at https://oversight.house.gov/hearing/preparing-for-the-2020-census-will-the-technology-be-ready/.

[31] The information under this heading is from CRS Report R40551, *The 2010 Decennial Census: Background and Issues*, by Jennifer D. Williams, which cited the U.S. Census Bureau, "Census Bureau Releases Estimates of Undercount and Overcount in the 2010 Census," press release CB12-95, May 22, 2012.

[32] Testimony of Census Bureau Director John H. Thompson, in U.S. Congress, House Committee on Oversight and Government Reform, Subcommittee on Government Operations and Subcommittee on Information Technology, *Preparing for the 2020 Census: Will the Technology Be Ready?*" hearing, 114th Cong., 1st sess., November 3, 2015, p. 1, at https://oversight.house.gov/hearing/preparing-for-the-2020-census-will-the-technology-be-ready/.

[33] See U.S. Census Bureau, "The 2020 Census Residence Criteria," at https://www.census.gov/programs-surveys/decennial-census/2020-census/about/residence-rule.html.

[34] Estimated net percentage undercount or overcount pertains to "the difference between the true, but unknown, population count and an original census count." Kirk M. Wolter, "Accounting for America's Uncounted and Miscounted," *Science*, vol. 253 (July 1991), p. 12.

- 0.84% for non-Hispanic whites (compared with their 1.13% estimated net overcount in 2000); and
- 1.95% for American Indians off reservations (versus their 0.62% estimated net undercount in 2000).

Every other racial category was undercounted to some extent in 2010, the CCM estimates suggested:

- non-Hispanic blacks by 2.07% (compared with their 1.84% estimated net undercount in 2000);
- non-Hispanic Asians by 0.08% (versus their 0.75% estimated net overcount in 2000);
- native Hawaiians or other Pacific Islanders by 1.34% (compared with their 2.12% estimated net undercount in 2000); and
- American Indians on reservations by 4.88% (versus their 0.88% estimated net overcount in 2000).

The CCM estimates indicated a net percentage undercount of 1.54% for Hispanics in 2010; their estimated net undercount in 2000 was 0.71%.

Among all racial groups and people of Hispanic ethnicity, only American Indians on reservations showed a statistically significant difference in estimated census coverage from 2000 to 2010.

GAO testified to Congress in July 2012 that "the 2010 Census generally accurately counted the total population of the country as well as each state."[35]

The Sociodemographic Challenge for 2020

Sociodemographic profiles of the population in 1970 and 2015 indicate how great a challenge the Census Bureau may face in 2020 when trying to obtain a high-quality, yet cost-controlled, count of all U.S. residents. In 1970, the United States had 203,302,031 residents[36] and 63,449,747 households,[37] compared with an estimated 321,418,820 residents[38] and 134,789,180 households[39] in 2015. So not only did the population grow by 58.1%, but the number of households the bureau will have to locate, contact, and count also more than doubled. In addition, several overlapping categories of people who were generally easier to find and enumerate in 1970 constituted smaller proportions of the population in 2015 than in 1970. They include whites (87.5% of the population

[35] U.S. Government Accountability Office, *2020 Census: Sustaining Current Reform Efforts Will Be Key to a More Cost-Effective Enumeration*, GAO-12-905T, July 18, 2012, p. 2.

[36] U.S. Census Bureau, *Statistical Abstract of the United States: 2012* (Washington, DC: GPO, 2011), p. 8.

[37] U.S. Census Bureau, *1970 Census of Population*, vol. 1, *Characteristics of the Population*, part 1, *United States Summary* (Washington, DC: GPO, 1973), p. 1-261.

[38] U.S. Census Bureau, "Annual Estimates for the Resident Population of the United States, Regions, States, and Puerto Rico: April 1, 2010 to July 1, 2015," at http://www.census.gov/data/tables/2015/demo/popest/nation-total.html.

[39] U.S. Census Bureau, "Annual Estimates of Housing Units for the United States and States: April 1, 2010 to July 1, 2015," at http://www.census.gov/data/tables/2015/demo/popest/total-housing-units.html.

in 1970[40] and 77.1% in 2015),[41] the native-born (95.3% in 1970[42] versus 86.5% in 2015),[43] and married-couple families (69.2% of all households in 1970[44] versus 48.0% in 2015).[45] Moreover, poll data presented by the Pew Research Center show a pronounced shift in attitudes toward the federal government since 1970, when 54.0% of respondents said that they trusted it "just about always" or "most of the time." By 2015, only 19.0% of those polled gave this response.[46] The erosion of public trust in the lead-up to 2020 is of concern because the Census Bureau is a federal agency; it conducts the decennial census under constitutional authority and federal law. Even though compliance with the census is mandatory, it is arguably more likely when trust in government is higher than when it is lower.

Innovations for 2020 Census Cost Control

As the Census Bureau prepares for the next enumeration, it is focusing on cost-control innovations in the four key areas discussed below. The bureau estimates that these innovations, if successful, could "save approximately $5.2 billion compared to repeating the 2010 design in the 2020 Census."[47] The estimated cost to repeat the 2010 design is $17.5 billion, compared with $12.3 billion for a reengineered census.[48]

More Efficiently Updating Census Addresses and Maps

Before the bureau can conduct the 2020 census, it must verify and update census addresses and maps—technically called the "Master Address File" (MAF) and the "Topologically Integrated Geographic Encoding and Referencing" (TIGER) system—through an address canvassing operation. The bureau director has stated that the "foundation of an accurate census is an accurate address frame, which includes both the address and geospatial location" of every housing unit in the United States.[49] Indeed, as the bureau noted before the 2010 census, MAF/TIGER "creates the

[40] U.S. Census Bureau, *1970 Census of Population*, vol. 1, *Characteristics of the Population*, part 1, *United States Summary* (Washington, DC: GPO, 1973), p. 1-262.

[41] U.S. Census Bureau, "Annual Estimates of the Resident Population by Sex, Race, and Hispanic Origin: April 1, 2010 to July 1, 2015," at http://www.census.gov/data/tables/2015/demo/popest/nation-detail.html.

[42] U.S. Census Bureau, *1970 Census of Population*, vol. 1, *Characteristics of the Population*, part 1, *United States Summary* (Washington, DC: GPO, 1973), p. 1-361.

[43] U.S. Census Bureau, "Selected Social Characteristics in the United States, 2015 American Community Survey 1-Year Estimates," at http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_13_1YR_DP02&prodType=table.

[44] U.S. Census Bureau, *1970 Census of Population*, vol. 1, *Characteristics of the Population*, part 1, *United States Summary* (Washington, DC: GPO, 1973), pp. 1-380, 1-957.

[45] U.S. Census Bureau, "Selected Social Characteristics in the United States, 2015 American Community Survey 1-Year Estimates," at http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_13_1YR_DP02&prodType=table.

[46] Pew Research Center, "Public Trust in Government: 1958-2015," at http://www.people-press.org/2015/11/23/public-trust-in-government-1958-2015/.

[47] U.S. Census Bureau, *U.S. Census Bureau's Budget, Fiscal Year 2017*, p. CEN-3, at http://osec.doc.gov/bmi/budget/FY17CBJ/Census%20FY%202017%20CBJ%20final%20not508.pdf.

[48] Ibid., p. CEN-110.

GAO has cautioned that the bureau's cost estimate is not reliable and does not "adequately account for risks that could affect the 2020 Census costs." U.S. Government Accountability Office, *Information Technology: Uncertainty Remains about the Bureau's Readiness for a Key Decennial Census Test*, GAO-17-221T, November 16, 2016, p. 3.

[49] Testimony of Census Bureau Director John H. Thompson, in U.S. Congress, Senate Committee on Homeland Security and Governmental Affairs, *2020 Census: Challenges Facing the Bureau for a Modern, Cost-Effective Survey,*

universe for all other [bureau] operations that collect information from the public."[50] According to the operational plan for the 2020 census, address canvassing in the past several decades involved having census employees "walk and physically check 11 million census blocks,"[51] or roughly every block in the United States.[52] For 2020, the bureau intends to replace some of this activity with in-office canvassing that will, if successful, continually update

> the address list based on data from multiple sources, including the U.S. Postal Service, tribal, state, and local governments, satellite imagery, and third-party data providers. This office work will also determine which parts of the country require fieldwork to verify address information. While fieldwork began in 2016 on a small scale for address coverage measurement, the bulk of the In-Field Address Canvassing will begin in 2019 and is anticipated to cover approximately 25 percent of all addresses, a significant reduction from the 100 percent that were reviewed in the field during the 2010 Census.[53]

Maximizing Responses in the Initial Phase of the Census

As mentioned above, the 1970 through 2010 censuses were primarily mail-out, mail-back operations. Most U.S. households received their census forms by mail, with instructions to respond the same way. After this initial phase of the census, the bureau attempted to contact, by telephone or personal visits, households from which it had not received completed forms and persuade them to respond. The nonresponse follow-up (NRFU) phase was the most expensive, labor-intensive part of the census.[54]

For 2020, the bureau proposes reducing its reliance on nonresponse follow-up in several ways, the first of which will be maximizing the public's cooperation with the initial census phase. The bureau will conduct an outreach campaign to promote the census and will offer multiple response options to facilitate answering it.

Public Outreach

The bureau's communications strategy for 2020 will be, as it was for the 2010 and 2000 enumerations,[55] to publicize and gain support for the census before it begins and while it is in progress. The strategy will involve advertising on television and radio, in print, and on social

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hearing, 114th Cong., 1st sess., April 20, 2015, p. 2, at http://www.hsgac.senate.gov/hearings/2020-census-challenges-facing-the-bureau-for-a-modern-cost-effective-survey.

[50] U.S. Census Bureau, *United States Census 2010, High Risk Improvement Plan*, version 7-2, November 4, 2008, p. 2.

[51] U.S. Census Bureau, *2020 Census Operational Plan*, version 2.0, September 2016, p. 15, at http://www2.census.gov/programs-surveys/decennial/2020/program-management/planning-docs/2020-oper-plan2.pdf.

[52] The bureau has "established blocks covering the entire nation." A "block is the smallest geographic unit for which the Census Bureau tabulates decennial census data." Blocks often "correspond to individual city blocks bounded by streets," but, especially in rural areas, blocks "may include many square miles and may have some boundaries that are not streets." U.S. Census Bureau, *Glossary*, "Block," at http://www.census.gov/glossary/#term_Block.

[53] U.S. Census Bureau, *2020 Census Operational Plan*, version 2.0, September 2016, p. 8, at http://www2.census.gov/programs-surveys/decennial/2020/program-management/planning-docs/2020-oper-plan2.pdf.

[54] From May through July 2010, for example, about 565,000 enumerators contacted approximately 47 million households that either had not received their 2010 census forms or had not completed and returned them. U.S. Census Bureau, "$1.6 Billion in 2010 Census Savings Returned," press release CB10-CN.70, August 10, 2010, p. 1; and U.S. Census Bureau, "Nation Achieves 74 Percent Final Mail Participation in 2010 Census," press release CB10-CN.81, October 21, 2010, p. 1. GAO estimated the cost of 2010 census field data collection and related support systems at almost $9.1 billion, in 2010 dollars. U.S. Government Accountability Office, *Decennial Census: Additional Actions Could Improve the Census Bureau's Ability to Control Costs for the 2020 Census*, GAO-12-80, January 2012, p. 8.

[55] See CRS Report R40551, *The 2010 Decennial Census: Background and Issues*, by Jennifer D. Williams.

media (blogs, Facebook, Twitter, etc.), and partnering with outside organizations, especially those trusted by population groups who have tended to be harder to count in past censuses.[56] Partnership activities will include providing census-promotional information to "government agencies and hosting events at community, recreation, and faith-based organizations."[57]

Multiple Response Options, Featuring Online Responses

In a marked change from the past, the 2020 census will replace as much of the standard mail operation as possible with an Internet response option. The bureau believes that this option will save money, modernize census-taking, and better engage the public by making cooperation more convenient. Forms will be accessible online in multiple languages.[58] Help for online respondents is to be available by telephone, also in multiple languages, from the bureau's questionnaire assistance centers and via web chat. The bureau estimates that 47% of households "in mailout areas" will respond by Internet.[59] Other options, for people unable or reluctant to provide their census information online, will include paper forms and responses entirely by telephone, through calls to the questionnaire assistance centers.[60]

Using Administrative Records to Limit Nonresponse Follow-Up

Addresses from which the bureau does not receive responses by web, mail, or telephone during the first phase of the 2020 census "will form the initial universe of addresses" for nonresponse follow-up.[61] Before it begins, the bureau will try to identify and remove the addresses of vacant housing units from this universe and thus reduce the NRFU workload. Governmental administrative records, chiefly "Undeliverable-as-Addressed" information from the U.S. Postal Service, will be the basis for identifying vacant units.[62]

The bureau's plan calls for making one attempt to contact nonresponding households, then further reducing the NRFU workload by using "administrative records and third-party data to enumerate occupied housing units where it makes sense and is feasible."[63] The "core administrative records" for this enumeration "will come from the Internal Revenue Service, the Centers for Medicare and Medicaid Services, the Indian Health Service and the Social Security Administration, as well as

[56] U.S. Census Bureau, *2020 Census Operational Plan*, version 2.0, September 2016, p. 93, at http://www2.census.gov/programs-surveys/decennial/2020/program-management/planning-docs/2020-oper-plan2.pdf.

[57] Ibid., p. 18.

[58] Ibid., p. 19.

[59] Ibid., p. 95.

[60] Ibid.

[61] Testimony of Census Bureau Director John H. Thompson, in U.S. Congress, House Committee on Oversight and Government Reform, *Census 2020: Examining the Readiness of Key Aspects of the Census Bureau's 2020 Census Preparation*, hearing, 114th Cong., 2nd sess., June 9, 2016, p. 3, at https://oversight.house.gov/wp-content/uploads/2016/06/Thompson-Census-Statement-2020-Census-6-9.pdf.

[62] Ibid.

[63] U.S. Census Bureau, *2020 Census Operational Plan*, version 2.0, September 2016, p. 114, at http://www2.census.gov/programs-surveys/decennial/2020/program-management/planning-docs/2020-oper-plan2.pdf.

existing Census Bureau information and third-party data."[64] The bureau has acknowledged that it continues "to look for additional administrative data sets to use in the NRFU effort."[65]

Throughout the nonresponse follow-up period, as the bureau receives late census responses from some households, it will remove the addresses of these households from the NRFU workload.[66]

Using Technology to Streamline Fieldwork

The bureau plans to rely on technology for managing 2020 census fieldwork "efficiently and effectively."[67] As in past censuses, most of the fieldwork for 2020 will occur during nonresponse follow-up. The bureau intends for field staff to perform their duties "completely remotely," using handheld devices for "all administrative and data collection tasks." Supervisors, likewise, will use the devices to "work remotely" and communicate with staff.[68] According to the bureau, the new capabilities will greatly reduce the physical space and staff necessary to support fieldwork. For the 2010 census, the bureau opened 12 regional census centers and almost 500 area census offices and hired more than 516,000 NRFU enumerators. The design for 2020 envisions only six regional census centers and no more than 250 centers for administrative support. The bureau expects, too, that easier monitoring and management of staff will reduce the number of supervisors needed for fieldwork.[69]

Census Enterprise Data Collection and Processing System

The bureau's overarching Census Enterprise Data Collection and Processing (CEDCaP) initiative dates from 2014. CEDCaP, in the bureau's words, "will create an integrated and standardized system of systems that will offer shared data collection and processing across all censuses and surveys," including, prominently, the 2020 census. The initiative is intended to "consolidate costs by retiring unique, survey-specific systems and redundant capabilities" and bring a much larger share of the bureau's total information technology (IT) expenditures under one "centrally managed program." The bureau's plan is to "put in place a solution that will be mature and proven for the 2020 Census."[70]

GAO testified to Congress in 2016 that the 2020 census "relies heavily on CEDCaP to deliver key systems to support its redesign."[71]

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[64] Testimony of Census Bureau Director John H. Thompson, in U.S. Congress, House Committee on Oversight and Government Reform, *Census 2020: Examining the Readiness of Key Aspects of the Census Bureau's 2020 Census Preparation*, hearing, 114th Cong., 2nd sess., June 9, 2016, p. 3, at https://oversight.house.gov/wp-content/uploads/2016/06/Thompson-Census-Statement-2020-Census-6-9.pdf.

[65] Ibid.

[66] U.S. Census Bureau, *2020 Census Operational Plan*, version 2.0, September 2016, p. 114, at http://www2.census.gov/programs-surveys/decennial/2020/program-management/planning-docs/2020-oper-plan2.pdf.

[67] Ibid., p. 26.

[68] Ibid.

[69] Ibid.

[70] U.S. Census Bureau, *U.S. Census Bureau's Budget, Fiscal Year 2017*, p. CEN-7, at http://osec.doc.gov/bmi/budget/FY17CBJ/Census%20FY%202017%20CBJ%20final%20not508.pdf.

[71] U.S. Government Accountability Office, *Information Technology: Uncertainty Remains about the Bureau's Readiness for a Key Decennial Census Test*, GAO-17-221T, November 16, 2016, p. 8.

Tests and Related Activities to Support the 2020 Plan

2013 Test

The 2013 census test explored using administrative records to remove the addresses of vacant housing units from the NRFU workload and reducing the number of attempts to contact nonrespondents, especially through personal visits. The test involved 2,077 housing units in Philadelphia. Data collection was completed in December 2013.[72]

2014 Test

In 2014, the bureau tested strategies to encourage prompt census responses, especially via the Internet, and limit reliance on paper questionnaires. Also tested were mobile devices for use by NRFU field staff, various means of contacting nonrespondents, and different methods for managing assignments to field staff. In addition, the test involved identifying the addresses of housing units that could be removed from the NRFU workload because administrative records were determined to be adequate for enumeration. The test covered about 200,000 housing units in the District of Columbia and Montgomery County, Maryland. Data collection took place from late June through September 2014.[73]

2015 Tests

Address Validation Test

The address validation test took place from September 2014 through January 2015. One component of the test, a "full-block canvass" covering 10,100 nationally representative blocks, assessed how well different statistical models could predict which blocks had address changes that the Master Address File had not captured. Another part of the test involved having geographic specialists find previously unrecorded address changes and identify parts of blocks where changes were likely to have occurred. In this way, the bureau could conduct a "partial-block canvass" that could reduce the extent and cost of address canvassing.[74]

Census Tests

A census test officially dated April 1, 2015, used "digital, targeted advertising methods" to increase awareness of the test and encourage prompt responses, whether by web, on paper, or by telephone. Those who chose to respond online could do so without having bureau-assigned

[72] U.S. Census Bureau, *United States Census 2020, 2020 Research and Testing: 2013 Census Test Assessment*, at https://www.census.gov/content/dam/Census/programs-surveys/decennial/2020-census/2013_Census_Test_Assessment_Final.pdf.

[73] U.S. Census Bureau, "2014 Census Test," at https://www.census.gov/programs-surveys/decennial-census/2020-census/research-testing/testing-activities/2014-census-test.html.

[74] U.S. Census Bureau, "2015 Census Tests, Address Validation Test," at https://www.census.gov/programs-surveys/decennial-census/2020-census/research-testing/testing-activities/2015-census-tests/address-validation.html.

identification (ID) numbers.[75] The test included 407,000 housing units in the Savannah, Georgia, media market, with a sample of 120,000 nonresponding units. [76]

A 2015 census test of 165,000 housing units in Maricopa County, Arizona, also had an official date of April 1. The test examined the bureau's effort to streamline and control the cost of nonresponse follow-up.[77] The bureau considered whether training fieldworkers by computer was as effective as classroom instruction, looked at new technology for more efficiently assigning work to field staff, tested the collection of NRFU data by smartphone versus on paper, assessed whether enabling fieldworkers to collect data on their own electronic devices saved money and was effective, and examined how well administrative records could fill data gaps caused by missing census responses.[78]

National Content Test

The national content test, conducted from August through October 2015, covered a representative sample of about 1.2 million households, mostly in in the 50 states; 20,000 of the households were in Puerto Rico. The test considered alternative wording of the census questions,[79] examined various strategies for prompting respondents to answer the questions in the initial census phase, encouraged online responses, and provided estimates of response rates for Internet and other response options.

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[75] U.S. Census Bureau, "2020 Census, February 2016 Monthly Status Report," p. 6, at http://www2.census.gov/programs-surveys/decennial/2020/program-management/monthly-status-reports/2016-02-msr.pdf.

[76] U.S. Census Bureau, *2020 Census Operational Plan*, version 2.0, September 2016, p. 41, at http://www2.census.gov/programs-surveys/decennial/2020/program-management/planning-docs/2020-oper-plan2.pdf; and U.S. Census Bureau, "2015 Census Tests, Frequently Asked Questions," at http://www.census.gov/programs-surveys/decennial-census/2020-census/research-testing/testing-activities/2015-census-tests/savannah/about.html.

The Savannah-area media market includes, besides Savannah and the rest of Chatham County, the neighboring Georgia counties of Appling, Bacon, Bryan, Bulloch, Candler, Effingham, Evans, Jeff Davis, Liberty, Long, McIntosh, Montgomery, Screven, Toombs, Tattnall, and Wayne; as well as, in South Carolina, Beaufort, Hampton, and Jasper Counties.

[77] U.S. Census Bureau, *2020 Census Operational Plan*, version 2.0, September 2016, p. 42, at http://www2.census.gov/programs-surveys/decennial/2020/program-management/planning-docs/2020-oper-plan2.pdf.

[78] U.S. Census Bureau, "2015 Census Tests, The Purpose of the 2015 Census Test in Maricopa," at http://www.census.gov/programs-surveys/decennial-census/2020-census/research-testing/testing-activities/2015-census-tests/maricopa.html.

[79] Each test household was asked to report a telephone number and an email address for the household; the number of people living in the housing unit; whether the unit was rented or owned; and each household member's name, sex, age, race, Hispanic or non-Hispanic ethnicity, and relationship to the person completing the test form. U.S. Census Bureau, "What Specific Questions Are Asked on the 2015 National Content Test?" at https://www.census.gov/programs-surveys/decennial-census/2020-census/research-testing/testing-activities/2015-census-tests/national-content-test/faqs.html.

Alternative wording of the questionnaire included combining the questions on race and Hispanic or non-Hispanic ethnicity versus keeping them separate, as has been past practice; and adding a new ethnic category, Middle East and North African (MENA), versus not doing so. The white racial category currently encompasses people with "origins in any of the original peoples of Europe, the Middle East, or North Africa." The checkbox for the new category shows, as examples, Lebanese, Iranian, Egyptian, Syrian, Moroccan, and Algerian. The change would align with the Office of Management and Budget's proposed addition of a MENA category to its standards for defining race and ethnicity. U.S. Office of Management and Budget, "Standards for Maintaining, Collecting, and Presenting Federal Data on Race and Ethnicity," 81 *Federal Register* 67398-67401, September 30, 2016, at https://www.gpo.gov/fdsys/pkg/FR-2016-09-30/pdf/2016-23672.pdf; and U.S. Census Bureau, *2020 Census Operational Plan*, version 2.0, September 2016, p. 44, at http://www2.census.gov/programs-surveys/decennial/2020/program-management/planning-docs/2020-oper-plan2.pdf.

2016 Tests

2016 Census Test

The broad objective of this test was to refine methods for obtaining prompt census responses, especially online, and conducting nonresponse follow-up. The bureau continued its attempts to engage historically harder-to-count population groups. Outreach efforts included offering questionnaire assistance by telephone in English and several other languages: Arabic, Chinese (Cantonese and Mandarin), French, Korean, Spanish, Tagalog, and Vietnamese.[80] The bureau further assessed the possible use of administrative records and commercial information to reduce the NRFU workload, and reexamined the technology for assigning cases to NRFU field staff and collecting NRFU data. Also examined were the integration and performance of IT systems, IT security, and cloud computing technology, as well as how to process and validate responses submitted without bureau-assigned identification codes. The test took place from March through August 2016 in Harris County, Texas, and Los Angeles County, California. Each site included about 225,000 housing units. The sites were chosen as being representative of large metropolitan areas with demographic and language diversity, different levels of Internet usage, and high housing vacancy rates—characteristics that can present enumeration challenges.[81]

Address Canvassing Test

From August through December 2016, the bureau conducted an address canvassing test in Buncombe County, North Carolina, and St. Louis, Missouri. The goal of the test was to produce a complete, accurate address list and "spatial database," and determine the address characteristics of each housing unit in the test areas. The bureau examined the effectiveness of in-office canvassing, as compared with canvassing done in the field, and sought to refine the methods for both. In-office canvassing included the use of geographic information systems and aerial imagery to add addresses to MAF/TIGER. In-field canvassing analyzed the performance of an address listing and mapping application on a mobile device. Examined, too, were the effectiveness of online field supervisor and staff training and "reengineered methods for quality assurance."[82]

2017 Test

The 2017 census test is scheduled for April 1, 2017, to cover a nationwide sample of about 80,000 housing units. The emphasis again will be on prompt responses, especially by web, with a Spanish-language response option. The test will involve integrating operational control systems with census questionnaire assistance and "non-ID" processing, and will continue to assess cloud computing.[83]

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[80] U.S. Census Bureau, "Census Bureau Reaches Milestone on the Road to 2020 Census," press release CB16-61, April 1, 2016, at http://census.gov/newsroom/press-releases/2016/cb16-61.html.

[81] Ibid.

[82] U.S. Census Bureau, "Address Canvassing Test," at http://census.gov/content/dam/Census/programs-surveys/decennial/2020-census/2016/address%20canvassing/address_canvassing_factsheet.pdf.

[83] Testimony of Census Bureau Director John H. Thompson, in U.S. Congress, House Committee on Oversight and Government Reform, Subcommittee on Government Operations, *2020 Census: Outcomes of the 2016 Site Test*, hearing, 114th Cong., 2nd sess., November 16, 2016, p. 11, at https://oversight.house.gov/wp-content/uploads/2016/11/Thompson-Statement-Census-Site-Test-11-16.pdf.

The bureau had planned, additionally, 2017 tests of field operations in Puerto Rico, the Standing Rock Indian Reservation in North and South Dakota, and the Colville Indian Reservation and off-reservation trust land in Washington. In October 2016, however, the bureau announced its decision to discontinue preparations for these tests due to uncertainty about FY2017 funding.[84] The bureau director noted at the time that proceeding "amid such uncertainty would all but guarantee wasted efforts and resources." Instead, the bureau "will consider" incorporating these operations into the 2018 test, discussed below.[85]

2018 Test

In July 2016, the bureau selected the sites where it will conduct its largest test in preparation for the 2020 census, the 2018 "end-to-end" test of 2020 "systems and operations."[86] The primary objective will be "to confirm key technologies, data collection methods, outreach and promotional strategies, and management and response processes" that will support the 2020 census.[87] Although the test has an official date of April 1, 2018, it is to begin in August 2017 with address canvassing field operations.[88] It will cover more than 700,000 housing units in Pierce County, Washington; Providence County, Rhode Island; and nine West Virginia counties[89] that include the cities of Beckley, Bluefield, and Oak Hill. The bureau chose these locations for their diversity: a test population that varies by age, race, language spoken at home, and other sociodemographic characteristics, with different levels of access to and use of the Internet; housing that has conventional, rural, and other types of addresses; and housing variety that includes group quarters,[90] vacant units, multiple units, and mobile homes.

[84] The bureau was funded until December 9, 2016, at the FY2016 level, with a 0.496% reduction, under the Continuing Appropriations and Military Construction, Veterans Affairs, and Related Agencies Appropriations Act, 2017, and Zika Response and Preparedness Act, H.R. 5325, P.L. 114-223, Division C. The Further Continuing and Security Assistance Appropriations Act, 2017, H.R. 2028, P.L. 114-254, was enacted on December 10, 2016. Division A funds the bureau at the FY2016 level, minus a 0.1901% reduction, through April 28, 2017, but under Section 152, the bureau may draw on money from the Periodic Censuses and Programs account at the rate necessary to conduct operations to maintain the 2020 census schedule. See CRS Report R44567, *FY2017 Appropriations for the Census Bureau and Bureau of Economic Analysis*, by Jennifer D. Williams.

[85] U.S. Census Bureau, "U.S. Census Bureau Announces Changes to 2017 Field Tests," October 18, 2016, at http://directorsblog.blogs.census.gov/2016/10/18/u-s-census-bureau-announces-changes-to-2017-field-tests/.

[86] U.S. Census Bureau, "Census Bureau Selects Sites for 2018 End-to-End Census Test in Preparation for 2020 Census," at https://www.census.gov/newsroom/press-releases/2016/cb16-126.html.

[87] Ibid.

[88] Testimony of Census Bureau Director John H. Thompson, in U.S. Congress, House Committee on Oversight and Government Reform, Subcommittee on Government Operations, *2020 Census: Outcomes of the 2016 Site Test*, hearing, 114th Cong., 2nd sess., November 16, 2016, p. 11, at https://oversight.house.gov/wp-content/uploads/2016/11/Thompson-Statement-Census-Site-Test-11-16.pdf.

[89] The counties are Fayette, Greenbrier, McDowell, Mercer, Monroe, Pocahontas, Raleigh, Summers, and Wyoming. U.S. Census Bureau, "Census Bureau Selects Sites for 2018 End-to-End Census Test in Preparation for 2020 Census," at https://www.census.gov/newsroom/press-releases/2016/cb16-126.html.

[90] In Census Bureau terminology, "group quarters" are places "where people live or stay, in a group living arrangement." These quarters are "owned or managed by an entity or organization providing housing and/or services for the residents." Examples include "college residence halls, residential treatment centers, skilled nursing facilities, group homes, military barracks, correctional facilities, and workers' dormitories." U.S. Census Bureau, *Glossary*, "Group Quarters," at http://www.census.gov/glossary/#term_GroupQuartersGQ.

After reviewing the end-to-end test results, the bureau expects to incorporate "any lessons learned" and "finalize plans for all operations and make any necessary adjustments to ensure readiness for the 2020 Census."[91]

Contracts Awarded or Planned

The following discussion highlights the Census Bureau's considerable reliance on contractors to perform many of the functions supporting the 2020 census. They include communicating the importance of the census, helping respondents understand and respond to the census questionnaire, and performing various IT operations.

Census Questionnaire Assistance

In July 2016, the bureau awarded a contract to General Dynamics Information Technology for 2020 census questionnaire assistance. Assistance will consist of providing information to respondents about "specific items on the census form and answering general questions related to the census," as well as enabling respondents to submit their census information via telephone interview.[92]

Communications

The bureau pursued its outreach strategy by contracting in August 2016 with the Young & Rubicam advertising agency "to design, plan, produce, integrate, and implement an integrated communications program" for the 2020 census.[93] The contract covers, among other activities, research, marketing, advertising, public relations, and support for census partners.[94] Young & Rubicam also led the bureau's first-ever paid advertising campaign, for the 2000 census.[95]

Technical Integration

Another contract awarded in August 2016 went to the T-Rex corporation, to support "all design and architecture engineering and integration activities" for the 2020 census, including "infrastructure planning and design for the data center capability," the regional and area census offices, "and any other designated locations"; "disaster recovery solutions"; and expertise in areas "such as fraud detection and security." According to the bureau director, "the management team of T-Rex has demonstrated experience on prior censuses," both in the United States and internationally.[96]

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[91] Testimony of Census Bureau Director John H. Thompson, in U.S. Congress, House Committee on Oversight and Government Reform, Subcommittee on Government Operations, *2020 Census: Outcomes of the 2016 Site Test*, hearing, 114th Cong., 2nd sess., November 16, 2016, p. 12, at https://oversight.house.gov/wp-content/uploads/2016/11/Thompson-Statement-Census-Site-Test-11-16.pdf.

[92] Ibid., p. 16.

[93] U.S. Census Bureau, "2020 Census Integrated Communications Contract," at https://www.census.gov/about/business-opportunities/opportunities/vendor-opps/2014-10-15-2020-comm.html.

[94] Testimony of Census Bureau Director John H. Thompson, in U.S. Congress, House Committee on Oversight and Government Reform, Subcommittee on Government Operations, *2020 Census: Outcomes of the 2016 Site Test*, hearing, 114th Cong., 2nd sess., November 16, 2016, p. 17, at https://oversight.house.gov/wp-content/uploads/2016/11/Thompson-Statement-Census-Site-Test-11-16.pdf.

[95] U.S. Census Bureau, "Census 2000 Advertising Campaign," at http://www.census.gov/dmd/www/advcampaign.html.

[96] Testimony of Census Bureau Director John H. Thompson, in U.S. Congress, House Committee on Oversight and Government Reform, Subcommittee on Government Operations, *2020 Census: Outcomes of the 2016 Site Test*,

Census Schedule A Human Resources Payroll System

In October 2016, the bureau awarded a contract to the CSRA corporation "to automate the recruiting, hiring, onboarding and separation" of Schedule A staff, the temporary fieldworkers who will do address listing and enumeration for the 2020 census. The new system is expected to be an improvement, in that it "will replace decades-old manual processes."[97]

Decennial Device as a Service

The bureau plans to award, at a yet-to-be-determined date in 2017, a contract that will enable it "to lease smartphones as the predominant mobile device for enumeration and address canvassing," from the 2018 end-to-end census test through the completion of 2020 census field operations.[98]

Emerging Challenges

The census could receive greater congressional attention as 2020 approaches; the bureau requests larger appropriations leading up to the count; and issues like House apportionment, within-state redistricting, federal funds distribution, and other uses of the decennial data gain prominence. The bureau is asking Congress to make substantial investments in census operations, particularly those related to information technology, which could invite increasing scrutiny of them. The discussion below notes concerns raised thus far about IT and IT security for the census, the status of census testing and findings from tests of nonresponse follow-up operations in two sites, and funding for census preparations.

Technology

General Concerns About 2020 Census Technology

In congressional testimony toward the end of 2016, GAO observed that 2020 census operations will depend on about 50 IT systems, including 11 CEDCaP "enterprise systems." With respect to CEDCaP, the bureau "developed several pilot systems to provide and test different capabilities" but in May 2016 decided to acquire six of them "from a vendor, using a commercial-off-the-shelf IT platform, rather than continue to develop the capabilities in-house."[99]

GAO questioned whether the bureau would be ready for the 2018 end-to-end census test, which, as previously mentioned, is scheduled to begin in August 2017. By October 2016, according to GAO, only 3 of the 50 systems for the test had been delivered; the remaining 47 systems were in

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hearing, 114th Cong., 2nd sess., November 16, 2016, p. 17, at https://oversight.house.gov/wp-content/uploads/2016/11/Thompson-Statement-Census-Site-Test-11-16.pdf.

[97] Ibid., p. 18.

[98] Ibid.; and information provided to the author by the Census Bureau, March 10, 2017.

[99] U.S. Government Accountability Office, *Information Technology: Uncertainty Remains about the Bureau's Readiness for a Key Decennial Census Test*, GAO-17-221T, November 16, 2016, p. 5. The bureau, in the words of its director, will take a "hybrid approach" to CEDCaP, which will integrate the commercial-off-the-shelf platform "with select Census Bureau custom solutions." Testimony of Census Bureau Director John H. Thompson, in U.S. Congress, House Committee on Oversight and Government Reform, Subcommittee on Government Operations, *2020 Census: Outcomes of the 2016 Site Test*, hearing, 114th Cong., 2nd sess., November 16, 2016, p. 3, at https://oversight.house.gov/wp-content/uploads/2016/11/Thompson-Statement-Census-Site-Test-11-16.pdf.

various stages of development.[100] Moreover, the bureau had not "identified the entire infrastructure (i.e., cloud solutions and/or data centers)" for the end-to-end test or 2020 operations, and "did not yet have a time frame for the implementation of the infrastructure."[101]

GAO further questioned whether the bureau was "effectively managing its significant contractor support," such as for "the technical integration" of all "key systems and infrastructure, and the development of many of the data collection systems"; "development of the IT platform" that will be used for most data collection; "procurement of the mobile devices and cellular service" for nonresponse follow-up; and "development of the IT infrastructure in the field offices." Adding to the uncertainty is the fact that, as GAO noted, the 2020 census will be the first time the bureau relies on "contractor support" for this kind of technical integration, collects data nationwide online, and employs mobile devices for NRFU.[102]

The bureau's "past efforts to acquire and implement new approaches and systems have not always gone as planned,"[103] GAO cautioned, citing the 2010 census to illustrate the point.[104] The bureau intended "to use handheld mobile devices to support field data collection," including for NRFU, in 2010. It switched from trying to develop the devices in-house to contracting for them, then encountered "significant problems" when it tested the devices. "Cost overruns and schedule slippages" were additional problems noted by GAO. The bureau thus abandoned its plan to use the handhelds for NRFU and "reverted to paper-based processing, which increased the cost of the 2010 Census by up to $3 billion" and greatly heightened "the risk of not completing the Census on time."[105] GAO accordingly "designated the 2010 Census a high-risk area in March 2008."[106]

Because of government-wide IT challenges, GAO cited "improving the management of IT acquisitions and operations as a key area" in its 2015 high-risk report and similarly named CEDCaP as "one of nine programs across the federal government in need of the most attention."[107]

GAO's February 2017 update to the high-risk list included the 2020 census, largely due to the bureau's complex innovations for 2020; the need for improved "ability to manage, develop, and secure its IT systems"; and, related to both of these factors, the need for "better oversight and control over its cost estimation process."[108]

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[100] U.S. Government Accountability Office, *Information Technology: Uncertainty Remains about the Bureau's Readiness for a Key Decennial Census Test*, GAO-17-221T, November 16, 2016, p. 11.

[101] Ibid., p. 12.

[102] Ibid., pp. 12-13.

[103] Ibid., p. 6.

[104] For further discussion of the bureau's innovative, but partially failed, technology initiative in the 2010 census, see CRS Report R40551, *The 2010 Decennial Census: Background and Issues*, by Jennifer D. Williams.

[105] U.S. Government Accountability Office, *Information Technology: Uncertainty Remains about the Bureau's Readiness for a Key Decennial Census Test*, GAO-17-221T, November 16, 2016, p. 6.

[106] Ibid.

GAO's high-risk series "calls attention to agencies and program areas that are high risk due to their vulnerabilities to fraud, waste, abuse, and mismanagement, or are most in need of transformation." Ibid., p. 7.

[107] Ibid.

[108] U.S. Government Accountability Office, *High-Risk Series: Progress on Many High-Risk Areas, While Substantial Efforts Needed on Others*, GAO-17-317, February 2017, pp. 221-223.

Information Security Concerns

The crucial role assigned to technology for the 2020 census, with the associated emphasis on web responses, heightens the need for information security in many interrelated areas. Areas identified by GAO include ensuring that only those authorized to see respondents' personal data have access to such data and that all bureau employees, both permanent and temporary, are aware of the need for security; protecting data on roughly 300,000 mobile devices that will be used for nonresponse follow-up; minimizing the threat of cybercrimes against data, respondents, and bureau employees; ensuring that those hired to fill key IT positions have expertise in information security; controlling "security performance requirements in a cloud environment"; and having "contingency and incident response plans" in place for all IT systems that will support the census.[109]

The end-to-end test could enable the bureau to determine whether it can "adequately secure" its IT systems for the census and deal with security breaches if they occur. Because most systems to be tested are not yet in place, however, the bureau "has not finalized" and assessed all the security controls that are to be implemented, developed plans for remediating any weaknesses in them, and determined whether it has time for remediation before the test begins.[110]

GAO's Observations About Certain Census Tests

2016 Test of NRFU Operations

In January 2017, GAO reported on its evaluation of nonresponse follow-up operations (NRFU, as previously noted) in the bureau's two 2016 census test sites, Harris County, Texas, and Los Angeles County, California.[111] GAO observed that although NRFU in both sites generally took place as planned, about 30% of the NRFU cases in Harris County and 20% in Los Angeles County were coded as "non-interviews." In these cases, the bureau collected "no data or insufficient data," either because it tried unsuccessfully to visit nonresponding households, a maximum of six tries per household, or because problems such as "language barriers or dangerous situations" prevented the bureau from completing visits.[112] Bureau officials, GAO reported, were "not certain" what accounted for so many non-interviews and were "researching potential causes."[113] One possible cause cited by GAO was enumerators' apparent lack of uniform understanding that proxy interviews are important in NRFU and their inconsistent adherence to "procedures for completing interviews with proxy respondents." GAO noted that a proxy is a "non-household member, at least 15 years old, and knowledgeable about the NRFU address."[114] Proxy data, as GAO pointed out, can make the difference between completed interviews and non-interviews, and thus are "important to the success of the census." The bureau informed GAO that it will "continue to refine procedures" for collecting proxy data in 2020.[115]

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[109] U.S. Government Accountability Office, *Information Technology: Uncertainty Remains about the Bureau's Readiness for a Key Decennial Census Test*, GAO-17-221T, November 16, 2016, p. 10.

[110] Ibid., p. 13.

[111] U.S. Government Accountability Office, *2020 Census: Additional Actions Could Strengthen Field Data Collection Efforts*, GAO-17-191, January 2017, p. 1.

[112] Ibid., pp. 4-5.

[113] Ibid., p. 5.

[114] Ibid., pp. 6-7.

[115] Ibid., p. 7.

The 2016 test showed as well, according to GAO, a certain lack of flexibility in the automated case management system for fieldwork during nonresponse follow-up and inadequate training for enumerators in using the system. Enumerators, for example, had "difficulty accessing recently closed, incomplete cases."[116] In addition, GAO's field visits disclosed instances when

> enumerators had been told by a respondent or otherwise learned that returning at a specific time on a later date would improve their chance of obtaining an interview from either a household respondent or a property manager. According to the Bureau, while there was a mechanism for capturing and using this information, it was not uniformly available to the enumerators, nor did the enumerators always use the mechanism when appropriate.[117]

Decision to Cancel Some 2017 Census Tests

GAO expressed concern about the bureau's decision, for budgetary reasons, not to conduct 2017 tests of field operations in Puerto Rico, the Standing Rock Indian Reservation in North and South Dakota, and the Colville Indian Reservation and off-reservation trust land in Washington.[118] GAO cited, again with concern, the bureau's intention to consider incorporating these test sites into the 2018 test of all 2020 systems and operations.[119] Doing so, in GAO's assessment, will put "more pressure on the 2018 Test to demonstrate that enumeration activities will function as needed for 2020."[120]

Funding

As discussed above, the Census Bureau's uncertainty about FY2017 appropriations led it to stop work on some of the tests it intended to conduct in 2017. The decision illustrates a problem the bureau has encountered throughout the ramp-up phase of the 2020 census, when heightened preparations for the count have required steady increases in funding. The bureau director testified to Congress in late 2016 that enacted appropriations for the census were "significantly" less than requested from FY2013 through FY2016.[121] In FY2013, the budget request was $131.4 million;[122] the enacted amount was $94.4 million.[123] In FY2014, the requested and enacted amounts were

[116] Ibid., p. 11.

[117] Ibid., p. 9.

[118] U.S. Government Accountability Office, *High-Risk Series: Progress on Many High-Risk Areas, While Substantial Efforts Needed on Others*, GAO-17-317, February 2017, p. 226.

[119] Ibid.

[120] Ibid.

[121] Testimony of Census Bureau Director John H. Thompson, in U.S. Congress, House Committee on Oversight and Government Reform, Subcommittee on Government Operations, *2020 Census: Outcomes of the 2016 Site Test*, hearing, 114th Cong., 2nd sess., November 16, 2016, pp. 4-5, at https://oversight.house.gov/wp-content/uploads/2016/11/Thompson-Statement-Census-Site-Test-11-16.pdf.

[122] U.S. Census Bureau, *Fiscal Year 2013 Budget Estimates*, p. CEN-73, at http://www.osec.doc.gov/bmi/budget/fy13cbj/Census_FY2013_CongressionalJustification-FINAL.pdf.

[123] U.S. Census Bureau, *Fiscal Year 2015 Budget Estimates*, p. CEN-119, at http://osec.doc.gov/bmi/budget/FY15CJ/CensusFY2015CJFinal508Compliant.pdf.

$244.8 million[124] and $232.7 million,[125] respectively; in FY2015, $443.2 million[126] and $344.8 million;[127] and in FY2016, $662.6 million[128] and $625.3 million.[129]

The 2020 census request for FY2017 was $778.3 million.[130] FY2017 appropriations legislation was not enacted by the end of FY2016. Instead, the Continuing Appropriations and Military Construction, Veterans Affairs, and Related Agencies Appropriations Act, 2017, and Zika Response and Preparedness Act, H.R. 5325, P.L. 114-223, Division C, provided funds for the bureau, including the 2020 census, at the FY2016 level, with a 0.496% reduction, from October 1, 2016, through December 9, 2016. The Further Continuing and Security Assistance Appropriations Act, 2017, H.R. 2028, P.L. 114-254, was enacted on December 10, 2016. In general, Division A of the legislation funds the bureau at the FY2016 level, minus a 0.1901% reduction, through April 28, 2017. Under Section 152, however, the bureau may draw on money from the Periodic Censuses and Programs account—which includes the decennial census and other major programs, such as the economic census, the census of governments, and intercensal demographic estimates, together with geographic and data-processing support—at the rate necessary for conducting operations to maintain the 2020 census schedule. The bureau director stated that the bureau still requires "the timely appropriation of the remainder of the 2017 President's Budget request in order to stay on track" for the 2018 census test. Nevertheless, the level of funding for the rest of FY2017 remains unclear.

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[124] U.S. Census Bureau, *Fiscal Year 2014 Budget Estimates*, pp. CEN-87, CEN-90, at http://osec.doc.gov/bmi/budget/FY14CJ/Census_FY_2014_CJ_Final_508_Compliant.pdf.

[125] Information provided to the author by the Census Bureau, December 9, 2016.

[126] U.S. Census Bureau, *Fiscal Year 2015 Budget Estimates*, p. CEN-119, at http://osec.doc.gov/bmi/budget/FY15CJ/CensusFY2015CJFinal508Compliant.pdf.

[127] Information provided to the author by the Census Bureau, December 9, 2016.

[128] U.S. Census Bureau, *Fiscal Year 2016 Budget Estimates*, p. CEN-83, at http://osec.doc.gov/bmi/budget/FY16CJ/Census_2016_CJ.pdf.

[129] Information provided to the author by the Census Bureau, December 9, 2016.

[130] U.S. Census Bureau, *U.S. Census Bureau's Budget, Fiscal Year 2017*, p. CEN-87, at http://osec.doc.gov/bmi/budget/FY17CBJ/Census%20FY%202017%20CBJ%20final%20not508.pdf.

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