2020 Census Operational Plan

Executive Summary

Prepared by the Decennial Census Management Division,
U.S. Census Bureau
Version 1.0

December 2015

INTRODUCTION

The U.S. Census Bureau's 2020 Census Operational Plan documents the current design for conducting the 2020 Census. As the initial version of an emerging concept of operations, it reflects and supports evidence-based decision-making by describing design concepts and their rationale, identifying future decisions, and describing significant issues and risks related to the implementation of the Operational Plan.

This document presents a summary of that plan. It includes an overview of the current 2020 Census operational design and presents the high-level schedule of key milestones and the most critical project risks.

The 2020 Census Program includes a broad set of documentation that will be further developed as the program matures.

As shown in Figure 1, this Executive Summary (shaded in yellow) is part of a broader set of documentation. Those items outlined in dark blue (i.e., the 2020 Census Operational Plan, the Operational Plan Briefing Materials, the Life-Cycle Cost Estimates, and the Rebaselined Schedule) are being released.

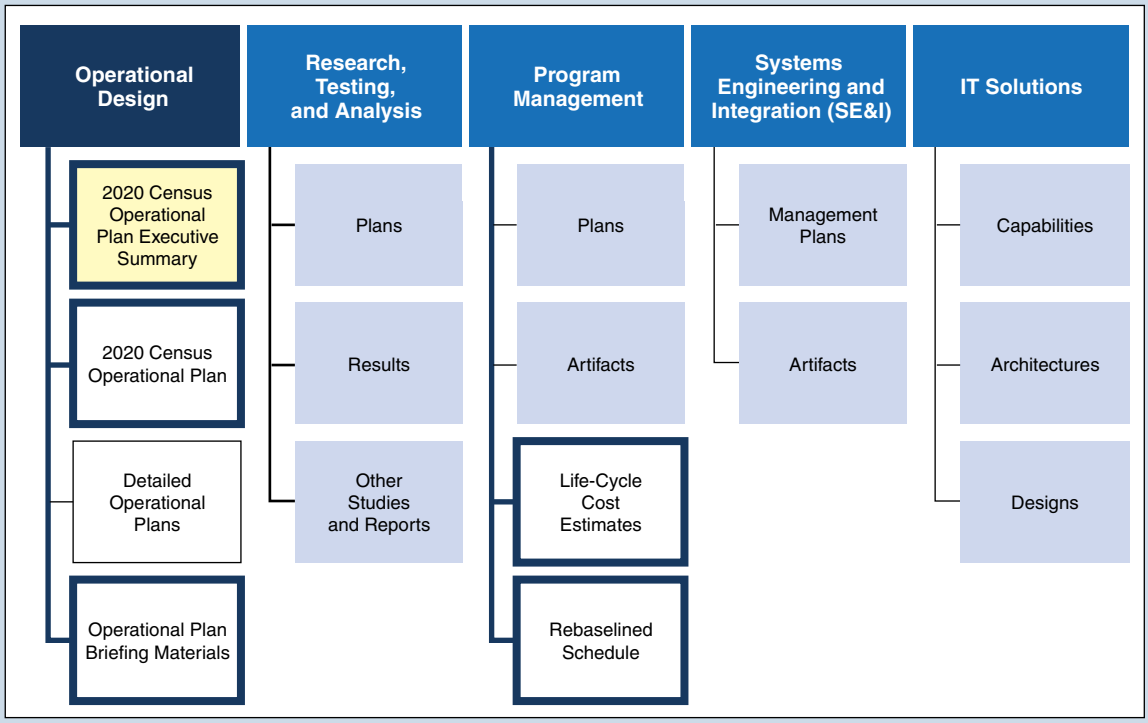

Figure 1: 2020 Census Program Documentation Structure

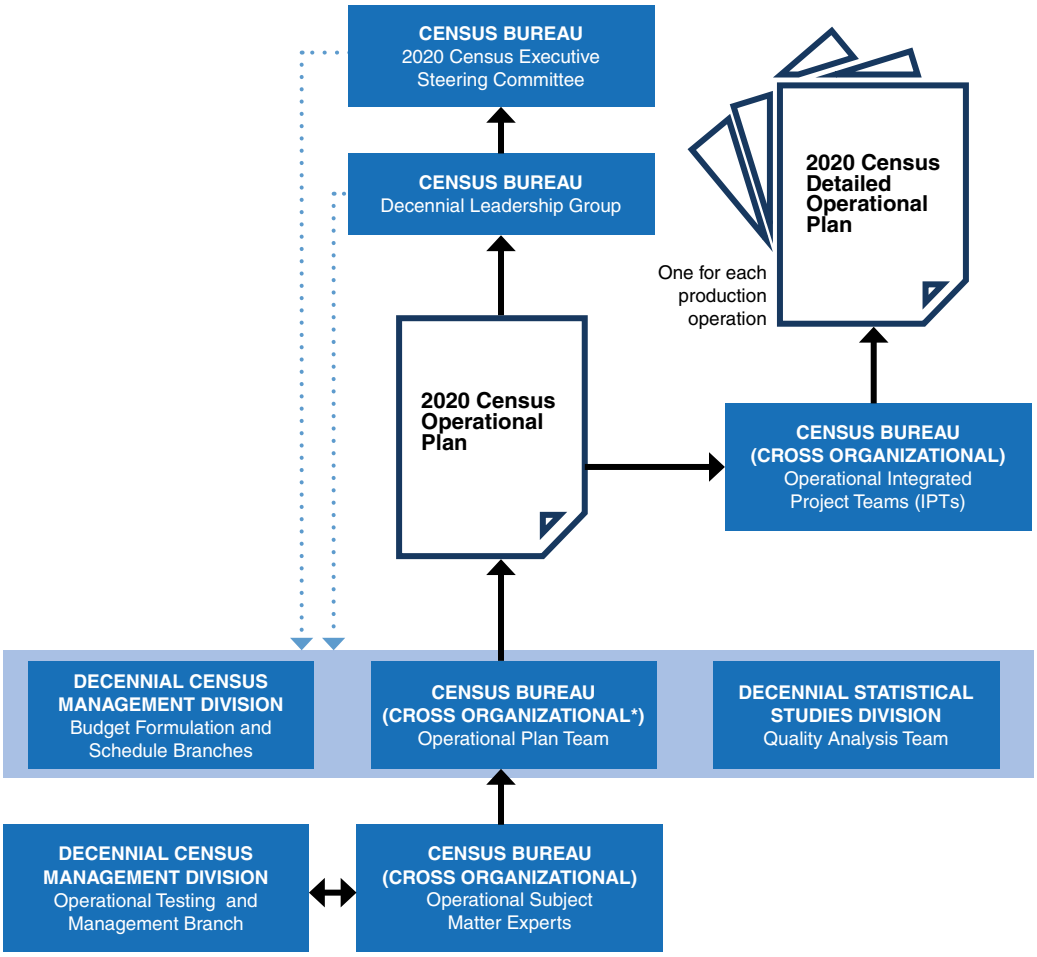

Figure 2: Organizations and Governance Boards for the 2020 Census Operational Plan

Many organizations across the Census Bureau and the Decennial Census Directorate have been involved in developing the 2020 Census Operational design.

Figure 2 illustrates the various organizations and governance bodies involved in the development of the 2020 Census Operational Plan. The Operational Plan Team consists of subject matter experts from the key Census Bureau organizations with significant roles in supporting the 2020 Census. This team, supplemented with additional subject matter experts from across the Census Bureau, plays a key role in identifying research needs, preparing for and analyzing the results of tests, and recommending design decisions. The Decennial Census Management Division is leading the development of the schedule and life-cycle cost analysis and the testing program. The Decennial Statistical Studies Division is leading the quality analysis. The Decennial Leadership Group and the 2020 Census Executive Steering Committee reviewed and approved the 2020 Census Operational Plan. Over the next 2 years, Operational Integrated Project Teams are developing Detailed Operational Plans for each production operation.

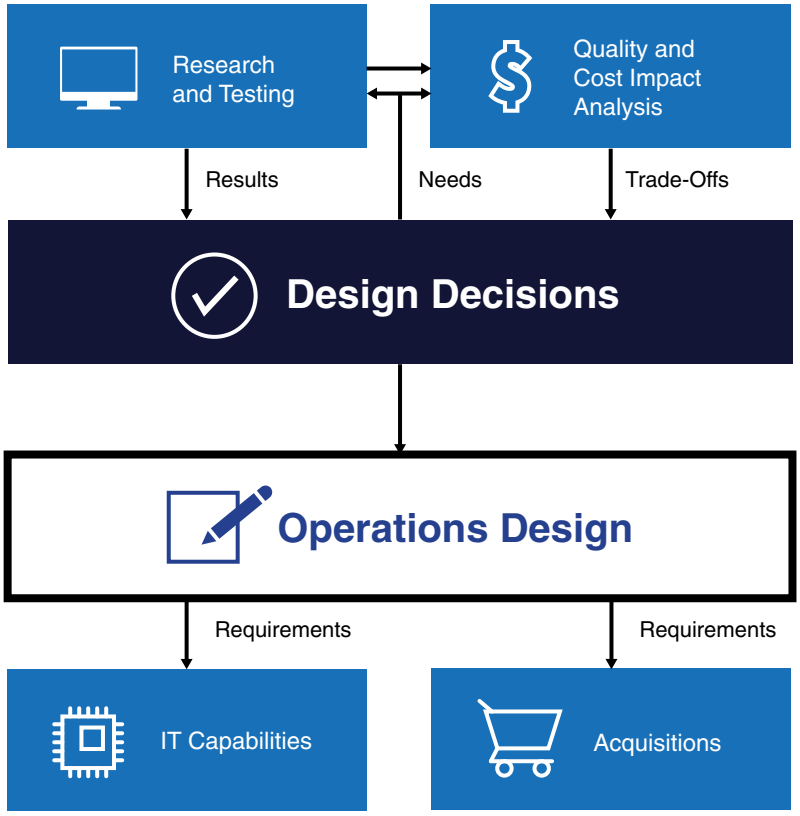

Figure 3: Approach to the Operational Design

The 2020 Census Operational Design comprises a set of decisions informed through research, testing, and analysis.

As shown in Figure 3, the operational design comprises a set of design decisions that drive how the 2020 Census will be conducted. These design decisions are informed through research, testing, and analysis of the cost and quality impacts of different design options. The operational design also drives the requirements for Information Technology (IT) capabilities and acquisitions.

The 2020 Census is being designed and developed on a rolling schedule. Accordingly, this process is iterative. Preliminary design decisions were based on early research, testing, and analysis, and these decisions were used to determine initial requirements for capabilities and acquisitions. As the design matures and more decisions are finalized, the requirements will be updated to reflect the revised design.

BACKGROUND

Decennial data support multiple important uses.

The purpose of the decennial census is to conduct a census of population and housing and disseminate the results to the President, the states, and the American people. Decennial data are used for many purposes. A primary use is for the apportionment of seats allocated to the states for the House of Representatives as mandated in the United States Constitution. Decennial data are also used by governmental entities for redistricting (defining the representative boundaries for congressional districts, state legislative districts, school districts, and voting precincts), enforcing voting rights and civil rights legislation, and determining the sampling frames (address lists) for many Census Bureau surveys. These, in turn, support important government functions, such as appropriating federal funds to local communities (an estimated $400 billion annually); producing

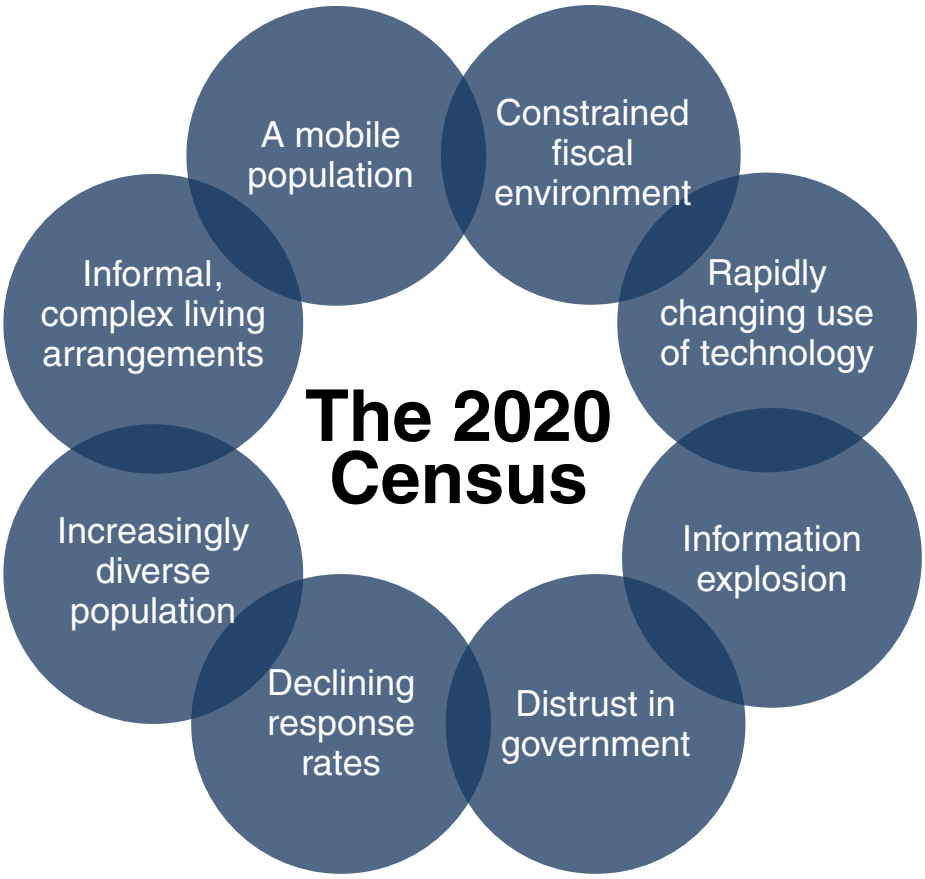

Figure 4: 2020 Census Environment

unemployment, crime, and poverty rates; and publishing health and education data. Finally, decennial data are foundational to the information used by businesses to understand demographic, economic, and geographic trends required to inform critical business decisions.

The Census Bureau is committed to conducting a 2020 Census at a lower cost per household (adjusted for inflation) than the 2010 Census, while maintaining high-quality results.

The goal of the 2020 Census is to count everyone once, only once, and in the right place. The challenge is to conduct a 2020 Census at a lower cost per household (adjusted for inflation) than the 2010 Census, while maintaining high-quality results. This challenge is exacerbated by multiple environmental factors that have the potential to impact its success (see Figure 4). The Census Bureau is committed to proactively addressing the challenges.

Several of the societal, demographic, and technological trends shown can result in a population that is harder and more expensive to enumerate. As it becomes more challenging to locate individuals and solicit their participation through traditional methods, the Census Bureau must, decade after decade, spend more money simply to maintain the same level of accuracy as in previous censuses.

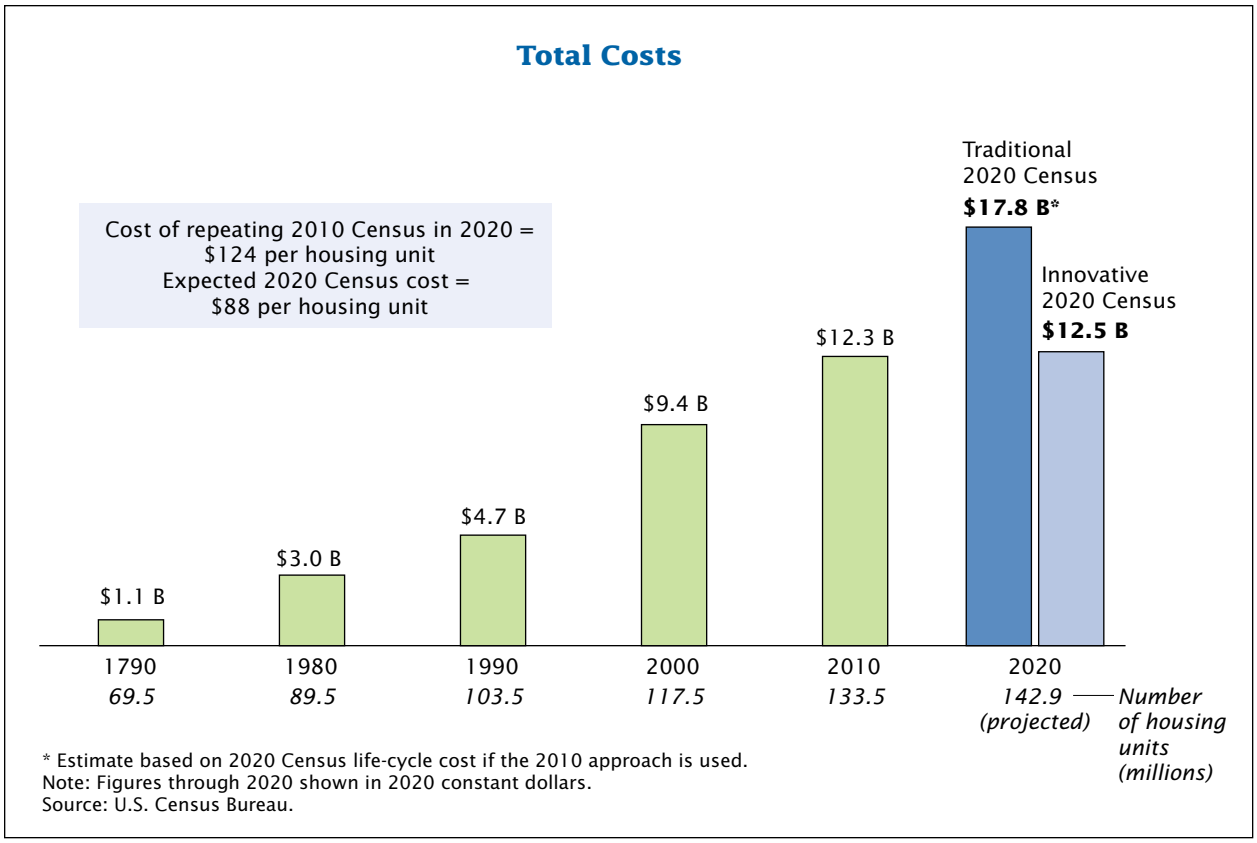

Figure 5: Costs—Traditional vs Innovative 2020 Census

As shown in Figure 5, on average, the total costs—in constant dollars—of conducting the decennial census have increased significantly each decade. Initial estimates for expected total costs for the 2020 Census are $17.8 billion in 2020 constant dollars if the Census Bureau repeats the 2010 Census design and methods. However, through a series of innovations that rely on technology and the use of existing data, the Census Bureau estimates that it can conduct the 2020 Census for $12.5 billion in 2020 constant dollars.

The cost parameters for this estimate were based on input from subject matter experts and the following sources:

- Historical data collected from the 2010 Census
- The American Community Survey
- The 2020 Census Research and Testing program results to date from the following tests:
  - 2012 National Census Test
  - 2013 National Census Contact Test
  - 2013 Census Test
  - 2014 Census Test
  - Local Update of Census Addresses (LUCA) Focus Groups
  - 2014 Human-in-the-Loop Simulation
  - 2015 Address Validation Test
  - 2015 Optimizing Self-Response Test
  - 2015 Census Test

Analysis of quality impacts of the redesigned 2020 Census will ensure that trade-offs between cost and quality are understood and accounted for in the final design.

Given the multiple important uses of Decennial data, it is critical that the data meet high-quality standards to ensure good decision-making and to continue building confidence in government data. The Census

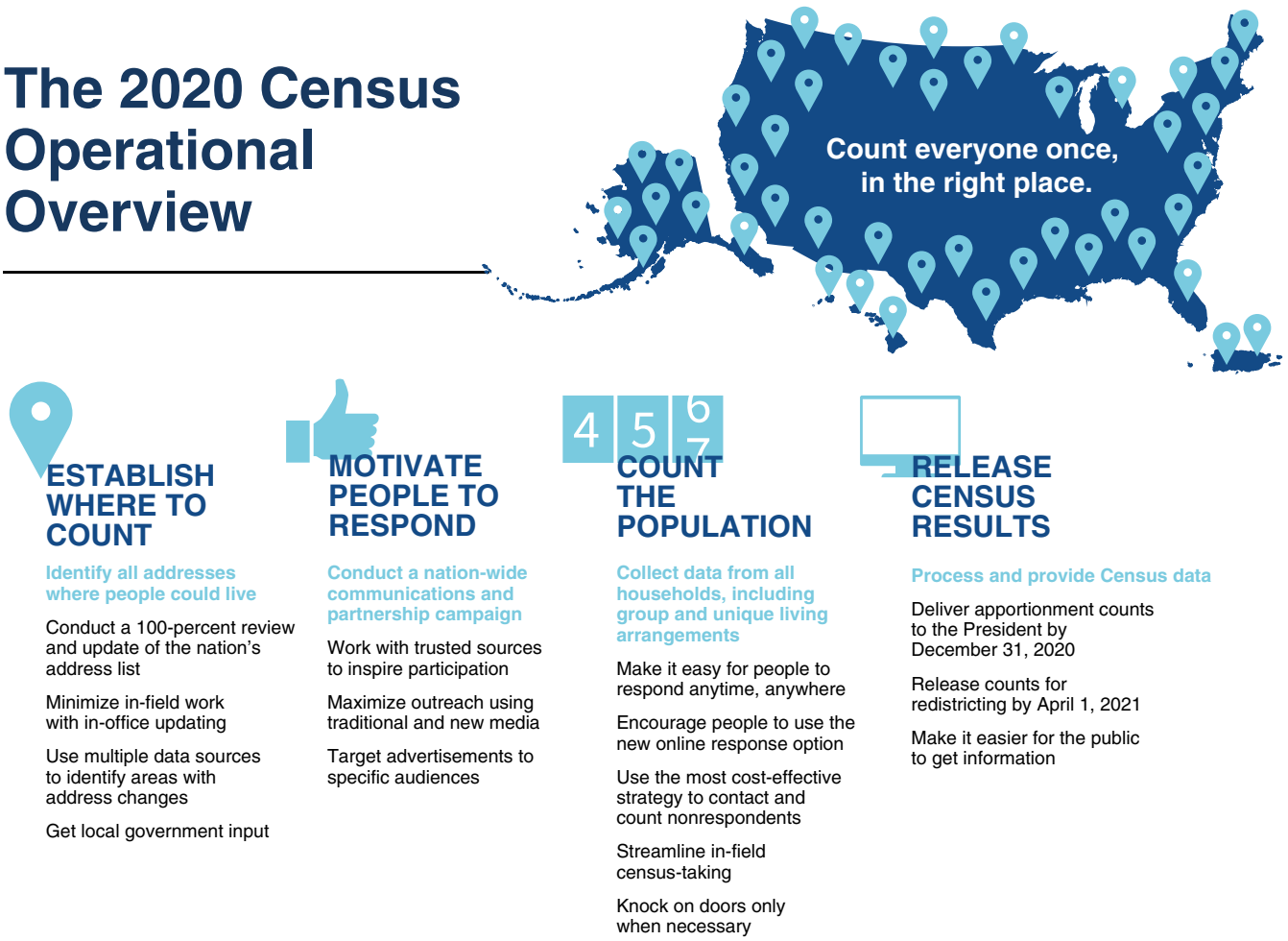

Figure 6: The 2020 Census—A New Design for the 21st Century

Bureau has begun analyzing the quality impacts of several key innovations related to address canvassing, self-response, and the use of administrative records and third-party data to reduce the workload for Nonresponse Followup. For example, the initial analysis of the reengineered address canvassing approach suggests that the innovations result in an address frame of similar quality to the level of quality achieved through the 2010 Census Address Canvassing operation as defined by two key metrics: the percentage of missed adds and missed deletes. The quality analysis will continue as the design is refined.

THE DESIGN OF THE 2020 CENSUS

The 2020 Census Operational Design includes all operations required to execute the 2020 Census, starting with precensus address and geographic feature updates, and ending once census data products are disseminated and coverage and quality are measured.

The 2020 Census is designed for the 21st Century, relying on advances in technology and available data to reduce cost, maintain quality, and minimize risk.

Figure 6 presents a high-level design for a 21st Century 2020 Census.

The first step in conducting the 2020 Census is to identify all of the addresses where people could live, or **Establish Where to Count**. An accurate address list helps ensure that everyone is counted. For the 2020 Census, the Census Bureau will begin an In-Office review of 100 percent of the nation's addresses in September 2015 and 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 will occur in 2016 on a small scale for address coverage measurement, the bulk of the In-Field Address Canvassing will occur 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.

Response rates to surveys and censuses have been declining. To **Motivate People to Respond**, the 2020 Census will include a nationwide communications and partnership campaign. This campaign is focused on getting people to respond on their own (self-respond) as it costs significantly less to process a response provided via the Internet or through a paper form than it does to send a fieldworker to someone's home to collect the response. Advertising will make heavy use of digital media, tailoring the message to the audience.

The Census Bureau **Counts the Population** by collecting information from all households, including those residing in group or unique living arrangements. The Census Bureau wants to make it easy for people to respond anytime and anywhere. To this end, the 2020 Census will offer and encourage people to respond via the Internet and will not require people to enter a unique Census identification with their response. Online responses will be accurate, secure, and convenient. If people are at the bus stop, waiting at the doctor's office, or watching TV and do not have their Census ID handy, then they can provide their address instead.

For those who do not respond, the Census Bureau will use the most cost-effective strategy for contacting and counting people. The goal for the 2020 Census is to reduce the average number of visits by using available data from government administrative records and third-party sources. These data can be used to identify vacant households, determine the best time of day to visit a particular household, or to count the people and fill in the responses with existing high-quality data from trusted sources. A reduced number of visits will lead to significant cost savings. It can also allow the Census Bureau to focus its field resources to achieve consistent response rates across geographic areas and demographic groups.

Additional cost savings are expected to result from the use of automation to streamline in-field census-taking. Fieldworkers will use handheld devices for collecting the data. Operations such as recruiting, training, and payroll will be automated, reducing the time required for these activities. New operational control centers will rely on automation to manage the work, which will enable more efficient case assignment, automatic determination of optimal travel routes, and reduction of the number of physical offices. In general, a streamlined operation and management structure is expected to increase productivity and save costs.

The last step in the 2020 Census is to **Release the 2020 Census Results**. The 2020 Census data will be processed and sent to the President (for apportionment) by December 31, 2020, to the states (for redistricting) by March 31, 2021, and to the public beginning in December 2021.

Four key innovation areas comprise the bulk of the cost reductions.

The 2020 Census design focuses on four Key Innovation Areas, each of which is described below:

- Reengineering Address Canvassing
- Optimizing Self-Response
- Utilizing Administrative Records and Third-Party Data
- Reengineering Field Operations

A reengineered address canvassing operation significantly reduces the amount of fieldwork required to produce a quality address list.

The goal of Reengineering Address Canvassing innovation area is to eliminate the need to canvass every block. Instead, the Census Bureau is developing innovative methodologies for updating the Master Address File (MAF)/Topologically Integrated Geographic Encoding and Referencing (TIGER) System throughout the decade. Figure 7 highlights the key concepts in the Reengineering Address Canvassing approach.

Continual research and updating will be conducted through an In-Office Address Canvassing operation that will begin in September 2015 and continue through the 2020 Census. Clerks will start with the 2015 Census address list and update it based on new information

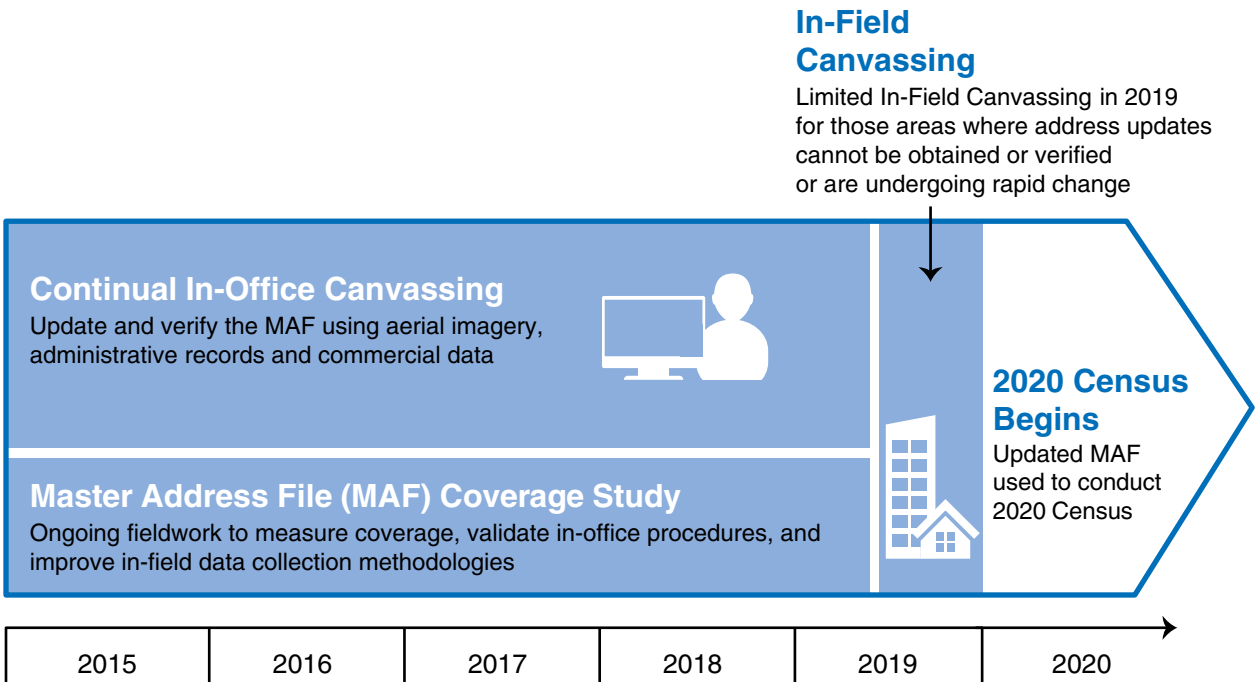

Figure 7: Summary of Reengineering Address Canvassing

from the United States Postal Service and data from tribal, state, and local governments and third parties (i.e., commercial vendors). Clerks will review satellite imagery to determine where changes in addresses are occurring, and based on these changes, the Census Bureau will develop a plan for capturing those changes. This plan will include an In-Field Address Canvassing operation where address updates cannot be obtained or verified or in areas undergoing rapid change. The number of addresses requiring In-Field Canvassing is expected to be approximately 25 percent of the total number of addresses. These design changes have the potential to save the Census Bureau an estimated $900 million.

Multiple methods and tools are aimed at generating the largest possible self-response, reducing the need to conduct expensive in-person follow-up activities.

The goal of the Optimizing Self-Response innovation area is to communicate the importance of the 2020 Census to the U.S. population and generate the largest possible self-response. As shown in Figure 8, the Census Bureau plans to motivate people to respond by using technology and administrative records and third-party data to target advertisements and tailor contact strategies to different demographic groups and geographic areas. The Census Bureau also plans to utilize its partnership program, providing information

Figure 8: Summary of Optimizing Self-Response

to government agencies and hosting events with community, recreation, and faith-based organizations. Communication and contact strategies will encourage the use of the Internet as the primary response mode through a sequence of invitations and postcard mailings. In addition, when Census fieldworkers visit a house and no one is home, the notice of visit will encourage self-response.

A second key aspect of Optimizing Self-Response is to make it easy for people to respond from any location at any time. This is done in several ways:

- By enabling people to respond via multiple modes (Internet, paper, or telephone if they call the Census Questionnaire Assistance Center)
- By allowing respondents to submit a questionnaire without a unique identification code
- By providing on-line forms in multiple languages

For these innovations to be successful, respondents must know that their personal information is protected. Thus, a key element of this innovation area is to assure respondents that their data are secure and treated as confidential.

These design changes have the potential to save the Census Bureau an estimated $400 million.

Information already provided to the government or third parties can be leveraged to increase the efficiency and effectiveness of the data collection operations.

The goal of the Utilizing Administrative Records and Third-Party Data innovation area is to use information people have already provided to improve the efficiency and effectiveness of the 2020 Census, and in particular reduce expensive in-person follow-up activities.

Improve the quality of the address list	Update the address list	Validate incoming data from tribal, federal, state, and local governments
Increase effectiveness of advertising and contact strategies	Support the micro-targeted advertising campaign	Create the contact frame (e.g., e-mail addresses and telephone numbers)
Validate respondent submissions	Validate respondent addresses for those without a Census ID and prevent fraudulent submissions	
Reduce field workload for follow-up activities	Remove vacant and nonresponding occupied housing units from the Nonresponse Followup workload	Optimize the number of contact attempts

Figure 9: Summary of Utilizing Administrative Records and Third-Party Data

Administrative record data refers to information from federal and state governments. Third-party data refers to information from commercial sources. As shown in Figure 9, data from both sources can help improve the quality of the address list (frame), increase the effectiveness of advertising and contact strategies, validate respondent submissions, and reduce field workload for follow-up activities.

As has been done in prior decades, administrative data from the United States Postal Service and other government records are used to update the address frame and reflect changes that occur over time. Additional administrative records sources, as well as third-party data from commercial companies, will also be used for this purpose. In addition, these data sources will be used to validate incoming data from tribal, federal, state, and local governments.

To increase the effectiveness of advertising and contact strategies, the Census Bureau will use demographic and geographic information from various administrative record and third-party data sources to help target the advertising to specific populations. These data will also be used to create a contact frame that includes e-mail addresses and telephone numbers. A contact frame with this additional information enables the Census Bureau to expand its contact methods beyond traditional postal mail.

Administrative records and third-party data will also be used to validate respondent addresses for those who respond without providing a unique Census ID. This will help prevent fraudulent and erroneous submissions.

Finally, a principal use of administrative records and third-party data is to reduce field workload for follow-up activities. To this end, the Census Bureau will use data from internal and external sources, such as the 2010 Census, the United States Postal Service, the Internal Revenue Service, and the Centers for Medicare and Medicaid Services to identify vacant and nonresponding occupied housing units and remove them from the Nonresponse Followup workload. The Census Bureau plans to continue acquiring and testing data from other sources, including the National Directory of New Hires, the Supplemental Nutrition and Assistance Program, and state-administered programs, such as Temporary Assistance for Needy Families, to understand how these data sources can help reduce follow-up field workload.

These design changes have the potential to save the Census Bureau an estimated $1.4 billion.

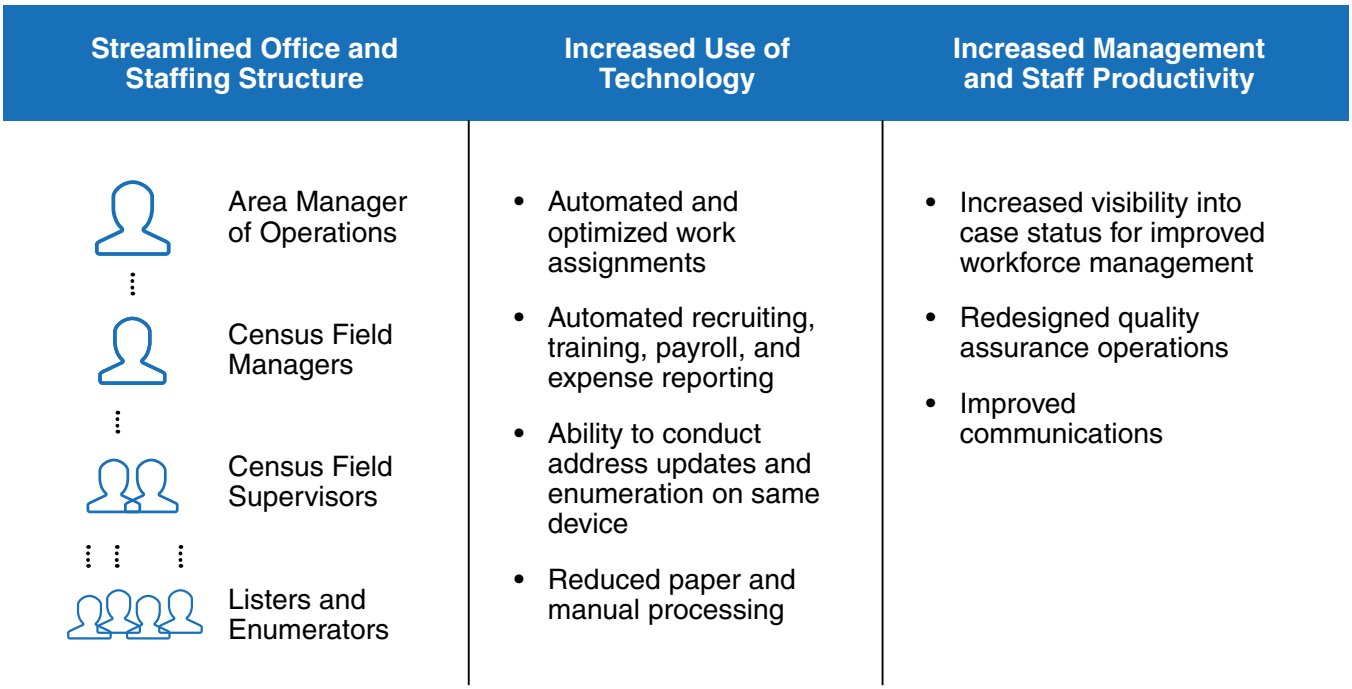

Figure 10: Summary of Reengineering Field Operations

Technology and automated operational control and administrative systems reduce the staffing, infrastructure, and brick and mortar footprint required for 2020 Census field operations.

The goal of the Reengineering Field Operations innovation area is to use technology to manage the 2020 Census fieldwork efficiently and effectively. Figure 10 shows the three main components of the reengineered field operations: streamlined office and staffing structure, increased use of technology, and increased management and staff productivity.

The 2020 Census field operations will rely heavily on automation. For example, the Census Bureau plans to provide fieldworkers with the capability to work completely remotely and perform all administrative and data-collection tasks directly from a handheld device. Supervisors will also be able to work remotely and communicate with their staff via these devices. These enhanced capabilities significantly reduce the number of offices required to support 2020 Census fieldwork. In the 2010 Census, the Census Bureau established 12 Regional Census Centers and nearly 500 Local Census Offices. The agency hired and trained over 516,000 enumerators to conduct Nonresponse Followup activities. The new design for the 2020 field operations includes six Regional Census Centers with up to 250 Area Census Offices.

Automation enables significant changes as to how cases are assigned and the supervision of field staff. By making it easier for supervisors to monitor and manage their workers, the ratio of workers to supervisor can be increased, reducing the number of supervisors required. This streamlines the staffing structure. Other design changes include optimized case assignment and routing.

All administrative functions associated with field staff will be automated, including recruiting, hiring, training, time and attendance, and payroll. The new capabilities also allow quality to be infused into the process through alerts to supervisors when there is an anomaly in an enumerator's performance (e.g., the Global Positioning Satellite indicator on fieldworker's handheld device indicates that she or he is not at the assigned address) and real-time edits on data collection. Accordingly, the quality assurance process used in the 2010 Census is being reengineered to account for changes in technology.

In total, these design changes have the potential to save the Census Bureau an estimated $2.5 billion.

The 2020 Census comprises 34 operations that together represent the work to be done to prepare for and conduct a high-quality census.

The 2020 Census includes 34 operations that are organized into eight major areas, which correspond with the Census Bureau standard work breakdown structure. The term "operation" refers to both support and business functions. For example, Program Management is considered a support function, and Address Canvassing is considered a business function. Table 1 provides a high-level purpose statement for each operation.

Table 1: Operations and Purpose

Operations	Purpose
Program Management	
Program Management	Define and implement program management policies, processes, and the control functions for planning and implementing the 2020 Census.
Census/Survey Engineering	
Systems Engineering and Integration	Manage the delivery of a system of systems that meets the 2020 Census Program business and capability requirements. Implement and manage the full Enterprise Systems Development Life Cycle for systems supporting the 2020 Census.
Security, Privacy, and Confidentiality	Ensure that all operations and systems used in the 2020 Census adhere to the appropriate systems and data security, respondent, and employee privacy and confidentiality policies, and regulations.
Content and Forms Design	Identify, research, and finalize content and design of questionnaires and other nonquestionnaire materials, ensure consistency across data collection modes and operations, and promote high response rates and accurate and consistent responses across modes.
Language Services	Assess and support language needs of non-English speaking populations for all modes and other mailing and field materials, determine the number of languages and level of support required, optimize non-English content, and ensure cultural relevancy and meaningful translation of non-English materials.
Frame	
Geographic Programs	Provide the geographic foundation in support of the 2020 Census data collection and tabulation activities, including delineation of boundaries in the Master Address File (MAF)/Topologically Integrated Geographic Encoding and Referencing (TIGER) System, delivery of address and spatial extracts from the MAF/TIGER System, and updates to the MAF/TIGER System.
Local Update of Census Addresses	Provide an opportunity for tribal, federal, state, and local governments to review and improve the address lists and maps used to conduct the 2020 Census as required by Public Law (P.L.) 103-430.
Address Canvassing	Deliver a complete and accurate address list and spatial database for enumeration, and determine the type and address characteristics for each living quarter.
Response Data	
Forms Printing and Distribution	Print and distribute Internet invitations, reminder postcards, and questionnaire mailing packages to support the 2020 Census mailing strategy and enumeration of the population.
Paper Data Capture	Capture and convert data from the 2020 Census paper questionnaires, including document preparation, scanning, Optical Character Recognition, Optical Mark Recognition, Key From Image, editing, and checkout.
Integrated Partnership and Communications	Communicate the importance of participating in the 2020 Census to the entire population of the 50 states, the District of Columbia, and Puerto Rico. Motivate people to self-respond, preferably via the Internet, and raise and keep awareness high throughout the entire 2020 Census.
Internet Self-Response	Collect response data via the Internet to reduce paper and Nonresponse Followup and maximize online response to the 2020 Census via contact strategies and improved access for respondents.
Non-ID Processing	Make it easy for people to respond anytime, anywhere to increase self-response rates by providing response options that do not require a unique Census ID.

Table 1: Operations and Purpose—Con.

Operations	Purpose
Update Enumerate	Update the address and feature data, and enumerate housing units in certain designated geographic areas with special enumeration needs (e.g., areas that do not have city-style addresses and areas with unique challenges associated with accessibility).
Group Quarters	Enumerate people living or staying in group quarters, people experiencing homelessness, and people receiving service at service-based locations.
Enumeration at Transitory Locations	Enumerate individuals in occupied units at transitory locations, such as recreational vehicle parks, campgrounds, tent cities, racetracks, circuses, carnivals, marinas, hotels, and motels, who do not have a usual home elsewhere.
Census Questionnaire Assistance	Provide questionnaire assistance for respondents by answering questions about specific items on the census form or other frequently asked questions about the 2020 Census and provide an option for callers to complete a census interview over the telephone.
Nonresponse Followup	Determine housing unit status for nonresponding addresses and enumerate housing units for which a census response was not received.
Response Processing	Establish the initial 2020 Census universe, assign the specific enumeration strategy for each census case based on case status and associated paradata, create and distribute workload files required for enumeration operations, track case enumeration status, and run post-data collection processing actions in preparation for producing the final 2020 Census results.
Federally Affiliated Americans Count Overseas	Obtain counts by home state of U.S. military and federal civilian employees stationed or deployed overseas and their dependents living with them.
Publish Data	
Data Products and Dissemination	Prepare and deliver the 2020 Census population counts to the President of the United States for Congressional apportionment, tabulate and disseminate 2020 Census data products for use by the states for redistricting, and tabulate and disseminate 2020 Census data for use by the public.
Redistricting Data	Provide to each state the legally required P.L. 94-171 redistricting data tabulations by the mandated deadline of 1 year from Census Day: April 1, 2021.
Count Review	Enhance the accuracy of the 2020 Census by implementing an efficient and equitable process for Federal-State Cooperative Population Estimates members to identify missing housing units and missing or geographically misallocated large group quarters.
Count Question Resolution	Provide a mechanism for governmental units to challenge their official 2020 Census results.
Archiving	Provide 2020 Census records deemed permanent, including files containing individual responses, to the National Archives and Records Administration for archiving and to the National Processing Center to use as source materials to conduct the Age Search Service.
Other Censuses	
Island Areas Censuses	Update and enumerate all living quarters in the Pacific Island Area of American Samoa, the Commonwealth of the Northern Mariana Islands, Guam, and the U.S. Virgin Islands, collectively known as the Island Areas.
Test and Evaluation	
Coverage Measurement Design and Estimation	Develop the survey design and sample for the post-enumeration survey for the 2020 Census. It also produces coverage error estimates and independent assessment of coverage via demographic analysis.
Coverage Measurement Matching	Identify matches and nonmatches between the 2020 Census and the Census Coverage Measurement Survey for the enumerated housing units and people.
Coverage Measurement Field Operations	Collect person and housing unit information (independent from the 2020 Census operations) for the sample of housing units in the Census Coverage Measurement Survey.
Evaluations and Experiments	Measure the success of critical 2020 Census operations. Formulate and execute an experimentation program to support early planning and inform the transition and design of the 2030 Census.

Table 1: Operations and Purpose—Con.

Operations	Purpose
Infrastructure	
Decennial Service Center	Support 2020 Census Field Operations and handle all service requests initiated by field staff.
Field Infrastructure	Coordinate lease management and space acquisition for the Regional Census Centers and field offices and provide the administrative infrastructure for data collection operations covering the 50 states, the District of Columbia, and Puerto Rico.
Decennial Logistics Management	Provide logistics management services to include procuring warehouse space, warehousing, inventory management, kit assembly, deployment of materials, and receiving and accessing materials.
IT Infrastructure	Provide the IT Infrastructure to support the 2020 Census, including enterprise systems and applications, 2020 Census-specific applications, field IT infrastructure, and mobile computing.

The designs of the 34 operations are at different maturity levels, reflecting the focus of early planning on those operations with the greatest potential for cost savings.

Figure 11 presents a graphic representation of the 34 operations organized into the eight areas described above. Program Management, Census/Survey Engineering, and Infrastructure are combined into one general group called Support, which is shown at the top of the diagram. As noted by the shading on the diagram, the degree to which detailed planning has been conducted for each operation varies. The maturity of the operational design for the 34 operations also varies based on the amount of planning conducted to date.

Based on work performed thus far, major operational design decisions for the 2020 Census have been made.

Table 2 lists the key design decisions made for the main steps of the 2020 Census (Establish Where to Count, Motivate People to Respond, Count the Population, and Release Census Results) as well as for infrastructure. Where appropriate, the table also indicates specific parameters used in the life-cycle cost estimates.

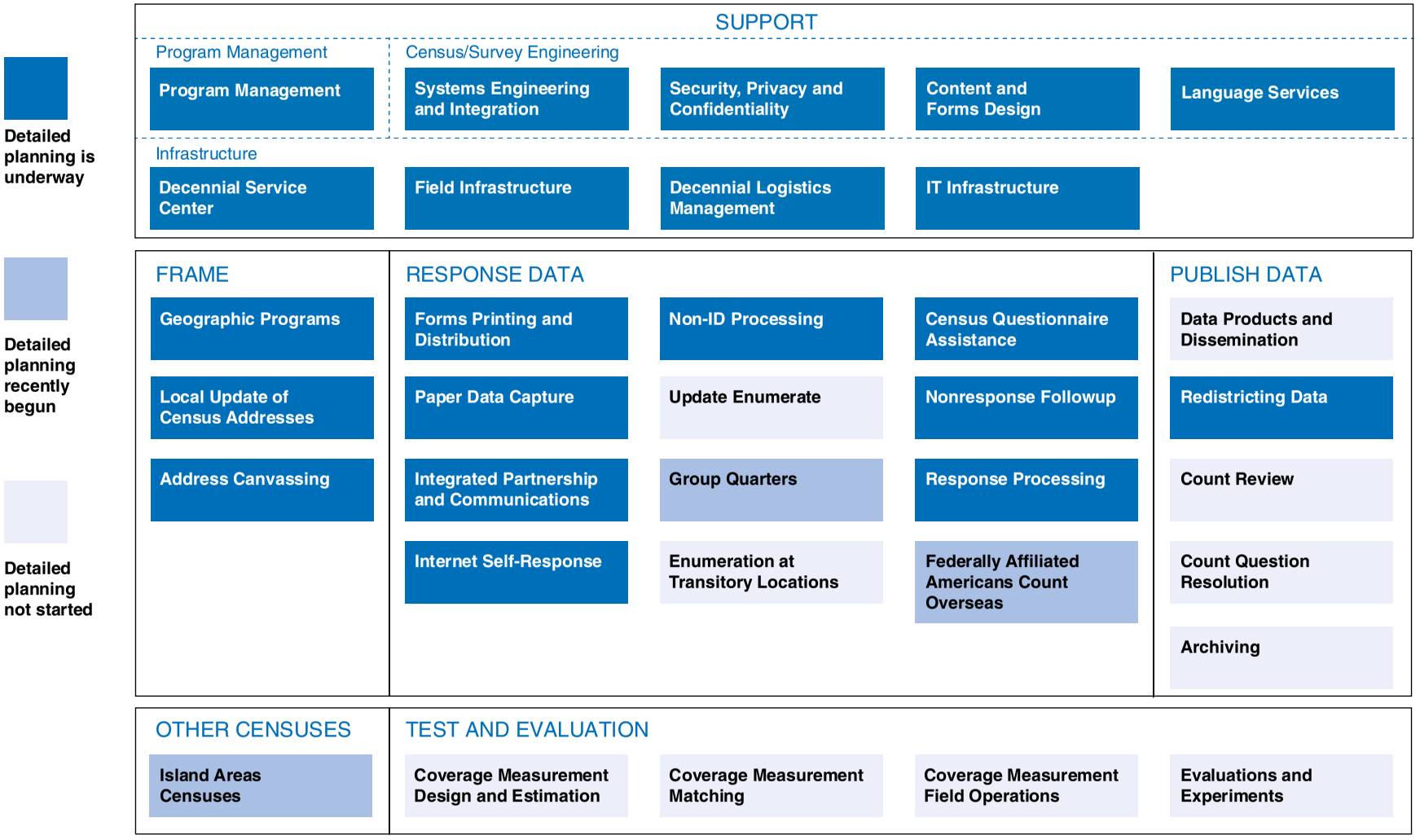

Figure 11: Operational Overview and Status

Table 2: Operational Design Decisions Made to Date

Area	Design Decisions Made and Cost Estimating Numbers
Establish Where to Count	In-Office Address Canvass will be conducted for 100 percent of housing units. In-Field Address Canvass will be conducted for 25 percent of housing units. The number of Area Census Offices in support of Address Canvassing will be reduced from 151 in 2010 to approximately 30 in 2020. The crew leader assistant position will be removed from the staffing structure for In-Field Address Canvassing due to increased efficiencies from automation. Administrative records and third-party data sources will be used to validate addresses within each block. Production Address Canvassing begins September 2015.
Motivate People to Respond	An Internet self-response option will be provided and will be available in languages other than English and Spanish, including those with non-Roman alphabets (number of responses via this mode estimated at 47 percent after 6 weeks). Census Questionnaire Assistance will complete interviews by telephone (number of responses via this mode estimated at 5.3 percent after 6 weeks). A paper response option will be provided (number of responses via this mode estimated at 11.2 percent after 6 weeks). ▪ Paper questionnaires will be sent to 20 percent of all housing units during the first mailing. ▪ Paper questionnaire will be mailed to nonresponding housing units after 2 weeks of self-response (estimated at 59.7 percent of total housing units). The 2020 Census will offer respondents the opportunity to respond without a unique census identification code via the Internet or via telephone agents. A formal “Notify Me” option will not be offered.
Count the Population	Administrative records and third-party data will be used to identify vacant units (approximately 11 percent of nonresponding housing units removed). Nonresponding housing units will be visited at least once (approximately 22.5 percent of the remaining nonresponding follow-up workload resolved through this visit). Administrative records and third-party data will be used to enumerate remaining nonresponding housing units (approximately 16.5 percent of the remaining nonresponse follow-up workload enumerated via these data). Administrative records and third-party data will be used to reengineer the Vacant/Delete and Coverage Followup operations. Coverage improvement operations will be included. The Nonresponse Followup operation will utilize a reengineered field management and staffing structure due to increased efficiencies from automation: ▪ Change in ratio of production enumerators to Census Field Supervisors from 8:1 in 2010 to 15:1 in 2020. ▪ Removal of crew leader assistants. The Nonresponse Followup operation will consist of production and quality assurance components. The Group Quarters operation will allow an individual to self-respond and self-identify the group quarter type for the facility in which he or she resides. Census Questionnaire Assistance will not collect questionnaire data via e-mail or web chat, nor will it accept e-mails with PDF attachments, faxes, or Internet uploads of completed Census questionnaires. Text messaging will not be used as a data collection mode.

Table 2: Operational Design Decisions Made to Date—Con.

Area	Design Decisions Made and Cost Estimating Numbers
Infrastructure Support	The 2020 Census field office infrastructure will include six Regional Census Centers (reduced from 12 in 2010). The 2020 Census field office infrastructure will include up to 250 field offices (reduced from 494 in 2010). The number of training hours for Address Canvassing will be reduced from 35 in 2010 to 28 in 2020; and for Nonresponse Followup from 44 in 2010 to 28 in 2020. The training pay rate for Address Canvassing and Nonresponse Followup (both enumerators and Census Field Supervisors) will be $1.50 lower than the production rate. The 2020 Census will have two paper data capture centers, reduced from three in 2010. Whenever technically feasible and cost-effective, enterprise solutions will be used in support of the 2020 Census (e.g., Integrated Capture and Data Entry is the planned paper data capture system for the 2020 Census). A hybrid cloud design will be used for scaling the Census Enterprise Data Collection and Processing systems when needed for the 2020 Census.
Release the 2020 Census Results	The tabulated 2020 Census data will be available to the public through the Center for Enterprise Dissemination and Consumer Service Innovation.

Source: U.S. Census Bureau, Life-Cycle Cost Estimates.

While key design decisions for the major operations have been made, more work is needed to refine the design for these operations, to plan and design the less mature operations, and to design and develop the capabilities required to support the operational design. The refinements will address the specifics of how the operations will be executed, the details associated with the use, acquisition, and timing of administrative records and third-party data, finalizing workload planning estimates, finalizing decisions on field staffing and office locations, and clarifying the interactions among certain operations (e.g., Address Canvassing and LUCA validation, Nonresponse Followup and Non-ID Processing, and Group Quarters and Internet Self-Response).

The operational design decisions made to date are based on planning, research, and a series of tests conducted between 2012 and 2015.

The Census Bureau has been conducting, and continues to conduct research, analysis, and tests to inform the design decisions. The tests are documented in the 2020 Census Research and Testing Management Plan, which provides the overarching management and analysis framework for executing research and testing projects and integrating the results across projects. More detailed information about each test is captured in formal research and test plan documents and in an integrated master schedule. Detailed test plans and results are available for review upon request.

As shown in Figure 12, the tests conducted early in the decade (2012–2015) were aimed at answering specific research questions (objectives) needed to make decisions on important aspects of the operational design for the four key innovation areas. Starting in 2016, the focus shifts to validating and refining the design by testing the interactions across operations and determining the proposed methodology for the operations. In addition, testing of production systems begins during this time frame and continues through 2018, with final performance testing to ensure scalability occurring in 2019. An end-to-end test in 2018 will test the integration of all major operations and systems.

Table 3 provides a brief description of the operational tests executed between 2012 and 2015. Table 4 provides a brief description of the tests planned for 2016 through 2019.

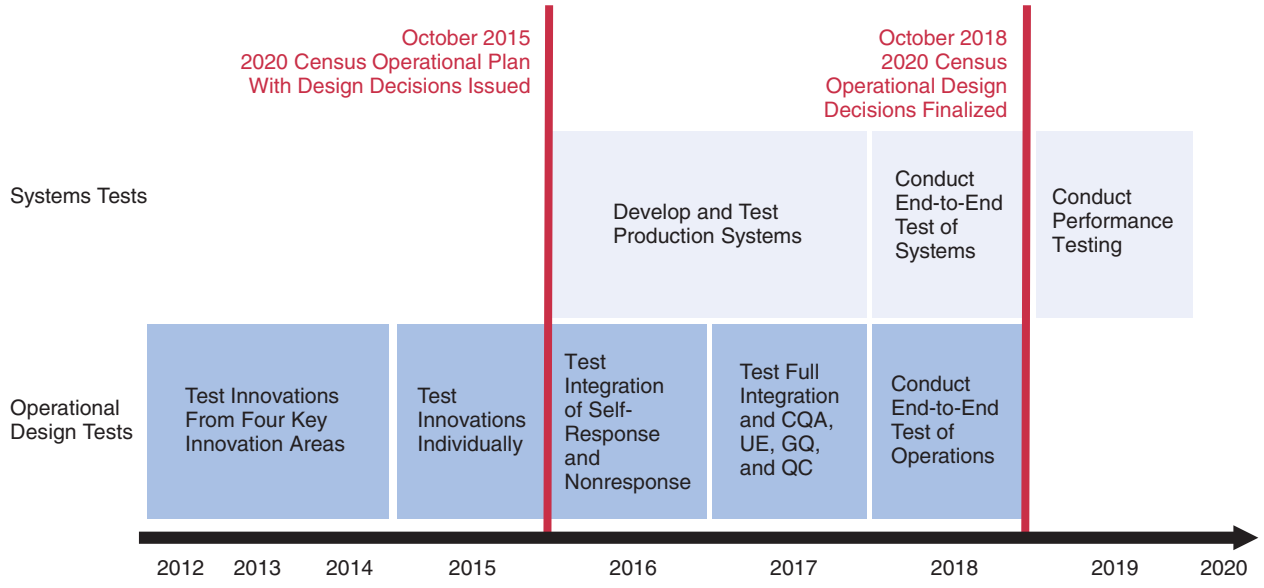

Figure 12: High Level View of Tests

Table 3: Operational Tests Conducted From 2012 Through 2015

Calendar Year	Test	Description
2012	Public-Opinion Polling	A public-opinion survey of attitudes toward statistics produced by the federal government (focuses on statistical uses of administrative records and third-party data). Uses the Nightly Gallup Polling. 850 nationally representative housing units telephoned per week. Started in February 2012 and continues as needed.
	2012 National Census Test	A study of overall self-response rates and Internet self-response rates. Conducted from August 2012 to October 2012. Included 80,000 nationally representative housing units.
2013	2013 National Census Contact Test	A study of the quality of the Contact Frame (a list of supplemental contact information, such as e-mail address and phone numbers, built from third-party data sources) and automated processing of census responses lacking a preassigned census identification number. Included 39,999 nationally representative addresses.
	2013 Census Test	An operational study of Nonresponse Followup procedures. Conducted in late 2013 and involved 2,077 housing units in Philadelphia, PA.
2014	2014 Census Test	An operational study of Self-Response and Nonresponse Followup procedures. Census Day of July 1, 2014. Included 192,500 housing units in portions of Montgomery County, MD, and Washington, DC.
	Continuous small-scale testing (ongoing as needed throughout the decade)	A study of respondent and nonrespondent reactions to new modes of contact and response (focus on privacy and confidentiality). Started in January 2014; ongoing as needed. Includes e-mails to 1,000–2,200 housing units sampled from an opt-in frame.
	Local Update of Census Addresses (LUCA) Focus Groups	A collection of input on potential LUCA models from eligible LUCA participants representing various sizes and types of governments across the nation. 46 governmental entities participated. Conducted from March 2014 through June 2014.
	2014 Human-in-the-Loop Test	A simulation of the reengineered field operations using an Operational Control Center and an enhanced operational control system. Occurred in November 2014. 87 field and office staff participated.

Table 3: Operational Tests Conducted From 2012 Through 2015—Con.

Calendar Year	Test	Description
2015	Address Validation Test (started in late 2014)	An evaluation of methods for reengineered Address Canvassing. Conducted from September 2014 to December 2014 and included 10,100 nationally representative blocks (~ 1.04 million addresses). Evaluated feasibility of canvassing portions of blocks, rather than entire blocks using both In-Office and In-Field methods. Conducted from December 2014 to February 2015. 615 blocks with national distribution were listed by 35 professional staff.
	2015 Optimizing Self-Response Test	An operational study of Self-Response procedures. Census Day of April 1, 2015. Included 407,000 housing units in the Savannah, GA, media market, with 120,000 sampled self-responding housing units.
	2015 Census Test	An operational study of Nonresponse Followup procedures. Census Day of April 1, 2015. Included 165,000 sampled housing units in Maricopa County, AZ.
	2015 National Content Test	An evaluation and comparison of different census questionnaire content. Census Day of September 1, 2015. Included 1.2 million nationally representative households, including 20,000 households in Puerto Rico and 100,000 reinterviews.

Table 4: Planned Tests

Calendar Year	Test	Description
2016	2016 Census Test	Planned to be an operational study of both Self-Response and Nonresponse Followup procedures. Census Day of April 1, 2016. Includes approximately 225,000 housing units per site in Los Angeles County, CA, and Harris County, TX.
	Address Canvassing Test	Planned to be an operational study of In-Office and In-Field Address Canvassing procedures. Begin in the fall of 2016 and will continue into 2017.
2017	2017 Census Test	Planned to be an operational study of Address Canvassing, Self-Response, and Nonresponse Followup procedures. Census Day of April 1, 2017.
2018	2018 Census End-to-End Test	Planned to test seven major threads that cover the vast majority of the 2020 Census requirements. Census Day of April 1, 2018 (Address Canvassing to begin in late 2017).
2019	Post End-to-End Testing	Final performance testing to ensure scalability.

An integrated design is required to ensure the 34 operations work together to achieve a successful 2020 Census.

Although each operation is presented separately, the operations must work together to achieve a successful 2020 Census. Information flows among the operations as the census proceeds from frame development through collection of response data to the publishing and release of the data.

The integration of these business operations requires integration of the IT systems that support them. This is a significant effort and is underway. All of the interfaces for the 2020 Census are not fully defined at this time. However, the Systems Engineering and Integration operation will detail those interfaces as the Research and Testing phase ends and systems are built for production.

KEY MILESTONES AND RISKS

The 2020 Census has multiple decision points, milestones, and production dates that must be met to deliver the final apportionment and redistricting data.

Figure 13 depicts the key decision points, milestones, and production dates.

Test results and planning assumptions also informed the timing of the major production field operations for the 2020 Census as shown in Figure 14. This schedule may change based on available funding and final design decisions.

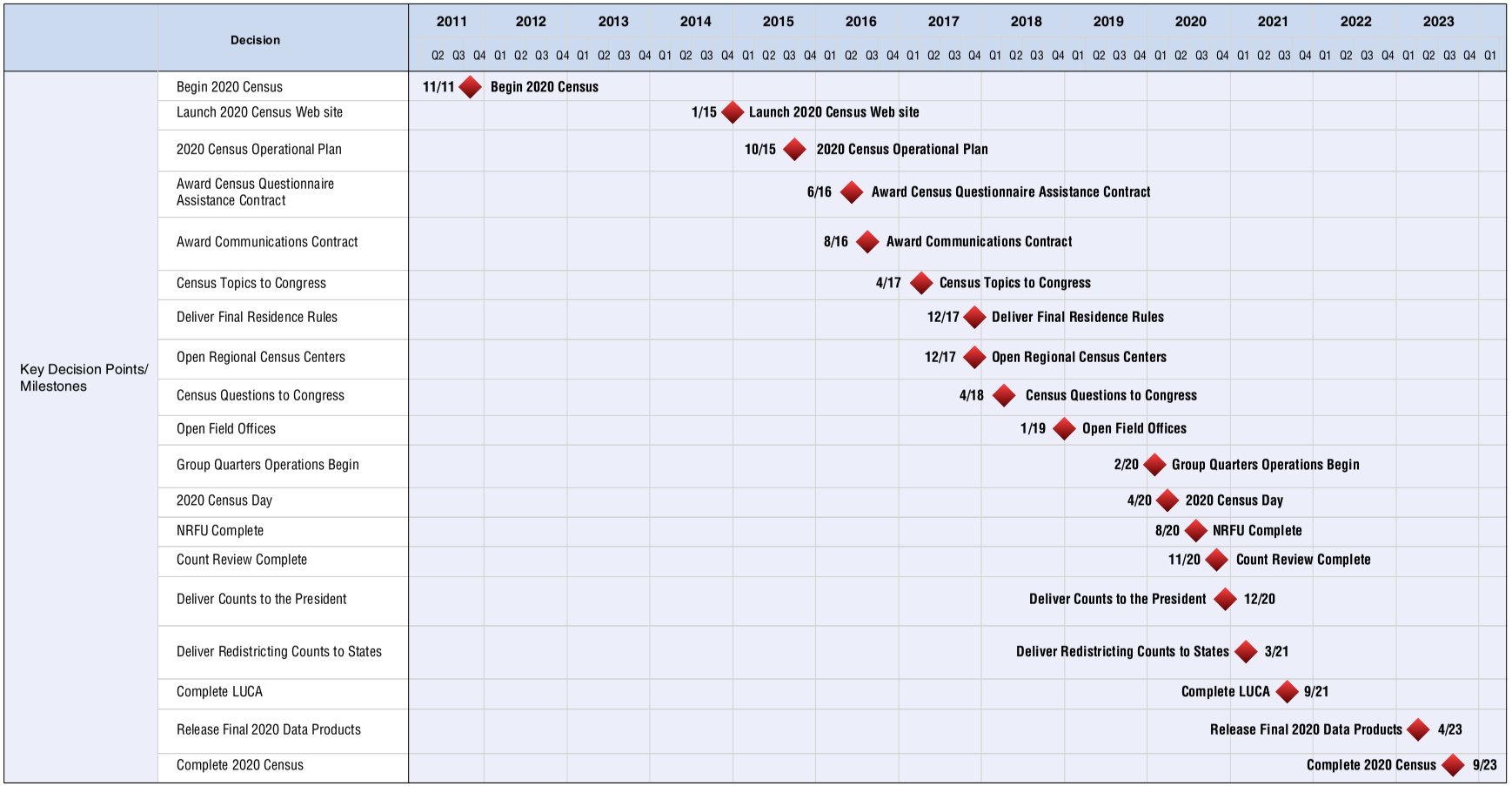

Figure 13: Key Decision Points and Milestones

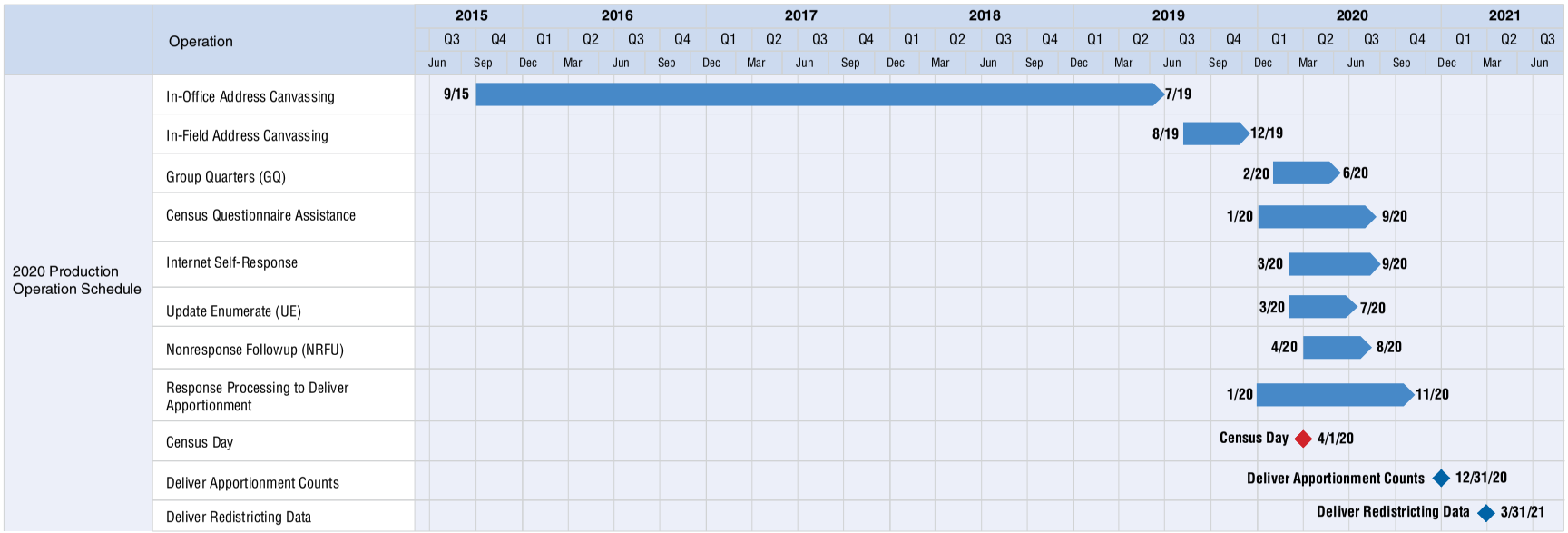

Figure 14: 2020 Census Operations—Production Timeline

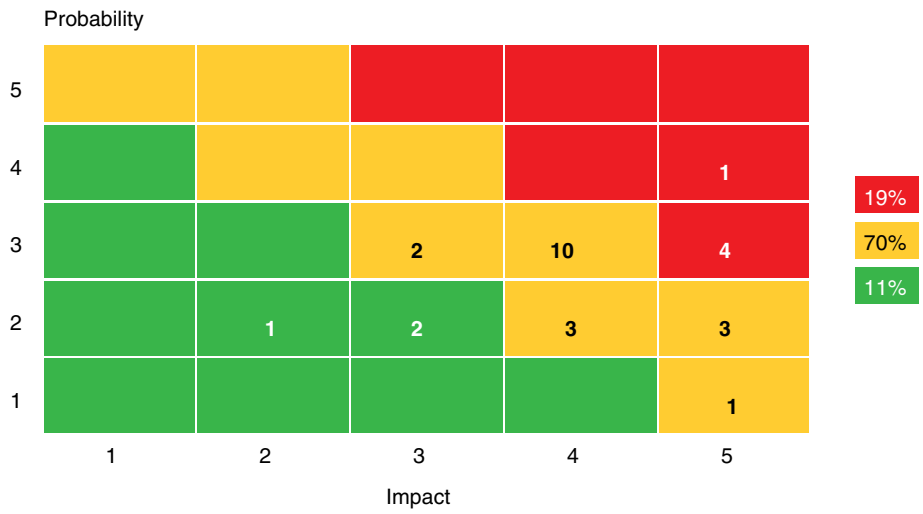

Figure 15: 2020 Census Program-Level Risk Matrix

The 2020 Census program is actively identifying and managing program and project-level risks.

The 2020 Census program is actively identifying and managing program and project-level risks and appropriate mitigation strategies to reduce their probability of occurring, or impact should they occur, and therefore increase the likelihood of a successful 2020 Census.

Twenty-seven program-level risks have been identified and are being monitored. Figure 15 shows the current risk matrix for all risks in the 2020 Census Program Risk Register, as of August 31, 2015. Six selected risks are presented below. These represent the major concerns that could affect the design or the successful implementation of the 2020 Census. The full risk register is available upon request.

Funding Requests Not Realized

To execute a 2020 Census that reduces cost while maintaining quality, the Census Bureau requires appropriate funding during the entire life cycle of the program.

IF the funding appropriated for each FY during the 2020 Census life cycle is less than requested or not provided at the start of each fiscal year, **THEN** the Census Bureau will have to reprioritize the projects, which may affect the ability to reengineer the systems and operations supporting the 2020 Census.

Probability 4 (Likely)	Impact 5 (Major impact) **HIGH**

Mitigation Strategies include the following:

- Formulate and submit robust cost estimates (including contingencies for known and unknown risks) for planned FY16 2020 Census activities.
- Develop strong budget justifications that demonstrate the negative impact of insufficient funds in FY16 for 2020 Census activities.
- Prioritize research, testing, and implementation activities to focus on those areas that can significantly impact cost and quality, and develop contingency plans to respond quickly to budget cuts.

Administrative Records and Third-Party Data—External Factors

The Census Bureau is planning to use administrative records and third-party data to reduce the need to follow up with nonrespondents through the identification of vacant and deleted housing units (those that do not meet the Census Bureau's definition of a housing unit) and the enumeration of nonresponding housing units.

IF external factors or policies prevent the Census Bureau from utilizing administrative records and third-party data as planned, **THEN** the Census Bureau may not be able to fully meet the strategic goal of containing the overall cost of the 2020 Census.

Probability 3 (Moderately likely)	Impact 5 (Major impact) **HIGH**

Mitigation Strategies include the following:

- Identify external stakeholders that have an interest in Census Bureau policies regarding administrative record and third-party data usage.
- Develop a stakeholder communications plan for identified external stakeholders.
- Regularly communicate to and seek feedback from identified external stakeholders on design decisions and research and testing results related to the use of administrative records and third-party data for the 2020 Census.
- Assess impacts of any changes to the design based on feedback from external stakeholders and update plans accordingly.
- Monitor external factors and policies that may impact the Census Bureau's planned use of administrative records and third-party data for the 2020 Census.

Public Perception of Ability to Safeguard Response Data

The accuracy and usefulness of the data collected for the 2020 Census are dependent upon the ability to obtain information from the public, which is influenced partly by the public's perception of how well their privacy and confidentiality concerns are being addressed.

IF a substantial segment of the public is not convinced that the Census Bureau can safeguard their response data against data breaches and unauthorized use, **THEN** response rates may be lower than projected, leading to an increase in cases for follow-up and cost increases.

Probability 3 (Moderately likely)	Impact 5 (Major impact) **HIGH**

Mitigation Strategies include the following:

- Develop a communications strategy to build and maintain the public's confidence in the Census Bureau's ability to keep their data safe.
- Research other Census Bureau divisions, other government agencies, and the private sector to understand how they effectively mitigate the issue of public trust and IT security.
- Continually monitor the public's confidence in data security in order to stay abreast of their probable acceptance of the Census Bureau's methods for enumeration.
- Prepare for rapid response to mitigate public concerns regarding any incidents that occur that could affect public perception of the Census Bureau's ability to safeguard response data (e.g., breach of data from another government agency).

Cyber Security Incidents

Security breaches could happen to the Census Bureau's Internet data collection instrument, mobile devices used for fieldwork, and data processing and storage systems. IT security controls will be put in place to block attempts from outside infiltration, as well as to prevent any negative impacts to services or data, such as network disruption (denial of services), technical malfunctions, and stolen or corrupted data.

IF a cyber security incident (i.e., breach) occurs to the systems or devices being utilized for the 2020 Census, **THEN** additional technological efforts will be required to repair or replace the systems and devices affected in order to maintain secure services and data.

Probability 3 (Moderately likely)	Impact 5 (Major impact) **HIGH**

Mitigation Strategies include the following:

- Monitor system development efforts to ensure the proper security guidelines are followed during the system development phase.
- Research other Census Bureau programs, other government agencies, and the private sector to understand how they effectively mitigate cyber security incidents.
- Audit systems and check logs to help in detecting and tracing an outside infiltration.
- Contract with third-party testers to perform threat and vulnerability analysis.
- Prepare for rapid response to address any detected cyber security incidents.

Technological Innovations Surfacing After Design Is Finalized[1]

Technological innovations inevitably surface, but the 2020 Census program must move forward toward building the operational design, which will be finalized and put into production for the 2018 Census End-to-End Test.

IF technological innovations surface after the design for the 2020 Census has been finalized, **THEN** development and testing life-cycle phases must be compressed if the innovations are adopted, resulting in less time to mature the innovations in census methodologies and systems.

Probability 3 (Moderately likely)	Impact 4 (Substantial impact) **MEDIUM**

Mitigation Strategies include the following:

- Build versatile operations and systems design.
- Keep team members and management aware of evolving technological innovations.
- Devote dedicated resources to track and communicate innovations.
- Dedicate funds to incorporate innovations into the design.

Late Operational Design Changes[2]

After key planning and development milestones are completed, stakeholders may disagree with the planned innovations behind the 2020 Census and decide to modify the design, resulting in late operational design changes.

IF operational design changes are required following the completion of key planning and development milestones, **THEN** the 2020 Census program may have to implement costly design changes, increasing the risk for a timely and successful 2020 Census.

Probability 3 (Moderately likely)	Impact 4 (Substantial impact) **MEDIUM**

Mitigation Strategies include the following:

- Identify external stakeholders that have an interest in the 2020 Census operational design.
- Develop a stakeholder communications plan for identified external stakeholders.
- Regularly communicate to and seek feedback from identified external stakeholders on design decisions and research and testing results.
- Assess impacts of any changes to the design based on feedback from external stakeholders and update plans accordingly.
- Monitor external factors and policies that may impact the Census Bureau's planned innovations for the 2020 Census operational design.
- Establish a change control management process to assess impacts of change requests to facilitate decision-making.
- Prepare for rapid response to implement change based on the results of the change control process.

SUMMARY

The 2020 Census Operational Plan documents the current design for conducting the 2020 Census. As the initial version of an emerging concept of operations, it reflects and supports evidence-based decision-making by describing design concepts and their rationale, identifying decisions still to be made, and describing significant issues and risks related to the implementation of the Operational Plan.

The 2020 Census is a design for the 21st century. No longer dependent on paper-based processes, the design takes advantage of technology and the vast amount of already available data to conduct an efficient census that produces high-quality results. These innovations are focused in four key areas:

- **Reengineering Address Canvassing:** New, in-office methods allow the Census Bureau to use imagery and other data sources to validate the address list, significantly reducing the amount of fieldwork required to produce a quality address list.
- **Optimizing Self-Response:** Multiple methods and tools aimed at generating the largest possible self-response reduce the need to conduct expensive in-person follow-up activities. These methods and tools include targeted advertising, extensive use of partnerships, effective contact strategies, encouraging people to respond via the Internet, and making it easy for people to respond anywhere and anytime.

[1] The closer it is to the start of the 2020 Census, the higher the impact of this risk. Thus, while currently yellow, this risk will become red as it becomes later in the decade.

[2] Ibid.

- **Utilizing Administrative Records and Third-Party Data:** Information already provided to the government or third parties can be leveraged to increase the efficiency and effectiveness of the data collection operations.
- **Reengineering Field Operations:** Technology and automated operational control and administrative systems reduce the staffing, infrastructure, and brick-and-mortar footprint required for 2020 Census field operations.

Together, these innovations are expected to result in a Census that costs $5.2 billion less than it would have cost if the 2010 Census design were repeated in 2020.

The Census Bureau has been and continues to conduct research and perform tests to evaluate alternative designs and to validate the assumptions regarding the feasibility of these designs and their impacts on cost and quality. The design decisions made to date are based on research, analysis, and tests performed thus far. These decisions will be refined through further testing in 2016 and 2017.

The Census Bureau is well on its way to meeting its challenge of conducting a 2020 Census at a lower cost per household (adjusted for inflation) than the 2010 Census, while maintaining high-quality results.

APPROVAL SIGNATURE

Lisa M. Blumerman (signed) *October 1, 2015*

Lisa M. Blumerman
Associate Director for
Decennial Census Programs

Date

DOCUMENT LOGS

Sensitivity Assessment

This table specifies whether the document contains any administratively restricted information.

Verification of Document Content
This document does not contain any: ▪ Title 5, Title 13, or Title 26 protected information. ▪ Procurement information. ▪ Budgetary information. ▪ Personally identifiable information.

Review and Approvals

This 2020 Census Operational Plan Executive Summary document has been reviewed and approved for use. This table documents the necessary approvals leading up to the point of baselining.

Document Review and Approval Tier: The 2020 Census Operational Plan Executive Summary		
Name	Area Represented	Date
Ann G. Wittenauer	2020 Census Operational Plan Team	9/8/2015
2020 Census Operational Plan Team Leadership Group:		
Lisa M. Blumerman	Associate Director for Decennial Census Programs	9/8/2015
Shirin A. Ahmed	Assistant Associate Director for Decennial Census Programs	9/8/2015
Deirdre D. Bishop	Chief, Decennial Census Management Division	9/8/2015
Patrick J. Cantwell	Chief, Decennial Statistical Studies Division	9/8/2015
Timothy F. Trainor	Chief, Geography Division	9/8/2015
Phani-Kumar A. Kalluri	Chief, Decennial IT Division	9/8/2015
	Decennial Leadership Group	9/8/2015
	2020 Census Executive Steering Committee	9/8/2015

Version History

The document version history recorded in this section provides the revision number, the version number, the date issued, and a brief description of the changes since the previous release. Baseline releases are also noted.

Rev #	Version	Date	Description
Final	V 1.0	November 6, 2015	Original baseline.