

Despite the obvious benefits, many infrastructure projects are not today receiving adequate funds or are simply being ignored. For instance, a 1995 Department of Transportation study found that nearly one-third of the roads in this country are in poor or mediocre condition.

The Department of Defense estimates that it will be at least 12 years before adequate housing can be built for every soldier in the U.S. armed forces.

And in 1996, the Federal Aviation Administration said it would need at least \$33 billion over the next 5 years to meet its capital improvement needs. Yet last year the Federal Government spent only \$1.46 billion for airport development projects.

Madam Speaker, we have a moral responsibility to provide a solid and fiscally secure future for the generations that will follow us.

THE 2000 CENSUS

The SPEAKER pro tempore. Under the Speaker's announced policy of January 21, 1997, the gentleman from Florida (Mr. MILLER) is recognized during morning hour debates for 5 minutes.

Mr. MILLER of Florida. Madam Speaker, today I rise to discuss the current status of the 2000 census.

Most Americans do not realize the size and scope of the decennial census. It is the largest peacetime mobilization of the Federal Government in history. The Census Bureau will hire and train about 500,000 Americans to carry out and conduct the 2000 census.

Under our system of government, we do not consider engaging in such a huge operation that spends billions of dollars without involving the United States Congress. Unfortunately, that is exactly what this administration has decided to do, ignore the Congress.

Most Americans do not know what the dispute over the 2000 census is all about. So let me take a moment to try and explain.

For 200 years we have conducted the census by trying to count all Americans. The fancy term for this is full enumeration. Of course, it is a difficult undertaking to count all Americans, but that is what we have been doing for 200 years. The administration does not want to do that anymore.

They no longer want to attempt to count all Americans. Instead, with the help of experts, they have designed the largest statistical experiment in U.S. history. I do not want to bore everyone with the details, but let me try and give my colleagues a basic outline of this grand experiment.

There are 60,000, 60,000 separate census tracts in the United States, each contains approximately 4,000 people. Under this new, untested theory, the administration wants to count 90 percent of the people in each of the 60,000 census tracts. And then they will use 60,000 simultaneous polls to estimate the other 10 percent in each of the census tracts. That is just step one.

And step two only gets worse. The scope of this experiment is simply breathtaking. When you see a poll in the New York Times or CNN or USA Today, the pollsters normally talk to about 1,000 or so Americans. What this administration is talking about is doing 60,000 separate polls at the same time. It has never been tried before and the potential for mistakes and errors is quite large.

The Commerce Department's own Inspector General said in December, "We can conclude that although the 2000 census design is risky, the Bureau's fundamental problem is that it simply may not have enough time to plan and implement a design that achieves its dual goals of containing costs and increasing accuracy."

The Inspector General goes on to state, "Because this process is long, complex and operating under a tight schedule, there will be many opportunities for operational and statistical errors."

Madam Speaker, I include for the RECORD the report, as follows:

U.S. DEPARTMENT OF COMMERCE,
THE INSPECTOR GENERAL,
Washington, DC, December 30, 1997.

Hon. JOHN MCCAIN,
*Chairman, Committee on Commerce, Science,
and Transportation, U.S. Senate, Wash-
ington, DC.*

DEAR MR. CHAIRMAN: During the Committee's May 14, 1997, oversight hearing on the Department of Commerce, you requested our views on what needs to be accomplished by what dates in order to ensure a successful 2000 decennial census. You planned to use this information as a benchmark to track the progress of the census.

In response to your request, the enclosed paper discusses decennial census milestones and associated risks. This paper does not take into account the recent decision to include plans for conducting the decennial without the use of sampling. The Census Bureau is currently in the early stages of adjusting its scheduling and cost models to reflect that decision, and we will closely monitor and report on the bureau's progress in making these adjustments.

We conclude that although the 2000 census design is risky, the bureau's fundamental problem is that it simply may not have enough time to plan and implement a design that achieves its dual goals of containing cost and increasing accuracy. The problem is evidenced by the decennial Master Activity Schedule—the primary decennial program management tool. The schedule's tightness is due to changing design details, lagging progress in some critical activities, less than full implementation of strategies and procedures, and a continuing lack of agreement between the Administration and the Congress on the appropriate use of sampling.

A recurring theme of this paper is our conclusion that, as a result of its lack of time to complete various aspects of the design, the bureau will need to ask for additional funding, reprogram funds, or accept potential quality shortfalls. To minimize the need for such actions, the bureau should immediately (1) prioritize and assess the readiness of its major design components, (2) simplify the design, (3) realistically reassess costs, (4) communicate results both internally and externally, and (5) redirect the 1998 dress rehearsal accordingly.

We discussed our findings and recommendations with senior bureau managers

who generally concurred. They stated that some planned corrective actions had been delayed by the Fiscal Year 1998 continuing resolution and the recent legislation requiring both a sampling and a non-sampling 1998 Dress Rehearsal. However, the bureau has initiated a comprehensive design review to be completed in January 1998 that is intended to address our concerns. We look forward to assessing the adequacy of those corrective actions.

If you have any questions about this paper, your staff may contact either me at (202) 482-4661 or Jessica Rickenbach, our Congressional Liaison Officer, at (202) 482-3052.

Sincerely,

FRANCIS D. DEGEORGE,
Inspector General.

Enclosure.

U.S. DEPARTMENT OF COMMERCE, OFFICE OF INSPECTOR GENERAL, DECEMBER 1997

2000 DECENNIAL CENSUS: KEY MILESTONES AND ASSOCIATED RISKS

INTRODUCTION

History of Decennial Census Design

The Census Bureau, in consultation with expert advisory panels, "reengineered" census-taking methods to meet the challenges of accurately and cost-effectively counting an increasingly hard-to-count population in 2000. An accurate census is crucial because the Constitution requires that it be used to apportion seats in the Congress. Additionally, census data are used for a host of other important activities, including federal and state redistricting, the implementation and enforcement of the Voting Rights Act, and the distribution of billions of dollars of federal and state funds each year. Because of its centrality to decisions that last 10 years, the bureau must address concerns about the content and method of conducting the census raised by its stakeholders—federal, state, and local governments and a myriad of advocacy groups whose constituents are affected by census results.

The 1990 census was long, expensive, and labor-intensive, a situation exacerbated by a lower-than-expected public response. Because of the low response, the bureau required additional appropriations from the Congress during the census to complete the count. Despite the census' higher cost, post-analysis concluded that the count was less accurate than that of the 1980 census. Particularly alarming to the Congress and other stakeholders was the increase over past censuses in the disproportionate undercount of minorities.

The Congress convened a panel of experts from the National Academy of Sciences to study these problems and recommend actions to address them. In 1994, the panel determined that traditional counting methods alone are no longer sufficient, and recommended that to contain cost and increase accuracy, the bureau use statistical sampling and estimation as an integral part of the 2000 census design. In addition, the panel recommended that the bureau rethink and reengineer the entire census process and operations. The bureau agreed with the panel's recommendations and decided to incorporate sampling and estimation, multiple response modes, updated computing tools, and an improved national address file into the design.

The dress rehearsal, scheduled to begin in the spring of 1998, offers the Census Bureau its first opportunity to test the interrelationships of the various decennial design components. The bureau plans to closely approximate all major decennial components and their supporting automated systems in the dress rehearsal. Only a complete dress rehearsal will allow the bureau and outside

observers to document the efficacy of the 2000 census design.

OIG Monitoring of Decennial Census Design

The OIG has long been concerned about the need for the bureau to develop a sound decennial design. In an inspection report issued two years ago, we concluded that the bureau had not sufficiently refined and optimized a design that was supported by adequate research and analysis and that it lacked a credible cost estimate.¹ Among our recommendations was that the bureau derive a coherent, substantiated, cost-effective design for meeting decennial goals. Since that time, we have continued to monitor the bureau's progress in finalizing its design, offering our views on what actions needed to be taken.

This paper was developed in response to a request made by Senator John McCain, Chairman of the Committee on Commerce, Science, and Transportation, at a May 14, 1997, oversight hearing on the Department of Commerce. The Chairman wanted the OIG's perspective on milestones that the Census Bureau needs to meet in order to ensure a successful census, intending to use this information as a benchmark to track the progress of the census.

To define the requested decennial census milestones and associated risks, we present several analyses of the design using some of the bureau's activities for the dress rehearsal and the census itself. First, we identify the key activities and design components in each of the four phases of the census. Then we briefly describe how the Master Activity Schedule defines relationships between activities and calculates start and finish dates. Based on the body of work done by our office, we next provide a design risk analysis, component by component. Since few dress rehearsal activities, and even fewer decennial activities have yet occurred, we identify potential future delays in milestone activities.

BACKGROUND

Decennial Census Phases

Pre-Enumeration. Before census enumeration can start, the Census Bureau must produce, distribute, and publicize the 2000 Census questionnaire. Perhaps the most complex step in this process is creating the Master Address File (MAF)—the list of addresses of all households to be counted in the census. The MAF is being developed from information obtained from the Postal Service, the 1990 census, local governments, and field checks. Rural address capture requires temporary staff to canvass areas that have rural delivery routes or post office boxes. Before the MAF is finalized, it will be sent to local governments for review and correction.

Enumeration. Once all address information is complete, the bureau will create the address file that will be used to label questionnaires. Questionnaires will then be distributed to households in one of two ways, depending on whether they are in urban or in rural areas. Questionnaires with urban, city-style addresses will be delivered by Postal Service mail carriers. In rural areas, temporary census staff will drop off questionnaires at each household and verify the location of residences in the process.

There will always be some individuals who do not return a questionnaire or do not receive one in the first place. To allow residents to obtain census forms at locations other than their residences, the bureau will distribute additional census forms, known as "Be Counted" forms, at high-profile public places. Distribution sites in each community will be determined through consultation

with local officials and community organizations. Additionally, temporary staff will visit shelters and soup kitchens to enumerate transient populations.

The Census Bureau anticipates that about two-thirds of all households will mail back a census form. To obtain information on the remaining one-third of households, temporary staff will visit them and attempt to conduct in-person census enumeration. Interviewers will obtain responses from at least 90 percent of all households in each census tract before terminating their activities. The bureau will use statistical estimation to determine the characteristics of the remaining nonrespondents.

Processing. As census questionnaires are mailed back, collected through follow-up interviews, or received over the telephone, they are sent to one of several processing centers. The data is then "captured," or translated from paper to electronic format for computer processing. Questionnaires from within a defined geographic area are compared to eliminate any duplicate responses from a single household. The results are compiled into the unedited census file, which is used in the post-enumeration phase to produce final counts.

Post-Enumeration. After enumeration and processing, the Census Bureau will conduct an independent survey, called the Integrated Coverage Measurement (ICM) survey, during which 750,000 households will be re-interviewed by temporary staff. These second interviews serve as a quality check on all preceding census activities. Responses to the ICM survey will then be matched to each household's original census form, if one was obtained, and the data transmitted to census headquarters. The results of the quality check will be used in calculating the final statistical adjustment of the census count.

At the end of December 2000, the Census Bureau will deliver to the Congress the population counts to be used in reapportionment. By April 2001, the bureau will release the redistricting data to the states. Later, the census database will be formatted for use by other data users—federal agencies, state and local governments, and the general public.

Project Management

To help manage the planning for the 2000 Census, the Census Bureau spent much of 1997 building its Master Activity Schedule (MAS) for the census. The schedule was developed using Primavera Project Planner (P3), a sophisticated project management software tool. P3 allows the bureau to identify relationships among activities in the schedule, such as whether one activity must be completed before another can start, or whether two must end at the same time. Using activity durations developed by the bureau, P3 calculates the earliest date an activity can begin based on its relationship to predecessor activities, as well as the latest date an activity can begin before it delays successor activities. The interval between those two dates is known as "float" time.

The bureau's planned beginning and ending dates for each activity generally fall within the float period. Activities with zero or negative float are considered critical, meaning that they either are delaying or will delay subsequent activities unless their durations are shortened. In part because P3 provides the bureau with the opportunity to vary activity durations or relationships as part of "what if" analyses, it is an important tool in determining the cost, schedule, and performance trade-offs inherent in implementing the census.

The milestones identified throughout this analysis come from the MAS as of late October 1997. For major milestones, we selected important end points from a possible list of

several thousand activities in the schedule. Unless otherwise specified, we used the bureau's planned start and finish dates. Appendixes I and II to this paper lists key dress rehearsal and decennial milestones from the schedule. Appendix III depicts the interrelationships among those key activities as portrayed in the schedule. Appendix IV provides a summary of our results.

RISK ANALYSIS

Phase One: Pre-enumeration

Master Address File (MAF)

Background

In 1990, the bureau purchased commercial address lists, available only for metropolitan areas, to begin its address-building process. Temporary field staff went door-to-door nationwide in 1989 to develop the 1990 Census Address Control File. Because the address list was the source of millions of errors, it was a good candidate for reengineering. Further, the list was of particular interest to local officials, who believed that they could help to improve it. In October 1994, partially in response to local government requests, the Congress passed Public Law 103-430, which requires the bureau to allow local governments to review its address list before the 2000 decennial. Consequently, bureau officials adopted an address-building program that centered on partnerships with the U.S. Postal Service and up to 39,000 local governments to build and review the MAF before the census.

This program was designed to produce an improved list at a lower cost by assigning a unique geographic code to city-style addresses based on the bureau's mapping system. This list is a combination of addresses from the Postal Service, the 1990 census, and local governments. Rural address capture would still require temporary staff to canvass areas that had rural delivery routes or post office boxes. The address list that emerged from both sets of activities would be sent to local governments for review and corrections. In addition to meeting the legal requirement for local government review of the address list before the 2000 census, this review would enable the bureau to obtain the most current information available while receiving early acceptance from local officials to preclude challenges after the census.

Activities at risk

Developing base MAF. Although the MAF program seemed sound in concept, when bureau staff began implementing it, a number of deficiencies became apparent. The quality, currency, and usability of the Postal Service and local government address lists varied greatly. Additionally, few local governments participated in the address-building part of the program. The bureau addressed these deficiencies by planning for targeted canvassing operations, such as a search for hidden units and checks of multi-unit structures. However, as time progressed, bureau analysts became increasingly alarmed about their inability to clearly identify the attributes of areas where errors would be most likely to occur. If it cannot identify such attributes, the bureau will be unable to accurately select the areas in need of the planned targeting, resulting in error-prone areas not being among those checked.

Acknowledging the MAF program concerns, during this past summer, the bureau's Deputy Director established a team to assess the 2000 decennial address-list building strategy. Finding this strategy to be complex, risky, and incapable of providing an adequate final product, the assessment team concluded that a 1990-style, 100-percent field check was essential and that the local review process needed to be redesigned. Consequently, the bureau has requested an additional \$108.7 million to complete the MAF

¹ See footnotes at end of article.

building process. Bureau officials say that, if the funding request is denied, they will reprogram the money from other areas to conduct the field operation.

Conducting local review of MAF. Despite its conclusions and the associated need for additional funds, the assessment team developed performance measures based on the number of local governments participating in MAF building. These participation measures seem to be considered as important as quality measures. This apparent emphasis is troubling since evidence suggests that, in some cases, local lists may contain significant numbers of inappropriate or erroneous addresses.

Further, the redesigned process calls for a more interactive process with greater technical assistance from the bureau; as a result, depending on the intensity of the bureau's efforts and the number of local governments participating, the bureau could be facing an enormous unanticipated resource drain. For example, local officials may require detailed geographic assistance to conduct reviews consistent with MAF requirements or technical assistance to match and unduplicate multiple lists using computer software. However, the current program infrastructure calls for staff whose primary skills are in public relations, not technical support. If the emphasis on local participation is not subordinated to quality concerns and the local reviews become unexpectedly numerous and intense, either cost and complexity will further increase or MAF accuracy will decrease.

Conclusion

To deliver the decennial MAF on schedule, the bureau must receive additional funding, reprogram funds, or accept potential quality shortfalls.

Phase Two: Enumeration

Nonresponse Follow-up

Background

The largest single operation in the decennial census is nonresponse follow-up—repeat mailings, visits, and telephone calls to nonresponding households. In 1990, 35.7 million housing units required follow-up. In 2000, nonresponding housing units will reach nearly 40 million, if the bureau's projections of voluntary mail response are correct.

After the traditional mail-out/mail-back phase of the census, the 2000 plan calls for applying new methods, such as making questionnaires (known as Be Counted forms) widely available in up to 32 languages, and other coverage improvement programs to further boost participation. Then, the bureau will end the initial enumeration phase, tally the responses in each census tract, and select a sample of the remainder of sufficient size to increase response rates in each tract to at least 90 percent. Using this strategy, according to bureau projections, will reduce the nonresponse workload to about 22 million housing units.

In addition to using statistical methods, another strategy for the 2000 census is building partnerships at every stage of the process with state, local, and tribal governments; community-based and other organizations; and the private sector. The bureau believes that such partnerships are valuable because local officials and community leaders understand and know their communities, and can therefore help to tailor plans for conducting the census. Local and tribal governments will have the opportunity to review, confirm, and augment the list of neighborhoods identified for targeting methods, including distributing Be Counted forms in multiple languages. Additionally, community-based organizations and local governments will help the bureau to identify strategic and high-visibility locations to serve as Be Counted form distribution sites.

According to bureau officials, despite the significant reduction in workload under the current sampling strategy, the single biggest threat to a successful census is completing nonresponse follow-up within six weeks so that the ICM survey can be completed in time to meet the December 31, 2000, legislative deadline.

Activities at risk

Making Be Counted forms widely available in multiple languages. The 2000 decennial census program to improve coverage of the hard-to-enumerate by targeting questionnaires in multiple languages may not be necessary and may conflict with the bureau's dual goals of increasing accuracy and containing costs.² The program may be unnecessary because the bureau has made sampling an integral part of its 2000 design to compensate for ineffective coverage improvement programs used in past censuses. Further, the 1995 Census Test results indicated that targeting areas with blank census questionnaires in multiple languages did not increase response rates for the intended populations.

Although specific program details are not yet in place, if the program is large and results in an unanticipated increase in the workload, it could hamper the bureau's ability to complete nonresponse follow-up on schedule. According to decennial census managers, the limited period available to complete nonresponse follow-up in time to conduct the ICM survey is the single biggest risk in the census. A delay in the start of the survey could compromise the bureau's ability to deliver the appointment counts to the President by the legal deadline.

Acknowledging these limitations, bureau managers have identified the goal of promoting partnerships as a justification for expanding the number of languages included, suggesting that measures of cost effectiveness are less important. Given bureau managers' intensive efforts to communicate and implement partnerships, community leaders are likely to expect to play a significant role in determining the program's ultimate scope and nature. In light of past experience, local officials will probably advocate an expansive program. Unless cost-effectiveness is a fundamental criterion, program cost growth is likely.

Conducting non-response follow-up. A long standing bureau concern has been the difficulty and expense of recruiting, hiring, training, and retaining a qualified, temporary workforce. Even under a sampling scenario, this task involves recruiting millions of people to ensure the hiring of about 500,000 staff to maintain a peak workforce. The magnitude of the problem is exacerbated by a number of potential external developments over which the bureau would have little or no control; e.g., a decline in voluntary mail response rates below the projected 67 percent, a booming economy shrinking the available workforce, or a greater-than-expected difficulty in enumerating nonrespondents.

To help address the workforce problem, the bureau contracted with WESTAT Inc. to devise a formula to calculate the optimal pay rate for each area of the country to minimize staff turnover without unnecessarily increasing wages. WESTAT concluded that the bureau could achieve an 80 percent turnover rate (a significant improvement over 1990) by setting wage rates at 70 percent of locally prevailing rates and by increasing the number of enumerators working at any one time by 50 percent over 1990. Given the nearly unprecedented pace and scale of hiring involved, however, WESTAT's calculations are subject to uncertainty. (For the discussion of some of the estimation issues related to non-response follow-up, see the ICM/Estimation section.)

Phase Three: Processing

Data Processing

Background

Unlike with previous labor-intensive decennial censuses, the bureau's plan for the 2000 decennial depends heavily on technology and automation. In previous censuses, the bureau used internally designed and developed technology for data processing. A prime example is its approach to data capture, the process of translating data from paper questionnaires to an electronic format for computer processing. Because the system that the bureau used in 1990 is expensive, obsolete, and unsupported, it is acquiring a modern system, called Data Capture System 2000 (DCS 2000), which uses electronic imaging. The bureau is seeking to maximize the use of commercial-off-the-shelf components for DCS 2000, but the unique and stringent decennial census requirements necessitate customizing parts of the system. Further, DCS 2000 is a key system for the 2000 census because every response to a census questionnaire or personal visit must be processed through the system in order to become a part of the census.

Once all census questionnaires are processed, questionnaires potentially from the same address or person must be matched and "unduplicated." In the 1990 census, census questionnaires were tightly controlled, with a unique identification number printed on each, and only one was sent to each household. Conversely, a key strategy for the 2000 Census is making questionnaires widely available. The bureau plans to mail two questionnaires to every household in the nation; mail a follow-up questionnaire to large households; place unaddressed questionnaires, called "Be Counted" forms, in public places; and allow responses by telephone and possibly over the Internet. The potential for duplication is therefore much greater than in previous censuses.

Activities at risk

Capturing data from census questionnaires. The bureau's plan for testing and implementing DCS 2000 appears feasible, but only if two conditions are met. First, the bureau must fund the contractor at agreed-upon levels. Second, the processing plan cannot be altered significantly to accommodate changes from other decennial census activities. If the bureau fails to meet the first condition, the contractor will be unable to provide full functionality. The DCS 2000 project faces the continuing threat of funding shortfalls. Without needed funds, the contractor will be unlikely to complete the full range of planned testing, which increases the risk of delays during operations.

If other parts of the decennial census require changes (e.g., in the questionnaire design or to the duration of the Be Counted program), either increased funding will be needed to pay for additional equipment and tasking, or the system will be unable to perform at the required level. For example, the bureau will be unable to process Be Counted forms in languages other than English until they are translated. If large quantities of Be Counted forms are submitted late in the census, the bureau will have to wait for translators to complete their work. To compensate for the delay, the bureau will have to process data in extra shifts, reduce quality assurance procedures, or extend the processing period. If the bureau is unable to process all questionnaires by its "drop dead date," the matching of the census data to the ICM survey will be delayed, jeopardizing timely census completion.

Conducting matching and unduplication of census questionnaires and concluding all ICM matching. Because limited time is available

for processing the millions of questionnaires involved in the 2000 census, the bureau must rely heavily on automated procedures to match potential duplicate questionnaires. Preparing the algorithms necessary to automate the matching process requires a set of detailed rules indicating what constitutes a match and a duplicate. Those rules cannot be completed until the programs under which questionnaires will be made available are fully defined. The uncertainties associated with the bureau's plan to use the telephone, the Be Counted campaign, and a second questionnaire mailing, as well as each one's interaction with the sample design, have delayed the preparation of the automated matching rules.

In fact, it appears the bureau's concern about its ability to automate this process caused it to limit to one block the size of the area it will search for potential duplicates for both the census and the ICM survey. Limiting the search area decreases computational complexities and timing constraints, but increases the likelihood of duplication because housing units placed erroneously in adjacent blocks will go undetected. This limitation is particularly problematic for matching the ICM survey and census results because it increases the likelihood that a household could be incorrectly designated as undercounted.

For example, if a household at 1075 Main Street is mistakenly recorded as 1076 Main Street in the ICM survey, the household will be incorrectly sorted across the street from its actual location and placed in an adjacent block. A matching process that searched nine blocks, as was previously considered, would probably discover that this household had been enumerated in the census. A single-block search would not find this household's census enumeration and would erroneously include the household in the undercounted population. An abbreviated search area would virtually guarantee more errors in the ICM survey.

Errors in both the census and the ICM matching will be further exacerbated without adequate software development and testing. To date, however, the bureau has not completed defining the matching rules and other procedural requirements needed to develop the specifications to guide software developers. Without adequate software, the matching and unduplication process will ultimately depend more heavily on labor-intensive clerical procedures, which are expensive, time-consuming, and error-prone. A high rate of errors in this arena could result in overcounts for certain groups, which could exacerbate the differential undercount, given that the method used in the ICM survey operates through "netting out" over- and undercounts. (See the Post-Enumeration Phase for more discussion about issues associated with completing the survey.)

Conclusion

Completing processing of census questionnaires in time to deliver the census unedited file to the ICM survey will require stability in the rest of the design, which appears unlikely. Moreover, to deliver accurate apportionment counts on time, the bureau must have well-defined, automated procedures to match and weed out duplicate questionnaires. Without improvements in this area, quality may suffer.

Phase Four: Post-Enumeration Integrated Coverage Measurement Background

The census has always had an undercount. Since 1940, the Census Bureau has been able to measure the undercount; since 1990, methods have been sophisticated enough to consider correcting for it. In the 1990 decennial

census, the bureau intentionally produced two sets of numbers: the census counts and the counts "adjusted" through a quality check called the Post Enumeration Survey (PES). The PES was a separate operation conducted upon the completion of regular census operations, in order to provide the option of adjusting the census counts for over- and undercounts. The results did not have to be completed as early as the first set of counts. Opposition to the adjustment ranged from technical to parochial, and the adjustment was not made. Bureau statisticians later conducted extensive analysis of the PES design, methodology, and results to help them develop the next-generation PES—the 2000 ICM survey.

The 1990 PES and the 2000 ICM survey differ in size, precision, and function. A major criticism of the PES was the use of indirect state estimates, which were based on samples from several states combined. In response to this criticism, the bureau increased the 2000 ICM sample size fivefold (to 750,000 households) to ensure that each state would have a large enough sample to allow for direct state estimates. This increase will provide every state with comparable levels of accuracy, as well as the assurance that corrections to a state's count are derived from residents of that state. Partially as a result of this change, the ICM survey should define the undercounted groups more precisely than the PES would. The survey should also feature improved categorization of subgroups that would share a probability of being counted or missed.

The most significant difference is that the ICM survey will be integrated into overall census operations, producing a single set of official Census Bureau counts. This "one-number census" is intended to be a seamless, accurate calculation of the population that will not distinguish between a housing unit determined through the ICM survey and one enumerated in any other manner. The bureau plans to provide data users with a single point estimate of a relevant population count and its combined level of error.

Activities at risk

Conducting ICM Field Interviews: ICM Size and Schedule. Because of its complexity, the ICM survey is highly vulnerable. In particular, the survey's magnitude, quality demands, and tight schedule all present serious challenges. Other than the census itself, the ICM is the largest survey the bureau will ever have undertaken—the bureau must survey 750,000 households in 25,000 census tracts nationwide. Because the ICM survey serves as a quality measure and adjustment for the entire census, it must also be extremely accurate. The bureau has stated that the survey must have a 98-percent response rate to produce a high-quality, accurate adjustment.

Perhaps the biggest obstacle facing the implementation of the survey is the time pressure it faces at both ends. At the front end, survey interviews cannot take place until the bureau receives a household's initial census response. Because the survey is one of the last census operations, it is already at risk of delay from lags in earlier projects, like nonresponse follow-up. If the survey begins late, ICM activities themselves could require ad hoc operational shortcuts, sure to compromise quality. At the back end, the bureau must implement a whole host of complex estimation and review steps.

Interview Mode. As one approach to ensure quality, the bureau plans for its thousands of interviewers to use laptop computers, rather than paper and pencil. Originally, the bureau selected Computer Assisted Personal Interviewing (CAPI) to save time by eliminating the need to process paper questionnaires and to improve quality through standardization

of interviews and built-in quality control measures. Unfortunately, this area is subject to cost growth, because the bureau's cost estimates for the ICM survey do not fully capture the costs necessary to successfully manage, implement, and process it. Areas of likely cost growth include better-trained interviewers, a technical support structure, a more complicated field structure to implement laptop use, additional telecommunications to transmit data to headquarters for processing, special contractual arrangements with vendors to ensure the readiness of CAPI software, and hardware delivery nationwide.

To alleviate time pressures, the bureau recently decided to include in the dress rehearsal some early ICM interviews over the telephone after a household has returned its census questionnaire but before nonresponse follow-up has been completed in the block. Not having been tested, this approach introduces new risks and complications. Using two ICM interview techniques poses methodological concerns, and early enumeration could violate the separation of the census and the ICM survey. The integrity of the ICM design hinges on the assumption that it is fully independent of nonresponse follow-up. If residents or enumerators realize that a block is in the ICM sample before nonresponse follow-up is complete, independence is comprised, error is introduced, and the ICM survey becomes a less effective correction for the undercount. Ultimately, because early telephone ICM interviews only recently became the subject of serious consideration, there has not been enough time to develop a solid understanding of their implications. An attempt will be made to validate this approach during the dress rehearsal.

Concluding All ICM Matching: Matching. The most sensitive aspects of ICM quality control arise after initial field interviews, when ICM responses are matched to census responses and when interviewers conduct follow-up, or reconciliation, interviews. The two sets of responses must be compared to identify who was missed or erroneously counted in census operations. Households that have not yet been counted in the ICM survey, or who have offered incomplete or inconsistent responses, must then be contacted by expert interviewers. These final steps will be critical to minimize error and to raise response rates to the necessary 98 percent.

Response Rate. Current ICM interview plans propose a response rate of 98 percent, since research has shown that the undercount correction could be imprecise at response rates as high as 95 percent. Raising response rates to 98 percent will require exhaustive efforts to contact all households. In fact, some senior decennial census field division managers do not find that goal realistic. If the ICM survey begins late, the probability of achieving such a high response rate is further reduced. Perhaps the only solution involves using statistical methods (imputation) or sampling of ICM nonrespondents (subsampling). The bureau is considering the implications of both of these options. Continued indecision in this area limits the bureau's opportunities to address the ICM survey's quality assurance measures. However, at present, the bureau does not fully understand how the treatment of ICM nonrespondents will interact with other design components, contribute to error, or otherwise influence the results.

Movers. Further, the bureau has yet to finalize decisions about handling ICM responses from households that move in and out of ICM blocks between census day and ICM enumeration. Since the 1990 census, there have been concerns about accurately enumerating movers in the ICM survey. The

bureau's decision to select a means for handling movers was expected during the summer of 1997. Instead, the bureau will test different methods for the treatment of movers during the dress rehearsal, and will select an approach after analyzing dress rehearsal results. Because of the delay of this decision, there will be limited time to evaluate the selected method, address any questions arising from the dress rehearsal, and prepare software specifications and quality assurance measures relating to movers. The treatment of movers is yet another example of the questions that remain about the reliability of matching and follow-up and the adequacy of quality control in these operations.

Combining All Estimation Streams to Produce Final Counts. Census 2000 includes numerous avenues for data collection and statistical adjustment; late in the census, all these elements must be brought together into one file. Nonresponse follow-up will estimate the characteristics of the final nonresponding portion of the population and merge the results into the census data file. Included in nonresponse follow-up are a number of unique treatments for a series of special populations. For example, the bureau must estimate how many housing units in the address file are vacant buildings and adjust census files to include counts for transient populations. Finally, the file will incorporate ICM estimates.

Estimation Design and Quality Control. Because this process is long, complex, and operating under a tight schedule, there will be many opportunities for operational and statistical errors. These conditions heighten the need for procedures to control for sampling and non-sampling error, while also managing the interplay of estimation and software components. Given the importance of ensuring that undiscovered errors do not creep into the final results, the bureau must ensure timely development, refinement, and testing of the software. These activities cannot be undertaken until the bureau solidifies the estimation design.

However, estimation associated with the ICM survey in particular faces lingering methodological questions. Decennial census managers intend to make all sampling and estimation design decisions by December 31, 1997. Since significant research questions have not yet been answered, the bureau is unlikely to have the information it will need to announce a fully adequate integrated sampling and estimation plan by then.

Conducting Estimation for Small Areas and Groups. Among the research yet to be completed is research to address two issues related to the accuracy of the ICM survey. First, ICM estimates have higher error rates for small geographic areas. The survey is intended to increase accuracy by significantly reducing the differential undercount. Although the ICM survey does introduce error, for larger geographic areas it improves the data quality greatly. However, in its current design, the survey introduced increasingly error-prone estimates for small localities and in particular for block-level data.

Second, the assumption that members of demographic subgroups share a probability of being missed in the census, called the homogeneity assumption, limits the accuracy of the estimates. The ICM survey estimates a person's chances of being undercounted based on only a few characteristics. In reality, a person may be missed for many diverse reasons. Therefore, the survey offers only an approximation of who is undercounted. The bureau examined several techniques for addressing this problem. Only one showed promise, and it has serious unresolved mathematical questions. Therefore, the bureau will be forced to address this important issue with a tool that may not be

fully evaluated and tested before implementation.

Applying Estimation to Blocks. The bureau is reconsidering its initial plan for applying all estimates to individual census blocks. The bureau intended to produce all population estimates in the form of households, making enumerated and estimated households indistinguishable. This approach was designed to address data user concerns about the 1990 PES method, which added an additional "group quarter" to each census block to hold all persons estimated as undercounted. This new approach raises fundamental questions about how results will be formatted for the data file and provided to all data users. Because of difficulties in applying the new technique, the bureau is considering reusing the 1990 method.

Implementing the One-Number Census. To deliver a one-number census that is accurate and credible requires not only mathematically proven sampling and estimation methodologies, but also highly reliable, robust, and confidentiality-assured software programs. Software of this caliber requires a controlled development approach and rigorous testing and retesting. Before the software development begins, decennial census statisticians should produce numerous sampling and estimation requirements specifications, or detailed sets of rules to implement the intended methodology, which can guide software developers. These specifications address selecting households for many applications ranging from receiving a long form to being included in the ICM survey. However, since many design decisions will not be made until December 1997, and the dress rehearsal begins in March 1998, the period available for specification preparation and subsequent software development is extremely limited.

In fact, even the long form sampling specifications, which are not based on a new technique, are almost a month late. Bureau officials plan to address delays in sampling and estimation specifications by having knowledgeable staff begin programming before the specifications are completed and formally delivered. They will then make software adjustments in an iterative manner as the dress rehearsal progresses. In a recent inspection of the decennial census software development area, we found that (1) software is not being developed in accordance with any well-defined process, (2) estimates of software development schedules and resources are not realistic for the dress rehearsal of the census, and (3) requirements for headquarters processing are immature, volatile, and likely to be late.³ These findings call into question the bureau's ability to develop and implement complete, accurate software for the census.

Bureau managers acknowledged the deficiencies and are taking steps to address them. For example, they have contracted with a recognized software expert to recommend improvements to the software development and testing process that will assist in achieving decennial census goals. However, there is not enough time to make significant changes before the dress rehearsal software development effort begins.

FOOTNOTES

¹ *Inadequate Design and Decision-Making Process Could Place 2000 Decennial at Risk* (OSE-7329-6-0001, November 1995).

² *2000 Decennial Census: Expanded Targeted Questionnaire Program May Be Unnecessary and Counterproductive* (ESD-9610-7-0001, September 1997).

³ *Headquarters Information Processing Systems for the 2000 Decennial Census Require Technical and Management Plans and Procedures* (OSE-10034-8-0001, November 1997).

Mr. MILLER of Florida. Madam Speaker, as the Chairman of the Subcommittee on the Census and a mem-

ber of both the Committee on Appropriations and the Committee on the Budget, I have to stop and scratch my head. Let me get this straight. This administration has unilaterally designed the largest statistical experiment in history. Their own Inspector General raises serious concerns that it will work. The majority of Congress disapproves of the plan. Yet, the administration is moving full steam ahead with their theory. They continue to stonewall the Congress.

On November 26, 1997, President Clinton signed the Commerce, State, Justice Appropriations bill. The law states, "that funds appropriated under this Act shall be used by the Bureau of the Census to plan, test, and become prepared to implement the 2000 decennial census without using statistical methods which will result in the percentage of the total population enumerated being as close to 100 percent as possible."

That legislation was signed last November. Secretary Daley testified last week before the Subcommittee on Commerce, Justice, State, and Judiciary, chaired by the gentleman from Kentucky (Mr. ROGERS), and the Chairman asked a simple question, "Do you have an enumeration plan in place?" And Secretary Daley replied, "If you are asking for a physical document, none is available."

Let me respond to Secretary Daley with the same words used by Chairman ROGERS. Why not? We paid for the plan. We need cooperation, not stonewalling from this administration.

The stonewalling continues. Congress, in the exercise of its responsibility for oversight, has been repeatedly thwarted by the lack of timely and complete responses for requests for information by our oversight subcommittees. Last year, Congress had to pass legislation to force the administration to give us a status report on their plan. Then the report was full of mistakes and had to be resubmitted.

As recently as last week, the Commerce Department took the position that the Subcommittee on the Census staff should not be allowed to interview Bureau employees. They are deemed to be the best source of oversight information. The National Academy of Sciences is allowed to talk to them. The Government Accounting Office is allowed to talk to them, but not the Congress, not the elected representatives of the people, not the branch of government directed by the Constitution to carry out the census.

Our ranking member of the subcommittee maintains that "the planning process for the next Census has been the most open and inclusive ever and has been carried out in direct accord with the wishes of Congress. . . ." Certainly the record has shown and continues to demonstrate that this is not true.

Finally, Madam Speaker, I want to quickly change topics. There's a growing controversy out at the Census Bureau in Suitland, Maryland about a fence around the parking lot. It was put there because of repeated car thefts

and vandalism. Now, the junior Senator from Maryland is threatening to go out there and cut down the fence. Employees of the census bureau are busy trying to prepare for the 2000 Census. Is it too much to ask for them to have peace of mind that their cars will be protected from vandals while they are at work? I mean really. All they want is to keep their fence. Doesn't the Junior Senator have more pressing issues to consider?

LET US HAVE AN UP OR DOWN
VOTE ON SCHOOL VOUCHERS
FOR EVERYONE

The SPEAKER pro tempore. Under the Speaker's announced policy of January 21, 1997, the gentlewoman from the District of Columbia (Ms. NORTON) is recognized during morning hour debates for 3 minutes.

Ms. NORTON. Madam Speaker, if the average American had a kid in almost any public school today, what do you believe she would say if someone advertised free money for scholarships to attend private or religious schools? How about you colleagues?

If you are like most Americans, you believe that private schools are more selective, have better classes in some important subjects, have a better teacher/student ratio. Why not apply? Private certainly have better reputations in many parts of the country. Free money for such schools would probably get many takers if advertised anywhere in this country among any group.

Last year, some District of Columbia ministers were asked to sign on to a letter to support free scholarships—that is how it was called—for D.C. kids. They, too, jumped at the opportunity.

When they found out that these scholarships were, in fact, publicly funded vouchers, which take taxpayer dollars away from public schools, they felt deceived, had a press conference, and took their names off of the letter and off of the campaign.

In public meetings around the District, I have raised this subject regularly with my constituents who have now applied in numbers over 7,000 for some free scholarship money. Who in America would not? They are no different, however, from the 69 percent of Americans who say that they do not want public money to go to vouchers for private schools. In the District, 89 percent have voted against private school vouchers.

What the majority puts up against this vote is a poll slanted with words to try to defeat what the people said at the polls. Why is the majority picking on D.C.? If they are for vouchers, why not bring a bill to the floor to have an up or down vote for everybody for vouchers? What are they afraid of? Why do they go for the smallest, least powerful district in America? We are not the only district, I have to tell my colleagues, that has poor public schools.

I think it just may be because so many States have turned down vouch-

ers at the polls, just as D.C. has. Listen to hear whether your State is in this list.

□ 1245

New York, Michigan, Nebraska, Oregon, Idaho, Maryland, Washington, Missouri, Alaska, California, Massachusetts, Utah, Colorado. What a cross-section of America has turned down private vouchers with public money at the polls!

Even when voucher advocates lose, however, they double back and lose again, always by more than they lost the first time. In California they lost first by 61 percent; then by 70 percent. In Washington State first by 61 percent; then they lost by 65 percent. In Massachusetts the first time they lost by 62 percent, then they lost by 70 percent. And here in the District, vouchers, public vouchers with public school money, have lost by 89 percent.

My constituents do want a better education for their children, but they are neither foolish nor selfish. They want educational choice but not at the expense of their own public schools here in the District.

I ask my colleagues: Do we want to help poor children get a better education, or do we want a veto, or do we want a lawsuit? Because that is all we will get out of a voucher bill for the District coming to the floor at this time.

If we are serious, there is a way to get scholarships for the remaining kids. Please join me in a group committed to raising private money for children who want to attend private schools in the District of Columbia.

STOP THE VIOLENCE IN KOSOVO

The SPEAKER pro tempore. Under the Speaker's announced policy of January 21, 1997, the gentleman from Michigan (Mr. BONIOR) is recognized during morning hour debates for 3 minutes.

Mr. BONIOR. Madam Speaker, our morning papers carried the grim news of the makeshift morgue in Kosova where Serbian authorities displayed the remains of 51 ethnic Albanians who died in an attack on their village. Bodies were proudly displayed by the Serbian police, showing the world the results of their destruction of a tiny village in Kosova. Some of the dead were women and children, and many were innocent civilians. The men had been executed by the police, often in front of their wives and their children.

Although this news has come as quite a shock to most of the world, we should have all seen it coming. For 9 years Serbia has repressed and harassed the people of Kosova and dozens have died. But within the past 10 days this campaign of terror has escalated into full-scale violence. Seventy-seven have died and scores more have been beaten and jailed and harassed.

We must say strongly and forcefully that this repression and this violence

cannot continue. The lessons we learned from Serbian aggression in Bosnia cannot be forgotten now. We and our allies cannot sit idly by on the sidelines. We cannot allow Milosevic to carry out his campaign of ethnic intimidation, violating the human rights of the people of Kosova.

Imposing an arms embargo and sanctions is the least we can do. Milosevic must know that any more bloodshed will not be tolerated. He must also know that the wishes of the people of Kosova cannot be ignored.

Madam Speaker, in the past we have taken to the floor to make the case for giving the people of Kosova greater freedom and independence, but today we come to the floor with a more urgent purpose, to make a plea for their lives. We must remember the commitments that have been made to protect ethnic Albanians in Kosova. We must not stray away from those commitments now, even though it means making difficult decisions.

We brought peace to the people of Bosnia only after we showed Milosevic that his brute force would be countered with swift and decisive military action. Now is the time to make sure he knows that he faces the same consequences if the violence in Kosova is not put to a stop.

This crisis has far-reaching implications but we must also keep it in focus. The people of Kosova are being brutalized and we must not allow it to continue.

RECESS

The SPEAKER pro tempore. Pursuant to clause 12 of rule I, the Chair declares the House in recess until 2 p.m.

Accordingly (at 12 o'clock and 50 minutes p.m.), the House stood in recess until 2 p.m.

AFTER RECESS

The recess having expired, the House was called to order by the Speaker at 2 p.m.

PRAYER

The Reverend Dr. Thomas F. Gulbranson, Senior Pastor, First Assembly of God Church, Alexandria, Virginia, offered the following prayer:

Our gracious Heavenly Father, the one who gives grace to all people, we exalt Your name and implore Your righteousness. Thank You for this day and this particular time in history. You have blessed this Nation and we trust that You will continue to do so. May You draw together this great country of many cultures under the banner of love.

We thank You for these lawmakers that have dedicated their lives to the service of this great Nation. May You continue to give each one of us strength and the fortitude to make choices according to Your divine will.