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DECENNIAL CENSUS

**Test Design Proposals Are
Promising, But Fundamental
Reform Is Still at Risk**

Statement of L. Nye Stevens
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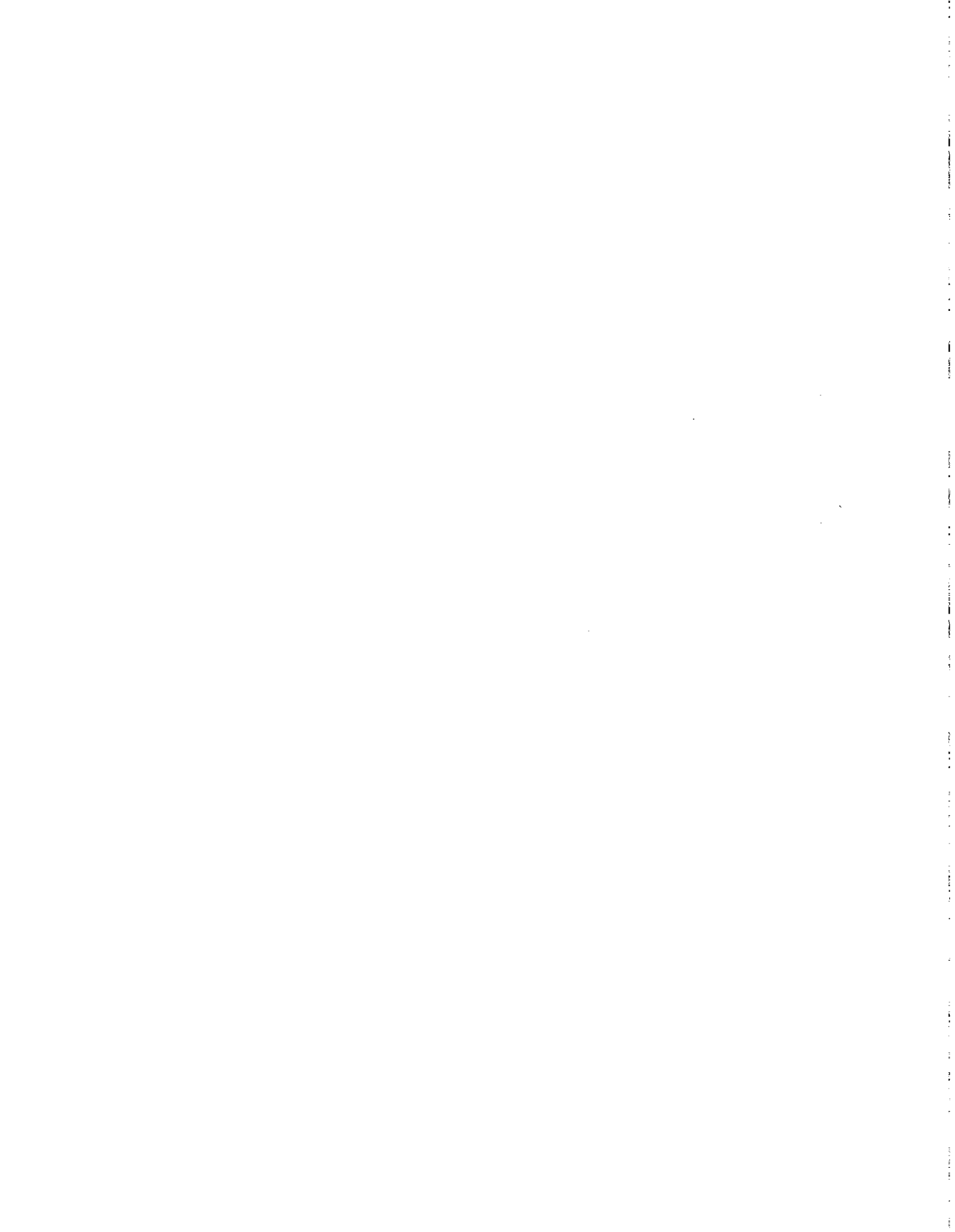
DECENNIAL CENSUS: TEST DESIGN PROPOSALS ARE PROMISING,
BUT FUNDAMENTAL REFORM IS STILL AT RISK

SUMMARY STATEMENT
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The Census Bureau's recently prepared 1995 Census Test Design Recommendation (TDR) contains promising proposals for fundamental breakthroughs to achieve the overarching goals of containing costs and improving accuracy. However, fundamental census reform remains at risk. The Bureau's research and evaluation efforts have been slowed by its changing planning strategy, and the Bureau still has the difficult task of integrating the TDR proposals into a detailed implementation plan for the 1995 test. The Bureau faces uncertainties in future funding, and it has been unable to obtain consensus among stakeholders. Another significant obstacle to achieving fundamental census reform is the lack of a nominated or confirmed Census Bureau Director. This situation puts additional pressure on both the career officials of the Census Bureau and the officials in the Department of Commerce and OMB who must make important decisions about the future of the decennial census over the coming months.

The Bureau's test proposals must be developed further into specific field data collection procedures and experimental design and evaluation plans. This effort must be supported by research and evaluation data that in many cases have yet to be obtained. Bureau plans to conduct research and evaluations for such promising proposals as the one-number census, sampling for nonresponse, and defining the content of the census are in a state of flux. Other important research and planning activities, such as improving the address list and using new automated techniques to convert respondent answers to machine-readable format, are behind schedule. Funding for research and test census preparation in fiscal years 1994 and 1995 is in doubt as evidenced by the budget cut proposed by the House Appropriations Committee and the opinions expressed in its report accompanying the fiscal year 1994 appropriation bill.

The Bureau has not made enough progress in building consensus with Congress and key stakeholders and gaining the public support necessary for major census innovations. Although the Bureau has been conducting outreach and consultation efforts, the type of comments received by the Bureau in response to its public notices and mailings to interested stakeholders, as well as comments received from several advisory committees, indicates to us that consensus still eludes the Bureau. The Bureau has received considerable support for its focused statement of goals for the next census--containing costs and improving accuracy--and its recognition that traditional census counting methods alone will be inadequate to achieve these goals. Nevertheless, there is no consensus emerging on how to achieve these overarching goals.



Mr. Chairman, Mr. Petri, and Members of the Subcommittee:

I am pleased to be here today to discuss the Census Bureau's progress in planning for the 2000 Decennial Census. You requested our assessment of the Census Bureau's final design choices for the 1995 census test. Specifically, you asked us to assess the Bureau's progress in analyzing data needs and the possible content of the 2000 census, as well as the status of testing alternative data collection methods; the Bureau's effectiveness in incorporating research results and consultations into its design; and the Bureau's ability to complete necessary preparations for the 1995 test. My testimony is based on our continuing audit work, at the Subcommittee's request, to monitor and evaluate 2000 census planning activities and operations.

The Bureau's recently prepared 1995 Census Test Design Recommendation contains promising proposals for fundamental breakthroughs. However, in view of the status of the Bureau's research and evaluation efforts, which have been slowed by its changing planning strategy, the uncertainties about future funding, and its inability to obtain consensus among stakeholders, we are concerned about whether the Bureau can design, implement, and properly evaluate the proposals in the planned 1995 test census.

CENSUS BUREAU PLANNING EFFORTS REFOCUSED EARLIER THIS YEAR

We testified in March 1993¹ that a lack of Bureau progress in redesigning the 2000 census jeopardized the prospects of fundamental reform. Our view then was that the Bureau's strategy for identifying promising census designs and features was proving to be both time consuming and cumbersome and impaired the Bureau's ability to institute major innovations. We found that with the exception of its field tests of methods to improve response rates, the Bureau had made limited progress on researching and developing the more promising major innovations for the next census.

In May 1993,² we testified again before your Subcommittee on the Bureau's progress. In that testimony we noted that the Bureau had altered its decisionmaking approach and taken steps to refocus its census research and development efforts, essentially reverting to an earlier approach previously documented by the Bureau in March 1991. In spite of the indirect path the Bureau followed in its planning process, we said that fundamental

¹See Decennial Census: Fundamental Reform Jeopardized by Lack of Progress (GAO/T-GGD-93-6, Mar. 2, 1993).

²See Decennial Census: Focused Action Needed Soon to Achieve Fundamental Breakthroughs (GAO/T-GGD-93-32, May 27, 1993).

breakthroughs in census taking were still possible for the 2000 census. Specifically, we said that over the next 4 months the Bureau must intensively research and refine the design features that appear most promising in order to meet its September 1993 deadline for deciding what to test in 1995.

CENSUS BUREAU TEST DESIGN RECOMMENDATION CONTAINS PROMISING PROPOSALS

In early August 1993 the Bureau's planning staff prepared and disseminated for comment the 1995 Census Test Design Recommendation (TDR). The TDR contains proposed goals and methods for the 1995 census test. The Bureau states that the goal of the 1995 Census Test is to determine if the fundamental changes being considered for the 2000 census can contain costs and improve accuracy, especially in reducing the differential undercount between the minority and nonminority populations. The TDR and related Bureau research into ways to collect detailed data on the population throughout the decade (the "continuous measurement" alternative) also have stimulated thinking about the content of the census and how to satisfy the nation's demographic data needs.

In the TDR, the Bureau has responded to the concerns of many that in 1995 it focus on and plan to test features that offer the potential of fundamental breakthroughs in the next census. The Bureau states that counting methods have exhausted their potential for enumerating our diverse population. The Bureau acknowledges that there is little potential for reducing the differential undercount and containing census costs through traditional counting methods alone. It proposes supplementing these traditional methods, in which all persons have the opportunity to be counted, with statistical methods applying only to a sample of the population.

We believe the TDR contains proposals, the most important of which we have urged the Bureau to consider, that could provide fundamental breakthroughs to achieving these overarching census goals of containing costs and improving accuracy. The most promising Bureau proposals are to incorporate statistical estimation procedures into the basic census process by a "one-number" census, reduce costly field work by sampling for nonresponse, increase public cooperation, improve the address list used to mail questionnaires, and use new technologies to collect and process the data.

FUNDAMENTAL CENSUS REFORM STILL AT RISK

Despite the promising nature of these proposals, we are deeply concerned that the Bureau may not be in a position to properly test these proposals in 1995. For this reason, fundamental breakthroughs remain at risk. The Bureau's test proposals need

to be supported by research and evaluation data that in many cases have yet to be obtained. Bureau plans to conduct research and evaluations for such proposals as the one-number census, sampling for nonresponse, and defining the content of the census are in a state of flux. Other important research and planning activities, such as improving the address list and using new automated techniques to convert respondent answers to machine-readable format, are behind schedule. Funding for research and test census preparations in fiscal years 1994 and 1995 is in doubt as evidenced by the budget cut proposed by the House Appropriations Committee and the opinions expressed in its report accompanying the fiscal year 1994 appropriation bill. Funding increases to support the continuous measurement alternative must compete with other funding needs in a very tight budget environment. Despite the title of "1995 Test Design Recommendation," the Bureau still faces the difficult task of integrating the TDR proposals into a detailed implementation plan for the 1995 test that develops specific field data collection procedures and experimental design and evaluation plans.

Another major risk to achieving fundamental breakthroughs is that the Bureau has not made enough progress in building consensus with Congress and key stakeholders and gaining the public support necessary for major census innovations. Although the Bureau has been conducting outreach and consultation efforts, our review of the comments the Bureau received in response to its public notices and mailings to interested stakeholders, as well as comments and reactions received from several advisory committees, indicates to us that consensus still eludes the Bureau. The Bureau has received considerable support for its focused statement of goals for the next census--containing costs and improving accuracy--and its recognition that traditional census counting methods alone will be inadequate to achieve these goals. Nevertheless, there is no consensus emerging on how to achieve these overarching goals.

LIMITED PROGRESS MADE ON RESEARCH AND ANALYSIS PUTTING PREPARATIONS FOR 1995 TEST CENSUS AT RISK

In the balance of my testimony I will discuss the specific proposals in the TDR that could result in fundamental breakthroughs and the risks that each of those proposals faces. I will assess first the Bureau's progress in analyzing data needs and possible content of the 2000 census, including the status of the continuous measurement proposal, which is a potential breakthrough. Then I will discuss four other areas offering potential breakthroughs--a one-number census, methods to reduce costly field work, improvements to the address list, and automated data capture technologies. I will focus in each discussion, as requested, on the status and effectiveness of research, consultations, and preparations for the 1995 test.

Controversy Over Data Needs, Possible Census Content,
and Alternative Data Collection Methods

The design of the 1995 test census and the 2000 census itself depend in the first instance on the type and amount of data to be collected. Bureau consultations to date, however, reveal considerable disagreement over what data should be collected in the decennial census. As a result of this lack of consensus, the plans for testing alternative data collection methods may not be resolved quickly. This situation threatens both preparations for the 1995 test and the census itself.

With help from the Office of Management and Budget (OMB), the Bureau is attempting to determine the data content of the decennial earlier in the decade than was done before the 1990 census. OMB requested in mid-December 1992 that government agencies identify their data needs for the 2000 census and specify what data are required by statute and whether alternative data collection methods, such as continuous measurement, administrative records, or matrix sampling, could satisfy those needs. Although OMB requested a response by mid-February 1993, some of the major agency data users did not respond until several months later. Most had responded by June 1993.

During the period of time when the Bureau and OMB were assessing the agencies' responses, the House Appropriations Committee, in its report on the Bureau's fiscal year 1994 budget request, specified that only the data needed to satisfy statutory requirements should be collected at taxpayers' expense. The Committee stressed that the basic purpose for a decennial census is an enumeration of the population. For this reason the Committee said other data, which was collected in the 1990 census, could be collected, if needed, through alternative methods, such as statistical sampling or administrative records.

Despite slippage in the original schedule, the Bureau has made progress in examining the statutory and programmatic needs for census data since we last testified. Using the Committee's directive as a guidance, the Bureau has found that very few questions are statutorily required. The Bureau has determined that even basic data requested in a decennial census, such as age, race, sex, Hispanic origin, and household relationship, are not technically mandated at the smallest levels of geography, the block level. The Bureau believes, however, that these data should be collected at the block level because most of them have become an important part of the data used for congressional and state redistricting.

The Bureau has pointed out examples where decennial census data are the only data available to implement or administer various federal programs, even though the U.S. Code does not explicitly mandate the collection of data or does not mention the decennial

census as the source of the data. Thus, the issue is to determine how broadly the concept of "statutorily required" should be interpreted. One agency, however, has pointed out that a strict interpretation of statutorily required data could result in government data users initiating legislation to require the collection of their data needs in a decennial census.

In response to the House Appropriations Committee's directive, the Bureau is considering revisions in its plan of collecting data in the 1995 test. Until the later part of July 1993, the Bureau had planned to collect the same data in the 1995 test as it had in the 1990 census. The Bureau felt that this would allow it more time to better define the federal data needs and to gather information on the nonfederal data needs. In fact, the Bureau was considering plans for testing alternative ways to collect sample data through matrix sampling or delayed follow-up. A strict interpretation of what data are statutorily required, however, would obviate the need for testing ways to collect sample data, because an insufficient number of questions meet this threshold. On this basis and due to the possible use of continuous measurement, the Bureau has reserved judgment on plans to test alternative ways to collect the sample data collected in previous censuses. The prospect of reduced data content on the 1995 test census is proving controversial among users of census data.

Continuous Measurement Faces Cost and Operational Hurdles

Independent of 1995 Census Test plans, but definitely a part of the Bureau's strategy of collecting decennial data, the TDR discusses continuous measurement as an alternative to collecting detailed small-area data in the decennial census. Under the continuous measurement design the Bureau is currently considering whether the frequency of the data would vary depending on the size of the geographic area. Annual data would be available for states and large metropolitan areas. For places with populations of several thousands, small-area estimates would be averages of rolling accumulations of 5 years of data issued annually. Data users have expressed concerns that they would lose some of the detailed data of a decennial census, and they may not be able to do some of the crosstabulations that combine information from two questions (such as income data crosstabulated by race). Also, data users are concerned that the funding necessary to start and continue this type of undertaking would not be ensured.

The Bureau has not yet developed reliable cost estimates for continuous measurement, but some of the Bureau's preliminary estimates suggest that in the early years continuous measurement could cost as much as \$100 million annually. For this reason, the data users' concerns have merit, particularly in an austere budget environment and in light of the views expressed by the House Appropriations Committee. Thus, the Bureau must provide

sound cost estimates for a 10-year cycle for both the continuous measurement alternative and the decennial census and demonstrate the relative costs and benefits to be derived from continuous measurement over the decade.

Much Work Remains to Be Done on a One-Number Census

A one-number census would supplement the results of the traditional headcount by statistical estimation to produce a single and best possible set of numbers by the legal deadlines. We believe such a census design offers several advantages. Primarily, a one-number census provides the potential of improving the overall accuracy of the counts and reducing the historically greater undercount of minorities. Statistical estimating methods, however, require technical calculations and assumptions that will undoubtedly be controversial. We are vividly reminded of the controversy and the difficulties the Bureau experienced using a post enumeration survey (PES). The PES was an attempt to estimate the coverage error for the 1990 census through a sample survey conducted after the Census Day, and use the results possibly to adjust the initial results.

The Bureau has much work remaining to advance the one-number census proposal. It must continue its technical research into the possible statistical error profiles of alternative methods to produce a one-number census. It must more fully develop the specific features of the methods to be tested in 1995. And, it must consult with Congress and the data users to determine their reaction to these methods.

The 1990 PES involved sampling about 165,000 households several months after Census Day and matching the information between the PES sample and the regular census questionnaires to determine the frequency of errors in the census. Although the PES has been tested under census conditions, the Bureau seems reluctant to reuse that method. Instead, the Bureau has proposed some other statistical estimating methods. However, it has not yet defined the actual design and operational concepts of these alternative methods. In fact, key Bureau statisticians have advised us that the possible designs are in a state of flux. This situation causes us to be concerned about the Bureau's ability to have sufficient time to adequately develop implementation procedures and an evaluation strategy in time to test the new statistical estimating methods in the 1995 test.

For this reason, we agree with the recommendation included in the interim report prepared by the National Academy of Science's Panel to Evaluate Alternative Census Methods that the Bureau should continue research efforts in perfecting the PES. We believe the Bureau's research should consider initiating the field data collection activities of the PES sample survey closer to Census Day to avoid some difficulties; for example, by persons

who move in the interim and problems caused by householders reconstructing their living situations on Census Day.

Regardless of what statistical estimating method is used, error in the counts at small geographic levels, such as blocks and combinations of blocks (census tracts), will still exist. As the size of the geographic area to be measured increases, however, the errors in the census data could be reduced significantly with these procedures. The statistical error at various geographical levels needs to be determined more precisely on the basis of Bureau research into the estimating methods under consideration. Also, the willingness of Bureau data users to accept error level at the smaller geographic levels must be explored.

Some Promising Proposals to Reduce Costly Field Work Require Considerably More Research

The Bureau's TDR includes several proposals for reducing costly field work. Significant progress has been made in finding ways to improve the design and presentation of the questionnaire to increase mail response by the public. Much more research remains to be done on the use of sampling for nonresponding households and the use of the Postal Service to identify vacant and nonexistent housing units.³

The cost and data quality of a census are dependent to a great extent on the public's cooperation in mailing back the census questionnaire. The 1990 mail response rate was about 10 percentage points lower than that experienced in 1980. As a result the Bureau spent significantly more to collect the data. The Bureau estimates that sending enumerators to these nonresponding households cost at least \$100 million, and many more millions of dollars were spent on indirect costs. It also has been well-recognized that data collected directly from households are more complete and accurate than the data collected when an enumerator is required to follow up on the nonrespondents.

The public's cooperation is dependent, in part, on the manner in which the questionnaire is designed and presented. To improve public cooperation through a better designed and presented questionnaire, the Bureau has conducted a series of tests. These tests prove a better response rate is possible when a simpler, shorter questionnaire designed in a respondent-friendly manner is

³We have advocated research and evaluation for both of these areas previously in our March and May testimonies and in our report Decennial Census: 1990 Results Show Need for Fundamental Reforms (GAO/GGD-92-94, June 9, 1992).

used and when more mail contacts with the household are used.⁴ This research has been extensive and has yielded valuable insights that will improve the cost and effectiveness of the next census.

Sampling for nonresponse has great promise in reducing the cost of following up those households which do not respond by mail. Recent Bureau cost estimates show that it could have achieved significant savings if it had used sampling for nonresponse in 1990. For example, if the Bureau had used a 10 percent sampling rate it could have saved as much as \$762 million in 1992 dollars. A 50-percent sample would have saved as much as \$347 million.

The Bureau currently is using 1990 census files to simulate the quality of census counts if sampling for nonresponse were used. This work was deferred until the Bureau had completed an evaluation of the possibility of sampling for the entire count, a concept that the Bureau later determined would not meet the constitutional requirement for an enumeration. The Bureau is now evaluating the statistical results of sampling 10 and 30 percent of the 1990 nonrespondents. Preliminary results were not available at the time we prepared our testimony, but Bureau officials have told us that considerable bias has been noted at the block level. This bias is considerably reduced at the census district office level (approximately 550,000 population) and above, particularly if the sampling is initiated several weeks after nonresponse follow-up efforts are started.

Considerably more research and evaluation are needed before implementation procedures can be developed for the 1995 test. For example, the Bureau needs to determine sampling rates, whether the sampling should be done by housing units or by whole blocks, when this sampling should be initiated (including whether percentage completion or a date certain should be used), how sampling should be integrated with one-number census statistical estimating procedures, and what instructions should be given the field staff implementing the sample of nonrespondents.

In the 1990 census, about 39 percent of the 34.3 million housing units that required personal visits were either vacant or nonexistent. We estimated that the Bureau spent about \$196 million visiting these vacant and nonexistent units in its nonresponse follow-up activities. We estimate that it spent another \$121 million rechecking the validity of the findings of

⁴GAO has long advocated this type of research. See Decennial Census: Local Government Uses of Housing Data (GAO/GGD-87-56BR, Apr. 8, 1987); Decennial Census: Issues Related to Questionnaire Development (GAO/GGD-86-74BR, May 5, 1986); A \$4 Billion Census in 1990? Timely Decisions on Alternatives to 1980 Procedures Can Save Millions (GGD-82-13, Feb. 22, 1982).

its staff that certain units were vacant or nonexistent. For this reason, we believe the Bureau could achieve significant savings by using the Postal Service to identify these vacant and nonexistent units close to Census Day.

Joint Efforts With Postal Service to Improve the Address List Are Lagging

The Bureau's TDR proposes that its address list be continually updated by the Postal Service.⁵ However, progress on joint efforts between the Census Bureau and the Postal Service is lagging.

A formal agreement was signed in November 1990 between the Postal Service and the Census Bureau to establish an interagency joint committee for census planning. One of the specific topics covered in that agreement was increased use of Postal Service automated systems for address list development and maintenance of census address files. However, only in April 1993, through the encouragement of this Subcommittee, did the Bureau and the Postal Service initiate a feasibility test of sharing automated address information on a long-term basis. Test results were originally to be provided in July 1993.

The two agencies did not sign a formal memorandum of agreement for the test until August 16, 1993, subsequent to the initiation of the test. Test results are now not expected until November 1993. One provision in this agreement allows for an extension of the test for some additional ZIP code areas to be mutually agreed upon by both parties. This provision could be applied to the 1995 test sites still to be chosen; however, another provision specifies that the agreement shall terminate within 6 months after the first Bureau address file is transmitted to the Postal Service for updating.

We suggested in our March testimony that the 1995 test would provide an excellent opportunity for evaluating the feasibility and usefulness of the Postal Service's information on vacant and invalid units. Also, the Bureau has to conduct field tests on how to reconcile the differences between the Postal Service's address list and its own automated address and geographic files. On the basis of progress to date and the provisions in the agreement, we are concerned about whether a sharing of automated address files will be operational for the 1995 test. Also, we are concerned whether a continually updated address file will be available for the proposed continuous measurement program.

⁵We had recommended this in a 1980 report, Problems In Developing The 1980 Census Mail List, (GGD-80-50, Mar. 31, 1980).

Opportunity to Test New Methods of Capturing Data Probably Lost for 1995 Test

Another critical proposal in the TDR is employing in the 1995 test an electronic imaging system to capture census data from paper. In past censuses, the Bureau used a multiphased data capture system that required photographing census questionnaires, film processing, and computer translation in order to convert written responses to computer-readable form. Under the proposal, the Bureau plans to convert responses directly from paper to computer-readable form. This proposal could provide major opportunities for streamlining census processing operations. Also, it could provide a means for incorporating optical character recognition systems that would allow machines to read handwritten numbers and letters into the processing operation. The Bureau believes that this system has the potential to reduce the cost of the census and to improve both data quality and timeliness.

Unfortunately, according to a senior Bureau planning official, electronic data capture research has experienced many setbacks because of the problems involved in selecting a contractual agreement and in the lack of funding. As a result, new automated data capture methods will probably not be used in the 1995 test. The Bureau will probably resort to previously used data capture methods. It may be able to employ this method in a later period of time, although the opportunity will be lost in 1995 to test the interaction of the data capture and processing technologies with the field operations.

ADMINISTRATION NEEDS TO MAKE FINAL 1995 PLANNING DECISIONS QUICKLY

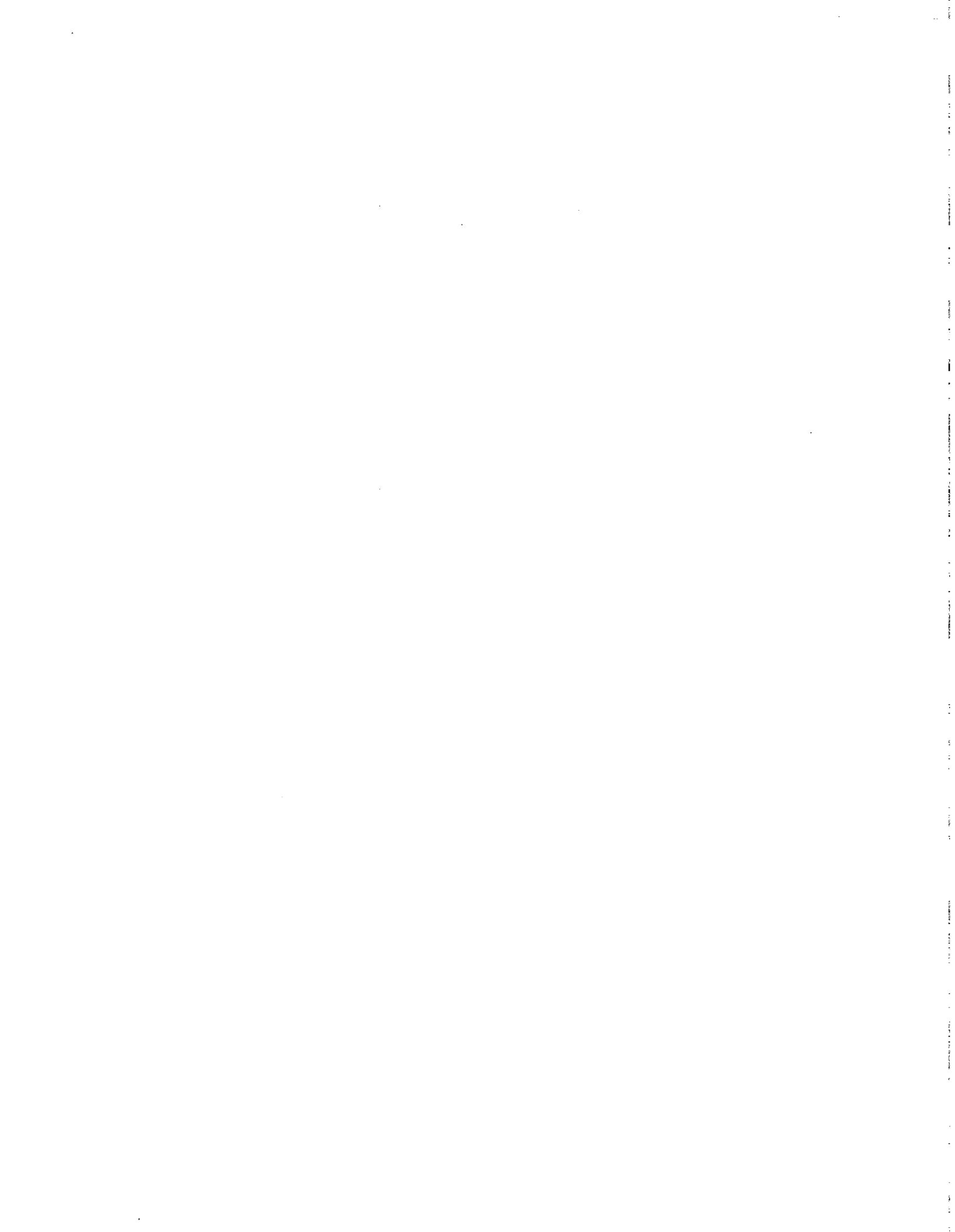
We again urge the administration, as we did in our May testimony, to provide the leadership required to achieve the breakthroughs so necessary to containing the cost of the next census while increasing its accuracy. Supported and directed by the Department of Commerce and the Office of Management and Budget, the Bureau will have to make tradeoffs and compromises very soon in planning the 1995 test census. These tradeoffs and compromises will involve important decisions about funding levels to be requested in 1995. They will involve important decisions about when to make final decisions and freeze the design of the 1995 test census and begin detailed operational planning, even though research and evaluation and other consultative processes may not be as complete as originally desired. Lastly, these tradeoffs will involve deciding what is doable in the time remaining for the 2000 census and what should be put aside, deferred, or put on a separate track for future census planning. Unfortunately, it appears that a Director for the Bureau will not be either formally nominated or confirmed before these decisions must be made. This situation puts additional pressure on both

the career officials of the Census Bureau and the officials in the Department of Commerce and OMB. Normally, we would look to the Census Bureau Director for leadership in this issue. The

absence of such leadership is a significant risk to achieving fundamental census reform.

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This concludes my prepared statement. My colleagues and I would be pleased to answer any questions.

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