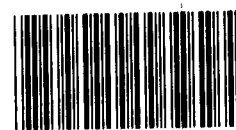


September 1993

# FEDERAL DATA COLLECTION

## Status of 1992 Agriculture and Economic Censuses and Future Challenges



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United States  
General Accounting Office  
Washington, D.C. 20548

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General Government Division

B-254731

September 23, 1993

The Honorable Thomas C. Sawyer  
Chairman, Subcommittee on Census, Statistics and  
Postal Personnel  
Committee on Post Office and Civil Service  
House of Representatives

The Honorable Thomas E. Petri  
Ranking Minority Member, Subcommittee on Census,  
Statistics and Postal Personnel  
Committee on Post Office and Civil Service  
House of Representatives

This briefing report responds to your request that we provide you an update on the status of the Department of Commerce's, Bureau of the Census' 1992 Agriculture and Economic Censuses. We included in our testimony on March 2, 1993, a short discussion of the progress of these censuses.<sup>1</sup> We agreed to provide the Subcommittee an overview of the censuses and more current information on their progress at a later date.

On September 20, 1993, we briefed the Subcommittee on the results of our work. This report documents the information presented in that briefing (see app. I).

## Background

The Agriculture and Economic Censuses, taken every 5 years, are major Bureau statistical efforts that provide comprehensive statistics on the characteristics of the agricultural and economic sectors of the nation, states, and local areas. The data contribute to a variety of federal uses, including estimating the nation's gross domestic product (GDP), the

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

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primary measure of the nation's economic performance; providing information for a variety of U. S. Department of Agriculture (USDA) programs; and serving private sector marketing and research needs. The total cost of the 1992 censuses is estimated at \$242 million, \$80 million for the Agriculture Census and \$162 million for the Economic Census.

The Bureau directs the Economic Census to individual business establishments<sup>2</sup> that report statistics on things such as the number of establishments, number of employees, payroll, and measures of outputs such as sales or revenue. The Agriculture Census is directed to farm operators who report data on land use and ownership; value of product sales; and operator characteristics.

The principal processes the Bureau uses to conduct the Agriculture and Economic Censuses are similar. Both require mailing list development, the distribution of forms by mail, the collection and refinement of data, mail and telephone follow-up for nonresponse, tabulation, and publication. The Bureau mailed questionnaires for both censuses in December 1992. Data collection activities, including mail and telephone follow-up, were performed primarily during fiscal year 1993. After the tabulation of results, publication of data will begin in late 1993 for both censuses and extend through calendar year 1996.

Some methodological differences exist between the two censuses. For example, the Bureau develops a new mailing list of data providers for each Agriculture Census, but it uses an ongoing list of businesses that it maintains (the Standard Statistical Establishment List) to provide a directory of establishments to whom forms are mailed for the Economic Census. Although both censuses depend on questionnaires to collect data, the Economic Census relies heavily on existing administrative records obtained from the Internal Revenue Service (IRS) and the Social Security Administration (SSA) and updated by other Bureau surveys for the larger portion of the business universe. In contrast, the Bureau does not use administrative records for the Agriculture Census as a primary source of data.

<sup>2</sup>Business establishments are grouped into eight major components: retail trade; wholesale trade; service industries; financial, insurance, and real estate industries; transportation, communications, and utilities; manufacturers; mineral industries; and construction industries.

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## Results

The most significant change for the 1992 censuses was the expansion of coverage of the Economic Census. More components of the service sector were included for the first time, increasing the coverage of the GDP in 1992 by 22 percentage points. For the 1992 Agriculture Census, the Bureau essentially used the same approach that it had followed in previous censuses.

Only modest changes to the censuses were necessary to accommodate fiscal year 1993 budget reductions. For example, the Bureau revised the type of follow-up mailings for each census and will spread data processing over a longer period with fewer staff.

For the Agriculture Census, the Bureau mailed about 3.5 million census forms in December 1992 and followed up with additional mailings and telephone calls that generated a national response rate of 84.7 percent as of September 4, 1993, a rate comparable to the one achieved for the 1987 census at the same point. Because the Bureau's mailing list for the Agriculture Census contains duplicates and addresses that are not farms, it expects to report data for about 2 million farms.

For the Economic Census, the Bureau mailed 4.2 million census forms, followed up with additional mailings and telephone calls, and produced a response rate of 86.8 percent as of September 4, 1993, compared to about a 78 percent response at this point in the 1987 census. By supplementing the census information with data derived from administrative records, the Economic Census will report data on about 15 million business establishments. In conjunction with separate censuses of agriculture and governments, the Bureau now covers about 98 percent of the nation's economic activity, up from about 76 percent in 1987.

In the past, the Congress, the Department of Commerce, and GAO have encouraged the Bureau to reconsider its approach to the Agriculture Census. The Bureau has considered options in the past to make the Agriculture Census more economical, efficient, and capable of providing useful data in a more timely fashion. Those planning future Agriculture Censuses still face the challenges of improving the quality of coverage, defining a farm for statistical purposes, deciding the role of sampling for data collection, assessing the relationship with other USDA agricultural statistics programs, and containing costs.

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## Objectives, Scope, and Methodology

Our objectives were to (1) provide an overview of the 1992 Agriculture and Economic censuses, (2) determine what changes were made to these censuses for 1992, (3) assess the impact of fiscal year 1993 budget reductions on these census operations, and (4) monitor the progress of data collection activities. The Subcommittee also asked us to identify any points for consideration in planning future Agriculture censuses.

To monitor the progress of these censuses, we reviewed weekly detailed computerized check-in progress reports and discussed them with Bureau officials. We discussed changes to the censuses and the impact of budget reductions with Bureau officials. Our analysis of planning issues for the next Agriculture Census was based on a review of prior GAO work on the Agriculture Census, the coverage evaluations of the 1987 Agriculture Census, other agency documents, and discussions with agency officials.

We did our review from November 1992 through September 1993 in accordance with generally accepted government auditing standards.

## Agency Comments

On September 17, 1993, the Director of the Economic Census and Surveys Division and the Acting Director of the Agriculture Division reviewed a draft of the report and provided some clarifications and suggestions for changes that we incorporated where appropriate in appendix I.

We are sending copies of this report to the Secretary of Commerce, the Director of the Bureau of the Census, the Director of the Office of Management and Budget, and appropriate congressional committees. Copies will also be made available to other interested parties upon request.

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The major contributors to this report are listed in appendix II. If you or your staff have any questions about this report, please call me on (202) 512-8676.

*for Charles D. Patton, Jr.*  
William M. Hunt  
Director, Federal Management  
Issues

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## Abbreviations

CATI	computer-assisted telephone interviews
FOSDIC	film optical sensory device for input to computer
GDP	gross domestic product
IRS	Internal Revenue Service
NASS	National Agriculture Statistics Service
SSA	Social Security Administration
USDA	U.S. Department of Agriculture

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# Appendix I: Status of 1992 Agriculture and Economic Censuses and Future Challenges

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## Scope of GAO Report

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- **Overview of censuses**
  - **Status of censuses**
    - Changes made to 1992 censuses
    - Impact of FY 93 budget reduction
    - Status of data collection
  - **Challenges for future Agriculture censuses**
-

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## Methodology of GAO Report

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- Analyzed prior studies and documentation
  - Interviewed agency officials
  - Evaluated budget information
  - Reviewed Bureau's computerized check-in progress reports
  - Examined results and evaluations of 1987 Agriculture Census
-

## Overview of Censuses: Agriculture Census

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- Major source of data on nation's farms and farm operators
  - Bureau's definition of farm for statistical purposes
  - County-level data reported
  - Historical perspective
-

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## Overview of Agriculture Census

The Agriculture Census is a major source of facts about the structure and activities of all of the nation's agricultural production operations (farms and ranches) and about the characteristics of their operators. For statistical purposes, the Bureau defines a farm as any place from which \$1,000 or more of agricultural products were produced and sold, or normally would have been sold, during the census year. Although many of the same kinds of information are collected in periodic or occasional surveys by various federal, state, and private agencies, this census remains the only source of comparable data for the entire nation--county by county and state by state.

### Historical Perspective

The Agriculture Census was first taken in 1840 as a part of the decennial census, when the United States was overwhelmingly agricultural. From 1840 until 1950, it was part of the decennial census. Separate mid-decade censuses of agriculture were begun in 1925. From 1954 to 1974, censuses of agriculture were taken every 5 years in years ending in "4" and "9." In 1976, the Congress authorized them to be taken for 1978 and 1982 to adjust the data reference year to coincide with the economic census. The adjustment in timing established the Agriculture Census on a 5-year cycle, to collect data for years ending in "2" and "7."

Since 1850, when the minimum criteria defining a farm for census purposes first were established, the farm definition has changed nine times. The current definition, any place from which \$1,000 or more of agricultural products were produced and sold, was established after the 1974 census when it was raised from \$250.<sup>3</sup>

<sup>3</sup>For 1974, places with less than 10 acres were counted as farms if they had estimated sales of \$250 or more. Places with 10 or more acres were counted as farms if they had estimated sales of \$50 or more.

## Overview of Censuses: Economic Census

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- Source of information on nation's business establishments
  - Information reported in eight major components
  - Coverage of nearly all of nation's economic activity
  - Historical perspective
-



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## Overview of Economic Census

The Economic Census provides a detailed portrait of the nation's economy from the national to the local level. Information from the Economic Census will be reported in eight major components of the economy, such as retail trade, manufacturers, and construction. Coverage was extended to include communication, utilities, financial, insurance, and real estate industries and additional transportation industries.

### Historical Perspective

The United States' industrial output was first measured in the 1810 Decennial Census, for manufacturers only. Because of the increasing dominance of manufacturing in the 20th century, the Congress directed that in addition to the full decennial census coverage, there would be censuses of manufacturers of lesser scope every 5 years beginning in 1905. Retail and wholesale trade data were first collected in 1930, and in 1933 selected service industries were added. Since then, these censuses have been done basically every 5 years. Later, other industries such as construction and some elements of transportation were added.

In addition to the basic economic census, special surveys of minority-owned and women-owned businesses, transportation, characteristics of business owners, and censuses of outlying areas have been included for many years.

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## Overview of Agriculture and Economic Censuses Methodology

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### **Agriculture**

- Attempts to identify and count all farms and farm operators
- Sent out 3.5 million forms
- Expects to report data on about 2 million valid farms

### **Economic**

- Sent out 4.2 million forms
  - Expects to report data on about 15 million establishments by using administrative records (IRS and SSA)
-

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## Overview of Agriculture Census Collection Methodology

The first major step in trying to cover the agriculture production universe in the Agriculture Census is the development of as complete a list as possible of agriculture production addresses, one that has the smallest number of duplicates and nonfarms. The mailing list for 1992 was developed from diverse source files including ones from the Internal Revenue Service (IRS), the National Agricultural Statistics Service (NASS), prior censuses, and special lists from farm groups.

These files contained 12.4 million addresses with considerable duplication. After elimination of duplicates and identifiable nonfarms, the Bureau produced a list of 3.8 million addresses. The Bureau then eliminated, by using a statistical model, addresses with low probabilities of being farms. That produced the census mailing list of about 3.5 million addresses to which questionnaires were mailed. Acknowledging that the final mailing list still contained many nonfarms and duplicates, the Bureau anticipates counting only about 2 million valid farms.

## Overview of Economic Census Methodology

Of the estimated 15 million establishments within the scope of the Economic Census, regular census questionnaires were mailed to about 4.2 million of them. The Bureau will rely on administrative records for data on over 10 million business establishments. Of those not canvassed by mail, limited information is obtained from administrative records obtained from IRS and the Social Security Administration (SSA). This is supplemented by information obtained from classification reports sent to establishments for which additional classification detail is required and from other Bureau surveys, such as prior economic censuses, Company Organization Surveys, and other business surveys.

Such a strategy for developing an inventory of businesses and a mailing list is facilitated by the Bureau's maintenance of its centrally compiled list of all known multi-establishment and single-establishment employer firms in the nation, the Standard Statistical Establishment List.

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## Overview of Data Reported by Agriculture and Economic Censuses

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- Agriculture Census reports on agricultural production operations:
    - Characteristics of operators
    - Value of product sales
    - Organizational structures
    - Number of hired workers
  
  - Economic Census reports data primarily on business establishments
    - Number of establishments
    - Number of employees and payroll
    - Measures of output
-

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## The Censuses Report Different Data

A distinction between the two censuses is that the Agriculture Census, in seeking responses from all farm operators,<sup>4</sup> also provides social and demographic information on the individuals engaged in agricultural work. The Economic Census, on the other hand, focuses primarily on the operations of business establishments rather than on the characteristics of the persons engaged in the activities. Related census programs, such as the Survey of Minority-Owned Business Enterprises and Women-Owned Businesses, provide information on business establishments owned by minorities and women.

<sup>4</sup>The term "operator" designates a person who operates a farm, either doing the work or making day-to-day decisions about such things as planting, harvesting, feeding, and marketing. The operator may be the owner, a member of the owner's household, a hired manager, a tenant, a renter, or a sharecropper. If a person rents land to others or has land worked on shares by others, he/she is considered the operator only of the land which is retained for his/her own operation. For partnerships, only one partner is counted as the operator. For census purposes, the number of operators is the same as the number of farms.

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## Overview of Agriculture and Economic Censuses Operations

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- Both censuses rely on
    - Mailout/mailback
    - Follow-up correspondence
    - Telephone follow-up
  - Neither uses in-person follow-up
- 

### Some Census Operations Integrated

The Agriculture and Economic censuses integrated a number of operations of the two programs, such as check-in of questionnaires, follow up on delinquent firms, data entry, and correspondence with respondents. However, the development of mailing lists, preparation of questionnaires for mailing, solving of unique problems, computer editing, tabulation, data review, and publication operations remain separate.

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## Overview of Estimated Costs of Agriculture and Economic Censuses

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### **Total Cost**

- Agriculture: estimated \$80 million
- Economic: estimated \$162 million

### **Estimated per unit cost**

- Agriculture = \$40.00
- Economic = \$11.00

### **Rates of total cost increases**

- Agriculture - little change from 1987 to 1992 in constant dollars
  - Economic - almost 40% increase from 1987 to 1992 in constant dollars, but scope increased significantly
- 

### Different Methods Yield Different Unit Costs

The Bureau has estimated that the 1992 Agriculture Census will cost about \$80 million and will report data on about 2 million farm operators. Thus, the estimated cost to report data for each farm operator is about \$40. By using administrative records and sampling, the Bureau estimates that the 1992 Economic Census will cost about \$162 million, but it will report data on about 15 million establishments. Thus, the estimated cost to report data for each business establishment is about \$11.

Bureau officials feel that comparisons of the unit costs of the two censuses may be misleading because the Economic Census collects data directly from about 4 million establishments and the rest is collected from administrative records. They noted that administrative records are not available to provide the type of data traditionally provided in past agriculture censuses.

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Our point in making the comparison is not to say that the Agriculture Census is less efficient than the Economic Census, but to point out that obtaining such extensive data on farms and farm operators results in higher unit costs. As we said in our testimony of March 2, 1993,<sup>5</sup> the unit costs of the Agriculture Census are higher because the Bureau seeks responses from 100 percent of all farms with sales of \$1,000 or more and does not use administrative records or sampling.

#### Inflation adjusted cost increase only in Economic Census

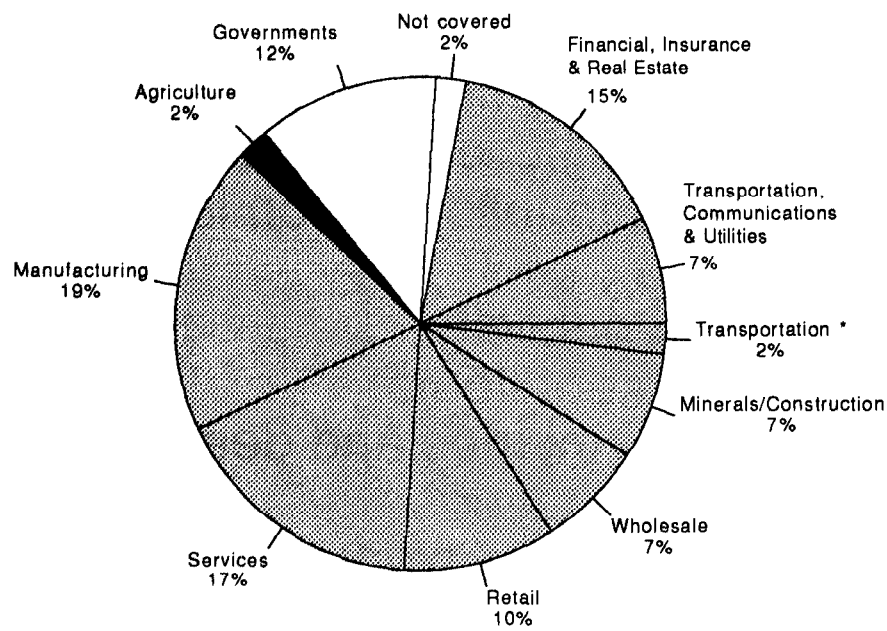
In constant 1992 dollars, there was little increase in the cost of the 1992 Agriculture Census compared to 1987. The cost of the 1992 Economic Census increased by about 40 percent over the 1987 cost in constant dollars. The cost increase was mostly due to the increased coverage of the service sector, an increase in coverage equal to 22 percentage points of the GDP.

<sup>5</sup>GAO/T-GGD-93-6, March 2, 1993.



Figure I.9

## Overview of Estimated Coverage



\* Portion of transportation industry covered in 1987 Economic Census

Source: Economic Census and Surveys Division, Bureau of the Census.

### Percentage of GDP Covered Varies Greatly

In conjunction with the separate census of governments,<sup>6</sup> the Bureau now covers about 98 percent of the nation's economic activity, as measured by GDP, up from about 76 percent in 1987, providing the most comprehensive coverage ever.

While the 1992 Agriculture Census provides data for about 2 percent of the nation's GDP, the 1992 Economic Census provides data for about 84 percent of the GDP (shaded area of figure I.9).

<sup>6</sup>The Bureau conducts a separate census of local, state, and federal governments in which it collects data on revenues and expenditures, taxes, employment, and pension funds.

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## Changes for the 1992 Censuses Agriculture Census

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- Redesigned forms to booklet format
  - Tested FOSDIC data capture
  - Used CATI to follow up on large farms
  - Expanded publicity
  - Added content items:
    - Number of injuries and deaths
    - New product types
    - Number of hired workers
    - Value of direct sales to consumers
-

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## Minor Changes to 1992 Agriculture Census

The Bureau made some minor changes for the 1992 Agriculture Census. The redesign of the census forms to a booklet format facilitated automated processing by allowing the testing of Film Optical Sensing Device for Input to Computers (FOSDIC). This form of data capture, a technology long used in the decennial censuses, is being used for the first time in the Agriculture Census. The Bureau used computer-assisted telephone interviewing (CATI) for follow-up phone calls to large farms that were delinquent in responding. The Bureau also expanded its outreach and publicity to target local papers to try to improve response rates. New content items added in 1992 were requests for information on the number of work-related injuries and deaths, some new product types such as aquaculture items, the number of hired workers (last asked in 1982), and the value of direct sales to consumers (also last asked in 1982).

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## Features Dropped from Prior Agriculture Censuses

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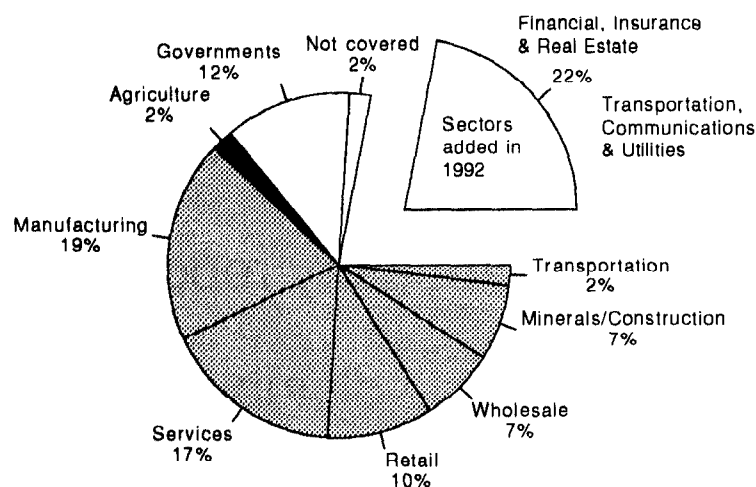
- Farm and ranch identification survey
- Farm finance survey
- Area sample

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### Some Features Not Included in 1992

Some features included in prior agriculture censuses were not a part of the 1992 census. The farm and ranch identification survey was formerly done prior to the agriculture census and served to eliminate nonfarms and duplicate addresses from the mailing list. The farm finance survey developed information on the financial state of the farm operators. The area sample was a coverage improvement initiative done in the data collection stage to help identify and enumerate farms that were not included in the mailing list.

## Expanded Coverage of the 1992 Economic Census



Source: Economic Census and Surveys Division, Bureau of the Census.

### Major Change Was Expanded Coverage

A major change that the Bureau made to the 1992 Economic Census was the expansion to include the two new service sectors: (1) transportation, communications, and utilities and (2) the financial, insurance, and real estate industries. These segments increased coverage by approximately 22 percentage points of the GDP.

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## Other Changes for the 1992 Economic Census

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- Took initiatives to improve response rate:
    - Simplified cover letter and reduced size of questionnaire
    - Stressed mandatory reporting authority
    - Improved forms distribution
    - Expanded telephone operation
    - New follow-up schedule and methods
  - New surveys added
- 

### Efforts That Improved Response Rate

The Bureau made several changes for 1992 designed to improve the response rates for the Economic Census. On the basis of a survey of potential respondents, it simplified the cover letters and instruction sheets and reduced the size of the questionnaire. Additional research showed that placing greater emphasis on the census' mandatory reporting authority would improve response. By using an automated printing technology, the Bureau was able to send follow-up questionnaires to multi-establishment companies more effectively than in previous censuses. In addition, the timing of follow-up mailings was changed from 4-week to 5-week intervals and all mailings to single establishments included a replacement questionnaire.

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The Bureau also inaugurated a proactive company contact program. Bureau economic subject-matter staff initiated personal contact with 1,100 of the largest companies before the census and maintained contact with them throughout the census. Greater emphasis was also placed on telephone contact. In addition to having a toll-free telephone operation available to answer respondents' questions, telephone calls were used to remind nonrespondents of the need to reply.

## New Surveys Added

For the first time, the 1992 Survey of Women-Owned Businesses included information on all corporations owned or controlled by women. Previously, the report included only sole proprietorships, partnerships, and small corporations. A new transportation survey, the Commodity Flow Survey, will report on the origin and destination of commodities shipped from manufacturing, mining, wholesale, service, and selected retail establishments.

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## Impact of FY 1993 Budget Reduction: Agriculture Census

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- Initial mailout reduced from 4 million to 3.5 million
- Revised follow-up mailings
- Number of questionnaires clerically reviewed reduced
- Processing spread over longer period with fewer staff
- Advanced report eliminated

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### Little Impact on 1992 Agriculture Census

The Bureau made several changes to its plans for the Agriculture Census as a result of across-the-board reductions of about 3 percent in fiscal year 1993. The initial mailout of questionnaires was reduced by more than 10 percent. To cut printing costs, the number of follow-up census forms mailed was reduced from five to four and the fourth follow-up was changed from a form follow-up to just a letter. To reduce the number of census forms that needed to be manually reviewed, the Bureau changed the criterion for initiating clerical review. To reduce the number of staff needed and to maximize the use of quality staff, the Bureau spread the data processing over a longer period of time. It also eliminated publication of an advance report that was prepared from 1987 census data to show results separately for each county with 10 farms or more, each state, and the nation at the earliest possible date.



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## Impact of FY 1993 Budget Reduction: Economic Census

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- Flexible staffing strategy
- Processing spread over longer period with fewer staff

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### Minor Adjustments to 1992 Economic Census

The Bureau made only minor adjustments to its plans for the Economic Census as a result of across-the-board reductions of about 3 percent in fiscal year 1993. It adopted a flexible staffing strategy that reduced staffing costs and extended data collection operations by about 1 month.

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**Table I.1: Status of Data Collection: Agriculture Census**

<b>Event</b>	<b>Number of Forms</b>	<b>Mailing Date</b>
Initial forms mailout	3,540,000	December 1992
First reminder postcard	3,540,000	January 1993
Mail back due date	-	February 1, 1993
Second follow-up and form	1,521,000	February 1993
Third follow-up and form	1,102,000	March 1993
Fourth follow-up letter	856,000	April 1993
Fifth follow-up and form	728,000	May 1993
Close out	-	September 30, 1993
Publication of results	-	Begin late 1993 and extend through 1996

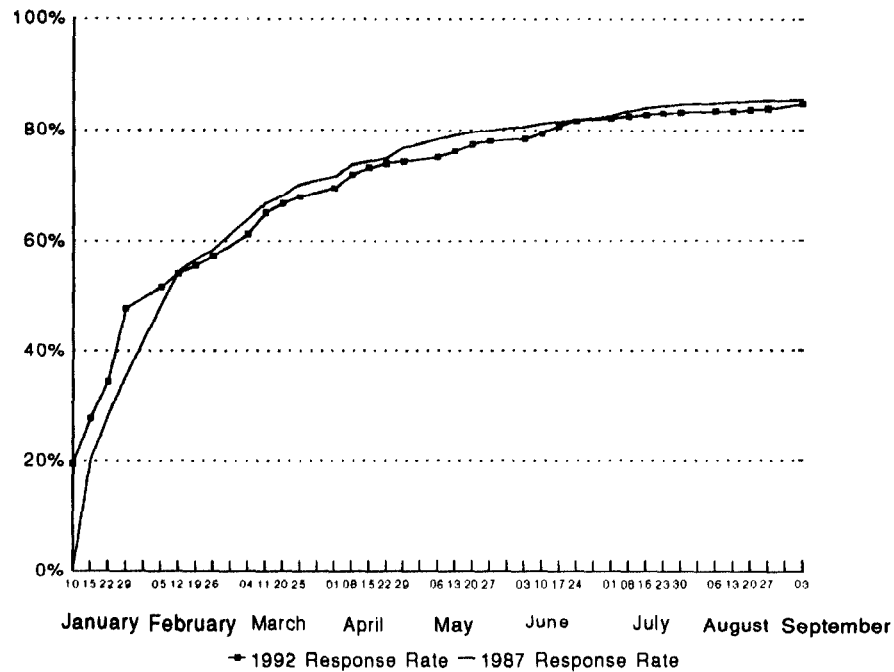
Source: Agriculture Division, Bureau of the Census.

### **Schedule of Data Collection Operations: 1992 Agriculture Census**

The schedule for the 1992 Agriculture Census data collection operations began with the initial forms mailout in December 1992. After several follow-up activities to obtain responses from those who did not respond by the original due date of February 1, 1993, the Bureau will close out its data collection efforts on September 30, 1993.

Figure I.16

## Response Rate Comparison: Agriculture Censuses - 1987 & 1992

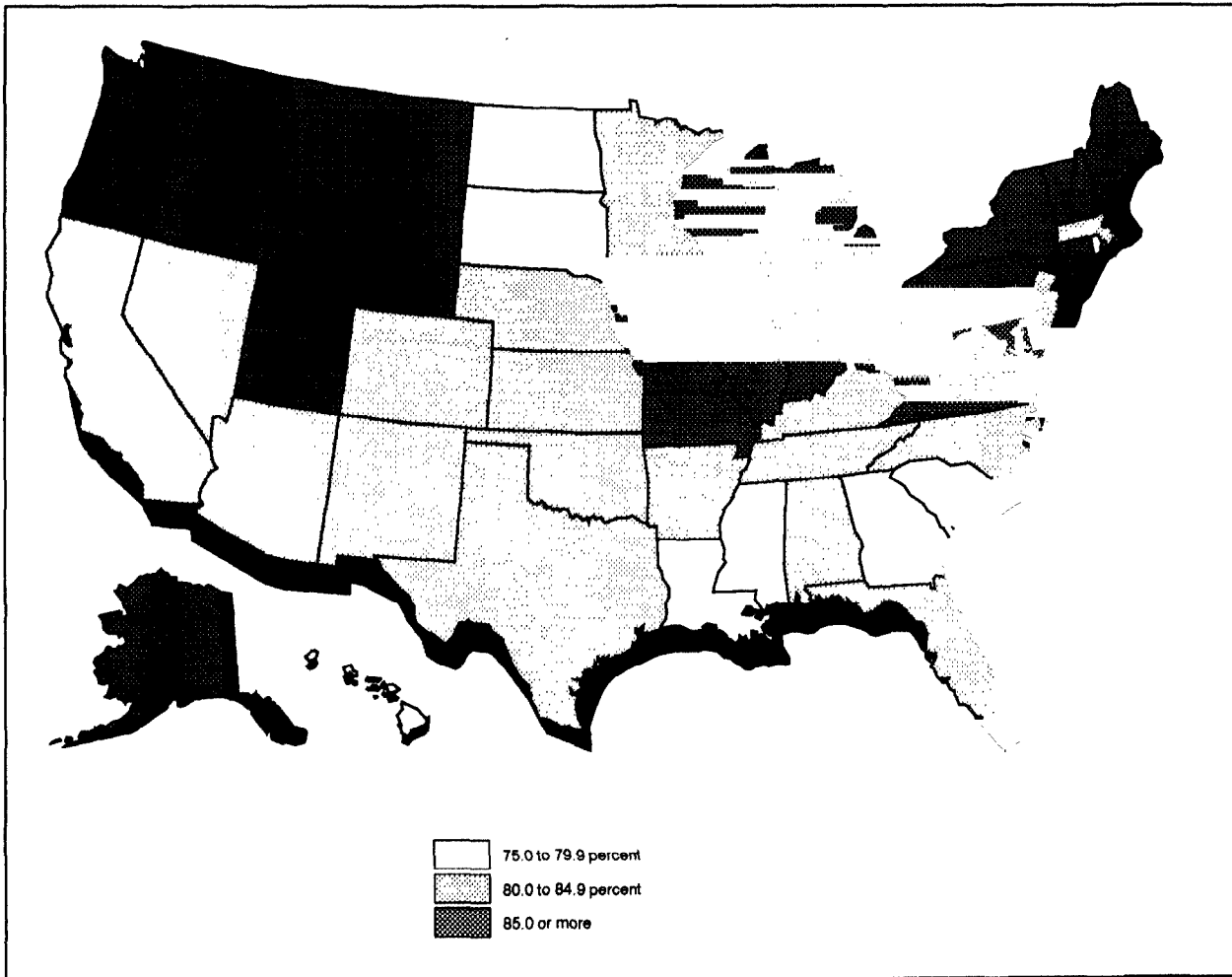


Source: Computerized Check-in Progress Reports, Bureau of Census.

### 1992 Agriculture Census Response Rates About Equal to 1987 Experience

The national response rate as of September 4, 1993, for the Agriculture Census was at 84.7 percent, slightly less than the 85.4 percent rate for 1987. Follow-up efforts maintained a rather consistent level of response, and did not prompt any dramatic changes from the 1987 experience. Figure I.16 shows the similarity of the 1992 response rates and the 1987 response rates.

Figure I.17 Response Rate by State Agriculture Census -- 1992



Source: Agriculture Division, Bureau of the Census.

## Target State Response Rates Achieved

In order to report data at the state and county levels, the Bureau seeks at least a 75 percent response rate to ensure valid results and confidentiality of individual respondents' data. As of September 4, 1993, all states had achieved this level of response.

**Table I.2: Status of Data Collection: Economic Census**

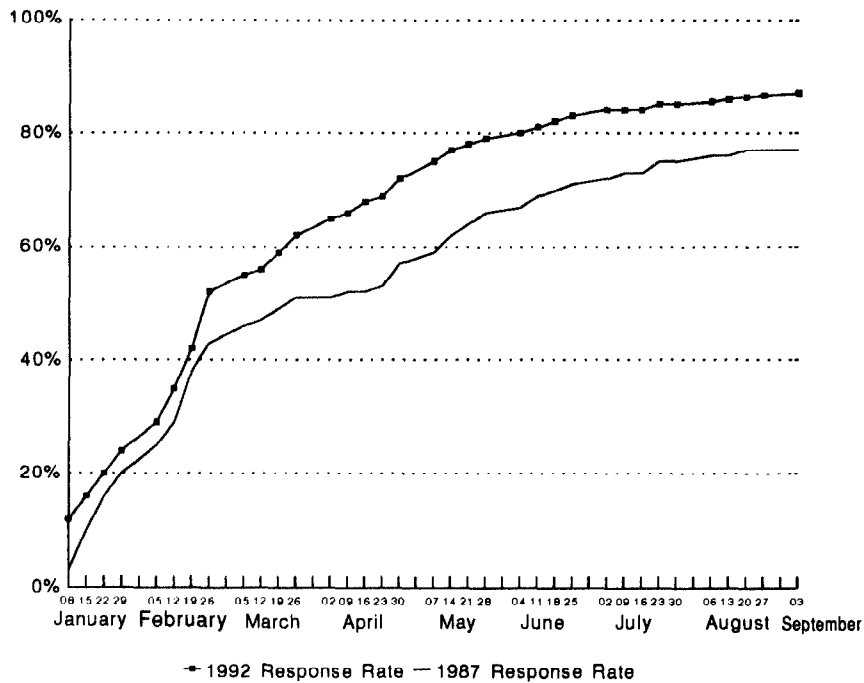
<b>Operation</b>	<b>Number of forms</b>	<b>Date</b>
Initial mailout: Multi-unit form Single unit form	1,400,000 <u>2,800,000</u> 4,200,000	December 1992 December 1992
Mailback due date	-	February 15, 1993
First follow-up: Multi-unit letter Single-unit form	80,000 1,400,000	March 1993 March 1993
Forms sent to firms just established in third quarter of 1992	250,000	April 1993
Second follow-up: Multi-unit letter Single unit form	65,000 1,200,000	April 1993 April 1993
Third follow-up: Multi-unit letter Single unit form	50,000 900,000	May 1993 May 1993
Fourth follow-up: Multi-unit form	90,000	June 1993
Close out	-	October 29, 1993
Publication of results	-	Begin late 1993 and extend through 1995

Source: Economic Census and Surveys Division, Bureau of the Census.

### Schedule of Data Collection Operations: 1992 Economic Census

The schedule for the 1992 Economic Census data collection operations began with the initial forms mailout in December 1992. After several follow-up efforts to contact those who did not respond by the original due date of February 15, 1993, the Bureau will close out its data collection efforts on October 29, 1993.

## 1987 & 1992 Economic Censuses: All Establishments Response Rates

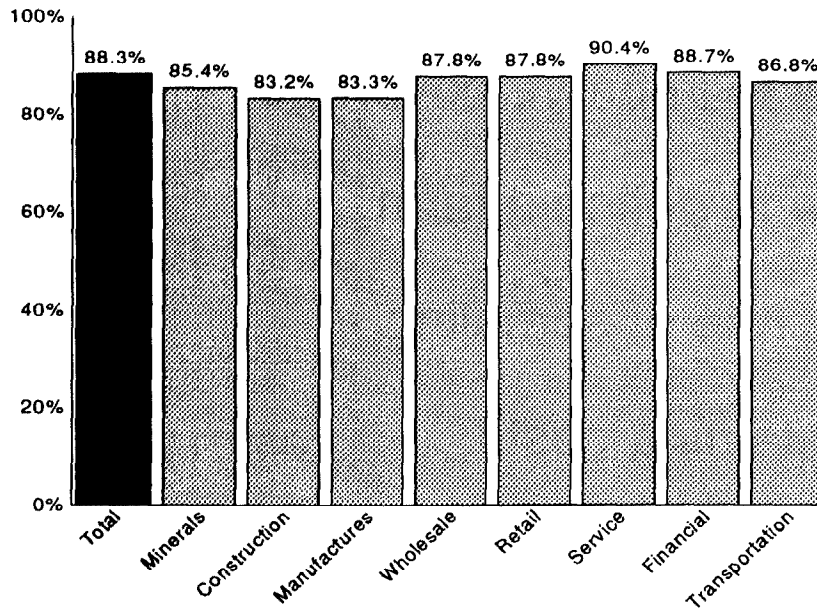


Source: Computerized Check-in Progress Reports, Bureau of the Census.

### 1992 Economic Census Response Rates Better Than 1987 Experience

The national response rates for the 1992 Economic Census were better than they were in 1987. As of September 4, 1993, the response rate for all establishments was 86.8 percent. Bureau staff attributed the improvement of the 1992 rate over the 1987 rate to the increased emphasis on the mandatory reporting requirement, the use of a toll-free telephone assistance number, and the use of replacement census form follow-ups instead of letters.

## 1992 Response Rates for Single Establishments by Major Components



Note 1: Bar labeled "Financial" includes financial, insurance, and real estate; the bar labeled "Transportation" includes transportation, communications, and utilities.

Note 2: The total response rate shown in this figure differs from that shown in figure I.18 because this figure shows return rates for single establishments only, not multi-establishments.

Source: Computerized Check-in Progress Reports, Bureau of the Census.

### High Response Rates for New Sectors Added to 1992 Economic Census

As of September 4, 1993, the response rates for all eight components were all above 83 percent. The establishments in the economic sectors covered for the first time--the financial, insurance, and real estate industries and transportation, communications, and utilities--were all above 86 percent.

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## Challenges for Future Agriculture Censuses

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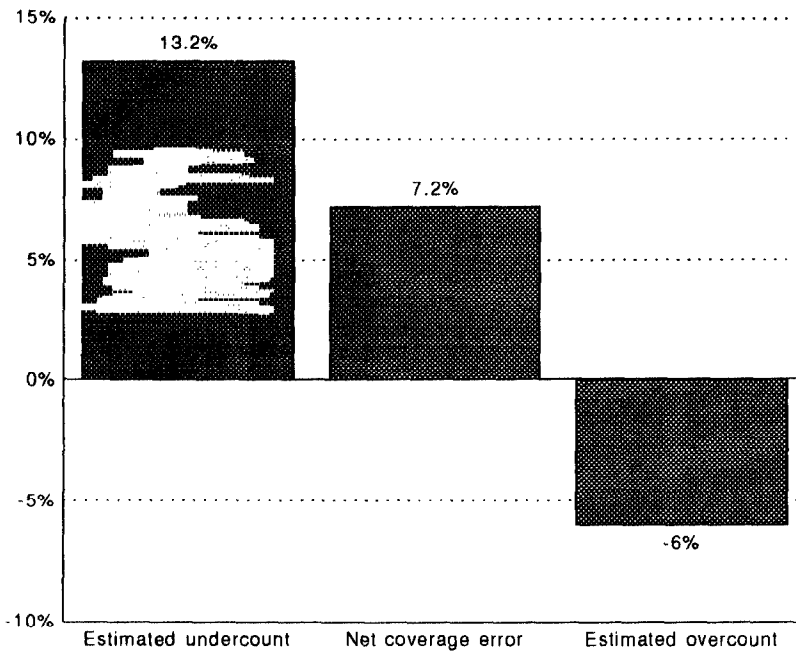
- How to improve coverage
  - How to define a farm
  - The role of sampling
  - Containing costs
  - The proper relationship with USDA
- 

### Challenges to Planning Future Agriculture Censuses

In the past, the Congress, the Department of Commerce, and GAO have encouraged the Bureau to reconsider its approach to the Agriculture Census. The Bureau has considered options in the past to make the Agriculture Census more economical, efficient, and capable of providing useful data in a more timely fashion. Those planning future Agriculture Censuses still face several challenges of improving the quality of coverage, defining a farm for statistical purposes, deciding the role of sampling for data collection, containing costs, and assessing the relationship with other U.S. Department of Agriculture (USDA) agricultural statistics programs.



## Estimated Net Census Farm Coverage Error - 1987 Agriculture Census

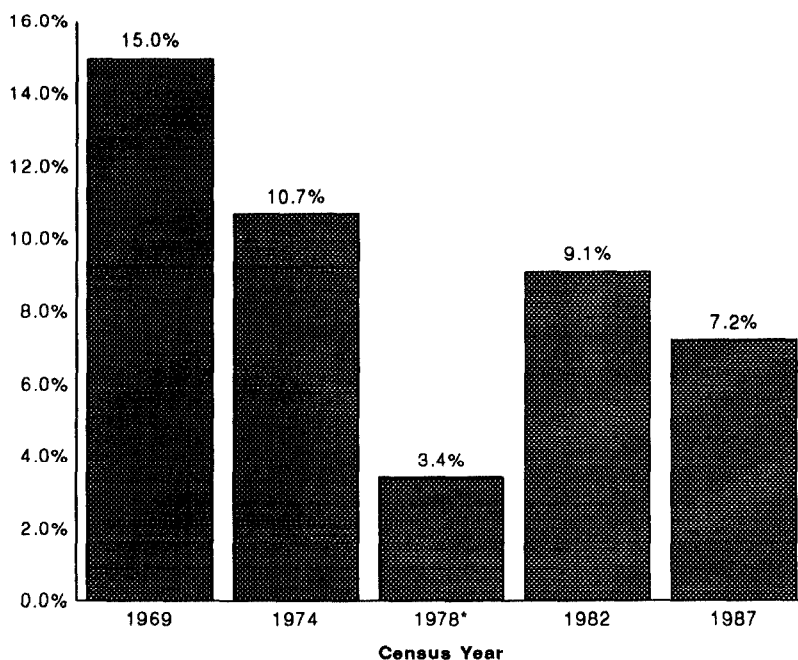


Source: Coverage Evaluation of 1987 Agriculture Census, Agriculture Division, Bureau of the Census.

### 1987 Agriculture Census Points Out Coverage Problems

Because data collection efforts have not yet been completed for the 1992 Agriculture Census, the current quality of coverage cannot yet be determined. The net farm coverage error in the last agriculture census, 1987, was 7.2 percent for the United States. The net farm coverage error consisted of undercounted and overcounted farms. The Bureau determined that about four of five of the undercounted farms were not on its mail list. The remainder were farms incorrectly classified (misclassified) as nonfarms. About half of the overcounted cases were nonfarms incorrectly classified as farms, and the remainder were farms with more than one census report--reports duplicated for a single farm or multiple reports for parts of a single farm.

## Estimated Net Census Farm Coverage Error - 1969 to 1987



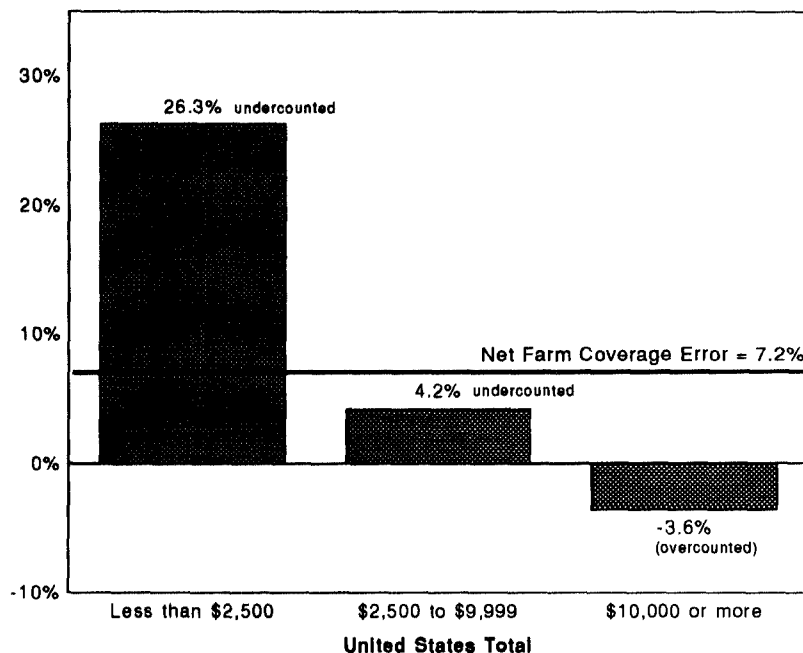
Note : \* Low net census farm coverage error in 1978 was the result of the use of area sample for coverage improvement.

Source: Coverage Evaluation of 1987 Agriculture Census, Agriculture Division, Bureau of the Census.

### 1978 Agriculture Census Had Best Coverage

Of recent agriculture censuses, the 1978 census had the best coverage. As shown in figure I.22 the net farm coverage error rate in 1978 was 3.4 percent. According to the Bureau's coverage evaluation report for the 1987 census, "The low net farm coverage error in 1978 resulted primarily from the inclusion of the area sample in the census." According to the Bureau, the area sample was too costly, and has not been used since 1978. It was not used for the 1992 Agriculture Census.

## Estimated Net Census Farm Coverage by Value of Sales - 1987

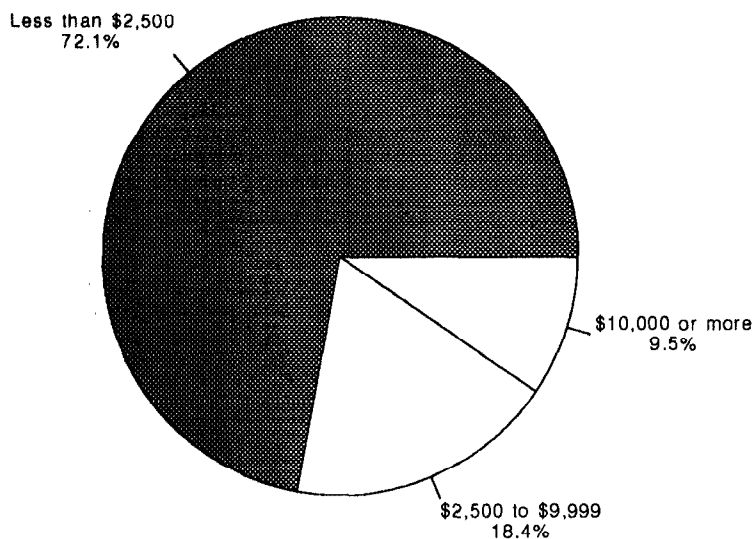


Source: Coverage Evaluation of 1987 Agriculture Census, Agriculture Division, Bureau of the Census.

### Coverage Problems Vary by Size of Farm

The undercount problem varies by the size of the farm as measured by the dollar value of sales. On a net basis, small farms with less than \$2,500 in sales are undercounted by 26.3 percent. Farms with sales between \$2,500 and \$9,999 are undercounted by 4.2 percent. On the other hand, large farms, those with \$10,000 or more in sales, are overcounted by 3.6 percent due to incorrect classification as a farm or by being counted more than once.

## Composition of Estimated Undercounted Farms - 1987



Farms by Value of Products Sold

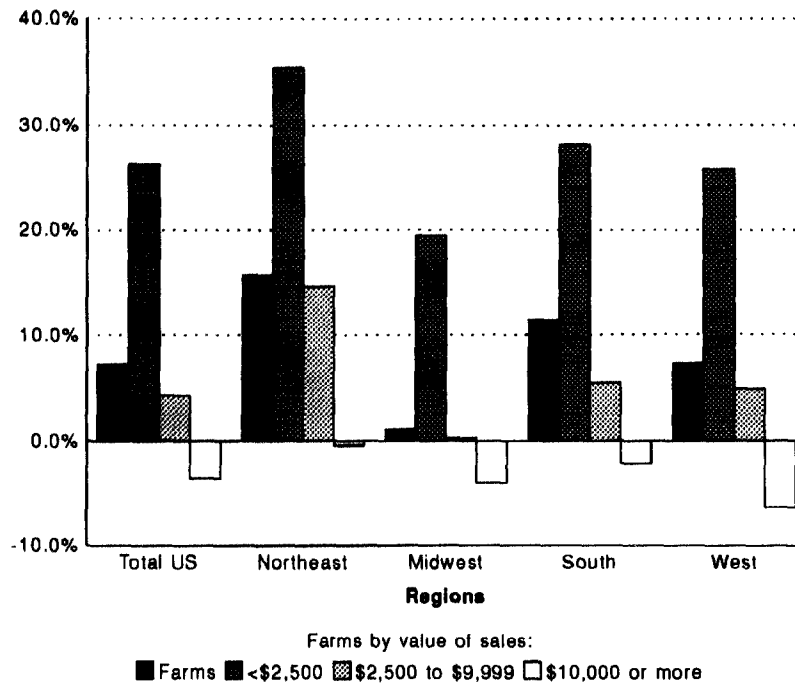
Source: Coverage Evaluation of 1987 Agriculture Census, Agriculture Division, Bureau of the Census.

### Most Undercounted Farms Are Small Farms

Quality of coverage for small farms was significantly worse than for the larger ones. As shown in figure I.24, about 72 percent of the undercounted farms had less than \$2,500 in value of agricultural products sold, while only about 9.5 percent of the undercounted farms had sales of \$10,000 or more. Of the undercounted farms, about 71 percent had 49 acres or less and only 6.7 percent had 180 acres or more.

Figure I.25

## Estimated Undercounted Farms, National and Regional - 1987

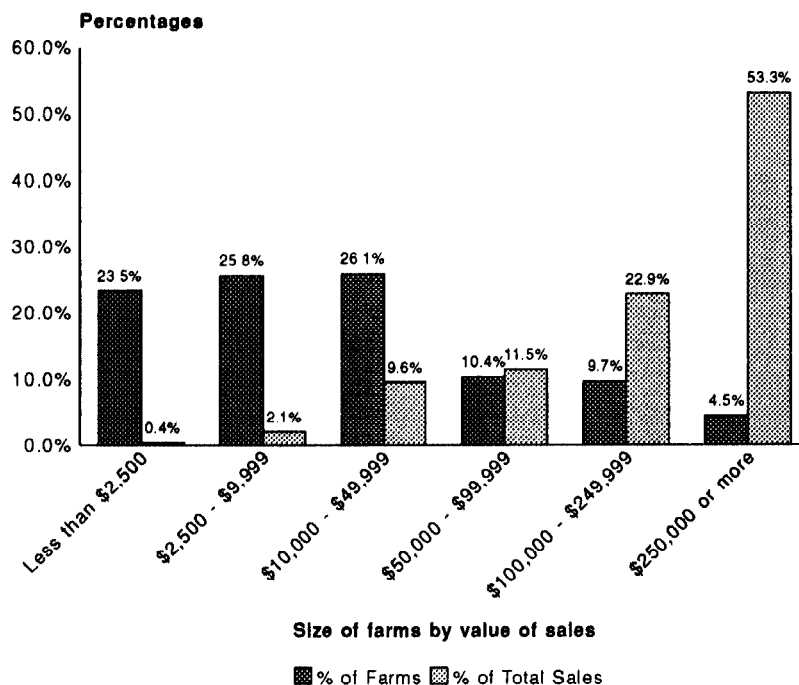


Source: Census Evaluation of 1987 Agriculture Census, Agriculture Division, Bureau of the Census.

### Coverage Varies by Region

Census coverage differed by the census regions as shown in figure I.25. The undercount coverage components were lower in the Midwest than in the other three regions. According to the Bureau, the overall coverage was substantially more complete for the Midwest region for all sizes of farms. This was due primarily to the higher proportion of larger farms in the Midwest region that are more likely to be included on the mailing list for the agriculture census. The completeness and accuracy of the Bureau's mailing list for the Agriculture Census in large part dictates the quality of the results.

## Composition of Farms by Value of Products Sold - 1987



1987 Census of Agriculture, Volume I Geographic Area Series, Part 51 United States Summary and State Data, Bureau of the Census.

### How to Define a Farm

Based on 1987 results, when the Bureau reported data on 2,087,759 farm operations, raising the threshold to \$2,500 would have eliminated about 24 percent of the farms but would have eliminated only 0.4 percent of the total value of sales. Raising the threshold to \$10,000 would have eliminated 50 percent of the farms but would have eliminated only 2.5 percent of the total value of sales.

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## Challenges for Future Agriculture Censuses

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- How to define a farm
    - Savings from higher threshold
    - Change considered in 1992 to meet budget cuts
  - Threshold unchanged since 1974
  - Tradeoffs involved
- 

### Threshold Unchanged Since 1974

In 1982, GAO reported that substantial savings could result from raising the dollar threshold for defining a farm by reducing the mailout and follow up.<sup>7</sup> In anticipation of budget reductions in fiscal year 1993, the Bureau had considered the option of only collecting data for farms with sales of \$10,000 or more to reduce the initial mailout and data processing costs. Because it was late in the planning process, July 22, 1992, and much of the preliminary work, including printing, had already been completed, the Bureau estimated that savings resulting from changing the threshold to \$10,000 would have been about \$2.2 million.

<sup>7</sup>Opportunities for Reducing the Cost of the 1982 Agricultural and Economic Censuses  
(GAO/GGD-82-43, Feb. 10, 1982).

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The Bureau's farm threshold of \$1,000 value of sales has remained the same since 1974, without even an adjustment for inflation.<sup>8</sup> Raising the threshold would reduce the size and cost of mailings and processing, but would have little impact on data on the nation's value of sales information. On the other hand, considerable data would be lost about the social and demographic characteristics of small farm operators. Planners would have to decide the value of such data in light of the poor response rates and net undercoverage.

<sup>8</sup>An overall GDP inflation-adjusted threshold equal to the 1974 threshold would be about \$2,750. According to the Bureau, using the farm price index, the threshold would be between \$1,500 and \$2,000.



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## Challenges for Future Agriculture Censuses

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- Sampling considered before
    - In 1954, the Department of Commerce recommended more use of sampling
    - In 1974, the Bureau recommended sampling replace the full census
    - In 1976 and 1977, legislation was proposed to replace full census with sample census
- 

### Sampling Considered Before

Unlike the Economic Census that uses sample survey results in combination with administrative records to provide data on all business establishments, the Agriculture Census uses a relatively more costly approach of attempting to identify, reach, and enumerate every individual farm operator.

The quinquennial frequency of and methodology used for the Agriculture Census has been questioned by the Department of Commerce and the Congress. The Department of Commerce had previously considered making the Agriculture Census a 10-year census supplemented by more frequent sampling operations to provide more timely data, with considerable cost savings.

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As far back as 1954, when there were more than twice as many farms as today and agriculture was a larger part of the nation's economic picture, a Department of Commerce committee recommended that this census be put on a 10-year cycle, supplemented by annual sampling. The committee believed that by doing so more kinds of data would be provided on a more timely basis and millions of dollars could be saved.

The Bureau initiated legislation to defer the 1974 census to 1977 when it would be taken as part of the Economic Census. The Bureau recommended that, in place of the 1974 census, a sample survey be done to provide data at the national and state levels. At that time, the potential savings were \$20 million. In 1976 and 1977, legislative proposals were introduced to change the Agriculture Census to a sample survey and transfer it to the USDA.

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## Challenges for Future Agriculture Censuses

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- Sampling involves trade-offs
    - Sampling smaller farms would require improved mailing list
    - No appreciable effect on total economic data
    - Affects social/demographic data on small farm operators
- 

### Sampling Involves Trade-Offs

If a sampling strategy similar to the Economic Census were used, 100 percent of large and medium-sized farms could still be surveyed and a sample of smaller farms could be used for the small farms. This would require an improved mailing list. Bureau officials noted that the Bureau has a difficult time identifying small farms based on mailing list information. In terms of the effect on the value of sales information, such a strategy would have a negligible impact because small farms' contribution to total value of sales is so small. On the other hand, sampling would introduce sampling error, in addition to current coverage error and affect data on the social/demographic characteristics of small farm operators. They also said that administrative data do not exist for the basic information items in the Agriculture Census.

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## Challenges for Future Agriculture Censuses

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- Containing costs
  - Bureau has recognized need to contain costs
  - Cost containment generally involves consideration of:

Definition of farm

Use of sampling

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### Need for Containing Costs

The Bureau has a continuing obligation to satisfy public and governmental needs for timely, reliable information while holding costs and reporting requirements to a minimum. Bureau officials have recognized the need to control costs of the Agriculture Census. Controlling costs will depend upon decisions about the minimum threshold for defining a farm and the use of sampling. These decisions depend in turn on the value and demand for agriculture data, particularly data on small farms and small farm operators.

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## Challenges for Future Agriculture Censuses

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- Proper relationship with USDA
    - What is the role of the Agriculture Census in the entire agricultural statistics program?
    - USDA's direct funding for major statistical programs:
      - FY 1991 - \$266 million (act.)
      - FY 1992 - \$287 million (est.)
      - FY 1993 - \$294 million (est.)
- 

### Finding The Proper Relationship with USDA

The Agriculture Census is only part of a total agricultural statistics program. Based on GAO's prior work, the USDA has improved its statistical gathering techniques, collects data on an annual basis, and has reduced its reliance on the Bureau's agricultural data.<sup>9</sup> For example, the USDA directly funded about \$266 million for its major statistical programs in fiscal year 1991 and estimated funding levels of \$287 million in 1992 and \$294 million in 1993.

<sup>9</sup>How the Content of the Agricultural and Economic Censuses Is Determined and Used (GAO/IMTEC-83-4, Sept. 2, 1983).

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The Bureau uses the National Agricultural Statistics Service's June Enumerative Survey as part of its coverage evaluation program, in lieu of doing its own area sample to improve coverage during the census itself. Also, the Bureau uses USDA data to help prepare its mailing list, but, because of confidentiality provisions is unable to then share its information with the USDA.

We have not assessed as part of this review whether the USDA's programmatic needs for information from the Bureau's Agriculture Census dictate the continuation of the Bureau's present methodology.

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# Appendix II: Major Contributors to This Report

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(243042)





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