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## PART I. THE CENSUS OPERATION

### Introduction

In the United States, official census-taking on a nation-wide basis dates back to 1790, when U. S. marshals collected the data required by the Constitution for apportionment purposes, with some additional detail specified by the Congress. In each subsequent decade, the enumeration was repeated, with additional subjects added from time to time. For example, in 1810 inquiries on manufacture were added and in 1840, inquiries on agriculture. The technique for collecting the information remained the same until 1880, when new legislation provided that a special field force (instead of the U. S. Marshals) be organized to do the job. Each decade the staff was organized on a temporary basis to take the particular census.

In 1902, the Census Office was created as a permanent agency of the Government. One of the advantages ascribed to this form of organization was that the workload could be spread over a decade, and various statistical inquiries were separated from the decennial census and taken at different times. In addition, many inquiries could be taken on a current basis. Since the early part of the century, Censuses of Manufactures, Business, Governments, Religious Bodies, and other subjects have been rescheduled for years other than those ending in "0" and a large number of current reports has been issued by the Bureau. As an example, Censuses of Manufactures were taken every five years from 1904 to 1919, then every two years

until 1939. Since the early 1920's, the Bureau has issued monthly and quarterly reports on specific products.

In 1940, there was still quite a concentration of major censuses, in the years ending in "0". Censuses were taken covering Population, Housing, Agriculture, Manufactures, Business, Mineral Industries. New legislation enacted in 1948 provided for taking the Censuses of Manufactures, Business and Mineral Industries on a quinquennial basis in years ending in "4" and "9". Thus, in 1950, the major censuses to be taken in that year covered only population, housing, agriculture, irrigation, and drainage.

Work on the 1950 Censuses covered several years. Every step had to be planned in advance so that it would fit into the succession of operations which converted the information into volumes of statistics in an efficient manner. The results of most use to the largest number had to be made available most readily, with facilities provided to meet the needs of those who required more specialized information.

The process of taking the 1950 Censuses is described, step by step, in the first seven chapters of this volume. That process began with the granting of authority and funds from Congress to do the job, and it was rounded out with the publication of the results. In these chapters, the general procedures are described. The chapters in Part II show how specific items of information were collected and processed.

## CHAPTER I

### PREPARING FOR THE ENUMERATION

The law required that the census enumeration start on April 1, 1950. More than 150,000 persons were to take active part in this enumeration, while another 10,000 were to help process the data and prepare them for publication. Before April 1, all the planning and preliminary work had to be completed so that the task could be done efficiently. Preliminary work included reviewing the authority for taking the census, obtaining funds from the Congress, determining the questions to be asked, designing the survey (including determination of the sampling plan), informing the public, and defining and mapping the various geographic areas.

#### Legal Authority for the 1950 Censuses

The Constitution of the United States authorizes the Census of Population. Article I, section 2, provides that "the actual enumeration shall be made within three years after the first meeting of the Congress of the United States and within every subsequent term of ten years, in such manner as they shall by law direct." The First Decennial Census was taken in 1790. The 1950 Census was the Seventeenth Decennial Census of Population.

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The 1790 Census was relatively simple. It gave the number of inhabitants in each State and a few facts about them. Decade by decade, the scope of the census was enlarged to meet the needs of an ever-growing number of users. In 1950, it covered not only the personal characteristics of the people, but also their occupations, their incomes, and their educational attainments.

The "manner" in which the 1950 Census of Population was to be taken was prescribed in the Act of Congress of June 18, 1929 (46 Stat. 21; 13 U.S.C. 201-218). This Act also provided for continuing the quinquennial Census of Agriculture and the decennial Censuses of Irrigation and Drainage (see Appendix F). The Census of Agriculture was first taken in 1840 and has been on a quinquennial basis since 1920. The Census of Irrigation has been taken in conjunction with the decennial census since 1890, and the Census of Drainage has been taken since 1920.

The 1950 Census of Housing was authorized by the Act of July 15, 1949 (63 Stat. 413; 42 U.S.C. 1442). The first Census of Housing was taken in 1940, but the legislation for that operation did not provide for subsequent censuses. The 1949 law authorized decennial Censuses of Housing beginning in 1950.

The Act of June 18, 1929, applied to all the enumerations of the decennial census. Its provisions required persons enumerated to supply complete and accurate information, to the best of their knowledge. The law in turn protected such persons by providing severe penalties for Census employees who disclosed to unauthorized persons the information supplied.

Changes in laws have modified the Bureau's program and simplified the administration of the censuses. Through 1940, the Census program had included Censuses of Manufactures, Mineral Industries, and Business in the years ending in "0." By a 1948 Act of Congress, these Censuses were changed to cover the years ending in "3" and "8," thereby enabling the Bureau to concentrate its resources in the years ending in "0" on the Censuses of Population, Housing, and Agriculture.

In the course of reviewing the legal authority, a number of questions were raised which required interpretation of the law. For example, two important questions which were referred to the Attorney General involved the methods of enumerating persons residing abroad and college students. The question of authority to cover the Trust Territories of the Pacific and other territory not specifically mentioned in the law was also the subject for legal discussion. To the extent possible, such questions were resolved before enumeration plans were made final.

### The Bureau Organization

Large-scale censuses are an important part of the Bureau's job, but not the only task which the Bureau performs. The regular organization must carry forward a continuing program of annual, quarterly, and monthly statistical surveys and special assignments, as well as the major quinquennial and decennial censuses.

This basic organization of the Bureau provided for major censuses such as the 1950 Censuses. The major units remained intact, one new one (the Philadelphia office) was added, and units at the lower levels were subdivided to provide supervision for the new employees. For the 1950 Censuses, the Bureau expanded from a group of 2,575 full-time workers at the end of 1948 to a total staff of 10,935 at the end of 1950. At the peak of the 1950 Census operations, there were about 150,000 full-time and part-time employees, most of them on short temporary assignments.

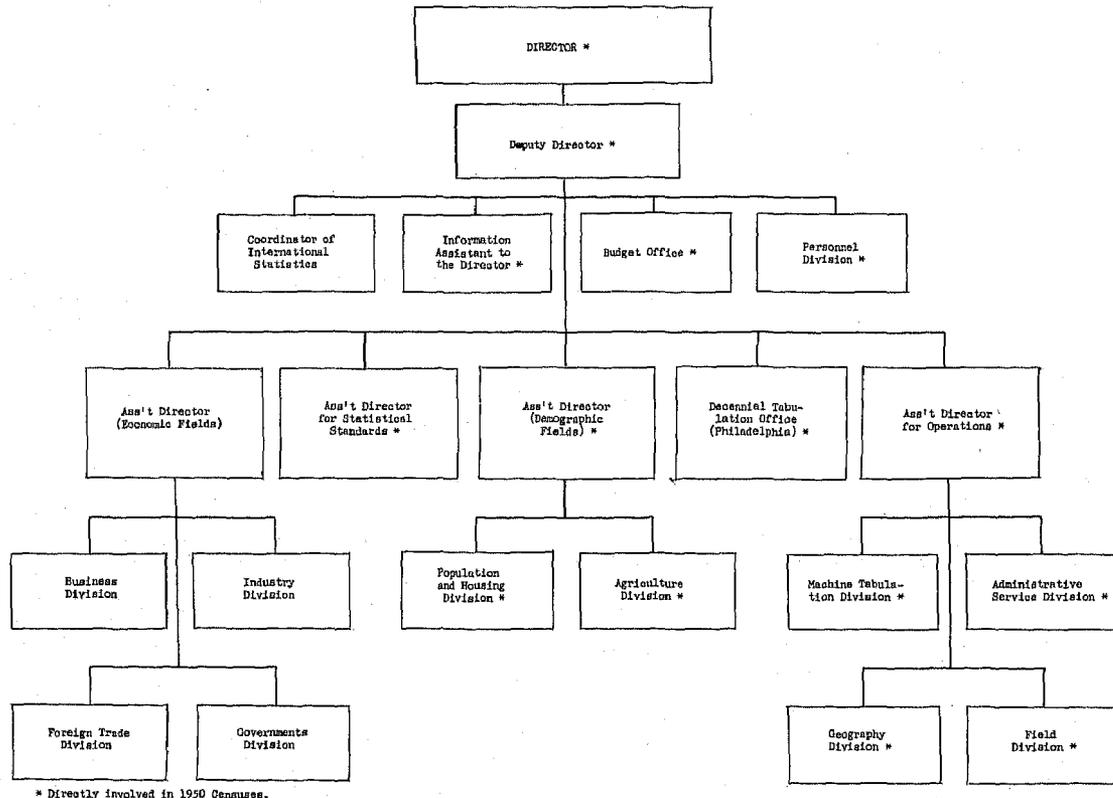
#### Executive Staff

The Director, the chief executive of the Bureau, was assisted by a Deputy Director, who shared his responsibilities. On their immediate staff were four Assistant Directors, the Coordinator, International Statistics, the Information Assistant to the Director, the Budget Officer, and the Chief of the Personnel Division (see Fig. 1).

The four Assistant Directors controlled the various operating divisions of the Bureau. Two divisions--the Agriculture Division and the Population and Housing Division--were under the direction of the Assistant Director for Demographic Fields. The Assistant Director for Operations was in charge of the Machine Tabulation, Administrative Service, Geography, and Field Divisions. The Assistant Director for Economic Fields supervised the activities of the Business, Industry, Foreign Trade, and Governments Divisions, which were not involved in the 1950 Censuses.

The Assistant Director for Statistical Standards was responsible for statistical techniques throughout the Bureau. The personnel in this office worked in a staff capacity with the Assistant Directors and the divisions on many phases of the censuses. This office was responsible for the technical direction of the sampling, quality control, research and experimental work on methods, and related activities; for developing and advising on publication practices and standards; and for the Post-Enumeration Survey, which was taken to evaluate the quality of the censuses.

Figure 1. --Organization of Bureau of Census at the Time of the 1950 Censuses



Divisions

Six of the twelve divisions were concerned with subject matter--Population and Housing, Agriculture, Business, Industry, Foreign Trade, and Governments. Three--Machine Tabulation, Geography, and Field--provided technical services; and the other three--Personnel, Administrative Service, and Budget--performed administrative functions. A new unit, the Decennial Tabulating Office, was established on a temporary basis, to meet the requirements of the work.

All the service and administrative divisions worked on the 1950 Censuses; but the Agriculture Division and the Population and Housing Division were the only subject-matter divisions involved.

The Geography Division determined the boundaries of the various geographic areas involved in the enumeration and in the presentation of the statistics, including the enumeration districts--the smallest geographic entity enumerated as a unit--and prepared the maps used during enumeration (see Chapter II).

The Administrative Service Division formulated the policies and practices for obtaining space, supplies, and equipment. It arranged for communication, transportation, and related facilities. It maintained official accounting records, prepared fiscal reports, audited vouchers, prepared Washington payrolls, and arranged for printing of schedules, forms, and publications. In addition, it carried on an administrative survey program in the field offices to see that the administrative problems were properly handled.

The Budget Office was responsible for budgetary planning and control. It coordinated the budget estimates and justifications, handled allocation and control of funds, and developed budget and fiscal policies.

The Personnel Division formulated personnel policies and prepared procedures to guide the various offices in applying personnel regulations. Recruitment, training, and orderly decrease of staff after completion of the work were among its major activities during the 1950 Censuses. This division also classified jobs, reviewed changes in organization, and directed employee services.

The Field Division collected the data. For this purpose, it set up 14 Area Offices to direct the work of the 476 District Offices. The District Offices supervised the actual collection of the data (see Chapter III).

The Decennial Tabulation Office in Philadelphia was organized to meet the needs of processing the 1950 Census of Population and Housing returns. Recruitment of qualified workers in the Washington area was difficult, and space was not readily available. Accordingly, the Philadelphia office functioned from May 1950 until July 1951. District Offices in 30 States shipped their completed schedules directly to Philadelphia. About 70 percent of the Population and Housing Schedules were edited, coded, and punched in Philadelphia.

The Seventeenth Decennial Census Committee

Because the 1950 Census program involved eight operating divisions and covered three major censuses, coordination was essential for efficient planning and operation. As one of the devices to effect this coordination, the Seventeenth Decennial Census Committee began to meet regularly in the spring of 1948.

The Committee ranged in size from 15 to 25 persons. It included the Deputy Director, the Assistant Directors, representatives of all divisions concerned with the 1950 Censuses, and other key persons. They reviewed time schedules and survey plans, watched the progress of operations, noted the effect on the budget, and proposed solutions for problems and emergency situations.

Subcommittees handled specific problems. One of the most effective was the Budget Clinic, which reviewed the Census budget and recommended changes in levels of operation and in the balance between various working units.

Size of Staff

The number of employees varied considerably among the divisions as the work progressed. One group might be completing an operation when another was starting one. Consequently, workers who finished a job in one division could be moved to another. Such reassignment and adjustment of staff was one of the major problems of the 1950 Census operation.

In the field offices, employment rose sharply before enumeration and then declined as the work progressed. The number of

employees in those offices at the end of each month in the period of greatest activity was as follows:

February 1950.....	2,054
March 1950.....	148,171
April 1950.....	63,731
May 1950.....	13,206
June 1950.....	4,199

Fluctuations in the number of persons employed on the 1950 Censuses in each division are shown in Table A.

Financing the Censuses

Work on the 1950 Censuses extended over a period of several years. For proper planning, it was desirable to know approximately how much money would be available for the entire period. An over-all plan was needed to decide upon the level of the budget request and to make appropriate decisions on work load. Collection of statistics in 1950 would be futile if funds were not available in 1951 and 1952 for their processing.

In July 1947, Congress appropriated \$200,000 for preliminary work on the Censuses of Population and Agriculture. These funds permitted the Bureau to start the map work and to conduct small-scale enumerations in which census questions, schedule formats, and techniques of enumeration were tested. These tests also provided data on costs which were used in developing the overall plan.

As a first step in budgeting, costs of different kinds of censuses were estimated. These censuses ranged from one that met the minimum legal requirements to one that satisfied all the important needs for data. Staff members studied the specifications for these censuses and agreed upon a set of conditions which would produce a good census at a reasonable cost.

A budget for the Censuses of Population and Agriculture for the entire five-year period was then prepared; it was sent to the Office of the Secretary of Commerce on September 15, 1948, for review, adjustment and submittal to the Bureau of the Budget. The revised budget was then submitted by the Bureau of the Budget to the President and to the Congress. Funds for the 1950 Census of Housing were requested after July 1949 when that Census was authorized.

Congress reviewed plans and estimates for the entire Census period, but it appropriated funds for only one year at a time. Consequently, the Bureau submitted a budget request each year showing what funds were needed for the coming year, what progress had been made, and what funds were required for the remainder of the Census period (see Table 8, Appendix D).

While the long-term budget was still being prepared, funds were requested for the fiscal year 1949, and Congress appropriated an additional \$2,676,000 for preparatory work. The Bureau was thus able to continue the map work, conduct additional pretests, and develop general technical and administrative plans.

The funds spent on preparatory work helped in the efficient planning of the Censuses. The schedules, the sampling plans, and the instructions to enumerators and administrators were tested in actual field operations. In this process, methods of improving the data and of saving money were determined; and potential errors were eliminated. The most up-to-date maps obtainable were prepared beforehand, so the enumerator could find his way around his district and locate the people living there. The public was made acquainted with the Censuses through newspapers, magazines, radio broadcasts and other means so they would give the required information accurately and without hesitation. Finally, the money permitted development of a good training program for administrators and enumerators; hence, when the time for enumeration arrived, they were ready to operate more efficiently and economically.

The appropriation of money for only one year at a time imposed certain limitations on the Bureau's activities. The Bureau had to operate on a schedule which could be changed rapidly and radically rather than on one which could be initially established and followed throughout the period. The fact that the amount of funds available was fixed for only one year in advance thus introduced an element of uncertainty which had to be considered in advance planning.

Choosing the Questions

Under authority delegated to him by the Secretary of Commerce, the Director of the Census selected the specific questions to be asked in the 1950 Censuses. Helping him were the technical staff of the Bureau and advisory committees of experts in specific fields. Under the Federal Reports Act of 1952, the

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Table A. -- Employment on the 1950 Censuses by Major Organizational Unit, June 1948-December 1952

(Figures from Washington personnel records for end of month, except for Field Division, which are based on payrolls for period ending nearest end of month)

Month	Total	Pop. and Housing Div.	Agriculture Div.	Field Division		Admin. Service Div.	Mach. Tab. Div.	Personnel Div.	Geography Div.	Philadelphia Office	Other
				Central office	Field offices						
June 1948.....	88	-	2	-	-	-	-	-	85	-	-
Sept. 1948.....	470	-	18	6	7	10	16	11	330	-	<sup>1</sup> 72
Dec. 1948.....	568	13	16	6	115	18	12	10	274	-	<sup>1</sup> 104
March 1949.....	483	38	19	8	3	18	11	11	368	-	7
June 1949.....	860	46	22	26	166	31	14	20	523	-	12
Sept. 1949.....	1,133	126	32	33	77	115	57	40	629	-	24
Dec. 1949.....	1,608	98	47	43	440	230	80	61	577	-	32
March 1950.....	149,399	110	47	53	148,171	<sup>2</sup> 285	115	73	506	-	39
June 1950.....	7,783	610	<sup>1,151</sup>	108	4,199	326	403	73	380	490	43
Sept. 1950.....	8,828	<sup>1,329</sup>	<sup>934</sup>	41	1,199	286	<sup>1,734</sup>	<sup>4</sup> 68	276	2,904	57
Dec. 1950.....	9,505	<sup>1,667</sup>	872	30	347	234	2,671	59	267	3,311	47
March 1951.....	8,256	1,224	748	54	60	204	3,019	54	222	2,630	41
June 1951.....	4,148	985	825	55	-	194	1,784	38	204	29	34
Sept. 1951.....	3,009	585	792	35	-	146	1,218	40	158	-	35
Dec. 1951.....	2,398	523	617	28	-	131	938	31	90	-	40
March 1952.....	1,893	630	312	17	-	121	688	28	45	-	52
June 1952.....	1,711	716	169	16	-	121	566	25	50	-	48
Sept. 1952.....	1,453	687	158	14	-	114	368	25	41	-	46
Dec. 1952.....	682	427	4	9	-	80	78	29	17	-	38

<sup>1</sup>Includes employees on Census of Business prior to passage of the Act of June 19, 1948.<sup>2</sup>Peak employment 395, February 1950.<sup>3</sup>Peak employment 1,228, July 1950.<sup>4</sup>Peak employment 88, August 1950.<sup>5</sup>Peak employment 1,708, November 1950.

Division of Statistical Standards of the Budget Bureau reviewed and approved the questionnaires before they were adopted. The final decision thus reflected the views of the Department of Commerce, other Government agencies, and users of the data.

The 1950 Censuses were an inventory and a description of the Nation's people, farms, and houses. Because of the basic character of the Census and its universal use, the questions had to be selected to furnish as much information as possible to legislators, business men, educators, research workers, and others, within the framework of available resources. The data which result from the Census affect public policy and important business decisions, making it essential that extreme care govern the formulation of the questionnaires.

#### Staff Members

As early as 1946, the staffs of the Agriculture Division and of the Population and Housing Division, as well as other parts of the Bureau, began to study the use of data from previous censuses and the requests for new information. They examined not only the extent to which earlier data were used but also the shortcomings revealed when the figures were applied to specific problems. New questions were evaluated in terms of the need for information and the problems and costs in getting it. Tests were made to see if respondents could provide the new information with reasonable accuracy.

The first draft of questions tentatively scheduled for the 1950 Censuses was drawn up early in 1947. These questions were submitted to the advisory committees for criticism. Individual items were revised many times as suggestions and information became available.

#### Consultants

Experts on specific problems, such as survey techniques or reactions of respondents, and specialists in particular fields, such as agriculture or housing, were asked to supplement the knowledge of the Bureau staff members. Their advice was particularly valuable because they usually were important users of Census data. These authorities usually worked as a group in advisory committees; but, if a problem of limited interest confronted the Bureau, an expert best informed on that problem was called in for consultation.

#### Technical Advisory Committees

Technical committees in four fields advised the Bureau on the 1950 Censuses. These four committees covered: (1) General Population Statistics, (2) Economic Statistics in the Census of Population, (3) Housing Statistics, and (4) Agricultural Statistics.<sup>1</sup>

The committees pointed out needs for information and recommended criteria for the inclusion of certain questions in preference to others. They considered specific problems and recommended methods of handling these problems. They also reviewed the form and content of the publication program.

The Technical Advisory Committee on General Population Statistics advised on questions of age, sex, race, marital status, education, residence, and migration. The Technical Advisory Committee on Economic Statistics in the Population Census considered problems in labor force, employment, unemployment, income, and related subjects. The Technical Advisory Committee on Housing Statistics helped with the questions and publications on housing and set up a subcommittee to work on the Survey of Residential Financing. The Technical Advisory Committee for the Census of Agriculture considered the problems related to that Census.

#### American Statistical Association Advisory Committee

Since 1919, the Census Advisory Committee has been a standing committee of the American Statistical Association for the purpose of advising the Directors of the Bureau on program and policies. This Committee expresses the viewpoint of the professional statisticians of the country. During the 1950 Censuses, it had a representative on each of the technical advisory committees and also served as a final clearing house for their recommendations. The members were able to apply a broader perspective to problems on which the technical advisory committees may have made conflicting recommendations and also to bring wide experience and knowledge in many fields into the discussions.

<sup>1</sup>See Appendix G, Part II, for names of the persons who served on these committees during the Census period.

### Special Committees

On occasion, unusual problems resulted in forming committees for special purposes. For example, a committee studied the establishment of an "urban fringe" (the built-up area around large cities). Another worked on training methods.

Existing committees of various organizations with an interest in the Census were also given an opportunity to review Census plans and make recommendations. The Business Statistics Committee of the United States Chamber of Commerce named a special subcommittee to consider problems of the Census of Population. The needs of the marketing groups for Census data were pointed out by the Census Advisory Committee of the American Marketing Association. The Committee on Social Statistics transmitted the suggestions of the American Sociological Society to the Bureau. The Bureau staff also worked closely with the Committee on Labor Force Statistics of the Social Science Research Council. In addition, some regional and local Census committees were established under various auspices. These illustrate the types of committees, but do not exhaust the list.

Two principal committees supplemented the work of the Technical Advisory Committee for the Census of Agriculture. The Joint Census-U.S. Department of Agriculture Committee, which followed a pattern established for past Censuses of Agriculture, worked through a number of subcommittees on various problems. This committee helped plan the questionnaire, the procedures, and the tabulations. The other principal committee was named in 1946 by the President of the Agriculture Publishers Association and was called the Committee for the Development of Census Data. It presented to the Bureau the needs of the agricultural publishing industry.

Within the Government, Census plans and procedures were reviewed under the sponsorship of the Division of Statistical Standards of the Bureau of the Budget. Interdepartmental committees were organized for this purpose. This was in addition to many conferences with individuals during the drafting of the questionnaires.

### Pretests of the Questionnaires

Past experience indicates that one of the best means of evaluating a proposed questionnaire is to have Census enumerators take it to the field and try it out on a group of people. Such an operation reveals not only the flaws in the questionnaire but also the public reaction to it. Did the respondent understand the questions? Did he have the information to answer them? Did he resent them? Were there so many questions that he got tired and inattentive? Could the enumerator follow the questionnaire effectively? Were the answers reasonable? Most of these questions could be answered by putting the questionnaire to a field test.

Wording and arrangement of questions, methods of enumeration, operating procedures, and costs were among the factors tested in this manner. Was a schedule for each household better than one for a number of households? Was it more accurate and convenient to mark one of several boxes with an "X" than to write in a reply for different types of questions? Was it feasible to get basic population data for all persons and additional data for a sample of persons? Was enumeration by the respondent (that is, self-enumeration) as accurate as that by the enumerator? Did it cost less? If self-enumeration were used, should the enumerator or the postman distribute the questionnaires?

Field tests were made in several ways. One way was to add a proposed question or group of questions to the schedule for another existing survey; the enumerator could then ask the census questions when he finished those for the regular survey. The Current Population Survey, which is taken each month to get labor force information, was used for this purpose. So were the special censuses which are taken for localities which want a special count of their populations. Tests such as these could be made at little extra cost.

Another way of making the field test was to simulate the conditions of an actual census as closely as possible. In some pretests, only specific phases of the censuses were examined. Several pretests, however, were "full dress"; that is, enumerators were trained, and they asked the householder the full list of questions (see Table B).

### Testing Field and Control Procedures

The first "full dress" pretest for the 1950 Censuses was held in April 1948, the second in October 1948, and the last in May 1949. Field offices had to be set up to conduct these pretests. Accordingly, some idea could be obtained of the administrative problems involved.

Recruiting and training personnel, obtaining office quarters, and equipping the staff were the initial problems to be solved. The pretests showed what steps had to be taken to attract applicants, what tests would identify those who could do satisfactory work, and what training they would need. The space required for storing the supplies, training the enumerators, and doing the office work was determined. Whether free space--usually in government or community buildings--was available and how it could be obtained was studied. Observers reported whether supplies arrived in sufficient quantity, in good condition, properly labeled, and on time.

Procedures for controlling the workers and the materials were determined during the pretests. What kind of an organization was needed in the field office? What records should be kept and what reports should be made? How much of the enumerator's work should the Crew Leader check? How much of the completed work should field offices edit before sending it to Washington? The information obtained during the pretests helped answer such questions.

A brief summary of various tests made prior to the 1950 Censuses is shown in Table B. For convenience, these tests are divided into 4 groups--those conducted as supplements to the Current Population Surveys; those conducted in conjunction with other surveys; those designed to test specific phases of the Census; and the "full dress" pretests.

### Special Enumerations

The two main schedules used in the 1950 Censuses--the Population and Housing (P1) Schedule and the Agriculture (A1) Questionnaire--could not carry all the questions needed.<sup>2</sup> Moreover, certain types of information required specialized treatment or could be collected more efficiently by different techniques. To supplement the main Censuses, a number of enumerations were planned to obtain additional data and to check the quality of the Censuses.

Agriculture Surveys.--A Census of Drainage, using Forms D1 and D2, was taken in 40 States; and a Census of Irrigation, using Forms I-1 and I-2, was taken in 20 States. Landlord-tenant operations were reported on a special questionnaire (A3) in 14 States. This questionnaire provided information on large economic units in which persons farm their land with tenants, and it helped to determine the units for which Agriculture Questionnaires (A1) were required. Horticultural specialties (nursery products, flowers, and vegetable and flower seeds) were surveyed by mail with Forms A11 to A14.

Survey of Residential Financing.--Mortgages of residential property were studied in this survey. The number, amount, and other features of the mortgage were related to the characteristics of the property and the borrower. A sample of owner-occupied properties and rental properties (including vacant) was selected for this purpose from the entries on the Population and Housing (P1) Schedule.

Post-Enumeration Survey.--The Bureau conducted this survey to find out whether it counted all the people, dwellings, and farms, and whether it described the characteristics of these units accurately. This survey also provided a basis for evaluating the different procedures tried out on a limited basis in experimental areas during the 1950 Census. The forms used were PE-101 to PE-106 and PE-109.

Experimental Areas.--A number of variations in the procedures for collecting data were introduced in ten District Offices. These variations made possible a comparison of procedures under actual census conditions. The experimental areas were located in Ohio and Michigan. In six of these districts, the alternative procedures involved the use of a household schedule (instead of a line schedule for a number of households), of the household as a sampling unit (instead of the person), and of self-enumeration (instead of direct enumeration). In four of the districts, assignments were made to enumerators in such manner that the variation in response could be studied in terms of enumerator differences.

### The Sampling Plan

Improved techniques, rising costs, and increasing demands for information were factors in the more extensive use of sampling in the 1950 Censuses than in previous censuses. If only one person out of five is asked a question, the cost is lower and there is less burden on respondents than if all questions are asked of every person. Moreover, the data can be tabulated and released to the public more quickly and more economically.

<sup>2</sup>The forms used for collecting information are shown in Appendix A.

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Table B.--Pretests of Parts of the 1950 Censuses

Date	Area	Methods or items tested	Results
<u>I. Supplements to the Current Population Survey</u>			
3/46	CPS areas	Enumeration of people where enumerator finds them as well as where they usually live	Information obtained on enumeration of non-residents and college students
4/48	CPS areas	Method of obtaining income data; enumeration of people where enumerator finds them as well as where they usually live	Pattern for income questions determined; decisions made on enumeration of nonresidents and college students
5/48	CPS areas	Questions on physical characteristics of dwellings	Definition of dwelling unit revised
<u>II. Experiments conducted in other surveys</u>			
4/46	Wilmington, N. C.	Enumeration of people where enumerator finds them as well as where they usually live; enumerator training; questions on general population characteristics (Special Census)	First draft of population questions prepared
2/48	Washington, D. C.	Questions on income (Survey made for National Park and Planning Commission, Bureau of Labor Statistics, and Housing and Home Finance Agency)	Schedule format, questions, and instructions changed
5/48	Little Rock and North Little Rock, Arkansas	Self-enumeration (Special Census)	Response rates and comparative costs determined
6/48	Philadelphia, Pa.	Methods of measuring housing quality (Survey made for Interdepartmental Subcommittee on Housing Adequacy)	Explanation of "dilapidation" revised
3/49	Chicago, Ill., and adjacent counties	Obtaining complete enumeration in sample of households (Chicago Community Survey)	Provided basis for consideration and test of household schedule
6/49	Baltimore, Md.	Check on quality of housing data collected in survey made for Baltimore Housing Authority	Housing questions revised
<u>III. Tests of Specific Phases of the 1950 Censuses</u>			
5/47	Altoona, Pa., Charlotte, N. C., Cincinnati, Ohio, and Louisville, Ky.	Document sensing (Marketing schedule so card can be punched automatically)	Test indicated technique possible
1/48	6 Southern counties	Landlord-Tenant Operations Questionnaire	Procedures revised
4/48	33 field offices	Agriculture questions, particularly livestock questions	Questions revised
10/48	Longman, Colorado, and Caldwell, Idaho	Irrigation questionnaire and procedures	Questions revised and plans adjusted
8/49	33 field offices	Alternative population and housing schedules	Final schedule form determined
8/49 and 9/49	5 counties	Drainage questionnaire	Questions and procedures modified
9/49	Puerto Rico	Population, housing, and agriculture questions	Questions revised
10/49	Raleigh, N. C. and Roxboro, N. C.	Training procedures	Final training plan determined
11/49	Raleigh, N. C.	Survey of Residential Financing questions	Plans modified
1/50	Areas in 13 States	Horticulture questionnaires	Questions revised
1/50	Chicago, Ill.	Survey of Residential Financing questions	Procedures determined
<u>IV. "Full Dress" Pretests of the 1950 Censuses</u>			
4/48 and 5/48	Cape Girardeau and Perry Counties, Mo.	Comparison of quality of data from schedule with few questions and one with many questions; enumeration of people where enumerator finds them as well as where they usually live; check on quality of data	Short schedule led to no material improvement in quality of data; persons to be enumerated where found as well as at usual residence; questions revised; costs determined; duties of Crew Leaders formulated
10/48	Oldham County, Ky., Carroll County, Ky., Putnam County, Ill., Union County, Ill., Minneapolis, Minn.	Enumeration procedures (Self-enumeration, distribution of materials by post office, etc.); check on quality of data	Self-enumeration to be used in Census of Agriculture; cost, time and quality of data under different procedures determined
5/49	Anderson City, S. C., School District 17, S. C., Edgefield County, S. C., Atlanta, Georgia, and rural areas near each of 64 CPS field offices	Training methods; questionnaires; operating procedures	Training procedures revised; questionnaire modified; procedures for shipping supplies modified; Post-Enumeration Survey procedures determined

Sampling plans were formulated at the same time the schedules were designed. Two samples were used in the Census of Population--a 20-percent sample and a 3-1/3-sample of persons. A 20-percent sample of dwellings was selected for the Census of Housing. The sample for the Census of Agriculture included all large farms and about one-fifth of the other farms. Separate samples were also designed for the Post-Enumeration Survey and for the Survey of Residential Financing.

Population 20-Percent Sample

To get the count of people, the enumerator listed each person on a separate line on the population side of the Population and Housing (P1) Schedule. The lines were numbered 1 to 30 and every fifth line was labeled "Sample line." The sample line numbers varied from sheet to sheet. On one sheet, the sample lines were 1, 6, 11, 16, 21, and 26; on another, 2, 7, 12, etc.; on another, 3, 8, 13, etc.; on another, 4, 9, 14, etc.; and on another, 5, 10, 15, etc.

A person whose name was listed on a sample line was automatically in the sample; and after the enumerator had entered information on age, sex, race, and the other 100-percent items, he asked all the sample questions which pertained to that person. These questions referred to: migration 1949 to 1950, birthplace of parents, educational attainment, school enrollment, period of unemployment (if unemployed), number of weeks worked in 1949, income in 1949, and veterans status.

Whether information on an item was to be obtained for all persons or only for one in five depended primarily on the amount of detail needed. For example, accurate data on age were needed for very small areas. Because the sampling error in small figures is large, the age data for these small areas were collected for the entire population. On the other hand, the data on weeks worked in 1949 were not needed for small areas or small groups; so, a sample could be used.

The use of schedules with different sample lines prevented a bias in the selection of the sample persons. For example, if the first line had always been a sample line, the first head of the household in the enumeration district would always be in the sample.

The sample deviated from 20 percent in some localities, because some of the population lines on the schedule were not filled or because a person was not listed on a sample line. Population lines were not filled because the housing information for a household had to be on the same sheet as the population information for the household head. If an area had only 2 persons in each household, only 24 of the 30 population lines would be used when the housing lines were completed and the next household had to be listed on a new sheet. An unfilled sheet might have sample information for 5 persons out of 28 (18 percent), for 6 persons out of 26 (23 percent), etc. In other cases, a note of "no one at home," "vacant," or "occupied by nonresidents," was entered on one sample line; so, even if all 30 lines of the schedule were filled, sample information was obtained for only 5 persons (17 percent). Analysis of the sample revealed, however, that the deviations from 20 percent were virtually negligible and could be ignored.

Population 3-1/3-Percent Sample

For a few items, data were needed only for large groups of people, so a sample smaller than 20 percent could be used. Accordingly, all persons listed on the last of the six sample lines on the population side of the Population and Housing (P1) Schedule were selected for inclusion in a 3-1/3-percent sample. The person listed on that sample line gave information for the 100-percent items, the 20-percent sample items, and the 3-1/3-percent sample items. The questions in the 3-1/3-percent sample were on occupation and industry (if recently, but not currently, in the labor force), on times married and duration of present marital status (if ever married), and on number of children ever borne (if female ever married).

The person listed on the last sample line of the sheet was included in the 3-1/3-percent sample. In areas where households had few people, however, persons were not listed on the last few lines of the schedule, and thus persons living in such areas were somewhat underrepresented in the sample in the field collection. It had been planned that the 3-1/3-percent sample would be supplemented by a sample of every sixth sample line in those areas where the last sample line was not filled in the field. This supplementary sample was selected, but it did not prove feasible to collect supplementary data for these people.

Housing 20-Percent Sample

The housing sample was somewhat different from the population 20-percent sample. A 20-percent sample was obtained for certain items; but instead of asking all sample questions in one household out of five, the sample questions were divided into five groups and one group was asked in each household. One household gave information on heating equipment and heating fuel used most. Another told whether they had electric lighting and what type of refrigeration they used. The third was asked whether they had radio and television. The fourth indicated whether they had a kitchen sink and what cooking fuel they used most. The fifth household gave the year in which the structure was built.

The group of questions appearing first on the schedule varied from sheet to sheet. On one schedule, the questions on heating equipment and heating fuel appeared on the first housing line; on another, those on electric lighting and type of refrigeration came first; and so on.

Like the population sample, the housing sample failed to provide information from exactly 20 percent of the households. When the instructions were followed, however, the procedure provided an unbiased sample for each of the characteristics.

Agriculture Sample

The agriculture sample was designed to provide data from all large farms and from one-fifth of the other farms. The subjects covered in the sample were: farm facilities and equipment; farm labor; farm expenditures; and miscellaneous information, such as distance to trading center, kind of road on which farm was located, value of farm land and buildings, mortgage debt, taxes, and rent.

A farm was a large farm for Census purposes if it met one of the following criteria:

<u>Criteria</u>	<u>Western States<sup>3</sup></u>	<u>Other States</u>
Land in farms.....	5,000 acres or more	1,000 acres or more
Total cropland (cropland harvested plus cropland pas- tured plus crop- land not harvested or pastured) .....	1,000 acres or more	750 acres or more
Cattle of all ages..	500 or more	200 or more
Sheep of all ages..	4,000 or more	500 or more
Value of farm products sold or to be sold.....	\$70,000 or more	\$70,000 or more

In the Southern States where the Landlord-Tenant Operations (A3) Questionnaire was used, the criteria applied to the totals for the entire landlord-tenant operation, plantation, or other type of large farm holding.<sup>4</sup> Thus, if the landlord-tenant operation qualified as a large farm, the home farm portion of that operation was considered a large farm even though it did not itself meet any of the criteria.

Lists of large farms were prepared and partially verified by field survey before enumeration and sent to the field. Crew Leaders were instructed to see that the information required for these farms was obtained.

Other farms to report on the sample items were selected during enumeration. Each Agriculture (A1) Questionnaire carried one of five numbers (1, 2, 3, 4, or 5) in a box opposite the title of Section X. Each enumeration district was also given a number from 1 to 5; this number was stamped on the label of the portfolio in which the enumerator carried maps and schedules for that district. When the number on the portfolio was "1," the enumerator asked the sample questions whenever he used a questionnaire on which "1" was printed opposite Section X; if "2" was stamped on the portfolio, he filled the sample items on questionnaires marked "2" opposite Section X; and so on.

<sup>3</sup>Arizona, California, Colorado, Idaho, Kansas, Montana, Nebraska, Nevada, New Mexico, North Dakota, Oklahoma, Oregon, South Dakota, Texas, Utah, Washington, and Wyoming.

<sup>4</sup>Alabama, Georgia, Louisiana, Mississippi, South Carolina, and specified counties in Arkansas, Florida, Kentucky, Maryland, Missouri, North Carolina, Tennessee, Texas, and Virginia.

The sample numbers stamped on the portfolio labels were determined as follows:

Number of enumeration district ended with	Number stamped on portfolio label
1 or 6.....	1
2 or 7.....	2
3 or 8.....	3
4 or 9.....	4
5 or 0.....	5

#### Survey of Residential Financing

The sample for the Survey of Residential Financing was selected from the dwelling units for which the household head (or a vacant dwelling unit) was listed on a sample line on the population side of the Population and Housing (P1) Schedule. The sample consisted of nonfarm residential properties--both owner-occupied properties and rental properties (including vacant)--of various sizes.

The sample was designed to provide estimates of financial characteristics for the entire United States, for each of the four regions, and for 25 of the largest standard metropolitan areas. A sample of counties was first selected, then a sample of the enumeration districts within those counties, and finally a sample of dwelling units of each size and type (owner-occupied or tenant-occupied) within those enumeration districts. The pattern was established in Washington, but the field offices selected the dwelling units according to the sampling instructions.

So that large mortgages would be adequately represented, a supplementary sample was selected consisting of structures with 50 or more dwelling units. A list of these large properties was compiled in Washington, and the sample was selected from that.

#### Post-Enumeration Survey

The Post-Enumeration Survey was taken to evaluate coverage (the extent to which the census included every person, dwelling unit, and farm) and to evaluate content (the accuracy of the replies entered on the schedules). The sample was therefore a combination area and list sample--the area sample to check coverage and the list sample to check content.

The area sample was selected by dividing the entire country into about 280 strata, based on geographical contiguity, urban and rural population, and various demographic and economic characteristics. Each stratum was composed of one or more primary sampling units (a primary sampling unit was usually a county or group of counties). One primary sampling unit was then selected from each stratum with the chance of its being drawn proportionate to the size of its population. Each primary sampling unit chosen was then divided into segments (small areas which were expected to have about six households in urban areas and about ten households in rural areas). A sample of these segments was then selected to obtain an over-all expected sample of 25,000 households. Each segment was canvassed completely to evaluate coverage.

The list samples were drawn from the segments in the area sample. Households and farms enumerated in the 1950 Census in these segments were listed; and samples were drawn from them. The content of the Agriculture Questionnaire and of the Population and Housing Schedules was checked only in the households or on the farms in the list sample.

Additional area and list samples were drawn in the experimental areas in Ohio and Michigan where different enumeration procedures were tested.

#### Informing the Public

The 1950 Censuses brought the Bureau into contact with at least one person in every family in the United States. The information program for the 1950 Censuses sought to make the enumerator a welcome figure at each door and to prevent unpleasant incidents caused by lack of information. Time was saved by establishing confidence and eliminating the need for the enumerator to explain the purpose of his visit. An attempt was made to make "census" meaningful to the people.

The Bureau emphasized several types of information in this program. One was the purpose of the Censuses; another, some uses of the results; another, the need for accurate replies; and finally, the kinds of questions that would be asked. Reference to compulsion, possible under the Census law, was avoided.

The information programs explained that the main purpose of the Censuses was to determine the number of Representatives to be sent from each State to the House of Representatives. The Constitution requires that this count be made. The need for facts was also emphasized, and uses made of some of the data were described. People learned that their local communities used the population figures to plan police and fire protection, road building, and schools. They also learned that slum clearance was often planned from facts collected in the Censuses, and that many agricultural programs were built around the facts for farms.

The confidential character of the Census data and the need for accurate replies were usually emphasized at the same time. People were urged to give information accurately and were assured that such information was not made available to any individual or to any other Government agency.

The questions to be asked in the 1950 Censuses were printed in many newspapers so respondents could have the answers ready. Most of the questions, of course, were simple; but some of them, such as those on income or agricultural operations, required reference to records. Time was saved and better data were obtained when respondents were familiar with the questions.

The public information began in 1948 and built up in a constantly increasing tempo. A small staff of experienced information specialists kept in touch with media of information, such as the press, radio, trade journals, and magazines; and they provided information on the 1950 Censuses to these media when it could be used most effectively.

Early in 1948, the Bureau suggested ideas for articles on the 1950 Censuses to magazine editors, feature writers for national press services, outstanding free lance writers, and others. As a result, articles on the "big count" appeared in magazines with national circulation or were distributed by newspaper wire services.

During the early period of preparation, publicity was distributed mainly at the national level. The press wire services and staff correspondents of newspapers with offices in Washington received all newsworthy releases. They, in turn, distributed the stories by telegraph and mail to their newspapers. Similar arrangements were made with the program directors of the national radio broadcasting chains and the television chains. The National Association of Broadcasters sent Census materials to radio broadcasters throughout the country and urged them to broadcast the information as a public service.

As the time for enumeration drew near, the Bureau more intensively solicited the cooperation of nationwide press, radio, and television facilities. This cooperation paved the way for the use of these facilities by the Census Area and District Offices, to which some of the publicity work was delegated. As a result, 19,000 newspapers and 2,000 periodicals told the Census story to the American people; 1,800 radio stations broadcast it and 100 television stations telecast it. In addition, thousands of motion picture theaters showed it on their screens.

The Bureau trained Area and District Supervisors for their part in the public information program. A manual, "Public Relations Program Outline for District Supervisors" was distributed to field offices; it explained methods of getting local publicity. Field offices were also supplied with newsworthy press releases, radio skits, and speeches designed for local adaptation.

Local committees were organized through many of the field offices. Community leaders, serving on these committees, emphasized the value to the community of a complete and accurate census. The field offices made available to these committee members information on the 1950 Censuses. County agricultural committees, which deal with governmental programs relating to farmers, helped to publicize the Census of Agriculture. The Department of Agriculture assisted in getting their cooperation.

The Advertising Council, which represents the advertising industry, gave valuable assistance in the Census programs. This group is organized to work with the government on public information campaigns. It prepared a series of magazine and newspaper advertisements which were published without charge by sponsoring organizations. It also designed and distributed posters. One of these, which emphasized the fact that individual replies to Census inquiries were confidential, was placed in every street car and bus.

Many other organizations and individuals assisted with the program. Members of Congress and outstanding radio and television personalities broadcast information. In addition, many radio and television entertainers made brief references to the 1950 Censuses. The National Education Association cooperated in preparing a booklet, "We Count in 1950," which teachers used to acquaint school children with the Censuses.