

OVERVIEW OF 1988 DRESS REHEARSAL DATA COLLECTION ACTIVITIES

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I. PURPOSE

In this paper we highlight the major features of the 1988 Census Dress Rehearsal. The dress rehearsal is the culmination of the Census Bureau's ten year testing cycle leading to the 1990 Decennial Census. This cycle included the following major tests:

- o 1984 - Test of different methods for developing census address lists.
- o 1985 - Test censuses in Jersey City, New Jersey, and Tampa, Florida, and a national questionnaire content test.
- o 1986 - Test censuses in Central Los Angeles County and East Central Mississippi.
- o 1987 - Test census in North Central North Dakota.

With the completion of the dress rehearsal, the Census Bureau testing cycle included complete representation from all racial and ethnic groups (Asian and Pacific Islander, Hispanics, Blacks, and American Indians) and spanned the entire continental United States.

The purpose of the 1988 Dress Rehearsal was to implement and refine 1990 census procedures under as near census-like conditions as possible. The dress rehearsal employed the full array of methods, techniques, work flows, equipment applications, publicity and outreach programs intended for use in the national census. It was an extensive and comprehensive program comprising approximately 500,000 housing units and over 1 million people.

The dress rehearsal included no major tests of fundamental methodology. However, in a few instances we employed minor variations within some concepts to investigate potential refinements to the basic operations for 1990. We will evaluate these refinements in time to make a final decision for the national census.

II. DRESS REHEARSAL SITES

The Census Bureau conducted the 1988 Dress Rehearsal in the three sites identified below. Within each site, we established a data collection or district office (DO) for purposes of conducting the enumeration.

- A. St. Louis City, Missouri
This site comprised an urban area with a high percentage

of multiunit structures containing an inner city with a large Black population. By Census Bureau standards, this site was difficult to enumerate. The DO was located in the city of St. Louis.

- B. East Central Missouri
This site contained two types of enumeration areas. A majority of the site was rural. It also contained a city that was not difficult to enumerate, Columbia, Missouri. The DO was located in Columbia.

- C. Eastern Washington
This site was primarily a sparsely-populated rural area. The site also contained the city of Pasco and the Colville and Spokane Indian Reservations. The DO for this site was located in Moses Lake, Washington.

We selected these sites because, as a whole, they possessed characteristics in terms of population density, mail delivery schemes, rural and ethnic diversity, and terrain that nearly approximate characteristics of the 1990 environment.

The close proximity of the East Central Missouri and St. Louis sites allowed us to implement a prototype of the 1990 outreach and promotion efforts, especially the mass media publicity program developed with the assistance of the Advertising Council.

We provide more information on the characteristics of each site in the attachment.

In addition to these DOs, the Census Bureau operated a processing office (PO) in Kansas City, Missouri for conducting data processing functions. Data processing functions concentrated on converting the questionnaire responses to a computer readable form.

The Census Bureau implemented a variable sampling rate design with an expected overall sample size of about 10 percent. The sampling rates for a geographic area, which depended on the number of housing units in that area, were 1/2, 1/6, 1/10, and 1/20.

III. MAJOR WORK FLOW FEATURES

In this section we highlight major work flow and design features implemented in the dress rehearsal. These features represent major changes in the census design from 1980 to 1990. Many of these design features are a direct result of advancements in technology. These technological advancements allowed the Census Bureau to improve the efficiency of existing computerized processes and to automate several traditionally clerical tasks.

A. Address Control File (ACF)

One vital element of the 1990 census design is the ACF. The ACF is a computerized file of the census address lists. With the ACF, it is easier for the Census Bureau to update the master address file with current address information on a regular basis. As such, future operations will have an up-to-date record of addresses based on the results from earlier operations. It also will provide for improved data collection and data processing management control as described below.

1. Flow Processing and Concurrent Collection/Processing

In the 1980 census, the Census Bureau organized and controlled work at a batch or enumeration area level for both data collection and data processing activities. All data collection activities for each enumeration area in a DO had to be complete before questionnaires for the DO could be shipped to a PO for data processing. Data collection and data processing activities were discrete processes. For the 1990 census, the Census Bureau will replace enumeration area control with control of work at an individual address or serial number level. Controlling at the individual address level introduces efficiencies to the census process in the following ways. First, it provides for the control and management of work of individual questionnaires. Secondly, it allows for the shipment of individual questionnaires on a flow

basis to the PO for data processing. Lastly, it affords us the opportunity to begin the data processing of an individual questionnaire once it is received in the PO. This concurrent data collection/processing of individual questionnaires will allow us to start and complete data processing activities earlier than in 1980.

2. Automated Check-in

With the ACF, we will be able to take advantage of barcode check-in technology to automate questionnaire check-in in 1990. In 1980, questionnaire check-in was a tedious, clerical operation. The Census Bureau estimates that barcode check-in by "wandering" can process 900 forms per hour versus the 1980 production of 250 forms per day per clerk for clerical check-in.

B. Multiple DO Work Flows

With the advent of the ACF and automation, the Census Bureau has tailored three different data collection work flows for different types of areas for 1990. We associate each work flow with a particular type of DO. For ease in presentation, we will call these type 1, type 2, and type 3 DOs.

1. Type 1 DO

A type 1 office will be located in a high density urban area which is difficult to enumerate. The Census Bureau expects difficulties in achieving adequate staffing levels for this type of DO. To facilitate the enumeration of areas associated with a type 1 DO, we will centralize certain processing "support-type" functions (questionnaire check-in, questionnaire editing for content and coverage, telephone callbacks) in a PO. By centralizing these processing support-type activities in a PO, the type 1 DO can concentrate their efforts on the enumeration. For the dress rehearsal, the St. Louis site was a type 1 DO. As such, the Kansas City PO conducted the above-mentioned

support-type functions for the St. Louis DO.

2. Type 2 and Type 3 DOs
Type 2 and 3 DOs will be located in all other areas of the country. These areas are easier to enumerate and staff. Each type 2 and 3 DO will conduct their own questionnaire check-in, edit questionnaires, and make telephone callbacks. In addition to these functions, a type 3 DO will also enumerate certain areas using the conventional or "door-to-door" enumeration procedure. The Columbia DO was the type 2 DO in the dress rehearsal and the Moses Lake DO was the type 3 DO.

C. DO Automation

Each DO used a small computer system to support administration (for example, recruiting and personnel) and to control collection operations. The file to control collection operations was a subset file of the ACF and contained just those addresses located in a particular DO boundary. This DO file is called the collection control file (CCF).

D. Management Information System (MIS)

The Census Bureau will use an automated MIS in 1990. The purpose of this system is to provide consistent, timely, and objective information for monitoring and managing decennial activities in the DO and PO. The Census Bureau used a prototype of this MIS during the dress rehearsal.

IV. BASIC OPERATIONAL FLOW

In this section we provide a description of the data collection and processing activities of the dress rehearsal. For descriptive purposes we have divided the census process into the following components: 1) development of address lists, 2) questionnaire delivery, 3) questionnaire check-in, 4) field follow-up, 5) data processing, and 6) coverage measurement. Further descriptions of each component follows.

A. Developing and Correcting the Address Lists

The Census Bureau enumerated the majority of households in the 1988 Dress Rehearsal using a mail census procedure. This

required the use of a comprehensive address list. For purposes of compiling this list, two procedures were identified.

1. We purchased commercial mailing lists for St. Louis, Missouri, Columbia, Missouri, and Pasco, Washington.
2. The Census Bureau itself developed address lists for rural areas with a population density of 15 or more per square mile. This procedure was used for a majority of area in the Columbia DO and for limited portions of the Moses Lake DO.

To improve the accuracy and completeness of the list, we conducted one or more address checks before the census. The U.S. Postal Service (USPS) conducted one of the address checks in May 1987. The Census Bureau conducted another check in the fall of 1987, and local officials conducted a check in November 1987.

Two additional USPS checks took place in March 1988, one approximately 9 days before questionnaire delivery and another at the time-of-delivery of the questionnaire.

B. Questionnaire Delivery

For mail census areas, we produced a label tape that incorporated all the address development and correction efforts described above. Questionnaires for the mail census area were labelled and delivered to every housing unit by either mail carriers or census enumerators. We instructed respondents to complete the questionnaire and to return it by mail. Mail carriers delivered the questionnaires 9 days before Census Day. (In 1980, questionnaires were delivered the Saturday before Census Day.) From February 20 to March 17, census enumerators delivered the questionnaires in certain rural areas in the East Central Missouri site where postal delivery problems existed. In selected St. Louis public housing projects, census enumerators (primarily project residents) delivered

the questionnaires the week of March 14.

Two weeks prior to Census Day, the USPS delivered a motivational flyer written in five languages to selected ZIP Codes in St. Louis populated primarily by persons whose sole language was not English. Shortly after Census Day, the USPS delivered a mail reminder card to all units in the mail census area designed to remind residents that they still had time to complete the questionnaire and mail it back.

The Census Bureau established telephone assistance telephone numbers to aid respondents requiring assistance in completing their questionnaire.

In sparsely-populated rural areas of the Eastern Washington site (those with a population density less than 15 per square mile) mail carriers delivered unaddressed questionnaires on March 11, 1988. Respondents completed the questionnaires and were instructed to hold them until an enumerator picked them up. The enumeration of the sparsely-populated rural areas began March 21 and continued until May 14.

We implemented a special procedure in each site to enumerate persons residing in special places (such as hospitals, hotels, and prisons). This operation was conducted for 3 weeks beginning March 21 and concentrated on obtaining just the population items from persons residing in such places.

We also conducted an operation in each DO which focused more intently on enumerating components of the homeless population. This operation, conducted on March 8, consisted of two phases. The first phase (6:00 p.m. to midnight) concentrated on enumerating the persons staying in homeless shelters. During the second phase (midnight to 6:00 a.m.) we concentrated on enumerating persons living on the street. In 1980 we conducted an operation for counting homeless persons only in urban areas. We will conduct homeless enumeration nationwide in 1990.

C. Questionnaire Check-in and Edit

Those from the East Central Missouri and Eastern Washington site were received in the appropriate DO. We provide questionnaire check-in rates in the attachment.

Once received, the DO checked-in the mail returned questionnaires against the CCF, while the PO checked them in against the ACF. The questionnaires then went through a series of edits to identify possible content or coverage errors on the form. The PO edited questionnaires by computer, while the Columbia and Moses Lake DOs conducted a clerical edit. Both the PO and Columbia and Moses Lake DOs made telephone callbacks for questionnaires that failed content and coverage edits.

D. Field Follow-up

There were two primary follow-up activities in the 1988 Dress Rehearsal. The first and largest follow-up operation concentrated on obtaining questionnaires from households that did not mail back a questionnaire (nonresponding units). The PO (for the St. Louis DO) and the Columbia and Moses Lake DOs identified the universe of nonresponding units approximately 3 weeks after questionnaire check-in began. The St. Louis DO began this operation on April 14 and completed it 6 weeks later. The other two DOs began this operation on April 21 and completed it nearly 5 weeks later. This variable start and end dates for type 1 versus type 2 and 3 DOs is also planned for 1990.

In the second follow-up operation we revisited coverage and content failed cases that we could not resolve by telephone and rechecked the status of certain units classified as vacant or nonexistent. This second follow-up began in mid-June for each DO and ended approximately 3 weeks later. The DO did not visit all vacant or nonexistent cases during the second follow-up. They did not visit vacant units in areas known to have a high proportion of seasonally vacant units and certain cases confirmed as a nonexistent

unit in several earlier operations.

The questionnaires used by enumerators during these two follow-up operations were written in a user-friendly tone. Enumerators read these questions verbatim during the interview.

The Census Bureau delivered housing unit counts based on census results to local government officials for a final round of review on August 19. We will compare census results to local government estimates and will recheck those blocks with the largest disparities in September 1988.

E. Data Processing

The PO received "accepted" questionnaires on a flow basis for data processing. Data processing consisted of microfilming the questionnaires using high speed cameras and scanning of the microfilm to convert questionnaire responses to a computer readable form.

F. Coverage Measurement

One of the last operations in the dress rehearsal was the interviewing for the Post-Enumeration Survey (PES). The results of this independent survey will be matched to census data to evaluate the completeness of census coverage of the population.

V. EVALUATIONS

The Census Bureau is not testing fundamental methodology in the 1988 Dress Rehearsal, but we are conducting a full evaluation program. We designed some of the evaluations to quantify results from major address list development and coverage operations. Others will provide us an opportunity to test minor refinements to some operations planned for 1990.

While we have rehearsed most of these operational components in at least one of our earlier test censuses, we feel that another look is warranted before we make final design decisions for 1990. In other cases, the need to test operational components in the dress rehearsal have arisen in response to program requirements levied by census oversight agencies. The dress rehearsal evaluations from which we hope to use the results to formulate final program decisions for the 1990 census include the following:

A. Coverage Improvement

The USPS conducted two checks of our address list just prior to Census Day. They conducted one of the checks at the time of questionnaire delivery on March 11 and one prior to this during the week of February 29 -March 4. Due to the short time lag between the two checks, we are examining the coverage yield and quality from them to decide whether or not to conduct just one check in 1990.

Another coverage improvement operation that we are examining is the component of the second follow-up operation in which we recheck the status of units classified as vacant or nonexistent. Analysis of this operation in past censuses show that we improve coverage during this operation by correcting for two types of errors, enumerator errors (that is, erroneous misclassifications) and procedural errors (that is, households missed because they were moving during the census-taking period). We are testing procedures designed to ensure the correct enumeration of these mover households at their Census Day residence.

B. Coverage Measurement

We are evaluating the final 1990 coverage measurement methodology by conducting the PES in all three dress rehearsal sites. We will use the results from this evaluation to make refinements to the PES listing, interviewing, matching, and undercount estimation procedures planned for 1990.

C. Delivery and Collection Methods

We first tested the use of the user-friendly toned questionnaire in the 1987 Test Census of North Dakota. We are testing this questionnaire on a much larger scale during the dress rehearsal to determine its efficacy for 1990.

We are also testing a "self-mailer" short form questionnaire package on a larger scale in the dress rehearsal prior to making a final decision on its use in the 1990 census. The self-mailer consists of a short form questionnaire and associated instructions that are sent out in the same envelope that the respondent

will use to return the questionnaire. The nonself-mailer or traditional package contains separate outgoing and return envelopes. We are examining mail return rates and overall data quality as a result of the use of the self-mailer questionnaire package.

- D. Field Administrative/Work Force Issues
We are assessing the effectiveness of a revised selection test for field enumerators and clerical staffs. We are particularly interested in the relationship between selection procedures and the quality and production of enumerators, crew leaders, and office clerks.
- E. Follow-up Procedures
We will continue testing the use of the telephone for making callbacks in rural areas. We initiated this study during the 1987 Test Census and from the dress rehearsal test we hope to develop a clearer picture of the problems as well as benefits (for example, reduced travel costs) of using the telephone in very rural areas.
- F. Outreach
We are evaluating the effectiveness of the Advertising Council sponsored general outreach campaign in the dress rehearsal. We will use the results from the evaluation to plan final outreach and census promotion campaigns for the 1990 census.

We tested some refinements to the first USPS address check conducted in May 1988 and the subsequent Census Bureau reconciliation of the USPS results from this in areas where Census Bureau enumerators constructed the address list. The results from this study suggest that we can incorporate these procedural refinements in the 1990 census and realize some cost savings for this operation.

In addition to the above list, we will evaluate several other programs and operations in the dress rehearsal for either minor refinements or to document results. These evaluations include documentation of results from address list compilation, coverage improvement, and quality control operations for which we plan to introduce refinements in 1990. They also include evaluations of some content items, automated coding techniques, coverage measurement of special populations, and field/work force issues.

Attachment

DRESS REHEARSAL FACT SHEET

	<u>St. Louis</u>	<u>E.C. Missouri</u>	<u>Eastern Washington</u>
Housing Units	208,000	198,000	115,000
Population (1980)	453,000	416,000	238,000
White	53%	94%	93%
Black	46%	4%	1%
Other	--	2%	6%
Questionnaire Delivery			
Mail Carrier	204,000	84,000	54,000
Enumerator	--	114,000	--
Housing Projects	4,000	--	--
Conventional	--	--	61,000
Questionnaires Returned by Mail	51%	57%	56%
Projected Rate of Mail Return	40%	55%	50%
# Persons Hired	800	700	400
Enumerator Pay Rates	\$6.00 per hour	\$5.50 per hour	\$5.50 per hour