

Census 2000 Topic Report No. 11

*Census 2000 Testing, Experimentation,
and Evaluation Program*

Issued March 2004

TR-11

Response Rates and Behavior Analysis

U S C E N S U S B U R E A U

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Foreword

The Census 2000 Testing, Experimentation, and Evaluation Program provides measures of effectiveness for the Census 2000 design, operations, systems, and processes and provides information on the value of new or different methodologies. By providing measures of how well Census 2000 was conducted, this program fully supports the Census Bureau's strategy to integrate the 2010 planning process with ongoing Master Address File/TIGER enhancements and the American Community Survey. The purpose of the report that follows is to integrate findings and provide context and background for interpretation of related Census 2000 evaluations, experiments, and other assessments to make recommendations for planning the 2010 Census. Census 2000 Testing, Experimentation, and Evaluation reports are available on the Census Bureau's Internet site at: www.census.gov/pred/www/.

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1. Background

The objective of this report is to answer the following seven questions:

- How quickly did the United States housing unit population respond by mail in Census 2000?
- How did the mail response rates differ between short and long forms?
- How did the mail return rates differ between short and long forms?
- How many people and households were enumerated by the different modes/methods?
- Of the persons who used the Census Bureau's Internet website, how satisfied were they with it?
- Of the person who used the Telephone Questionnaire Assistance program, how satisfied were they with it?
- How was the language program utilized in Census 2000?

In order to answer the first three questions the report contains a discussion of the mail response and mail return rates; for the total and by form type - short versus long. For the fourth question a distribution of the number of persons and households by the different enumeration methods and data collection operations are provided. In addition, imputation rates are discussed. For the fifth and sixth questions data from the customer satisfaction surveys of the Internet website and the Telephone

Questionnaire Assistance programs are analyzed. Finally for the language program, the number of non-English questionnaires and language assistance guides are provided. In addition, data are provided on the amount of assistance the Census Bureau provided respondents with completing the English questionnaire in a language other than English. The analysis for this report is limited to the United States housing unit population. Therefore, persons enumerated in Group Quarters are not included in these analyses. In addition, Puerto Rico is not included in these analyses. Other topic reports that are related to this report are:

- Address List Development,
- Content and Data Quality,
- Coverage Improvement,
- Data Collection, and
- Puerto Rico.

Census 2000 consisted of a large number of components or activities. In order to address the objectives of this report three components to the census are discussed in detail:

- the partitioning of the United States into enumeration areas,
- the questionnaires used to enumerate the population, and
- the data collection operations.

Sections 1.1, 1.2 and 1.3 provide a discussion of each component individually. Section 1.4 provides a discussion of the three compo

nents and how they were integrated for Census 2000. Finally, Section 1.5 provides a discussion of the three elements of the Census 2000 language program which affected mail response and respondent behavior.

1.1 Types of enumeration areas

The Census Bureau partitioned the geographic land mass of the United States into approximately 7.2 million blocks (non-water blocks). For Census 2000, the Census Bureau assigned each block to one of six types of enumeration areas. The enumeration areas were determined depending on the address type in the block, the need for special enumeration procedures, and/or the method for delivering the Census questionnaire. The six types of enumeration areas are Mailout/Mailback, Update/Leave, Urban Update/Leave, Update/Enumerate, List/Enumerate, and Remote Alaska (Treat and Stackhouse, 2002).

1.1.1 Mailout/Mailback

In Mailout/Mailback areas, the majority of addresses are city-style, e.g., 801 Main Street. In addition, the address list was primarily developed prior to Census Day, April 1, 2000. The Census Bureau mailed paper questionnaires to each address in Mailout/Mailback areas. The United States Postal Service delivered paper questionnaires between March 13 and March 15, 2000. For Mailout/Mailback areas respondents could self-enumerate

providing their data on paper questionnaires. If they did not return their questionnaire on or before April 18, 2000, the address was visited by an interviewer during Nonresponse Followup (see Section 1.3.6). An interviewer-administered enumeration was performed using a paper questionnaire. Of the 7.2 million blocks in the nation, 52.71 percent (3,782,567) were in Mailout/Mailback areas containing approximately 79.81 percent of all housing units. Mailout/Mailback areas were in all 50 states and the District of Columbia. Mailout/Mailback areas also included areas designated as Military. Military areas were originally Update/Leave areas on military bases. After the address list was created, it was determined that all the addresses were city-style and received mail delivery by the United States Postal Service. Therefore, these areas were converted over to Mailout/Mailback methodology but were classified as Military. Areas classified as Military do not make up all military bases.

1.1.2 Update/Leave

Update/Leave areas include both city and non-city style addresses. An example of a non-city style address is Rural Route 7, Box 4. United States Postal Service delivery coverage played a role in determining Update/Leave areas. Areas where the United States Postal Service had difficulty delivering to some or all of the housing units were classified as Update/Leave. While the address list was developed prior to Census Day, it was also updated during the delivery of the Census questionnaire. During March 2000, Census Bureau staff canvassed the Update/Leave blocks, updated both the address list and the maps, and delivered paper questionnaires. Like

Mailout/Mailback areas, in Update/Leave areas respondents could self-enumerate providing their data on paper questionnaires. If they did not return their questionnaire on or before April 18, 2000, the address was visited by an interviewer during Nonresponse Followup (see Section 1.3.6). An interviewer-administered enumeration was performed using a paper questionnaire. Of the 7.2 million blocks in the nation, 41.72 percent (2,993,665) were in Update/Leave areas containing approximately 18.80 percent of all housing units. Update/Leave areas were in all 50 states except Rhode Island. The District of Columbia contained no Update/Leave areas.

1.1.3 Urban Update/Leave

Urban Update/Leave areas were originally Mailout/Mailback areas which were converted to an Update/Leave enumeration methodology. The Census Bureau identified blocks where we thought the United States Postal Service would have difficulty delivering the Census questionnaire. These areas were inner-city, usually containing multi-unit structures. During March 2000, Census Bureau staff canvassed the Urban Update/Leave blocks, updated both the address list and the maps, and delivered questionnaires. Like Mailout/Mailback and Update/Leave areas, in Urban Update/Leave areas respondents could self-enumerate providing their data on paper questionnaires. If they did not return their questionnaire on or before April 18, 2000, the address was visited by an interviewer during Nonresponse Followup (see Section 1.3.6). An interviewer-administered enumeration was performed using a paper questionnaire. Of the 7.2 million blocks in the nation, 0.18 percent (12,843) were in Urban

Update/Leave areas containing approximately 0.21 percent of all housing units. Eight of the twelve Regional Census Centers identified blocks for Urban Update/Leave areas. The eight participating Regional Census Centers were Atlanta, Boston, Chicago, Dallas, Denver, Detroit, Philadelphia, and Seattle. The four Regional Census Centers that did not participate were Charlotte, Kansas City, Los Angeles, and New York. There were Urban Update/Leave areas in California, Colorado, Delaware, the District of Columbia, Florida, Idaho, Illinois, Louisiana, Michigan, New Jersey, Pennsylvania, Rhode Island, and Washington.

1.1.4 Update/Enumerate

Update/Enumerate areas were originally Mailout/Mailback or Update/Leave areas which were converted to this enumeration area. This enumeration area occurred in communities with low mail response rates in the 1990 Census. Some of the areas had primarily city style addresses and some consisted of non-city style addresses. Update/Enumerate areas include some selected American Indian Reservations and the Colonias, which are Hispanic-occupied unincorporated communities near the Mexican border. In addition, Update/Enumerate took place in resort areas with high concentrations of seasonally vacant housing units. From March to June 2000, Census Bureau staff canvassed the Update/Enumerate blocks, updated both the address list and maps, and enumerated the housing units. An interviewer-administered enumeration was performed using a paper questionnaire. Of the 7.2 million blocks in the nation, 2.32 percent (166,427) were in Update/Enumerate areas containing approximately 0.83 percent of all housing units.

Update/Enumerate areas were in portions of 35 states. These states were Alabama, Alaska, Arizona, California, Colorado, Connecticut, Florida, Idaho, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Massachusetts, Minnesota, Mississippi, Montana, Nebraska, Nevada, New Mexico, New York, North Carolina, North Dakota, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Texas, Utah, Virginia, Washington, Wisconsin, and Wyoming. Detroit was the only Regional Census Center that did not participate in the Update/Enumerate operation.

1.1.5 List/Enumerate

List/Enumerate areas contain mostly non-city style addresses. These areas of the country are geographically remote with a low housing unit density. For these reasons the address list was developed during the enumeration of the housing units. From March to July 2000, Census Bureau staff canvassed the ground creating the address list, updating maps, and enumerating the housing units. An interviewer-administered enumeration was performed using a paper questionnaire. Of the 7.2 million blocks in the nation, 2.99 percent (214,785) were in List/Enumerate areas containing approximately 0.34 percent of all housing units.

List/Enumerate areas were in portions of 20 states. These states were Alaska, Arizona, California, Hawaii, Idaho, Maine, Montana, Nebraska, Nevada, New Hampshire, New Mexico, New York, North Dakota, Oregon, South Dakota, Texas, Utah, Vermont, Washington, and Wyoming. These states are mainly in the West and Northeast regions of the country.

1.1.6 Remote Alaska

Remote Alaska areas contain mostly non-city style addresses. These areas of Alaska are the most geographically remote with a low housing unit density. For these reasons the address list was developed during the enumeration of the housing units. From late January to late April 2000, Census Bureau staff canvassed the ground, creating the address list, updating maps, and enumerating the housing units. An interviewer-administered enumeration was performed using a paper questionnaire. Of the 7.2 million blocks in the nation, 0.08 percent (5,418) were in Remote Alaska areas containing approximately 0.02 percent of all housing units.

1.2 Types of questionnaires

For Census 2000, there were three basic types of questionnaires; paper questionnaires, an Internet questionnaire, and computer assisted telephone interview (CATI) questionnaires (Treat and Stackhouse, 2002).

1.3 Data collection operations

For Census 2000, there were nine major data collection operations related to the housing unit population: Questionnaire Delivery, the Internet program, Telephone Questionnaire Assistance, the Be Counted program, Coverage Edit Followup, Nonresponse Followup, Coverage Improvement Followup, Personal Visit Enumeration, and Transient Night (T-Night) enumeration.

1.3.1 Questionnaire Delivery

For the Questionnaire Delivery operation, paper questionnaires were delivered by either the United States Postal Service in

Mailout/Mailback areas or Census Bureau staff in Update/Leave and Urban Update/Leave areas. The delivery operation occurred between March 13 to March 15, 2000 in Mailout/Mailback areas. In Update/Leave areas, Questionnaire Delivery was scheduled to begin on March 3, 2000, with the intent that all questionnaires were to be delivered by Census Day, April 1, 2000. In actuality some questionnaires were delivered earlier than March 3 during training exercises. In addition, the operation was not completed in some areas until April 6, 2000. In Urban Update/Leave areas, Questionnaire Delivery occurred from March 3 to March 31, 2000. Respondents were to complete their questionnaires and return the forms through the mail. Note that this operation includes the Local Census Office delivery of paper questionnaires which the United States Postal Service was unable to deliver. Questionnaire delivery occurred in Mailout/Mailback, Update/Leave, and Urban Update/Leave areas (Stackhouse and Brady, 2003a and 2003b; Rosenthal, 2002a; and Pennington, 2003).

1.3.2 Internet program

For the Internet program, respondents receiving the short form paper questionnaire were able to respond on the Internet. Respondents were required to provide their 22-digit census identification number in order to access the Internet questionnaire site. The Census Bureau decided not to advertise the Internet program. Therefore, persons who responded using this program located it on the Census Bureau website or had some connection to the Census Bureau. The website was accessible between March 3 and April 18, 2000. Internet program primarily

occurred in Mailout/Mailback, Update/Leave, and Urban Update/Leave areas (Whitworth, 2002).

1.3.3 Telephone Questionnaire Assistance

For the Telephone Questionnaire Assistance program, the Census Bureau provided a toll-free 1-800 telephone number to assist respondents in completing the Census questionnaire. There were two ways respondents could provide their data. First, one of the capabilities of the program was to allow the respondent to provide his or her Census short form data over the telephone. When the respondent met certain conditions, a computer assisted telephone interview was administered. Some of these enumerations resulted in addresses being added to the housing unit inventory. Second, respondents could request that a questionnaire be mailed to them. The operator collected the respondent's address information and a paper questionnaire was mailed. Telephone Questionnaire Assistance network was available to the public from March 3 to June 30, 2000. Telephone Questionnaire Assistance primarily occurred in Mailout/Mailback, Update/Leave, and Urban Update/Leave areas (Chesnut, 2003).

1.3.4 Be Counted program

For the Be Counted program, the Census Bureau distributed undressed paper questionnaires at targeted locations in the community. If a person felt he or she was not counted in the Census, he or she could complete the form and return the questionnaire through the mail. Questionnaires were available from March 31 to April 17, 2000. The Be Counted

program occurred in all six enumeration areas (Carter, 2002).

1.3.5 Coverage Edit Followup

For the Coverage Edit Followup program, the Census Bureau reviewed the data from paper questionnaires returned through the mail and from Internet questionnaires. The review consisted of checks or edits to ensure that the respondent provided consistent data on the number of persons in the household. The Coverage Edit Followup program was not designed to be a content followup. The program included two types of edit failures. The first edit was a consistency check on the number of persons in the housing unit. This edit was called "count discrepancy". The second edit identified households that reported more persons than there was room on the questionnaire. This was called "large household edit". Computer assisted telephone interview was conducted that consisted of a review of the household roster and nine coverage probes. The probes were designed to identify persons included on the roster in error and excluded from the roster in error. The demographic data for persons added to the roster as a result of the coverage probes and persons resulting from the large household edit were obtained. This operation occurred from May 8 to August 13, 2000 in Mailout/Mailback, Update/Leave, and Urban Update/Leave areas (Sheppard, 2003).

1.3.6 Nonresponse Followup

For the Nonresponse Followup operation, addresses for which a questionnaire had not been received on or before April 18, 2000 were visited by Census Bureau staff. Paper questionnaires were used during the Nonresponse Followup operation. In addition, if

the enumerator located an address on the ground that was missing from their address register they were able to add and enumerate the housing unit. This operation occurred from April 27 to June 26, 2000 in Mailout/Mailback, Update/Leave, and Urban Update/Leave areas (Moul, 2002).

1.3.7 Coverage Improvement Followup

The Coverage Improvement Followup operation occurred a few weeks after the completion of the Nonresponse Followup operation. This operation was designed to enumerate housing units that were added late to the address list and thus could not be included in the Nonresponse Followup operation. In addition, housing units classified as vacant or delete in Nonresponse Followup were visited again during Coverage Improvement Followup. Paper questionnaires were used during the Coverage Improvement Followup operation. In addition, if the enumerator located an address on the ground that was missing from their address register they were able to add and enumerate the housing unit. This program occurred from June 26 to August 23, 2000 in Mailout/Mailback, Update/Leave, and Urban Update/Leave areas (Moul, 2003).

1.3.8 Personal Visit Enumeration

The Personal Visit Enumeration operation was designed to enumerate areas of the country where the Census Bureau did not mail or deliver a questionnaire for the respondents to complete and return through the mail. These areas of the country are typically remote with low housing unit density. In addition they are in communities with low mail response rates in the 1990 Census. Census Bureau staff visited and

enumerated each housing unit using paper questionnaires. The Personal Visit Enumeration operation occurred between January 31 and May 30, 2000. This operation occurred in Update/Enumerate, List/Enumerate, and Remote Alaska areas (Zajac, 2002 and Rosenthal, 2002b).

1.3.9 T-Night enumeration

The T-Night enumeration was designed to enumerate persons at transient locations such as recreational vehicle (RV) parks, campgrounds, marinas, racetracks, fairs, and carnivals. Persons living or staying at these locations on Census Day were not likely to be at these locations year-round. Persons at these locations were enumerated by the T-Night operation if they indicated they had no other usual home. At RV parks, marinas, and campgrounds, the objective was to enumerate persons who primarily lived in RVs and houseboats, or other mobile or temporary housing. At racetracks, fairs, and carnivals, the population being enumerated was the resident workforce. Paper (household) questionnaires were used to enumerate all such persons. These sites and slips were enumerated as housing units. T-Night enumeration occurred on March 31, 2000 in all six enumeration areas (Jonas, 2002).

1.4 Enumeration methods

Based on the six types of enumeration areas, the three types of questionnaires, and the nine data collection operations, there were large number of enumeration methods in Census 2000. For this discussion, they have been collapsed into three enumeration methods based on how the data were collected.

The first method is self-administered enumerations. They are

defined as questionnaires that respondents completed without the direct assistance of Census Bureau staff. This occurred in Mailout/Mailback, Update/Leave, and Urban Update/Leave areas. This includes paper questionnaires from the questionnaire delivery operation and the Be Counted program that were completed by the respondent, and returned through the mail. In addition, Internet questionnaires are included.

The second method is interviewer-administered followup enumerations. They are defined as questionnaires that were completed with the direct assistance of Census Bureau staff. In addition, most respondents had the option of performing and completing a self-administered enumeration and did not. This occurred in Mailout/Mailback, Update/Leave, and Urban Update/Leave areas. It includes paper questionnaires from the Nonresponse Followup and Coverage Improvement Followup operations. In addition, computer assisted telephone interviews from the Coverage Edit Followup operation and the Telephone Questionnaire Assistance program are included. Note that returns from the Coverage Edit Followup operation originally started as a self-administered enumerations however, since there was an interaction between the respondent and a telephone agent, these were classified as interviewer-administered followup enumerations.

The third method is interviewer-administered enumerations. They are defined as questionnaires that were completed with the direct assistance of Census Bureau staff. In addition, the respondent's only option to complete his or her questionnaire was with direct assistance from Census Bureau staff. Therefore, they did not have the

opportunity to perform a self-administered enumeration. This occurred in all six enumeration areas. For Mailout/Mailback, Update/Leave, and Urban Update/Leave areas, this included paper questionnaires for housing units added during Nonresponse Followup and Coverage Improvement Followup. In addition, housing units added as a result of the Telephone Questionnaire Assistance program are included. This consisted of computer assisted telephone interviews only. For Update/Enumerate, List/Enumerate, and Remote Alaska areas, paper questionnaires from the Personal Visit Enumeration operation are also included. Finally, the T-Night enumeration is also included in this enumeration method, occurring in all enumeration areas.

At the end of the census, all housing units should have been enumerated by one of the above methods. However, there were some housing units at the end of the census data collection operations for which there was no enumeration. For these housing units, the Census Bureau imputed all of the person data. They are called Whole Household Substitutions.

1.5 Language program

For Census 2000, there were three components of the language program; questionnaires in languages other than English, language assistance guides, and assistance in completing the English questionnaire.

1.5.1 Non-English questionnaires

Questionnaires were provided in five languages other than English. The five languages were Spanish, Chinese, Korean, Tagalog, and Vietnamese. These questionnaires could have been obtained through

two methods. First, all households in Mailout/Mailback areas and households in Update/Leave areas with mailing addresses had the option to request a questionnaire in Spanish, Chinese, Korean, Tagalog, or Vietnamese through the advance letter. The advance letter contained a form allowing respondents to identify the non-English questionnaire they required. Respondents would complete and return the form to the Census Bureau. Upon receipt of the request, the Census Bureau mailed the respondent the requested non-English questionnaire. The second method of obtaining a non-English questionnaire was through the Be Counted program. Be Counted questionnaires were available in English, Spanish, Chinese, Korean, Tagalog, and Vietnamese. These Be Counted questionnaires were available at local Questionnaire Assistance Centers and at the "Be Counted" distribution sites (Carter, 2002 and Jones and Barrett, 2003).

1.5.2 Language assistance guides

Language assistance guides were brochures available in 49 languages other than English that assisted non-English respondents in filling out their English questionnaire. Language assistance guides could be obtained through three methods; from the Internet Questionnaire Assistance site, through the Telephone Questionnaire Assistance program, or obtained at a Questionnaire Assistance Center. Appendix A contains a list of the 49 languages. Note that in addition to the 49 languages, a large print English version of the guide was available (Chesnut, 2003; Jones and Barrett, 2003; and Pendleton, 2003).

1.5.3 Assistance with completing the English questionnaire

Assistance in completing the English questionnaire could be obtained through two methods; the Telephone Questionnaire Assistance program and the Questionnaire Assistance Centers.

The Telephone Questionnaire Assistance program was implemented to assist the public in completing their census forms. Six language specific national toll-free telephone numbers were printed on Census questionnaires and Language Assistance Guides. The English and Spanish toll-free telephone numbers connected to an Interactive Voice Response system where a caller obtained information by selecting from a series of menu options, and if needed, was transferred to an agent. The four Asian language toll-free telephone numbers connected directly to bilingual agents. The Asian languages supported were Chinese, Korean, Vietnamese, and Tagalog. The Operator Support System facilitated agents in servicing calls by providing verbatim scripting. One of the roles of the Questionnaire Assistance Centers was to assist respondents with language barriers in completing their questionnaire. Bilingual staff were hired to facilitate that role (Chesnut, 2003).

2. Results

The analysis for this report is limited to the United States housing unit population. Therefore, persons enumerated in Group Quarters and in Puerto Rico are not included in these analyses.

2.1 Mail response rate versus mail return rate

There are two measures that examine self-enumeration in Census 2000; mail response rates and mail return rates. The mail response rates and the mail return rates for Census 2000 were calculated at two points in time: as of April 18, 2000 and as of December 31, 2000. April 18 was used as a reference date for calculating the rates since that was the date for determining which housing units would be contacted during the Nonresponse Followup operation. December 31 was used as a reference date for calculating the rates since that was the date the official counts were due to the President. While the rates are calculated through December 31, the last date on which the Census Bureau received a self-enumerated return was October 19, 2000.

The mail response rate as of April 18 is a measure that represents the percentage of addresses eligible for Nonresponse Followup that returned questionnaires prior to the designation of the Nonresponse Followup universe. The mail response rate as of December 31 is a measure of respondent participation by mail in Census 2000. The difference between the two rates is that the December 31 rate was not restrict

ed to returns received before the cut for the Nonresponse Followup universe. Several criteria were used to identify addresses for inclusion in the denominator of the mail response rate. First the address had to be on the Census 2000 address frame (Decennial Master Address File) and be eligible to be contacted in the Nonresponse Followup operation. In addition, the rate was restricted to housing units in mailback areas only. Mailback areas included Mailout/Mailback, Update/Leave, and Urban Update/Leave areas. Finally, addresses that were pre-identified as having inadequate address information for mailout were excluded from the rates. For a housing unit to be in the mail response rate numerator, it had to be in the mail response rate denominator, and the Census Bureau received a questionnaire on or before a specific point in time, i.e., April 18 and December 31.

The mail return rate is a measure of respondent cooperation by mail in Census 2000. Several criteria were used to identify addresses for inclusion in the denominator of the mail return rate. First the address had to be occupied in Census 2000 (on the Hundred Percent Census Edited File) and be in the Census 2000 address frame prior to the start of the Nonresponse Followup operation. In addition, the rate was restricted to housing units in mailback areas only, i.e., Mailout/Mailback, Update/Leave, and Urban Update/Leave. Finally, addresses identified by the United States Postal Service in

Mailout/Mailback areas or by Census Bureau staff in Update/Leave and Urban Update/Leave areas as undeliverable were excluded from the rates. For a housing unit to be in the mail return rate numerator, it had to be in the mail return rate denominator and the Census Bureau received a questionnaire on or before a specific point in time, i.e., April 18 and December 31.

The main difference between the denominators of the mail response and mail return rates is that the mail response rate denominator includes vacant housing units, addresses determined by the United States Postal Service and Census Bureau staff as undeliverable, and addresses on the Census 2000 address frame which were eventually determined not to exist.

For the mail response rate and the mail return rate calculations, questionnaires completed from the following data collection operations are considered "mail" returns and are included in the numerators as responses: Questionnaire Delivery, the Internet program, the Be Counted program, Telephone Questionnaire Assistance, and Coverage Edit Followup. Therefore, questionnaires from those five data collection operations are considered mail responses/returns. Finally, the national level rates include all 50 states and the District of Columbia.

Table 1 contains the final mail response and final mail return rates (as of December 31). In addition, the table contains the mail

**Table 1.
Mail Return and Mail Response Rates Over Time**

Date	Time frame	Mail return rate		Mail response rate	
		Rate	As a percent of the final rate	Rate	As a percent of the final rate
March 3	Questionnaire delivery begins in Update/Leave and Urban Update/Leave areas	0.0	0.0	0.0	0.0
March 6	Advance letter delivery begins	0.1	0.2	0.1	0.2
March 13	Questionnaire mailout begins in Mailout/Mailback areas	2.2	2.7	1.9	2.8
March 20	Reminder postcard delivery begins	25.9	33.1	22.5	33.3
April 1	Census Day	63.1	80.5	54.7	81.2
April 8	One week past Census Day	70.5	89.9	61.2	90.7
April 18	NRFU universe is determined..... One week past the NRFU universe determination	74.1	94.5	64.3	95.3
April 25	Official start date for the NRFU field activities	75.1	95.8	65.2	96.7
April 27	Official start date for the NRFU field activities	75.4	96.1	65.4	97.1
June 26	Official end date for the NRFU field activities	77.9	99.3	67.0	99.4
December 31	End of the Census Year	78.4	100.0	67.4	100.0

Source: Stackhouse and Brady, 2003a and 2003b.
NRFU means Nonresponse Followup.

response and mail return rates at difference points in time. These points are related to the questionnaire delivery in Update/Leave and Urban Update/Leave areas, questionnaire mailing strategy in Mailout/Mailback areas, Census Day, and Nonresponse Followup. Finally, Table 1 contains percentages using the final mail response and final mail return rates as the base. These percentages show the relative relationship between the two rates over time.

As a measure of respondent cooperation, the final mail return rate (as of December 31) was 78.4 percent. Therefore, of all the households who could have responded by mail 21.6 percent required a visit by a Census Bureau field staff to enumerate their household. As of the start of the advance letter mailing on March 6, the mail return rate was 0.1 percent. The forms received at that point in time were from Update/Leave and Urban Update/Leave areas. As of the start of the questionnaire mailing for Mailout/Mailback areas (March 13), the rate was 2.2 percent. The majority of these forms were also

from Update/Leave and Urban Update/Leave areas. As of the start of the reminder postcard mailing on March 20, the rate had increased to 25.9 percent. This represented 33.1 percent of the final mail return rate. On Census Day (April 1), the rate was 63.1 percent, representing 80.5 percent of the final mail return rate. On April 8, one week after Census Day, the rate increased by 7.4 percentage points to 70.5 percent. The mail return rate on April 18 was 74.1 percent, representing 94.5 percent of all the mail returns that were received. April 18 was the date that the Nonresponse Followup universe was determined. Within one week after April 18 and two days prior to the official start date for the Nonresponse Followup field activities (April 27), the mail return rate increased to 75.1 percent. At the official end date for the Nonresponse Followup operation (June 26), the mail return rate was 77.9 percent, representing 99.3 percent of all the returns that were received.

Between the mailing of the questionnaire in Mailout/Mailback areas

and Census Day, forms were returned by respondents at a fairly high rate. During the 20 day interval, the mail return rate increased by about 61 percentage points, an average of 3.0 percentage points per day. Between Census Day and the date the Nonresponse Followup universe was determined, the rate at which respondents returned forms started to decline. During this 18 day interval, the mail return rate increased by 11.0 percentage points, an average of 0.6 percentage points per day. Between the date of the Nonresponse Followup universe determination and the official start of the Nonresponse Followup field activities, the rate at which respondents returned forms declined even further. During this 10 day interval, the mail return rate increased by 1.3 percentage points, an average of 0.1 percentage points per day. The rate basically leveled off some time after the start of the Nonresponse Followup field activities. Therefore, by the official start of the Nonresponse Followup field activities the majority of the forms (96.1 percent) that the Census

**Table 2.
Mail Return and Mail Response Rates by Form Type Over Time**

Date	Time frame	Mail return rate			Mail response rate		
		Form type		Difference	Form type		Difference
		Short form mail return rate	Long form mail return rate		Short form mail response rate	Long form mail response rate	
March 3	Questionnaire delivery begins in U/L and UU/L areas	0.0	0.0	0.0	0.0	0.0	0.0
March 6	Advance letter delivery begins	0.2	0.1	0.1	0.1	0.1	0.0
March 13	Questionnaire mailout begins in MO/MB areas.	2.2	1.7	0.5	2.0	1.5	0.5
March 20	Reminder postcard delivery begins	28.6	12.7	15.9	24.9	10.8	14.0
April 1	Census Day	66.4	47.1	19.2	57.7	40.3	17.4
April 8	One week past Census Day	73.1	57.8	15.4	63.6	49.4	14.2
April 18	NRFU universe is determined.	76.4	63.0	13.4	66.4	53.9	12.5
April 25	One week past the NRFU universe determination	77.2	64.6	12.6	67.2	55.3	11.9
April 27	Official start date for the NRFU field activities.	77.5	65.1	12.4	67.4	55.7	11.8
June 26	Official end date for the NRFU field activities.	79.6	69.7	9.9	68.7	58.8	9.9
December 31	End of the Census Year	80.1	70.5	9.6	69.1	59.4	9.6

Source: Stackhouse and Brady, 2003a and 2003b.

U/L means Update/Leave.

UU/L means Urban Update/Leave.

MO/MB means Mailout/Mailback.

NRFU means Nonresponse Followup.

Difference means the difference between short form rate and the long form rate for the mail return and mail response rates.

Bureau was going to receive were received as measured by the mail return rate.

The final mail response rate (as of December 31) was 67.4 percent. However at the time of the Nonresponse Followup operation universe determination (April 18) the mail response rate was 64.3 percent. Therefore, 35.7 percent of the mailback universe (Mailout/Mailback, Update/Leave, and Urban Update/Leave areas) required contact during Nonresponse Followup. The difference between the final mail response and final mail return rates is about 11 percentage points. However, the pattern discussed with the mail return rate can also be observed with the mail response rate. Looking at the percentage distribution over time for the two rates we see that there is relatively no difference.

2.2 Short form mail rates versus long form mail rates

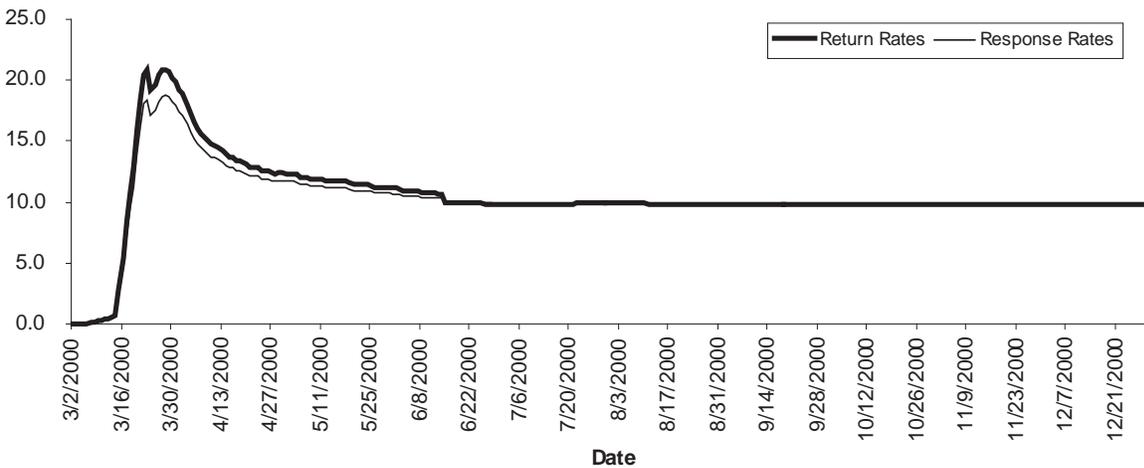
Table 2 contains the final mail response rate and the final mail return rates (as of December 31) by form type (short versus long). In addition, the table contains the form level rates at different points in time. Similar to Table 1, these points are related to the questionnaire mailing strategy in Mailout/Mailback areas, Census Day, and Nonresponse Followup. Table 2 also contains the difference between the short form mail rate and the long form mail rate at the different points in time. The classification of form type was based on the form the housing unit was sent and not the form of enumeration. It is possible that some housing units were sent a long form by the Census Bureau but were enumerated on a short form.

The differences by form type between the final mail return rates and the final mail response rates are relatively the same. For short forms, the difference between the final short form mail return rate and the final short form mail response rate is 11.0 percentage points. The difference for the long form mail rates is 11.1 percentage points.

The short form final mail return rate of 80.1 percent is 9.6 percentage points higher than the long form final mail return rate of 70.5 percent. For the final mail response rates, the short form final mail response rate and the long form final mail response rate are 69.1 percent and 59.4 percent, respectively. The difference between these two rates is also 9.6 percentage points.

From Table 2 we see a similar pattern in the difference between

Figure 1:
Difference Between Short Form and Long Form Rates (in percent)



short forms and long forms over time for both mail return rates and mail response rates. Starting on March 6 the differences are relatively small. The difference increases substantially and then decreases, ending up at 9.6 percentage points for both rates. To get a better understanding of the relationship between the short form and the long form mail rates, one would need to look at more than the ten points in time presented in Table 2. Figure 1 graphs the difference between the short form and long form mail rates starting on March 2, 2000 and ending on December 31, 2000. The graph contains data for both the mail return rate and the mail response rate.

First we looked at the difference between the short forms and the long forms for the mail return rate. Between March 2 and March 14 we see that while the difference is increasing, it is relatively small. Between March 15 and March 23 the difference went from 2.7 percentage points to 20.8 percentage points. This period of rapid

increase began two days after the start of the questionnaire mailing in Mailout/Mailback areas (questionnaires were mailed between March 13 and March 15). On March 24, the difference dropped over a percentage point to 19.2 percentage points and then rebounded over the next four days to a high of 20.9 percentage points on two consecutive days (March 27 and 28). March 29 began the gradual decline in the difference that continued until June 14. On June 15, the difference in the rate went to 10.0 percentage points from 10.7 percentage points on the previous day. From the middle of June to the end of the year, the difference does not fluctuate much, resulting in a difference of 9.6 percentage points.

The pattern observed for the mail return rate can also be seen with the difference for the mail response rate. However, the magnitude of the difference is smaller for the mail response rate between March 15 (the first day of the rapid increase) and June 15 (the day we observed the rate starting to stabi-

lize). At the end of the rapid period of increase (on March 23) the observed difference is 18.4 percentage points (2.4 percentage points lower than the mail return rate). It reaches its highest level of 18.7 percentage points on two consecutive days (March 27 and 28). Like the mail return rate, the difference for the mail response rate does not fluctuate much from the middle of June to the end of the year. By December 31, 2000, the difference between the short form and long form mail response rates is 9.6 percentage points.

Based on Figure 1, respondents were more likely to complete short forms and return them earlier than long forms. However, the large difference observed at the end of the first few weeks between short form and long form mail rates decreased later in the year. The patterns observed in Figure 1 could be the results of the reminder postcards, the Nonresponse Followup advertising campaign, or other factors.

2.3 Enumeration of people and households by the different modes/methods

Table 3 contains a distribution of the number of persons and households by the three enumeration methods. Within each enumeration method there is a breakdown by the specific data collection operations which comprise that method. Table 3 also contains the average household size for the three enumeration methods and the specific data collection operations. It should be noted that the number of persons that respondents could provide data for differed by the questionnaire used for each data collection operation. The reader should be cautious when comparing this statistic across operations given that for most households the operation they were enumerated by was a self selection process. In addition to the three enumeration methods discussed in the Background Section, there is a fourth category which includes operations that could not be categorized into an enumeration method and/or data collection operation.

Self-administered enumerations represented 72.33 percent of the persons and 74.16 percent of the occupied housing units in the census. The majority of these persons and returns (99.74 percent and 99.76 percent, respectively) were from paper questionnaires from Mailout/Mailback, Update/Leave, and Urban Update/Leave areas. The paper questionnaires were completed by respondents and returned through the mail. Internet returns and Be Counted Forms accounted for a relatively small number and percent of the enumerations.

Interviewer-administered followup enumerations are defined as ques-

tionnaires that were completed with the direct assistance of Census Bureau staff. In addition, most respondents had the option of performing and completing a self-administered enumeration and did not. Note that returns from the Coverage Edit Followup operation originally started as self-administered enumerations however since there was an interaction between the respondent and a telephone agent, these were classified as interviewer-administered followup enumerations. These returns represented 25.26 percent of the persons and 23.35 percent of the occupied housing units in the census. The majority of these persons and returns (82.96 percent and 87.31 percent, respectively) were enumerated during Nonresponse Followup on a paper questionnaire. Within the interviewer-administered followup enumerations, the Coverage Improvement Followup operation enumerated the second largest number of occupied housing units but the third largest number of persons. The Coverage Edit Followup operation accounted for the third largest number of occupied housing units and the second largest number of persons. The high average household size in the Coverage Edit Followup operations is the result of the "large household edit". The purpose of the large household followup component was to obtain the demographic data for the following:

- persons seven and higher on Questionnaire Delivery returns,
- persons seven and higher on Internet returns, and
- persons six and higher on Be Counted returns.

These households were originally enumerated on a self-administered

enumeration. Therefore, by design, households classified as enumerated during the Coverage Edit Followup operation should have more persons on average than the other operations. The impact of the large household followup component can be seen in the average household size statistics. The overall average household size is 2.59 persons, but for the Coverage Edit Followup operation the number is 5.81 persons per household. Finally, the Telephone Questionnaire Assistance program accounted for a relatively small number and percent of the enumerations.

Interviewer-administered enumerations are cases where the household was not provided the opportunity to self respond to the census. These returns represented 1.14 percent of the persons and 1.10 percent of the occupied housing units in the census. The largest single contributing operation in this category is the Update/Enumerate operation, representing 51.96 percent of the persons and 47.40 percent of the occupied housing units.

Nonresponse Followup Adds and Coverage Improvement Followup Adds are cases that were identified during the respective operations as new housing units. The field staff added the address and enumerated the household during the operations. Adds from the Nonresponse Followup operation were the second largest contributing component, followed by the List/Enumerate operation and adds from the Coverage Improvement Followup operation. Finally, the Remote Alaska and the T-Night operations accounted for a relatively small number and percent of the enumerations.

Table 3.
Number of Persons and Households by Enumeration Method

Enumeration method	Persons		Occupied housing units		Average household size
	Number	Percent	Number	Percent	
Total	273,643,273	100.00	105,480,101	100.00	2.59
Self-administered enumerations:.....	197,939,491	72.33	78,220,756	74.16	2.53
Paper.....	197,418,790	72.14	78,031,668	73.98	2.53
Internet	173,291	0.06	63,630	0.06	2.72
BCF	347,410	0.13	125,458	0.12	2.77
Interviewer-administered followup enumerations: ...	69,127,365	25.26	24,632,980	23.35	2.81
NRFU.....	57,346,012	20.96	21,505,895	20.39	2.67
CIFU	4,394,067	1.61	1,820,349	1.73	2.41
CEFU.....	7,231,591	2.64	1,245,603	1.18	5.81
TQA	155,695	0.06	61,133	0.06	2.55
Interviewer-administered enumerations:	3,131,137	1.14	1,159,514	1.10	2.70
NRFU Adds	662,284	0.24	276,485	0.26	2.40
CIFU Adds	191,478	0.07	75,965	0.07	2.52
Update/Enumerate	1,627,023	0.59	549,658	0.52	2.96
List/Enumerate.....	559,800	0.20	221,729	0.21	2.52
Remote Alaska.....	55,232	0.02	16,306	0.02	3.39
T-Night.....	35,320	0.01	19,371	0.02	1.82
Other:.....	3,445,280	1.26	1,466,851	1.39	2.35
Unlinked Enumerator Continuation Forms	4,126	0.00	2,058	0.00	2.00
WHH Substitutions	3,441,154	1.26	1,464,793	1.39	2.35

Source: Zajac, 2003 and Imel, 2003.

BCF means Be Counted Form.
 NRFU means Nonresponse Followup.
 CIFU means Coverage Improvement Followup.
 CEFU means Coverage Edit Followup.
 TQA means Telephone Questionnaire Assistance.
 WHH means Whole Household.

The last category in Table 3 is titled "Other". These returns represented 1.26 percent of the persons and 1.39 percent of the occupied housing units in the census. The majority of these persons and returns (99.88 percent and 99.86 percent, respectively) were the result of the Whole Household Substitution process. The Whole Household Substitutions represent households which were not enumerated by a data collection operation. Thus, the data for these cases were imputed. The remaining returns in the "Other" category are "unlinked enumerator continuation forms". These returns were generated during the interviewer-administered followup enumeration (all except the Telephone Questionnaire Assistance operation) and the interviewer-administered enumeration operations. Continuation forms were used when there were more than five

persons in the household. The field staff was to transcribe the housing unit identification number (ID) onto the continuation form. The ID would permit the data from the continuation form to be linked with the parent form after the forms were data captured. A small number of continuation forms (2,058) could not be linked with their parent form. The failure to link the parent and continuation forms could have been caused by incompatible information between the two forms due to enumerator error, scanning error at the time of data capture, or some other complexity of the case like a missing parent form. Most of the time the parent form was missing. These forms were included in the count of persons and households. The unlinked enumerator continuation forms accounted for a relatively small number and percent of the total housing unit population,

4,126 persons and less than 0.00 percent, respectively.

A discussion of the imputation¹ rates by enumeration method is not possible since the rates were not produced by the three enumeration methods. However, they were produced for the self-administered enumeration and the combination of the other two enumeration methods. In addition, the combined group also contains the unlinked enumerator continuation forms. Based on these two categories the self-administered enumerations had lower imputation

¹ Imputation occurs when a response for a data item is either missing or not consistent with other responses. For person data items, the value is imputed based on provided information from the same person, from another person in the household, or from a person in a nearby household. For the tenure item, the value is imputed based on provided long form information from that same household or from a nearby household.

rates for the relationship, sex, age, race, and tenure data items. Hispanic origin was the only data item where the imputation rate was larger for the self-administered enumerations. This could be due, in part, to the conscious choice for the self-administered enumeration respondents who are not Hispanic to skip the question. In addition, enumerators are able to explain to the respondent that the question requires a response. Based on these data, persons who provide their data by self-administered enumerations were more likely to provide complete data (Zajac, 2003).

2.4 Satisfaction with the Internet website

Census 2000 marked the first time in the history of the decennial census that the Census Bureau provided respondents with the option to submit their census form via the World Wide Web. As part of a comprehensive plan to simplify public participation and to increase mail response and mail return rates to Census 2000, Census Bureau staff designed a single website to serve Internet users. The site contained two major components: Internet Questionnaire Assistance and Internet Data Collection. The overall objectives were to provide census respondents with a highly secure Internet filing option to the paper-based short form questionnaire, and to assist respondents with completing their census questionnaire (Stapleton, 2002).

2.4.1 Internet Questionnaire Assistance

Most respondents were not satisfied with the Internet Questionnaire Assistance. Nearly 62 percent of the respondents indicated that, overall, they were not at all satisfied with the Internet help screens. While nearly 77 per-

cent of the respondents found it easy or very easy to understand the help screen information, about 58 percent said it was not at all easy to find the help topics for which they were searching. In addition, 65 percent of the respondents stated that the help screen information was not at all helpful. These findings suggest that while the information presented on the site was easy to interpret, it may not have been the appropriate information for the users (Stapleton, 2002).

It should be noted, that those respondents who did find the information helpful were more satisfied overall. Helpfulness of the help screen information was highly associated with overall satisfaction with the Internet help screens (Stapleton, 2002).

While the information on Internet Questionnaire Assistance was easy to understand, it was difficult to locate, and generally unhelpful. In short, the Internet Questionnaire Assistance did not provide the information that respondents were seeking (Stapleton, 2002).

2.4.2 Internet data collection

For the Internet data collection operation, satisfaction measures were collected on the following seven aspects:

- time required to load the form,
- moving through the form,
- availability of help screens,
- understanding the help screen information,
- ease of sending the form,
- security and confidentiality procedures, and
- overall satisfaction.

Respondents were largely satisfied with most of the seven aspects related to the Census 2000 Internet Form. The percent of respondents indicating they were satisfied or very satisfied with a specific aspect was as high as 94 percent (for the item 'ease of sending form'). However, satisfaction lapsed slightly for the two items which dealt with help screens: availability of help screens and understanding the help information (74 percent and 73 percent, respectively). It is important to note that most respondents did not use help while completing the Census 2000 Internet Form. The percentage of respondents who chose "Not Applicable" on questions about the usefulness of specific help topics ranged from nearly 69 percent to over 85 percent (Stapleton, 2002).

Overall, 91 percent of respondents were satisfied with the Census 2000 Internet Form. Given the high levels of customer satisfaction, Internet Data Collection demonstrated a strong potential for large-scale implementation in 2010 (Stapleton, 2002). Note that only 173,291 persons in 63,630 households were enumerated using the Internet.

2.5 Satisfaction with the Telephone Questionnaire Assistance program

As part of the Census 2000 design, the Census Bureau implemented a telephone program to provide the public with assistance in completing their census forms. To meet the program requirements the Census Bureau contracted with Electronic Data Systems (EDS). EDS leveraged state-of-the-art technologies commonly used in customer service environments in the private sector. The major technologies included Intelligent Call Routing

Table 4.
Non-English Questionnaires Requested

Language	Advance letter		Be Counted Forms			
			QAC		Distribution sites	
	Number	Percent	Number	Percent	Number	Percent
Total	2,235,435	100.00	65,264	100.00	656,639	100.00
Spanish.....	1,871,065	83.70	55,482	85.01	450,000	68.53
Chinese.....	151,752	6.79	4,914	7.53	69,710	10.62
Korean	101,653	4.55	1,995	3.06	44,342	6.75
Tagalog	19,200	0.86	456	0.70	43,353	6.60
Vietnamese	91,765	4.11	2,417	3.70	49,234	7.50

Source: Carter, 2002; Imel, 2003; and Jones and Barrett, 2003.
 QAC means Questionnaire Assistance Center.

software and Interactive Voice Response technology coupled with a network of commercial call centers to function as a single virtual call center. The Interactive Voice Response system was based on telephone technology that allowed callers to enter and obtain information through a series of menu options using either the telephone keypad (touch tone) or for English speaking callers, voice response. The Intelligent Call Routing system responded to a request from the AT&T network and routed the calls to an Interactive Voice Response system or, if necessary, to an agent.

The Telephone Questionnaire Assistance network was available to the public through language specific toll-free numbers March 3 through June 30, 2000. Callers could access the Interactive Voice Response portion of the network 24 hours a day, 7 days a week. Agents were available 8:00 AM to 9:00 PM for each of the nation's nine time zones, 7 days a week. Telephone Questionnaire Assistance provided the following services:

- Answered questions about the census and the census questionnaire

- Allowed respondents to request a census form or language guide by mail
- Allowed callers who met certain criteria to respond to the census

For the Telephone Questionnaire Assistance operation, the customer satisfaction survey included five or seven questions depending on whether they spoke to an agent. The questions asked about ease of moving through the automated menu system, quickness of the agent in understanding their request, agent's level of interest in helping, overall satisfaction with the call, and other customer concerns. Overall, the callers were satisfied with the Telephone Questionnaire Assistance operation. At least 72 percent of the respondents to the customer satisfaction survey replied favorably (Stevens, 2002).

2.6 Use of the language program

2.6.1 Non-English questionnaires

Table 4 contains a distribution of the number and percent of non-English questionnaires requested through the advance letter, distributed at the Questionnaire Assistance Centers, and obtained at the Be Counted distribution sites. The type of questionnaires

provided to respondents at the Questionnaire Assistance Centers were Be Counted Forms. Respondents requested approximately 2.2 million questionnaires in a language other than English through the advance letter. The Questionnaire Assistance Centers distributed a substantially smaller number of language Be Counted questionnaires, 65,264 forms. At the Be Counted distribution sites respondents obtained 656,639 questionnaires in a language other than English.

We see similar distributions for advance letter and the Questionnaire Assistance Center programs. The majority of the non-English questionnaires were Spanish, about 85 percent. Chinese questionnaires were the next largest category. Korean and Vietnamese forms were about the same within each program. Finally, Tagalog questionnaires were the least requested of the five languages, under one percent for both programs.

For the Be Counted distribution sites the majority of the questionnaires that were picked up by respondents were Spanish. Chinese questionnaires were the next largest category followed by Vietnamese. Finally, Tagalog and Korean were about the same,

Table 5.

Language Assistance Guides: Requests Through the Telephone Questionnaire Assistance Program, at the Questionnaire Assistance Centers, or at the Internet Website

Language	Total		Language	Total	
	Number	Percent		Number	Percent
Total	242,840	100.00			
Albanian	6,277	2.58	Japanese	6,391	2.63
Amharic	528	0.22	Korean	6,131	2.52
Arabic	3,228	1.33	Kurdish	17,394	7.16
Armenian	2,011	0.83	Laotian	1,011	0.42
Bengali	604	0.25	Polish	2,550	1.05
Burmese	396	0.16	Portuguese	1,810	0.75
Cambodian	2,241	0.92	Roma	380	0.16
Chamarro	518	0.21	Romanian	978	0.40
Chinese	10,334	4.26	Russian	7,729	3.18
Creole	3,825	1.58	Samoan	777	0.32
Croatian	1,033	0.43	Serbian	602	0.25
Czech	710	0.29	Slovak	460	0.19
Dari	554	0.23	Somali	757	0.31
Dinka	5,273	2.17	Spanish	115,010	47.36
Dutch	590	0.24	Swahili	704	0.29
Farsi	1,622	0.67	Tagalog	1,324	0.55
French	1,856	0.76	Thai	3,747	1.54
German	1,623	0.67	Tibetan	479	0.20
Greek	772	0.32	Tigrean	472	0.19
Hebrew	1,244	0.51	Tongan	385	0.16
Hindi	1,408	0.58	Ukrainian	1,290	0.53
Hmong	1,548	0.64	Urdu	868	0.36
Hungarian	674	0.28	Vietnamese	6,203	2.55
Ilocano	1,255	0.52	Yiddish	2,690	1.11
Italian	1,016	0.42	Large print English	1,346	0.55
			Other Languages	10,212	4.21

Source: Chesnut, 2003; Jones and Barrett, 2003; and Pendleton, 2003.

between 6.5 and 7.0 percentage points.

One explanation for these distribution differences is where the 51,692 Be Counted distribution sites were located compared to the location of the 13,817 Questionnaire Assistance Centers. A larger percent of the Be Counted distribution sites were placed in tracts identified through the Planning Database² as compared to the location of the Questionnaire Assistance Centers, 13.7 percent compared to 3.5 percent, respec-

tively. Another explanation could be that the Be Counted distribution sites were more accessible to persons interested in obtaining an Asian language questionnaire.

There were 2,235,435 requests for a non-English questionnaire through the advance letter. Of the 2.2 million requested non-English questionnaires, 1,009,204 questionnaires (45.1 percent) were checked-in and data captured. In many instances two forms were completed by households requesting a non-English form; the English questionnaire and the non-English questionnaire. When reviewed for completeness the English questionnaires was often selected over the non-English questionnaire. Only 114,110 non-English questionnaires were returned by respondents in occupied housing units

and selected for the household. This represented 5.1 percent of the requested non-English questionnaires. One possible reason for the small number of non-English questionnaires selected for the household was that the respondent received, completed, and returned the English form prior to even receiving the language form.

2.6.2 Language assistance guides

Table 5 contains a distribution of the number and percent of language assistance guides requested through the Telephone Questionnaire Assistance program, distributed at the Questionnaire Assistance Centers, or obtained on the Census 2000 Internet website. For the Telephone Questionnaire Assistance program, data on the number of language assistance guides requested came from the

² The Planning Database is a file created by Population Division for planning purposes based on 1990 census tract data. It includes information at the census tract. Field Division used the database to aid the Local Census Offices in knowing which tracts needed a Be Counted distribution site and a Questionnaire Assistance Center (Carter, 2002).

Table 6.

Assistance in Completing the English Questionnaire in a Language Other Than English During Telephone Questionnaire Assistance

Language	Telephone Questionnaire Assistance	
	Number	Percent
Total	788,237	100.00
Spanish	760,325	96.46
Chinese	11,828	1.50
Korean	7,342	0.93
Tagalog	7,249	0.92
Vietnamese	1,493	0.19

Source: Chesnut, 2003.

evaluation files. For the Questionnaire Assistance Centers, data on the number of language assistance guides requested came from the Record of Contact form (D-399). For the Census 2000 Internet website, data on the number of language guides came from Pendleton (2003). Spanish language assistance guides were the most requested of the 50 languages (including large print English). Of the four Asian languages in which questionnaires were also provided, Chinese, Korean, and Vietnamese each represented between two and five percentage points. A relatively small percent (0.55 percent) of the language assistance guides were requested for Tagalog. Language assistance guides in Albanian, Dinka, Japanese, and Russian each represented about three percentage points. In addition, Kurdish was over 7 percent of the

requests. The Other Languages category contains 12 language assistance guides which were available at some but not all of the Questionnaire Assistance Centers. For the Questionnaire Assistance Centers only, data on these languages could not be obtained because the D-399 did not list these languages separately. Therefore, information on the number of guides distributed was not reported individually but was collapsed into "Other Languages" category. These languages are Albanian, Amharic, Burmese, Dari, Dinka, Hebrew, Kurdish, Roma, Somali, Swahili, Tibetan, and Tigrayan. Note that for the Telephone Questionnaire Assistance program and the Census 2000 Internet website data on these 12 languages were available. Refer to Appendix A for a breakdown of the number of lan

guage assistance guides by program.

2.6.3 Assistance with completing the English questionnaire

Table 6 contains information on the amount of assistance that was provided in completing the English questionnaire in a language other than English during the Telephone Questionnaire Assistance program. Assistance was provided in Spanish, Chinese, Korean, Tagalog, and Vietnamese. The majority of the time (96.46 percent) when assistance was provided in a language other than English, it was in Spanish. For the four Asian languages, assistance was provided 3.54 percent of the time. Chinese was the most frequent of the Asian languages, followed by Korean and Tagalog. Vietnamese represented a relatively small number of the non-English workload. Two things should be considered when reviewing these data. First, the 788,237 cases represent 13.08 percent of the overall call volume received by the Telephone Questionnaire Assistance program. Second, the numbers presented in Table 6 are counts of the number of calls made by respondents to the language specific toll-free 1-800 telephone number. While the agents handling the calls were bilingual, the conversations may have occurred in English.

3. Conclusions/Recommendations

Mail return rates were first measured for the 1970 Census. In addition, mail return rates were calculated for the 1980 and 1990 censuses. In 1970, 1980 and 1990 censuses, the mail return rate was 87.0 percent, 81.3 percent, and 74.1 percent, respectively (Stackhouse and Brady, 2003b). The Census 2000 mail return rate as of April 18, 2000 was 74.1 percent. It should be noted the calculations for mail return rates are not always comparable across censuses. One difference among the four reported rates is the time frame they represent, in number of calendar days. While there are differences in the calculation among the four rates, it is of value to compare the numbers. Between the 1970 and 1980 censuses, the mail return rate decreased, beginning a trend of decline in respondent cooperation. Between the 1980 and 1990 censuses we observed another decline in the mail return rate. However, Census 2000 halted the decline in respondent cooperation that was observed between the 1970, 1980, and 1990 censuses.

For Census 2000, self-administered enumerations consisted of paper questionnaires, Be Counted forms, and Internet returns. The majority of the self-administered enumera-

tions were paper questionnaires. For the 2010 Census, the Census Bureau needs to incorporate electronic self-response modes for respondents to provide their data, e.g., Internet and Interactive Voice Response. In addition, there is a need to encourage respondents to use the electronic modes.

There was a large number of Whole Household Substitutions in the census, 3,441,154 persons in 1,464,793 households. For the 2010 Census, the Census Bureau needs to ensure that this is reduced.

Results from the customer satisfaction survey of the Internet Questionnaire Assistance site indicated that respondents were not satisfied with the application. Therefore, the Census Bureau needs to improve the development and testing process for that application.

Through the use of the advance letter, respondents were able to request a non-English questionnaire in one of the following languages; Spanish, Chinese, Korean, Tagalog, and Vietnamese. There were 2,235,435 requests for a non-English questionnaire through the advance letter. As stated earli-

er, of the 2.2 million requested non-English questionnaires, 1,009,204 questionnaires (45.1 percent) were checked-in and data captured. In many instances two forms were completed by households requesting a non-English form; the English questionnaire and the non-English questionnaire. When reviewed for completeness the English questionnaire was often selected over the non-English questionnaire. Only 114,110 non-English questionnaires were returned by respondents in occupied housing units and selected for the household. This represented 5.1 percent of the requested non-English questionnaires. One possible reason for the small number of non-English questionnaires selected for the household was that the respondent received, completed, and returned the English form prior to even receiving the language form. Using the advance letter to provide respondents with the ability to obtain a non-English questionnaire did not work based on low percent (5.1 percent) of non-English questionnaires returned and selected for the household. Therefore, the Census Bureau needs to research methods for delivering non-English questionnaires.

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References

- Carter, Nathan (2002), *Census 2000 Evaluation A.3: Be Counted Campaign for Census 2000*, September 25, 2002
- Chesnut, T. John (2003), *Census 2000 Evaluation A.1.a: Telephone Questionnaire Assistance*, March 20, 2003
- Imel, Jerry (2003), *Census 2000 Evaluation H.9: Local Census Office Profile*, September 2003
- Jonas, Kimball (2002), *Census 2000 Evaluation E.5: Group Quarters Enumeration*, November 7, 2002
- Jones, John and Barrett, Diane (2003), *Census 2000 Evaluation H.4: Questionnaire Assistance Centers for Census 2000*, June 25, 2003
- Moul, Darlene (2002), *Census 2000 Evaluation H.5: Nonresponse Followup for Census 2000*, July 25, 2002
- Moul, Darlene (2003), *Census 2000 Evaluation I.4: Coverage Improvement Followup*, May 9, 2003
- Pendleton, Carol (2003), *Assessment Report: Census 2000 Language Program*, September 2003
- Pennington, Robin (2003), *Census 2000 Evaluation F.10: Update/Leave*, June 6, 2003
- Rosenthal, Miriam (2002a), *Census 2000 Evaluation F.11: Urban Update/Leave*, October 3, 2002
- Rosenthal, Miriam (2002b), *Census 2000 Evaluation F.12: Update/Enumerate*, December 10, 2002
- Sheppard, David (2003), *Census 2000 Evaluation I.1: Coverage Edit Followup*, July 29, 2003
- Smith, Damon and Jones, John (2003), *Census 2000 Evaluation A.4: Language Program - Use of Non-English Questionnaires and Guides*, September 22, 2003
- Stackhouse, Herbert and Brady, Sarah (2003a), *Census 2000 Evaluation A.7.a: Census 2000 Mail Response Rates*, January 30, 2003
- Stackhouse, Herbert and Brady, Sarah (2003b), *Census 2000 Evaluation A.7.b: Census 2000 Mail Return Rates*, January 30, 2003
- Stapleton, Courtney (2002), *Census 2000 Evaluation A.2.c: Census 2000 Internet Website and Questionnaire Customer Satisfaction Surveys*, April 15, 2002
- Stevens, Neala (2002), *Census 2000 Evaluation A.1.b: Telephone Questionnaire Assistance Customer Satisfaction Survey*, February 6, 2002
- Treat, James B. and Herbert F. Stackhouse, 2002, *Demographic Comparison between Self-Response and Personal Visit Interview in Census 2000*, Population Research and Policy Review Document, Volume 21, Numbers 1-2, pages 39-51, April 2002
- Whitworth, Erin (2002), *Census 2000 Evaluation A.2.b: Internet Data Collection*, August 14, 2002
- Zajac, Kevin (2002), *Census 2000 Evaluation F.13: List/Enumerate*, May 23, 2002
- Zajac, Kevin (2003), *Census 2000 Evaluation B.1.a: Analysis of Imputation Rates for the 100 Percent Person and Housing Unit Data Items from Census 2000*, September 2003

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Appendix A.

Table A-1.
Number of Language Assistance Guides Requested Through the Telephone Questionnaire Assistance Program, the Questionnaire Assistance Centers, and at the Internet Website

Language	TQA	QAC	Internet	Language	TQA	QAC	Internet
1 Albanian	5,388	NA	889	26 Japanese	60	408	5,923
2 Amharic	9	NA	519	27 Korean	1,244	3,261	1,626
3 Arabic	71	1,475	1,682	28 Kurdish	4	NA	17,390
4 Armenian	65	1,470	476	29 Laotian	20	403	588
5 Bengali	14	118	472	30 Polish	58	1,082	1,410
6 Burmese	7	NA	389	31 Portuguese	102	844	864
7 Cambodian	41	1,557	643	32 Roma	2	NA	378
8 Chamorro	9	34	475	33 Romanian	143	73	762
9 Chinese	2,326	4,964	3,044	34 Russian	219	4,999	2,511
10 Creole	1,645	1,394	786	35 Samoan	14	412	351
11 Croatian	61	254	718	36 Serbian	12	80	510
12 Czech	256	30	424	37 Slovak	11	97	352
13 Dari	96	NA	458	38 Somali	110	NA	647
14 Dinka	4,630	NA	643	39 Spanish	57,563	51,017	6,430
15 Dutch	11	21	558	40 Swahili	130	NA	574
16 Farsi	49	189	1,384	41 Tagalog	63	333	928
17 French	83	389	1,384	42 Thai	15	2,976	756
18 German	39	74	1,510	43 Tibetan	40	NA	439
19 Greek	27	82	663	44 Tigrean	4	NA	468
20 Hebrew	232	NA	1,012	45 Tongan	4	53	328
21 Hindi	23	452	933	46 Ukrainian	11	716	563
22 Hmong	37	881	630	47 Urdu	15	197	656
23 Hungarian	28	38	608	48 Vietnamese	1,394	3,151	1,658
24 Ilocano	724	22	509	49 Yiddish	14	239	2,690
25 Italian	68	288	660	50 Large Print English	310	1,036	NA
				Total	77,501	95,321	70,018

Source: Chesnut, 2003; and Jones and Barrett, 2003; and Pendleton, 2003.

TQA means Telephone Questionnaire Assistance.

QAC means Questionnaire Assistance Centers.

NA means the language assistance guide was not listed on form D-399—Record of Contact for the Questionnaire Assistance Center.

Note that there are 12 language assistance guides which were available at some but not all of the Questionnaire Assistance Centers. They are reported in the "Other" category on the D-399 form. There were 10,212 language assistance guides reported.

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