

THE EVALUATION OF THE BE COUNTED PROGRAM IN THE CENSUS 2000 DRESS REHEARSAL

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BACKGROUND

The Census 2000 Dress Rehearsal was the culmination of the Census 2000 testing program which began shortly after the 1990 Census was completed. The Dress Rehearsal was conducted in Columbia, South Carolina and eleven surrounding counties; Menominee County, Wisconsin; and Sacramento, California. Each dress rehearsal site was selected because of its demographic and geographic characteristics to provide experience with some of the expected Census 2000 environments. Each site used a different mix of census and statistical procedures. The dress rehearsal provided information to assess procedures used in the individual sites but not for comparisons between sites. One of the goals of the Dress Rehearsal was to measure the effectiveness of making census questionnaires widely available. The Be Counted Program was one means for people to be included in the Census 2000 Dress Rehearsal. This program allowed people who may not have received a Census questionnaire, believed they were not included on a questionnaire, or had no usual residence on Census day the opportunity to pick up and return a Be Counted form.

The Be Counted questionnaires were printed in six languages: English, Spanish, Chinese, Vietnamese, Mien, and Russian. They were accessible in targeted locations that were determined through communications between local census office officials and community partnership specialists. These locations included businesses, community organizations, churches, Department of Motor Vehicle offices, Libraries, Post Offices, and Questionnaire Assistance Centers. There were 218 locations in Sacramento, California, 183 locations in Columbia and surrounding counties of South Carolina, and 16 locations on the Menominee American Indian reservation in Wisconsin (see table 1 for a complete distribution of locations by type). The forms were made available shortly after census day and collected before the start of the operation to personally enumerate households that did not complete a form. Approximately three percent of the 1,700 English forms available at Be Counted locations were picked up by the public in Menominee; about 18 percent of the 59,272 English and Spanish forms were picked up in South Carolina; and

about 39 percent of the 24,249 forms in all languages that were distributed in Sacramento were picked up.

Besides sending in a Be Counted Form (BCF), the public could call the Telephone Questionnaire Assistance (TQA) operation if they believed that they were not counted. This operation had computer instruments that were programmed to help interviewers take census responses from these callers. If the caller did not give the 22 digit identification number off the Census form sent to them, then their response was treated as a Be Counted Form Equivalent. The acronym BCFE will refer to Be Counted forms and TQA responses without the 22 digit identification number.

BCFEs were sent to the Census Geography Division to be geocoded and matched to the Master Address File (MAF). The MAF is a computer address data base that the Census Bureau created, updates, and uses for address information. Geocoding is the process that changes a unique address into its unique identification number.

Those BCFEs that went to Census Geography and contained sufficient address information were geocoded and matched to the MAF. Those addresses that matched to the MAF were assigned the corresponding MAF identification number (ID). Those addresses that did not match to the MAF were sent out to be field verified and if found to be valid were added to the MAF and assigned an ID; if found to be invalid, the BCFE was removed from further Dress Rehearsal processing. Those BCFEs that were returned without sufficient address information to be geocoded were removed from further census processing.

CENSUS GEOGRAPHY RESULTS

The following is a summary for those BCFEs that were sent to Census Geography. Due to a time constraint and late arriving BCFEs some of the BCFEs could not be processed in time to be included in the Dress Rehearsal. Forms that indicated that the person had no address on census day were processed through the Service-Based Enumeration process. Additionally, the procedures for the accounting of BCFEs during processing could not provide trustworthy numbers to report where BCFEs fell out of the process. The following numbers represent those BCFEs that the Census Bureau could account for.

A total of 21 responses were received from Menominee. Of these, eight (38%) did not contain sufficient address information and were removed from further processing, ten (48%) had geocodable addresses that arrived in time for Census processing, and five (24% of all responses) of the geocoded returns were included in the Dress Rehearsal. These five returns contained information for 16 persons who were enumerated in the Dress Rehearsal. There were three (14%) forms that were geocoded, but arrived too late for Dress Rehearsal processing and are not included in the above geocoded counts.

The South Carolina site generated 783 BCFE responses. Of these, 122 (15%) did not contain sufficient address information and were removed from further processing, 606 (78%) had geocodable addresses, and 337 (43% of all responses) of the geocoded returns were included in the Dress Rehearsal. These 337 returns contained information for 821 persons who were enumerated in the Dress Rehearsal. There were 55 (8%) forms that were geocoded, but arrived too late for Dress Rehearsal processing and are not included in the above geocoded counts. (See table 2)

The Sacramento, California site generated 1,575 BCFE responses; 247 (17%) did not contain sufficient address information and were removed from further processing, 907 (57%) had geocodable addresses, and 343 (22% of all responses) of the geocoded returns were included in the Dress Rehearsal. These 343 returns contained information for 870 persons who were enumerated in the Dress Rehearsal. There were 421 (26%) forms that were geocoded, but arrived too late for Dress Rehearsal processing and are not included in the above geocoded counts.

POPULATION RESULTS

Across all three sites, a total of 1,707 persons with address information from BCFEs were included in the Census 2000 Dress Rehearsal. These BCFE's persons were enumerated on four of the eight different form types that make up BCFEs. The four form types included the following: both long and short form versions of TQA enumerations, English Be Counted forms, and Spanish Be Counted forms (see table 5 for distribution of persons included by form type). After processing no enumerations were included in the Dress Rehearsal from the Be Counted form types in Chinese, Vietnamese, Mien, or Russian (a total of 192 forms, see table 4).

To see if there was a difference in the demographic variables of sex, age, race, and Hispanic origin between persons enumerated on BCFEs and persons enumerated

on other mail returns, a chi-square test was calculated on the two populations consisting of Be Counted persons and other mail return persons ($\alpha=0.1$). The Be Counted population includes all BCFE persons that were enumerated in the Dress Rehearsal and the other mail return population includes all persons that were enumerated on other mailed back returns. These distributions are based on self reported data, therefore item nonresponse will change the total population counts across variables in table's 6 and 7. The Menominee site had a total of 16 persons, so many of the cells in a chi-square test had expected values that were too low, hence this comparison is not reported for Menominee.

The results showed a significant difference in the distribution of age, race, and Hispanic origin between the two populations in Sacramento. Persons enumerated on BCFEs were more likely to be either younger, Hispanic, or non-white when compared to those enumerated by other mail returns (see table 6). The results also showed a significant difference in the distribution of age and race between the two populations in South Carolina. Persons enumerated on BCFEs were more likely to be either between the ages of 5 to 14 or 65 and over, or to be Black or African American than they were on the other mail returns (see table 8).

ITEM NONRESPONSE RESULTS

We next examined data quality as measured by item nonresponse rates. Only persons enumerated on BCF mail returns were included in the analysis of nonresponse rates. Due to the small number of BCF persons in Menominee, this site was not included in the analysis of item nonresponse. The TQA returns were excluded since the nature of a Computer Assisted Telephone Interview instrument lowers item nonresponse rates.

The item nonresponse rates for BCF persons were compared to the nonresponse rates of persons enumerated by other mail returns. A chi square test was used to determine if there were any significant differences ($\alpha=0.1$). The variables of interest were sex, age, race, and Hispanic origin. The results for Sacramento indicated that there was a significant difference in item nonresponse rates between the BCF population and the other mail population for all four variables (see table 9). Each of these variables had a higher nonresponse rate for the BCF population than for the other mail return population. The results for South Carolina indicated that there was a significant difference in item nonresponse rate for the Hispanic origin variable (see table 7). This was higher for the BCF population than for the other mail return population. This is a concern as data must be imputed

when answers to requested items are missing, since there is no followup to obtain the information.

RECOMMENDATIONS

A number of recommendations for Census 2000 are made as a result of this evaluation. There are five recommendations:

- Improve the accounting for and documentation of the flow of Be Counted responses through all operational processes, including check-in, geocoding, and field verification as this will assist the Census Bureau in determining exactly where and why Be Counted forms are removed from the processing flow.
- Part of the success of the Be Counted operation is determined by the quality of the data received on forms. Analysis shows that item nonresponse rates are significantly higher on BCFs that they are on other mail returns. An evaluation should be conducted to determine the benefits of including Be Counted responses in a telephone follow-up operation to improve content.
- More planning should go into the operations of the Be Counted Program including the

placement of Be Counted forms in the field and the geocoding of addresses in order to ensure that Be Counted response records have time to make it into the Census process.

- Field observers reported that people often had trouble finding Be Counted forms in places where they should have been. The Census Bureau should choose better targeted sites and increase notices and posters in sites to help alleviate these complaints and increase access to the forms.
- Conduct additional research to gain insight into the need for and effectiveness of foreign language Be Counted forms, since all of the foreign language forms except some Spanish forms were removed from processing.

This paper reports the results of research and analysis undertaken by Census Bureau staff. It has undergone a more limited review than official Census Bureau Publications. This report is released to inform interested parties of research and to encourage discussion.

Table 1: Number of BCF Distribution Centers by Type of Location and Site

| | Sacramento | South Carolina | Menominee |
|---------------------------------|------------|----------------|-----------|
| Business | 136 | 79 | 4 |
| Community Organization | 8 | 16 | 6 |
| Church | 0 | 8 | 0 |
| Department of Motor Vehicles | 2 | 1 | 0 |
| Library | 6 | 16 | 0 |
| Post Office | 9 | 9 | 2 |
| Questionnaire Assistance Center | 52 | 47 | 4 |
| Other | 5 | 7 | 0 |
| Total | 218 | 183 | 16 |

Table 2: BCFEs Received in Geography, Geocoded, and Included in the Dress Rehearsal for Menominee

| | Received | Geocoded | Included in Dress Rehearsal |
|--------------|-------------------|--------------------|-----------------------------|
| BCF-English | 20 | 10 | 5 |
| TQA | 1 | 0 | 0 |
| Total | 21 (100 %) | 10 (47.6 %) | 5 (23.8 %) |

Table 3: BCFEs Received in Geography, Geocoded, and Included in the Dress Rehearsal for South Carolina

| | Received | Geocoded | Included in Dress Rehearsal |
|--------------|--------------------|---------------------|-----------------------------|
| BCF-English | 548 | 411 | 247 |
| BCF-Spanish | 2 | 1 | 0 |
| TQA | 233 | 194 | 90 |
| Total | 783 (100 %) | 606 (77.3 %) | 337 (43.0 %) |

Table 4: BCFEs Received in Geography, Geocoded, and Included in the Dress Rehearsal for Sacramento

| | Received | Geocoded | Included in Dress Rehearsal |
|----------------|----------------------|---------------------|-----------------------------|
| BCF-English | 984 | 578 | 282 |
| BCF-Spanish | 173 | 63 | 44 |
| BCF-Cantonese | 32 | 28 | 0 |
| BCF-Mein | 2 | 1 | 0 |
| BCF-Vietnamese | 82 | 70 | 0 |
| BCF-Russian | 31 | 24 | 0 |
| TQA | 271 | 143 | 17 |
| Total | 1,575 (100 %) | 907 (57.6 %) | 343 (21.8 %) |

Table 5: BCFE Persons Included in the Dress Rehearsal by Form Type

| | Sacramento | South Carolina | Menominee |
|--------------|------------|----------------|-----------|
| BCF-English | 707 | 625 | 16 |
| BCF-Spanish | 129 | 0 | 0 |
| TQA, Short | 28 | 156 | 0 |
| TQA, Long | 6 | 40 | 0 |
| Total | 870 | 821 | 16 |

Table 6: Demographic Comparison of BCFE and Other Mail Return Populations in Sacramento

| | Be Counted | Other Mail | |
|--|-------------------|-------------------|----------------|
| | % | % | p value |
| Sex | N=838 | N=224,477 | 0.724 |
| Male | 46.18 | 46.79 | |
| Female | 53.82 | 53.21 | |
| Age | N=778 | N=222,337 | 0.001 |
| Under 5 | 8.61 | 5.11 | |
| 5 to 14 | 21.08 | 12.93 | |
| 15 to 24 | 15.17 | 12.00 | |
| 25 to 44 | 29.95 | 30.70 | |
| 45 to 64 | 16.97 | 23.36 | |
| 65 and over | 8.23 | 15.89 | |
| Race | N=728 | N=207,281 | 0.001 |
| White | 32.55 | 59.52 | |
| Black or African American | 19.92 | 13.03 | |
| American Indian and Alaskan Native | 2.61 | 1.20 | |
| Asian | 30.08 | 16.75 | |
| Native Hawaiian and Other Pacific Islander | 3.43 | 0.92 | |
| Some other race | 7.14 | 5.27 | |
| Two or more races | 4.26 | 3.31 | |
| Hispanic Origin | N=719 | N=215,042 | 0.001 |
| Yes | 33.10 | 18.89 | |
| No | 66.90 | 81.89 | |

Table 7: South Carolina Item Nonresponse for 100% Person Data Items

| | Be Counted | Other Mail | |
|------------------------|-------------------|-------------------|----------------|
| | N=625 | N=397,308 | p value |
| Sex | 1.92 | 1.19 | 0.092 |
| Age | 2.08 | 2.39 | 0.617 |
| Race | 1.28 | 1.31 | 0.949 |
| Hispanic Origin | 11.20 | 6.86 | 0.001 |

Table 8: Demographic Comparison of BCFE and Other Mail Return Populations in South Carolina

| | Be Counted | Other Mail | |
|--|-------------------|-------------------|----------------|
| | % | % | p value |
| Sex | N=809 | N=392,584 | 0.333 |
| Male | 47.96 | 46.26 | |
| Female | 52.04 | 53.74 | |
| Age | N=808 | N=387,830 | 0.006 |
| Under 5 | 6.31 | 5.10 | |
| 5 to 14 | 15.47 | 13.48 | |
| 15 to 24 | 10.52 | 12.10 | |
| 25 to 44 | 28.47 | 29.66 | |
| 45 to 64 | 21.78 | 25.33 | |
| 65 and over | 17.45 | 14.32 | |
| Race | N=812 | N=392,107 | 0.001 |
| White | 51.48 | 64.93 | |
| Black or African American | 46.18 | 32.70 | |
| American Indian and Alaskan Native | 0.62 | 0.38 | |
| Asian | 0.00 | 0.84 | |
| Native Hawaiian and Other Pacific Islander | 0.12 | 0.08 | |
| Some other race | 0.86 | 0.52 | |
| Two or more races | 0.74 | 0.55 | |
| Hispanic Origin | N=751 | N=370,068 | 0.124 |
| Yes | 1.07 | 1.82 | |
| No | 98.93 | 99.18 | |

Table 9: Sacramento Item Nonresponse Rates for 100% Person Data Items

| | Be Counted | Other Mail | |
|------------------------|-------------------|-------------------|----------------|
| | N=836 | N=227,825 | p value |
| Sex | 3.83 | 1.47 | 0.001 |
| Age | 11.00 | 2.41 | 0.001 |
| Race | 16.99 | 9.02 | 0.001 |
| Hispanic Origin | 18.06 | 5.61 | 0.001 |