THE 1996 INTEGRATED COVERAGE MEASUREMENT TEST

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BACKGROUND

For the first time in the 1995 Census Test, the Census Bureau integrated the coverage measurement process audit results into the census-taking procedures. That is, the ICM survey measured how well the census procedures counted people in the test sites, and was completed in time for the results to be incorporated into the census numbers by the end of the calendar year 1995. The ICM program is a statistical methodology that improves decennial census results for both the total population and the various component groups that comprise the total. After the initial steps of the enumeration are complete, the survey replicates the census in a sample of blocks. Its results are used to estimate how many people and housing units were missed or counted more than once during the initial census steps. Based on the results of the ICM, the Census Bureau will incorporate these estimates into the final census results. A quick schematic of what ICM does is given below:



The 1995 ICM had two major successes:

- We conducted the ICM interview using Computer Assisted Personal Interviewing (CAPI) technology. This allowed "on-the-doorstep" matching of the people found during the independent ICM interview with the people found in the census results that were already loaded into the computer.
- We completed field work and processing of the ICM interviews by the end of September 1995. This allowed more time for the results to be incorporated into the census by the end of the year. In the 1990 census, field work using the old paper and pencil method (the Post-Enumeration Survey) was not completed until mid-January 1991.

¹This paper reports the general results of research by Census Bureau staff. The views expressed are attributable to the author and do not necessarily reflect those of the Census Bureau.

1996 Integrated Coverage Measurement Plans

Despite those successes, the 1995 ICM had some room for improvement. Foremost, we have redesigned the ICM Person Interview. We are pleased with the results so far. We will test this instrument in the 1996 ICM test.

We are also including some additional features into our operations. First, we will test the 1996 ICM in a reengineered census setting in both urban and rural areasseven noncontiguous census tracts in Chicago and two American Indian reservations. All features of the reengineered census that involve the ICM methodology will be incorporated into the ICM test. The census in these areas will be called the 1996 Community Census. More information regarding this census is presented in the final section.

• We will test improved ICM address listing techniques in both the urban and rural settings. That is, improving the step shown above as, "List addresses in ICM <u>sample</u> blocks." Our approach of asking people what <u>other</u> housing units are on the property in the 1995 test was successful since we improved the address list by using this question, and we did not contaminate the ICM sample through this contact with ICM households before the census.

If the ICM treatment had contaminated response to the census, we would be violating the assumption that coverage improvement in the ICM sample could be applied to non-ICM blocks. We evaluated whether listing had contaminated census responses by comparing response-associated variables in the ICM blocks with their values in non-ICM blocks. The variables we compared were: mail response rate, average mail return date, nonresponse check in rate, mean nonresponse check in date, postmaster return rate, and last resort rate in nonresponse followup. These comparisons were made in the four ICM sampling strata separately: blocks with a high concentration of Blacks, blocks with a high concentration of Hispanics, blocks with a high concentration of Asians and Pacific Islanders, and all other blocks.

We did find a difference in mail response rates between blocks in the ICM sample and those not in the sample in the Asian and Pacific Islander stratum. However, there were no trends observed across all strata and across all variables. "The evidence of possible contamination may be considered somewhat weak because it occurs in only one ICM stratum. However, it does serve as a sign that contamination is possible, and there is cause for caution in future We will refine our approach to obtaining a complete list of addresses by testing in half of the ICM areas some new questions designed to elicit missed addresses on a property or in a multi unit and comparing the results with our basic approach. These new questions follow:

- For single units
 - How many (housing units/living quarters/apartments), occupied or vacant, are there at (sample address)?
 - Besides the units(s) you have just mentioned, has this building been converted into apartments for other people to live in?
- For multi units the ICM lister will first canvass the entire multi unit, then ask a respondent (e.g., a landlord), "How many apartments--occupied or vacant--are on each floor?"

Our final measure of how well these questions worked will come from our measurement of housing unit coverage. Areas where these questions have been asked will be compared to results using our basic approach to see if they improve coverage. As in the 1995 test, we will look to see if these questions contaminate census results.

We are redesigning the 1996 ICM CAPI interview. First, we listened to debriefings of our 1995 interviewers and to observers who saw the 1995 instrument in use during the test. Our Center for Survey Methods Research is taking the lead in the redesign. Many of the flaws of the 1995 interviewing instrument--problems identifying movers, having some redundant questions, and problems establishing residency for some individuals--have been addressed.

One major innovation has been the redesign of our approach to "rostering"--obtaining a list of census day residents. The approach helps take the respondent backwards in time to recollect inhabitants of his/her household on census day. It uses last night as an anchor--asking for names of all person who stayed at the sample address "last night." Then we determine whether or not these people were at the address on census day. A probing question then asks for people who lived at the address on census day but were away last night. A final probe asks about non-relatives who lived at the address on census day. (U.S. Bureau of the Census 1995c)

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This rostering approach was tested using cognitive interviewing and found to be superior to more traditional methods. In fact, we have now completed programming of the redesigned ICM interview, and it has undergone rigorous rounds of testing:

- Cognitive testing--We undertook some cognitive testing of real respondents in CSMRs interviewing laboratory to find the best approach to "rostering"--using very thorough probing questions to obtain a correct census day list of household members.
- Regional office test--We had some of our 1995 ICM interviewers test the new instrument and give us their impressions.
- Path testing--Some 25 Census Bureau employees have been given paths (particular interviewing situations) to test each time a new version of the instrument is produced.
- Experienced interviewer test--Some of our current survey interviewers were taught how to use the instrument and then used it in simulated real-life interviewing situations. We debriefed them, received their recommendations, and incorporated them.

All of these tests have gone well. Our major field test in Paterson, New Jersey will take place in June 1996. Then we have to test our training and have two full systems tests before beginning interviewing in January 1997.

• We will include people in noninstitutional "group quarters" in the 1996 ICM test. With all the changes we were testing in the 1995 ICM program we decided to omit group quarters. This time, we have carefully included each type of group quarters in our urban site, for instance homeless shelters, religious group quarters, college dorms, and halfway houses. We are testing some new approaches to coverage measurement in group quarters.

These approaches include a "supercensus" approach to enumerating non-dormitory type of group quarters. The main reason this is an improvement is that we would only have to enumerate these (in sample) group quarters once as opposed to the 1990 Post-Enumeration survey approach of comparing two enumerations. The supercensus idea is to do this one sample enumeration very well. The census group quarters enumeration in the sample cluster would be used as part of ICM sample counts for the sample clusters which are used to produce the ICM estimate of the census population.

We will use administrative records for coverage ٠ improvement in the 1996 ICM test. We will use appropriate subsets of national files (and, working in partnership with people in the local area, some local files) to which we have access. Administrative records will be incorporated during the step shown above as "Compare results--determine how well we counted individuals in the ICM sample blocks." During the "on-the-doorstep" matching of the ICM interview results with the initial census results, we also will ask about people not yet mentioned who appear on these administrative records. Most of the time, the administrative records person we ask about will be. say, a person now away at college, but sometimes administrative records will add people to the census through the ICM process and improve its accuracy.

In the 1995 test the Census Bureau created an administrative records database of people, their demographic characteristics and addresses for the three test sites. In the Coverage Study (U.S. Bureau of the Census 1995a), we followed-up in the field on a sample of people in the database that were not in the census. In Paterson, New Jersey, we found that 18 percent of them were not in the census and should have been. In Oakland, California, the comparable figure was 32 percent. Since one of the major goals of Census 2000 is to reduce the undercount, we will continue to pursue the objective of accounting for these missed people through the Integrated Coverage Measurement survey.

We will be doing a census and ICM on two American Indian reservations: the Pueblo of Acoma Reservation in New Mexico and the Fort Hall Reservation and Trust Lands in Idaho. The test will use and evaluate tribal "administrative records" as a coverage improvement tool and will give us the opportunity to perfect our rural address listing techniques, using the innovations mentioned above.

• We also will measure our coverage of housing units and incorporate the degree to which we under/over enumerate housing units into the census results. We are trying to improve almost every aspect of the ICM program. These improvements and how they augment the ICM system are shown below:



1996 Community Census Sites

The 1996 Community Census will be undertaken in seven census tracts in Chicago, Illinois and in the Pueblo of Acoma Reservation in New Mexico and the Fort Hall Reservation and Trust Lands in Idaho. The City of Chicago contains a large number of census tracts in which the residents have characteristics associated with the differential in the count and that include noninstitutional group quarters. We used three stages in selecting the seven recommended tracts. First, staff from the Chicago Regional Office provided a list of 52 census tracts representing areas with differential in the count containing noninstitutional group quarters. Then we used the targeting data base to rank these tracts based on 13 variables, including percent multi-unit, percent vacant, percent in complex (non-married couple) households, etc. In the final selection step, we chose tracts meeting the following criteria:

- Total of about 9,000 housing units. (An additional 2,600 are included in the rural American Indian reservation portion of the test.)
- Geographically dispersed among four 1990 district offices.
- Racial and ethnic diversity.
- At least four different noninstitutional group quarter types.
- At least one tract with high residential mobility.
- At least one tract ranked high for linguistic isolation.

We have already begun some of our early address list compilation operations for the census. Census day for the 1996 Community Census is October 5, 1996.

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