

SESSION ON THE 2000 CENSUS: ALTERNATIVE DESIGNS
AND EARLY RESEARCH RESULTS

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I would like to comment on the papers in reverse order in which they were presented, partly to emphasize the importance of cost as a driving factor in rethinking the way we conduct the decennial census and partly to make some points that are relevant to the discussion of the paper on research related to alternative methods of conducting the census.

First, I would like to congratulate both the Bureau on devoting the resources necessary to build a good cost model and Keller and his colleagues on the product. It is good to see a detailed cost model built on actual assumptions about work involved in carrying out a census, and built in a way that can be used as a managerial tool by district field managers on day-to-day basis.

While I have not seen the details of the model, there are several features that must be there if it is to perform as described in the paper. There must be a very detailed work break-down structure and reporting structure that integrates work progress with cost reporting. This is a very considerable achievement and an important characteristic if the model is to be useful for management purposes.

Also it is good that it runs on a PC and uses an off-the-shelf spread sheet program--even though at the time it was built it was not clear that the speed and capacity of PC's would be enough to make it worthwhile. This was a daring decision, and Keller is to be commended for making it. Others who may be embarking on the development of complex new computer-supported systems should take this example to heart.

The model is complex, but in a good way. It must be segmented to be useful to lower level managers, as well as an overall planning tool. It must be put together in a simple enough way for line managers to use, thus motivating them to get the data in a form that can be used not only for their management purposes but also as inputs to test out the model during the pre-census years.

The complex interaction of parts of the model is a very important characteristic. For example, the entire FU in 1990 cost about \$380 million. But having no follow-up in 2000 is estimated to save far more (\$740-894 mil.) because of all the other costs, e.g., overhead, shorter time period to do work, etc. that would be saved. Or a 50% FU would only save

\$300 million, less than half that of no FU; a 25% sample FU is estimated to save \$450-659 million, not double the 50% sample savings, etc.

Because the model is built up from analyses of actual operations and their interactions, it is especially useful in modeling cost savings that might result from different alternative methods being considered by the planning staff--or, in the case of a 2-stage sample, increases in cost.

A word of caution here. The effectiveness of the model depends on the experiences in field tests that allow the Bureau to get a good fix on work involved in different designs. The current model is well worked out on the basis of the 1990 census. We need to be careful when doing things radically different. In research for 2000, the Bureau needs to be sure that data on operational requirements are obtained to help revise the cost model. If budgets are tight for research, this type of reporting may not get done. It should be a very high priority to make sure that the necessary operational and cost data are obtained in a form that can feed into the model.

If not everything is done the same way in each site, as is being proposed with the "took kit" approach, the model needs to be able to disaggregate the operations and build up different combinations of operational elements.

I now turn to the Tortora, Miskura, Dillman paper. First, I would like to compliment the Bureau for undertaking research to investigate really fundamental changes in methods for the year 2000. Progress has been made. Big strides will be made in the 1995 test.

It was good to abandon the 14 designs in favor of a hybrid design investigating the most promising elements from which the 14 were made up. It is important to emphasize that this abandonment of the 14 designs does not represent a retreat from the commitment to do things differently. Rather it is a more realistic approach to creating designs that will yield the most information about how to do things differently.

Below, I review and comment on the major elements to be tested.

1) Designs to improve the mail-back rate: SQT, IT, MTMT, ALFE.

The research on improving the mail-back rate has been spectacularly successful in showing that the application of techniques used in sample surveys in the private sector can be successfully applied to the census. These elements are:

- Respondent friendly questionnaires
- Better contact with households through pre-notice, reminders, and sending replacement questionnaires
- (Probably) improved motivational appeals

This research is important because improving the mail-back rate saves a lot of money and because the mail-back data appear to be better across the boards. Maximizing the mail-back rate is the first step to lowering costs and improving quality.

This research was also important psychologically because it showed to skeptics both within and without the Bureau that things can be done differently and that doing them differently can have dramatically positive results. It helps overcome the "It wasn't invented here" syndrome.

If one maintained the 30+% improvement in response rates under Census conditions, one would approach a 100% response by mail. This seems unlikely, but a mail-back rate of 80% or higher is not out of the question. It is also encouraging to know that you can get a response rate over 70% with a sample under non-census conditions for the possibility of a continuous measurement census.

It is vital that these improvements be made operational in the actual census. In order for this to happen, the Bureau needs to get optical scanning equipment that can do the job. They need to use these methods in the 1995 tests and make them standard for all future tests. But this line of development does not need major new research in the 1995 test--just more experience with using the new forms and procedures.

2) Improvements for the non-mailback count:

The concept of a one-number census is important symbolically to avoid the arguments that occur when there are 2 numbers and you have to choose between them. It also encourages the debate over method to take place before the count rather than after, when the results are known.

Note that a one-number census means using counts, assignments and statistical estimation techniques. These have all been used before, and we are now talking about shifting the balance among them. I am happy to see that the Bureau is proceeding along these lines and committing itself to

a more judicious combination of these techniques, particularly the use of sampling for follow-up.

I would like to comment a little on two of these 3 methods, assignment and estimation:

1) *Assignment*. Assignment is the counting of individuals at an address on the basis of indirect evidence from administrative or other records (i.e. no personal verification). The 1995 test gives the Bureau the opportunity to test the accuracy of assignment and should include a test of the accuracy of local administrative records for assignment purposes. It is very important to get some experience with the use of local records; this should be given high priority in the test.

2) *Estimation*. Here the choices are many and not everything can be tried. The Bureau needs to make judicious choices based on estimated cost savings and on maximizing the amount of information obtained from the choices selected. Extensive analysis and simulation based on 1990 experiences will be vital to making good choices. I understand that such analyses and simulations are going on now.

Again, it is very important that data for the cost model be collected so that the model can be tested on a radically different way of going about taking the census. Field operations people are not always sympathetic about these information needs, so special care must be taken to ensure that the data are collected in a form that can be used in revising the model.

3) Estimation coverage improvement methods

The Bureau has traditionally relied on the Post Enumeration Survey and Demographic Analysis to evaluate coverage. The PES has proved to be a good measure but has two difficulties--1) it appears to produce two numbers, one of which may be used to adjust the other. and 2) it is operationally difficult to get done in time to meet the legally mandated dates.

A one-number census needs a method to estimate coverage errors that also might be used for estimation purposes to produce the one count. Two new methods are discussed:

- *Supercensus*. The concept of a Supercensus is not well spelled out. Basically it appears to be a method that takes a sample of blocks on which expensive methods are used to get a "perfect" census. These data are then used in an unspecified way to estimate the true counts for non-sampled blocks.
- *CensusPlus*. This method appears to take a sample of blocks in which the regular census procedures are first used. Then there is a re-enumeration a la PES (or with more expensive

methods) as soon as possible after the completion of the regular census procedures--a sort of foreshortened PES. These data are then used to ratio-estimate the counts of the non-CensusPlus blocks.

I am frankly skeptical of Supercensus as an approach because nothing is perfect, and there is no second measurement to estimate variability of counts. It is not clear how one can go from the Supercensus counts to estimate the counts for other blocks. True, there is no matching problem, but that is because there is no independent way of knowing whether there is anything to match or not.

One thing that was not mentioned in the paper was the possible use of different questions to obtain within-HH counts in areas of difficult enumeration. Ethnographic research suggests that non-traditional households are difficult to enumerate accurately by ordinary means. Altering the questionnaire may get usually missed people, and even if such techniques are difficult to implement in a full census, they could be part of the methodology in a CensusPlus or PES program. To repeat the regular census methodology on every block would seem to miss an opportunity to improve enumeration. With an increase in non-traditional HHs, experimentation along these lines seems particularly important. Equal methods may not produce equal results in each area.

One final word of caution. Much of the work that is designed to improve the differential undercount also has the potential to increase duplications and overenumeration, particularly if one goes to multiple modes of responding or to distributing census forms in many places. We do not want to substitute an overcount problem for the undercount problem.