

COMMENTS ON THE PAPERS OF KING AND RUST

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testimony of Larry Brown to the House of
Representatives Subcommittee on the Census.

These are remarkable times - a session at the JSM about the work of two census panels, one beginning and one finishing its tenure, while yet a third remains active.

The King Panel is newly formed so most of these comments are directed toward the Rust paper just presented. This is an especially well-written and balanced account of the deliberations and the recommendations of his panel.

As a first point, let me urge statisticians to be as careful with their words as is Rust in his paper. Here is a quote taken from it.

"The question of whether or not estimates of net undercount, derived from data collected in a Post Enumeration Survey, should be included in census counts (or just used as an evaluation tool) has been a hotly debated statistical and political topic for the past two censuses, and even more so for 2000. The Swedish statisticians Lyberg and Lundstrom have described this issue as "the pinnacle of statistical methodological controversy."

The issue has never been termed the "the pinnacle of statistical sampling controversy" to my knowledge, but consider some wording taken from Jonas Ellenberg's President's Corner column of the July AmStat News.

"ASA members have expressed their opinions, both in private and through the press, on the scientific issue - the validity of using sampling - and the political issue - the extent of ASA's involvement in the dialogue."

The debate, as I understand it, deals with the accuracy of a census adjustment methodology which relies on results of a Post Enumeration Survey. The validity of sampling is certainly not at issue, though politicians seem particularly eager to declare that sampling is good or sampling is bad. Clearly we can and should avoid such a caricature.

The results of the 1990 census and its adjustment through the PES have been thoroughly discussed in the literature. The size of non-sampling error generally, concrete problems of data quality, understatement of sampling errors, and time constraints were such that the Secretary's 1991 decision to not adjust was the correct one, in my opinion. A succinct summary for such a position is taken from the September 17, 1998

"The first and most straightforward analysis of the PES data gathered in 1990 produced some implausible and hence unacceptable answers. Generally plausible answers were only produced after several reanalyses of the data using various technical data-analytic methodologies and options. Even then, the official version of the 1990 PES correction, as submitted for consideration by the Secretary of Commerce, contained at least one major error, and was open to reanalyses that arguably improved its results. This state of affairs seems to me unacceptable; the complete protocol for both the sampling and analysis of the resulting data must be laid out in advance of the census process."

One reevaluation of the 1990 Census and PES was done by the Committee on Adjustment of Postcensal Estimates. The committee advocated basic changes in poststrata and estimates from those used in 1990 before concluding that "on average, an adjustment to the 1990 base at the national and state levels for use in intercensal estimates would lead to an improvement in the accuracy of intercensal estimates". The committee added two important points to its report of August 7, 1992 (numbers 1 and 4 in the section entitled "Future").

"The Census Bureau should examine alternatives to the Dual System Estimation process used in 1990. Some of the problems of that approach may continue despite best efforts, meaning that a full adjustment based on such a system might never be possible."

"Any proposed undercount estimation/adjustment scheme must be simple. It must be simple enough so the technical aspects can be evaluated and it must be simple enough so it can be explained, even to those without extensive statistical knowledge."

The Rust Panel gives a measured endorsement of "the Census Bureau's plan to incorporate coverage adjustment estimates derived from PES data into the census counts". The plan has not been finalized, but there is scant reason to be optimistic about the simplicity of adjustment mechanisms to be employed. Rust does mention the concerns that have been raised about dual system estimation (matching error, homogeneity and independence assumptions, and the problems inherent in loss function analysis) and the panel's consideration of them. Here are some quotes from the paper in this regard.

"The report endeavors to explain why we conclude that, on balance, incorporating the sample data on under- and over-coverage via statistical estimation, will improve census results."

"The panel's view is that the evidence from past research indicates that the bias and sampling error estimation from incorporating PES data through dual-systems are likely to be subject to less error in total than the unadjusted estimates."

". . . the panel concluded that matching error . . . did not appear to be sufficiently great in 1990 (or the 1995 test census) to render the adjustment as less accurate than the unadjusted counts on average (and especially at higher levels of geography)."

"Considering the planned size of the PES, in the panel's view it is unlikely that heterogeneity bias will lead to adjusted counts that, on balance, have less error than the unadjusted."

The evidence before the panel was largely spelled out in the literature by 1994, as proponents and opponents of adjustment methodologies engaged in what Rust refers to as "a hotly debated statistical and political topic". The panel takes a familiar position from that era as its own, weighing in on one side of this debate. From my vantage point, the arguments brought forward in the panel report are no more substantial than before, nor have they become more persuasive with time. After all, one is reminded of the Monty Python skit in which a man, having paid for five minutes at the Argument Clinic, arrives at Room 12A: "Is this the right room for an argument?", "I've told you once.", "No you haven't.", "Yes I have.", "When?", "Just now!", "No you didn't.", "Yes I did!", "Didn't.", "Did.", "Didn't" . . . It is hard to find more than another "Does so" rejoinder here.

There are recommendations of the panel to appreciate and support.

Move the date of the 2010 census to mid-March.

This seems as obvious to me as the idea of levying twice the toll on traffic across the Bay Bridge into San Francisco while allowing outgoing traffic to pass freely (tolls were once collected in both directions!).

Update the Master Address File throughout the decade.

We can hardly do a good job counting people if we cannot do an excellent job of listing dwelling places. The MAF deserves continued, not sporadic, attention.

Collect a trace sample in 2000.

And, it could be added, make these (and other) data widely available. Confidentiality is a Bureau concern that can never be taken lightly. Still, data sets carefully stripped of information that might identify individuals would provide more statisticians with a chance to see substantial census issues at first hand.

Ben King gives us some information about the proposed American Community Survey. As with the previous two recommendations, let us gather and hold information for use between censuses. This sounds right to me. One might go further and argue that, in light of the recent Supreme Court decision, the Bureau equipped with adequate ACS funding might be able to consciously stress its two-fold purpose: count people at the turn of a decade; provide demographic information about the citizenry as asked.

Finally, with regard to the experiments to be run during Census 2000, it is certainly helps to bear in mind that these are experiments run during an actual census. Without such a reminder, it is very hard to be enthusiastic about three of the four that are planned.

Specifically, in the case of the Census 2000 Alternative Questionnaire experiment, the Social Security Number, Privacy Attitudes and Notification experiment, and the Response Mode and Incentive experiment, it seems fair to ask whether any novel or clear-cut answers will emerge. Will the Bureau get its money's worth? At the same time, the Administrative Records Census 2000 experiment looks to the future in a demonstrable way. Something quantitative should emerge from this and, even if this information source is as problematic as some fear, valuable knowledge will be gained.

The Rust Panel, in looking at seven proposed experiments, gave high marks to those involving administrative records, and also assigned a high priority to the Alternative Questionnaire experiment as they understood it. Fair enough.

In conclusion, the speakers deserve our thanks for clearly setting forth these issues and points of view. And, whether we agree with all panel recommendations or not, now is surely a good time for us to wish the Bureau well.