

Rejoinder

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NEW DEVELOPMENTS

Since the three articles and the discussions were accepted by *Statistical Science*, a federal appeals court set aside the judgment of a district court judge that had allowed the Commerce Department's decision not to adjust the 1990 decennial census to stand. Although the lower court's ruling was vacated, the ultimate consequences of the appellate decision are far from clear. Actions by the plaintiffs, by the government, by other appellants and ultimately by the courts will determine how the 1990 census adjustment saga is played out. See Fienberg (1994b) for a more detailed discussion of the appeals court ruling.

We hesitate to read the appeals court ruling as an endorsement of our scientific point of view. Nevertheless, the rulings of both the district court and the appeals court reflect a willingness on the part of non-statisticians to view an adjusted census as a feasible and reasonable approach for improving on the accuracy of an attempted headcount.

Statisticians should understand and appreciate this willingness. We thus hope that this appellate court decision will give a new impetus to the statistics community to help facilitate consensus on how to use estimation methods in census-taking. The Census Bureau's investigation of a "one-number" census is a constructive step in this direction.

RESPONSES TO DISCUSSANTS

We focus here on the discussions by Diamond and Skinner, by Steel, by Lyberg and Lundstrom, and by Ericksen, Fienberg and Kadane; we have not seen either the Freedman and Wachter (FW) or the Breiman rejoinders, although we comment briefly on a point raised in some exchanges with our Berkeley colleagues.

The discussions by Diamond and Skinner, by Steel, and by Lyberg and Lundstrom all provide useful and enlightening perspectives on census-taking practices around the world. The balance in their remarks sets a good example for us to follow here in the United States.

The final paragraph of the discussion by Diamond and Skinner amounts to an excellent summary of our essential points: the debate over census adjustment should emphasize scientific matters, but consensus will require more than just scientific progress. We

appreciate their supportive remarks. On a more subtle matter, their point is well taken that the term "heterogeneity bias" could be construed to mean either error in the synthetic assumption explored by FW or error in the assumption of equal capture probabilities discussed, for example, in Alho, Mulry, Wurdeman and Kim (1993). We hope our use of the term was clear from the context. We are also glad that Diamond and Skinner agree with us that the heterogeneity reported by FW is not surprising and that heterogeneity should be reflected in local-area estimates of variability.

Steel's discussion of how statistical estimation is used in the Australian census provides a valuable frame of reference for the debate about the future of the U.S. census. Steel does not attempt to adjudicate our disputes with Breiman, yet we interpret his remarks in his penultimate paragraph as supportive of our point of view: the census-taking process has to stop somewhere, and decisions have to be made. We read Steel's final paragraph as reflecting a semantic difference with our use of the term "consensus." We do not imagine that all statisticians would realistically line up behind one particular census methodology, but we can imagine there being a critical mass of support for a particular approach so that the controversy subsides. Indeed, during the 1980's as a member of the National Academy Census Panel, one of us (Rolph) saw such a critical mass forming on that panel and among the senior staff of the Census Bureau behind a planned adjustment methodology for the 1990 census. Intervening events led to the controversy and adversarial process referred to in these articles, but in our view the process need not be so contentious. For example, the use of postal delivery in the 1960 census was a major methodological change, but one that did not engender much controversy. There may have been some people who opposed this innovation at the time, but the level of support for a mail-out, mail-back census would qualify as consensus from our standpoint.

Lyberg and Lundstrom add a variety of insights that reflect the realities of government statistics practice. In a few places, their statements are stronger than we would make. For example, we do not have a problem with criticizing "bad data"; what we object to is the notion that we should assign a loss of infinity to model-based estimators and then call such an approach good science. We are also