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Double Sample to Minimize Bias Due to Non-response in a Mail Survey

Herbert L. Smith, *University of Pennsylvania*

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Abstract

A large study of nurses conducted in the U.S. states of California (CA) and Pennsylvania (PA) is based on two large samples: $n^{CA} \approx 100{,}000$ and $n^{PA} \approx 65{,}000$. The study was conducted by mail and had response rates of: $p^{CA}=.27$ and $p^{PA}=.39$;; the number of respondents is thus, respectively, : $n_1^{CA} \approx 28{,}000$ and $n_1^{PA} \approx 25{,}000$. Although there are many respondents, we must concern ourselves with the possibility of substantial bias due to non-response. In order to estimate and correct for this bias, a second random sample ($n_{01}=1{,}300$ in the two states combined) was drawn from among the non-respondents to the first survey. Thanks to financial incentives and, above all, a shorter questionnaire, we obtained a response rate above 90%. In each state, the two samples were combined to create a virtually unbiased double sample.

Keywords

Biases, California, Double sample, Efficiency, Errors, Mail surveys, Non-response, Nursing, Pennsylvania, Random sample, Sample design, Sample surveys, Sampling, Statistical methods, Statistics, Survey Data, Survey methodology, Surveys