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Allocation problem in the presence of non-response: a mathematical programming approach.

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Summary: Survey non-response refers to the failure to get a useable response from the respondent selected for the sample. Non-response may occur due to several reasons. The randomised response technique (RRT) presented by *S. L. Warner* [J. Am. Stat. Assoc. 60, 63–69 (1965; Zbl 1298.62024)] used to estimate proportion of respondents to the sensitive questions without revealing his choice to the interviewer. In this article, the problem of optimal allocation in stratified sampling where RRT is used in presence of non-response, is formulated as an nonlinear programming problem (NLPP). The formulated problem is solved using branch and bound method and the results are obtained through LINGO.

MSC:

94A50 Theory of questionnaires
90C30 Nonlinear programming
90C57 Polyhedral combinatorics, branch-and-bound, branch-and-cut

Keywords:

stratified random sampling; optimum allocation; randomised response technique; RRT; non-response; branch and bound method; nonlinear programming problem; NLPP

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