

LECTURE 18 PART I: 13.3 Mail Surveys Combined with Interviews of Nonrespondents

One of the methods to decrease the non-response rate is to conduct a two-stage sampling procedure in which the first stage is a mail survey and the second stage is a telephone or personal interview of a subsample of non-respondents (those who didn't respond to the mail questionnaire).

Determination of Optimal Fraction of Initial Nonrespondents to Subsample for Intensive Effort

n =the number of people initially surveyed by mail,
 n_1 =the number of people initially responding to mail survey,
 n_2 =the number of people initially not responding to mail survey,
 n_2^* =the number of the n_2 nonrespondents selected for intensive effort (phone and/or personal interview),
 n_2' =the number of the n_2^* people for which responses are obtained successfully,
 C_0 =cost per mailing of initial questionnaires (stationary and labor),
 C_1 =cost per returned questionnaire of processing responses (coding and recording data, etc.),
 C_2 =cost per questionnaire of obtaining data from initial nonrespondents,
The total cost is $C_0 n + C_1 n_1 + C_2 n_2'$,
 P_1 = response rate to the initial mailing.

The optimum number n_2^* of subsampled nonrespondents is

$$n_2^* = n_2 \sqrt{\frac{C_0 + C_1 P_1}{C_2 P_1}}.$$

EXAMPLE $n = 300$, $n_1 = 30$, $C_0 = \$4.50$, $C_1 = \$45.00$, $C_2 = \$135.00$,

$$P_1 = n_1/n = 0.3, \quad n_2 = n - n_1 = 70, \quad n_2^* = 70 \sqrt{\frac{4.50 + (45.00)(0.3)}{(135.00)(0.3)}} = 70(2/3) = 47.$$

Thus, the optimal subsample size is two-thirds of the 70 initial nonrespondents.