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A novel method of generating individual communications for participants in large surveys

Most surveys and studies involving large numbers of randomly selected participants have less than desirable participation rates. The researchers conducting these large population studies are always searching for ways to entreat more people to participate using a variety of tactics including reminder letters/calls, monetary remuneration, hand stamped envelopes and others (Edwards et al. 2002; Gibson et al. 1999; Harris et al. 1989; Hoffman et al. 1998).

A practical method to encourage participation

To encourage more people to enroll in a survey similar to the National Health and Nutrition Examination Survey (NHANES) of older people in Utah (National Center for Health Statistics 1985–89), each randomly selected person was promised a personalized analysis of his or her dietary status generated from the food frequency (FFQ) part of the survey questionnaire. A thank-you letter containing the dietary information was mailed to each person who completed the food frequency. The intake of each of 10 nutrients for each participant was compared to the Recommended Dietary Allowances (RDAs) (Food and Nutrition Board 1989) or Dietary Reference Intakes (DRIs) (Food and Nutrition Board 1998) as a percent of the recommended amount. Lists of foods were added to the letters that are good sources of nutrients that were consumed in amounts less than recommended, as calculated from the FFQ. The information in the letter also included a group comparison of the dietary information for all of the others survey participants of the same gender and age group so that each person could compare his or her results to their peers in Utah (Fig. 1). Although this process is ancillary to the objectives of the population survey, the personalized letter provided an efficient way to distribute relevant public health information to a large audience.

Based on past experience, an individual analysis of each respondent's diet would be time and cost prohibitive for a survey of this size. The automated process was developed using

data management and publishing skills, combined with the variable-data mailing technology used by the printing company. Once the automated process was in place, there was only a marginal cost increase over sending a static, generic "thank you" letter.

Methods

A flow chart of data manipulation through the automated response system is presented in Figure 2.

While data entry was being completed, we drafted the letter that would be sent to the respondents. Several versions were created to describe each set of data that could be sent. For example, individuals who were getting too much of all nutrients should get a substantially different letter than individuals who were getting too little. These different drafts were restructured to follow a similar flow, and include common information. PageMaker (Adobe Systems Incorporated 1985–96) was used as it allowed easy manipulation of different layout elements. Once letters were drafted, we could begin selecting fields from the database to provide the information needed for our letters. The final three page letter contained the intake data of the respondent compared to the group averages on page 1; lists of foods rich in nutrients low in the respondents estimated diet on page 2; and a list of people, organizations for additional information and a list of free reference materials for study participants on page 3.

First, the necessary information to create the response letters was extracted. This consisted specifically of mailing information (name and address), and dietary data. The name and address fields would be sent directly to the publishing house, but we first calculated all other fields needed for each letter.

We used FoodCalc (Lauritsen 1998) to convert the dietary data from food amount per unit of time to nutrient amounts per day. Once individual diet information was assembled, we calculated group information, which was also needed for the letter.

At this stage, the merged letter was complete. Proof or test prints were made to verify that both logic and data were present and working correctly. Several mock records, which consisted of specific and easily calculated diets, were introduced into the variable data file for validating our letters. These records facilitated error checking during the merge and printing processes.

After several proofs were returned for edits, we were satisfied with the resultant letter. We took special care in checking the proofs, and making sure that all possible combinations of data were checked. An additional benefit of the mock records was to identify phrasing or punctuation errors that would appear, although infrequently, in the actual letter.

Conclusion

Since all waves of the Utah Survey of Older People included the promise of a personal dietary assessment, we have no

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way to calculate increases in participation, nor if this incentive biased the respondents. The data may have been biased because of the incentive or it may have increased the validity of the food frequency questionnaire because respondents were interested in an accurate measure of their dietary adequacy.

Complex mail merging can be accomplished with several logical steps and careful planning. Mail merges, though tedious, are far easier now than in the past with easily acquired software and lower overall printing costs. Based on calls received by the study staff, receiving personalized results had a positive influence on the participants, and may also encourage greater response levels in future surveys.

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