B. Statistical Methods

1. Respondent Universe and Sampling Methods

The respondent universe is members on Knowledge Networks' KnowledgePanel.

KnowledgePanel® is a probability-based online non-volunteer access panel. Panel members are recruited using a statistically valid sampling method with a published sample frame of residential addresses that covers approximately 97% of U.S. households. Sampled non-Internet households, when recruited, are provided a netbook computer and free Internet service so they may also participate as online panel members. KnowledgePanel consists of about 50,000 adult members (ages 18 and older) and includes persons living in cell phone only households. Due to voluntary withdrawal, involuntary retirement of high-tenured members, and the addition of new panelists from the on-going recruitment, actual panel size fluctuates across the year.

Until recently, KnowledgePanel's probability-based recruitment had been based exclusively on a national RDD frame. In 2009, KN initiated the use of an address based sample (ABS) frame to first supplement the RDD frame and subsequently replace it. ABS involves probability-based sampling of addresses from the U.S. Postal Service's Delivery Sequence File. Randomly sampled addresses are invited to join KnowledgePanel through a series of mailings and by telephone follow-up to non-responders when a telephone number can be matched to the sampled address. Invited households can join the panel by one of several means: completing and mailing back an acceptance form in a postage-paid envelope; calling a toll-free hotline staffed by bilingual recruitment agents; or going to a dedicated KN recruitment Web site and completing the recruitment information online. The address sampling, conducted throughout the year, is done without replacement. Addresses with matched telephone numbers from the former RDD recruitment samples (for the last five years of calling) are also removed to eliminate duplication.

Once panel members are recruited and provide basic demographic information such as gender, age, race/ethnicity, they become "active" for selection for specific surveys. Survey samples are drawn from among active members using a probability proportional to size (PPS) weighted sampling approach.

More details about KnowledgePanel's design and general sampling approaches can be found at http://www.knowledgenetworks.com/knpanel/docs/KnowledgePanel(R)-Design-Summary-Description.pdf.

We plan to have 4,000 of KnowledgePanel members complete the study. Each respondent will view two labels and therefore provide two observations on each of product and label perception measures, each observation on a different label. The total number of observations is approximately 8,000.

In this repeated-measures study, each number-of-statement condition is estimated to have at least 2,100 observations, except for the no-statement condition, which will have 156

observations. Each type-of-statement is estimated to have at least 1,700 observations. Dependent measures, such as product and label perceptions, will be collected using rating on a 1-to-6 Likert scale and treated as continuous variables. Incidence of viewing of the Nutrition Facts label will be collected and considered as a binary (yes/no) variable. Based on the existing literature, these estimated sample sizes are expected to detect a small effect size of mean differences in main effects of continuous dependent variables with $\alpha = 0.05$ and $\beta = 0.2$ (Refs. 1-2). The sample sizes are also expected to offer a similar power to detect small interactive effects for continuous dependent variables. In addition, the sample sizes are expected to offer a similar degree of power in identifying proportional differences with an odds ratio of at least 2 (e.g., 0.5 vs 0.3) as well as a small effect size of interactions (Refs. 3-4).

2. Procedures for the Collection of Information

Members on KnowledgePanel will be invited by email to complete the study online (see Appendix A for the invitation). The study is expected to take an average of 15 minutes to complete (see Appendix B for the questionnaire). Reminder emails will be sent to those who have not completed their questionnaires every three days during the field period (see Appendix C for the reminder).

The study plans to use a questionnaire that asks participants questions in the order exhibited in Table 3.

Table 3. Structure of Study 1 - experimental study

Section	Topic
A	Consumption and purchase frequency of food products targeted in the study.
B	- Perceptions of the viewed products, including (1) overall healthfulness, (2) health benefits, (3) the amounts of nutrients, (4) taste, and (5) purchase intention. - Perceptions of the viewed labels, including (1) helpfulness in conveying the nutritional qualities of the product, (2) trustworthiness of featured health benefits, and (3) helpfulness in purchase decision.
C	Food purchase experiences, including (1) purchase considerations, (2) use of food labels to compare products and to find nutrient contents, and (3) familiarity with the nutritional characteristics of products targeted in the study.
D	Prior perception of products targeted in the study, including (1) overall healthfulness, and (2) health benefits.
E	Dietary interests and restrictions, including (1) nutrients that are being limited or targeted for sufficient intake, (2) practicing a vegetarian diet or having any food allergy, and (3) interest in buying natural or organic products.
F	Motivation regarding label use and health literacy, including (1) attitudes toward food labels, and (2) a test of health literacy using the Nutrition Facts label.
G	Health status and demographics.

Each respondent will be randomly assigned to view two labels, each displaying a different product and a different labeling condition, and answer questions about each product and label consecutively. The order of the two labels will be counterbalanced. No respondent will see the same label or the same food product twice in the study.

The study will inform the respondents that they can click to see the Nutrition Facts label for a product if they choose. The Nutrition Facts label, however, will not be shown together with the front of the package label. Since the study focuses on cognitive response to labeling statements on the front of a package, the Nutrition Facts information will be kept constant between labeling conditions for a given food product.

All labels will be full-color and identify the food (e.g., chips) but not any real or fictitious brand name (see Appendix D for examples of study labels and Appendix E for examples of the Nutrition Facts label). For a given product, the nutritional characteristics will be kept constant in the study (see Appendix F for product characteristics).

The study will record the time a respondent takes to complete each question and whether a respondent has viewed the Nutrition Facts label and, if yes, the question at which a viewing occurred.

3. Methods to Maximize Response Rates and Deal with Non-response

We will implement several procedures to maximize participation. We will conduct cognitive interviews and pretests to help improve understandability of the questionnaire, particularly to reduce participant burden, and to enhance interview administration (see Appendix G for cognitive interview invitation).

In addition, the contractor will send reminders and regularly monitor sampling output and returns to solve any problems daily throughout the course of the collection of information.

4. Test of Procedures or Methods to be Undertaken

The agency will conduct two rounds of pretest with 200 panelists on the KnowledgePanel after OMB approval of the collection of information. The pretests will serve to address any unforeseen problems in administration of the interview.

5. Individuals Consulted on Statistical Aspects and Individuals Collecting and/or Analyzing Data

Chung-Tung Jordan Lin, PhD, CFSAN, will lead the analysis of the data.

Appendix A. Invitation
Appendix B. Questionnaire

References

1. Lui, K-J, and W.G. Cumberland, “Sample Size Requirement for Repeated Measurements in Continuous Data,” Statistics in Medicine, vol. 11, pp. 633-641, 1992.
2. Trans, Z.V., “Estimating Sample Size in Repeated-Measures Analysis of Variance,” Measurement in Physical Education and Exercise Science, vol. 1, pp. 89-102, 1997.
3. Lipsitz, S.R., and G.M. Fitzmaurice, “Sample Size for Repeated Measures Studies with Binary Responses,” Statistics in Medicine, vol. 13, pp. 1233-9, 1994.
4. Leon, A.C., and M. Heo, “Sample Sizes Required to Detect Interactions between Two Binary Fixed-Effects in a Mixed-Effects Linear Regression Model,” Computational Statistics and Data Analysis, vol. 53, pp. 603-8, 2009.