

## **CONSUMER STORAGE PRACTICES FOR REFRIGERATED READY-TO-EAT (RTE) FOODS: STUDY DESIGN**

### **GENERAL INFORMATION**

#### Study Purpose

A national survey of U.S. adults was conducted using a Web-enabled panel survey approach. The purpose of the survey was to characterize home storage and refrigeration practices for a variety of refrigerated ready-to-eat (RTE) foods and consumers' knowledge and use of open date statements (e.g., "use by" or "sell by") among pregnant women, seniors, and the remaining population.

#### Date of Study

The data collection was conducted May to June 2005.

#### Funding Source

The survey was funded through a grant from the National Integrated Food Safety Initiative of the Cooperative State Research, Education, and Extension Service, U.S. Department of Agriculture (Grant No. 2004-51110-02177).

#### Suggested Citation for Use of Data

RTI International, Tennessee State University, and Kansas State University. 2005. "Consumer Storage Practices for Refrigerated Ready-to-Eat Foods: Results of a Web-Enabled Panel Survey." Research Triangle Park, NC. Available at: [http://www.foodrisk.org/RTI\\_data.cfm](http://www.foodrisk.org/RTI_data.cfm).

## **STUDY METHODS**

RTI International\* conducted a national survey of U.S. adults using a Web-enabled panel survey approach. RTI International's Committee for the Protection of Human Subjects, which serves as RTI's Institutional Review Board, reviewed and approved the study protocol.

### **Survey Sample**

The sample was selected from a Web-enabled panel developed and maintained by Knowledge Networks (Menlo Park, CA), a survey research firm. The Web-enabled panel is constructed using a list-assisted, random-digit-dial (RDD) sample selected from all 10-digit telephone numbers in the United States and is designed to be representative of the U.S. population. Coverage is not provided for households without landline telephones (approximately 2.4 percent of U.S. households). Households participating on the panel that do not have a personal computer and an Internet connection are provided with free hardware (an Internet appliance that connects to a television) and free Internet access. New panel members complete an initial survey that collects information on demographic characteristics to create a member profile. At the time of sample selection, approximately 28,000 households representing about 40,000 individuals were members of the panel.

Samples of the following subpopulations were surveyed: pregnant women between the ages of 18 and 40 years; adults aged 60 years or older (i.e., seniors); and the remaining population (i.e., men aged 18 to 59 years, nonpregnant women aged 18 to 40 years, and women aged 41 to 59 years). An e-mail was sent to the approximately 5,000 female panel members between the ages of 18 and 40 years to collect information on whether they were currently pregnant, and a census was taken of the 296 females who reported they were pregnant. We randomly selected 1,059 seniors and 1,073 adults from the remaining population to participate in our survey, for a total sample of 2,428 adults.

### **Survey Questionnaire**

The survey questionnaire collected information on the following topics:

- storage times for refrigerated RTE foods,
- refrigerator thermometer use and refrigerator temperature, and
- knowledge and use of open date statements (e.g., "use by" or "sell by") on refrigerated RTE foods.

\* RTI International is a trade name of Research Triangle Institute.

It was not necessary to collect demographic information (e.g., age, education, income) in the questionnaire because this information is maintained for panel members. The questionnaire for pregnant women also collected information on their awareness of specific recommendations during pregnancy (e.g., avoid soft cheeses) and where they heard or read about this recommendation.

Before survey administration, the questionnaire was evaluated with 12 individuals using cognitive interviewing techniques and subsequently refined. We describe below each type of information collected in the survey.

**Storage Times for Refrigerated RTE Foods.** The questionnaire collected information on unopened and opened storage times for the following 10 foods:

- smoked seafood (hot or cold smoked seafood such as salmon, trout, clams, or oysters; excluding products packaged in cans or jars);
- cooked crustaceans (shrimp or crab legs that were steamed or boiled by the grocery store or manufacturer);
- bagged salads (precut, prewashed lettuce, spinach, mixed greens, and salads);
- precut fresh fruit (such as pineapple, watermelon, or other fruits; excluding products that are frozen or packaged in cans or jars);
- prewashed, precut fresh vegetables (such as carrots, celery, or other vegetables; excluding products that are frozen or packaged in cans);
- soft and Mexican cheeses (feta, Brie, Camembert, blue cheese, queso fresco, queso blanco, and Panela);
- frankfurters (hot dogs or corn dogs made from meat or poultry);
- deli/luncheon meats (such as bologna, ham, roast beef, turkey, or other luncheon meats; including freshly sliced and product sliced and packaged by the manufacturer);
- dry/semi-dry fermented sausages (whole or sliced salami, pepperoni, and summer sausage; including freshly sliced and product sliced and packaged by the manufacturer); and
- deli salads with a creamy or mayonnaise-based dressing (such as potato salad, chicken salad, egg salad, or pasta salad) made by the grocery store or manufacturer.

For each product, we collected information on the last time the product was purchased for home consumption; whether the product was still in the refrigerator; whether the product had been opened; the storage time for the unopened product; and, if opened, the storage time for the opened product. To collect information on storage times, we used closed-ended questions in which respondents selected the storage time from a list of responses (more than 28 days, 22 to 28 days, 15 to 21 days, 8 to 14 days, 6 to 7 days, 2 to

5 days, 1 day or less). To encourage respondents to report their actual behavior rather than their usual behavior, the questionnaire asked about respondents' storage practices for the last time the product was purchased for home consumption. For cooked crustaceans, frankfurters, dry/semi-dry fermented sausages, and deli/luncheon meats, we also collected information on whether the product was initially stored in the freezer and unopened and opened storage times for frozen product subsequently moved to the refrigerator.

To minimize respondent burden, we developed two versions of the questionnaire. Version 1 collected information on storage times for smoked seafood, bagged salads, soft and Mexican cheeses, frankfurters, and pre-cut fresh fruit. Version 2 collected information on storage times for cooked crustaceans, pre-cut fresh vegetables, dry/semi-dry fermented sausages, deli/luncheon meats, and deli salads. Seniors and the remaining population were randomly assigned to receive one of the two versions of the questionnaire. Pregnant women received a questionnaire that included questions from both versions. A copy of the combined version of the questionnaire is provided.

**Refrigerator Thermometer Use and Refrigerator Temperature.** The questionnaire collected information on

- refrigerator thermometer ownership before the survey,
- home refrigerator temperature at the time of the survey, and
- the last time respondents cleaned the inside of their home refrigerators (Version 1 only).

About 1 week before survey administration, each selected panel member was mailed a refrigerator thermometer with instructions on where to place the thermometer inside the home refrigerator. Panel members were instructed to hang the thermometer from the center of the top or middle rack at the back of the refrigerator or, if the refrigerator did not have wire racks, to use the suction cup provided to attach the thermometer to the left interior wall near the back of the refrigerator. Panel members were also instructed to place the thermometer inside the refrigerator at least 24 hours before completing the survey.

**Knowledge and Use of Open Date Statements on Refrigerated RTE Foods.** The questionnaire collected information on

- frequency of use of open date statements before purchasing the RTE foods asked about in the survey,
- frequency of use of open date statements before preparing or serving the RTE foods asked about in the survey,

- knowledge of definitions for different open date statements (Version 2 only),
- opinions on the most useful open date statement (Version 2 only), and
- opinions on the most important factor in deciding whether to eat a refrigerated food product (Version 1 only).

Respondents were asked to provide information on the frequency of use of open date statements for the same foods for which information was provided on storage times.

### **Survey Procedures and Response**

Knowledge Networks e-mailed the questionnaire to selected panel members and sent two e-mail reminders to nonrespondents to encourage participation. Because of the small sample size, pregnant women were offered a \$10 honorarium for completing the survey. We received 249 completed surveys from pregnant women (84% completion rate), 946 surveys from seniors (89% completion rate), and 865 surveys from the remaining population (81% completion rate).

### **Weighting Procedures**

Respondents from the three subpopulations were combined, and the data were weighted to reflect the selection probabilities of sampled units and to compensate for differential nonresponse and undercoverage. The weights were based on the inverses of their overall selection probabilities with adjustments for undersampling of telephone numbers for which an address was not available during panel recruiting; households with multiple telephone lines; oversampling of certain geographic areas, African American and Hispanic households, and households with computer and Internet access; and households not covered by MSN TV. Using a raking or iterative proportional fitting technique, data on age, gender, race/ethnicity, geographic region, education, Internet access, and metropolitan statistical area (MSA) status were used in a poststratification weighting adjustment to make the sample reflect population benchmarks, controlling for the demographics within the three subpopulations and also the proportion of the three subpopulations. The benchmarks of pregnant/nonpregnant women and the proportion of pregnant/nonpregnant women among those aged 18 to 40 years came from the e-mail screener. The benchmarks and proportions of the other subpopulations came from the December 2002 Current Population Survey. The final weights were trimmed and scaled to sum to the total U.S. population aged 18 years or older.

## **PUBLICATIONS**

Cates, S.C., K.M. Kosa, S.A. Karns, S. Godwin, and D. Chambers. 2007. "Consumer Storage Practices for Refrigerated Ready-to-Eat Foods: Results of a Web-Enabled Survey." *Food Protection Trends*, 27(7):530-543.

Kosa, K.M., S.C. Cates, S.A. Karns, S. Godwin, and D. Chambers. 2007. "Consumer Knowledge and Use of Open Dates: Results of a Web-based Survey." *Journal of Food Protection*, 70(5):1213-1219.

Kosa, K.M., S.C. Cates, S.A. Karns, S. Godwin, and D. Chambers. 2007. "Consumer Home Refrigeration Practices: Results of a Web-based Survey." *Journal of Food Protection*, 70(8):133-142.