

B. STATISTICAL METHODS

This section describes the statistical methods for the information collection and the survey procedures.

B.1 Respondent Universe and Sampling Methods

(i) Respondent Universe

FSIS plans to survey federally-inspected egg products processing plants. FSIS also plans to survey state-inspected egg products plants, though there are only 5 such plants (located in the state of Utah).

The following types of plants will not be surveyed:

- Import-only facilities
- Plants that are in-distribution warehouses and do not have any processing activities
- Plants that only pack shell eggs

(ii) Sampling Methods

All egg products processing plants in the population will be included in the sample (i.e., a census will be taken).

Sampling Frame

FSIS's Performance Based Inspection System (PHIS) will be used as the sampling frame for the egg products survey. PHIS provides information on inspection authority code, inspection status, location, contact information, and other information for all federally and state-inspected plants.

At present, no plants are operating for objectives that are not strictly commercial, and no active plants are located in a U.S. territory.

Precision

Typically, precision estimates are used to help determine sample size. An indication of the expected precision of sample survey estimates is the widths of 95% confidence intervals calculated for statistics of interest. Precision of proportions of 0.5 (50%)¹ will be about 14% if all 80 plants are included in the sample and a yield of 58 plants (see below) is assumed. This

¹ Using proportions of 0.5 (50%) to compute precision allows for precision requirements to be met for all proportions.

assumes that the non-responding plants are considered as a random sample from the population of plants. Often, however, non-responding plants differ in some features that might result in different expected answers to questions from those for the responding plants. A high non-response rate can thus introduce significant biases in the results. A response rate of nearly 75% will help ensure a reasonable accurate representation of the industry. Selecting a sample from the 80 plants and having less than a 75% response rate might introduce bias and have a precision higher than 14% for a 50% characteristic, and thus would be insufficient to obtain high-quality economic information to use for an impact analysis of regulatory actions. A more detailed discussion of nonresponse bias is included in Appendix 4.

Sample Design

The eligibility rate accounts for plants with inaccurate information in the sampling frame, plants that no longer process, or plants that are out of business. The eligibility rate of 96% is based on the actual eligibility rates observed for the first round of surveys. An overall response rate of 75% is expected, based on experience with the first round of survey that achieved response rates that ranged from 65% to 81% for the various industry segments. Response rates were higher for large and small plants compared with very small plants.

Table B-3 summarizes the sample design for the egg products survey. Information is provided on the survey universe, starting sample size, the estimated number of eligible plants, and the required sample yield. The sample size required to achieve the desired level of precision will require sampling all plants in the population (i.e., taking a census). Only one state with just a few plants performs inspection-using FSIS regulations and policies.

Table B-3. Sample Design

	Survey Universe	Starting Sample Size	Eligible Establishments^a	Required Sample Yield^b
Egg products processing	80	80	77	58

^a Assumes a 96% eligibility rate.

^b Assumes a 75% response rate.

Estimation

Statistical estimates for each survey will be generated by applying appropriate survey weights to the respondent record data. Appendix 4 describes the procedures for computing survey weights.

B.2 Procedures for the Collection of Information

The survey procedures to be followed by the contractor are described below. With the exception of offering respondents the option to complete the survey by mail or Internet, the survey procedures are the same as those used for the initial round of surveys. Appendix 5 provides the script for the initial and follow-up telephone calls, and Appendix 6 provides other survey materials used to contact respondents (i.e., prenotice letter, reminder postcard, and survey brochure).

- Contact with inspection personnel: FSIS will send an e-mail to each district manager with information on the surveys, who will then notify Inspectors-in-Charge (IICs) about the upcoming survey to verify the legitimacy of the survey to plant management, if necessary.
- Initial telephone call: The survey contractor will contact each plant to obtain the plant manager's name and physical address. A script of the telephone call is provided in Appendix 5.
- FSIS prenotice letter: The survey contractor will send a letter to plant managers. The letter—on FSIS letterhead and signed by the administrator of FSIS—will explain the purpose of the survey, the importance of participation, and the survey contractor's pledge of privacy. The letter will also promise respondents that they will receive a copy of the survey results. The information brochure—a two-color, trifold brochure—will highlight the purpose of the study and provide contact information for FSIS and the survey contractor. Appendix 6 provides a copy of the letters and brochure.
- Respondent identification telephone call: Ten days after mailing the prenotice letters, the survey contractor will contact plant managers at sampled plants to verify their eligibility for participating in the survey.

As part of this telephone call, the target respondent for the survey will be identified (i.e., the plant manager or a delegate) and the desired mode of data collection (mail or Internet) will be determined. A script of this telephone call is provided in Appendix 5.

- Survey packet mailing or e-mail notification: The contractor will send the survey packet via Federal Express or send an e-mail notifying the respondent of the survey's availability on the Internet. The Federal Express survey packet will include a metered (i.e., prepaid) envelope for returning the completed questionnaire to the survey contractor.

- Thank you/reminder postcard or e-mail: One week after mailing the survey packets, the survey contractor will send sampled plants a postcard (mail) or e-mail (Internet). This notification will serve as a thank you for those who have returned the completed survey and as a reminder for those who have not. Appendix 6 provides copies of the postcard and e-mail notification.
- Follow-up telephone calls: Two weeks after the postcard mailing, the survey contractor will begin follow-up telephone calls to nonrespondents to remind them to complete the survey. These calls will be made at three different points during the data collection period. During the follow-up calls, interviewers will offer to send a replacement questionnaire and will inquire if the respondent would like to complete the survey over the telephone. Also, plants that have not previously completed the respondent identification telephone call will be screened for eligibility. Plants that refuse to participate in the survey will be contacted by a member of the contractor's project team, and a refusal conversion will be attempted. A script of this telephone call is provided in Appendix 5.
- Remailing of survey packet: Seven weeks after the original mailing, the survey contractor will resend the survey (via Federal Express or e-mail) to all nonrespondents and indicate a cutoff date for completing the survey. The final set of follow-up telephone calls will be made approximately 1 week after the remailing.
- Toll-free survey help line and e-mail address: During the data collection period, the survey contractor will operate a toll-free survey help line. Respondents will also have an e-mail address that they can use to request assistance when completing the survey.

B.3 Methods to Maximize Response Rates and Deal with Nonresponse

Achieving a high response rate is important to minimizing nonresponse bias. The data collection procedures employed by the contractor will be designed to maximize the response rate and includes the following activities:

- securing plant "buy-in" through clear and effective explanation of the importance of the study;
- developing rapport and trust through effective and consistent messages conveyed from telephone interviewers to the individual respondents;
- using a variety of methods and communication modalities to convey the importance of the study, including a cover letter on FSIS letterhead, brochures, postcards, and telephone calls;
- developing a carefully designed and thoroughly tested survey instrument;
- providing the option of completing the survey on paper or on the Internet;
- using highly trained individuals, outfitted with the most effective technological tools, to gain cooperation and minimize refusals in a timely and efficient manner;

- operating a toll-free survey help line and an e-mail address that respondents can contact to request assistance when completing the survey;
- ensuring the utmost confidence in the data security and privacy procedures in place by the survey contractor; and
- working with industry (for example, by meeting with trade associations) to secure their support of the survey.

These same procedures were employed for the first round of surveys and yielded a response rate of 81%. Consistent with the first egg products survey, a nonresponse bias analysis will be conducted.

B.4 Tests of Procedures and Methods to Be Undertaken

RTI conducted pretest interviews with three individuals from egg products plants that varied in plant size and geographic location. FSIS recruited eligible plants, and RTI scheduled and conducted telephone interviews to pretest the survey instrument. The purpose of the interviews was to evaluate participants' comprehension and interpretation of the survey questions and to identify unclear terminology, ambiguous phrasing, and inappropriate (or missing) multiple-choice response options.

Participants were sent a copy of the survey instrument to complete before participating in the telephone interview. During the telephone interview, the contractor recorded participants' responses, probed for areas of difficulty, and asked a series of debriefing questions to assess participants' overall understanding of the survey questions.

Overall the survey instrument was well received and understood. Changes made to the survey instruments included adding skip patterns where needed, adding instruction boxes for some questions or clarifying question instructions, adding definitions for some terms, and changing the order of some response options. Some pretest participants expressed concern about the need for some questions and found some questions confusing. These questions were either revised or deleted from the survey instruments.

After making additional revisions to the questionnaire, we asked three egg products plants to complete the survey and provide an estimate of the time required to complete it. These individuals are Jerry Boatman (402-330-2500), Elliott Gibber (908-351-0330), and Paul Saunders (402-369-2950). Because the average time to complete the survey was longer than

anticipated, we simplified some questions and eliminated seven questions. Thus, we believe the average time to complete the current survey will be 60 minutes.

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

RTI International will collect the information and analyze the data on behalf of FSIS. Mr. Peter H. Siegel (919-541-6348) of RTI International developed the sample design and estimation procedures.

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