

## **APPENDIX A**

### **METHODOLOGY**

This Appendix provides a more detailed description of the methodology used in conducting the study. In this regard, it supplements the description that appears in Chapter II. The principal sections of the Appendix address the following topics:

- sample selection
- recruitment and training
- valuing donated commodities
- transcription and processing of raw data
- edit checks
- derivation of final weights
- estimation of standard errors

#### **A. Sample Selection**

In deriving an optimal sample design, it is necessary to strike an equilibrium or balance between the idealized objectives of a survey and the costs and problems of gathering data in the real world. The objective of sample frame development is to obtain an accurate and comprehensive list of the members of the survey population. The sample frame for this study was derived from the "super 2000" database obtained from Quality Education Data (QED). The sampling frame excluded private, state-operated, and special ungraded schools and non-unified districts, those that do not include all grades kindergarten through twelve. School districts in Alaska, Hawaii, and the US possessions were also excluded.

##### **1. Sample size**

A national sample of 480 school districts was used. Initially it had been planned to sample with replacement and to have a final sample of 400 districts, with an additional 200 drawn as replacement districts to be used as needed. This approach, which had been used in the study conducted in SY 1984/85, met the desired accuracy requirement. The requirement was to generate 90-percent confidence intervals ranging no more than ten percent below to ten percent

above the resulting population estimates.<sup>1</sup> The current survey design is so similar to the previous one that it was expected to produce confidence intervals in the same general range. However, in granting approval to collect the data, the Office of Management and Budget required that a fixed sample of 480 school districts (without replacement) be used.

## **2. Stratification**

The sample was stratified by the USDA's ten Agricultural Production Regions to ensure that the sample was evenly distributed across the country. Each of these strata was assigned a share of the 480 school districts prorated by student enrollment counts per stratum. It is important to note that the strata were not used as domains of study since only national estimates were derived. If the national-level accuracy requirements were extended to the stratum level, the sample would have had to have been much larger.

Stratifying districts by whether they provide a breakfast program was considered but not adopted. We anticipated that at least half of the sampled school districts would have breakfast programs. The probability of selecting an unrepresentative sample of such programs would have been significant only if the fraction of school districts serving breakfast had been much closer to zero.

There are about 350 school districts nationwide that participate in the NSLP but do not receive donated commodities. This includes all school districts in Kansas (over 300) as well as those that receive cash and commodity letters of credit (CLOC) as a result of earlier studies of alternatives to commodity donation. In place of commodities, these school districts receive additional cash payments. While we considered using special treatments for these districts, we kept them in the sample and have discussed the implications of their inclusion in the interpretation of the study results. Of the 480 school districts in the final sample, two were from Kansas and five others were receiving cash or commodity letters of credit. Both of the Kansas districts and four of the five cash/commodity letter of credit districts took part in the study.

## **3. Quarterly Sampling**

Each sampled school district submitted data on food purchases for one quarter of the survey year. This element of the sample design has the following arguments in its favor:

---

<sup>1/</sup> *School Food Purchase Study: Final Report*, August 1987, p. 2.2

- **Effect on sampling error.** Increasing the sample size reduces the standard error of estimates made from survey data, but adding uncorrelated observations has more effect on error rates than adding correlated observations. Because of this principle, one can expect that quarterly observations from 400 school districts, for example, would yield lower error rates than annual observations from 100 districts. Even though individual SFA food purchases exhibit season variation, each quarter's purchases are related to other quarters. Thus, adding more districts to the sample is more valuable than adding more quarterly observations from each district.
- **Burden and response rate.** Here and in other aspects of the sample design, we cannot ignore the relationship between respondent burden and response rate. Clearly, the greater burden of collecting data for a year rather than a quarter could have further reduced the response rate.

Though it was not reported in the earlier study, one drawback to the quarterly approach became evident as we reached the analysis phase and particularly analysis of the number of SFAs acquiring individual food items. We found that food items that are highly seasonal and therefore are only acquired during certain periods of the year are likely to be underreported in terms of the number of school districts acquiring them. At the extreme, the estimated number of school districts acquiring the items could be as small as one-quarter of the actual number. This would occur if all SFAs reporting delivery of the item received it in the same quarter.

While this effect limited the usefulness of the estimates of this measure, quarterly sampling was found to have some distinct advantages that more than compensated for this limitation. Estimates of the quantity and value of acquisitions were not affected

#### **4. Weights for sample selection**

In a population that has a natural clustering, such as that of students into school districts, and a skewed distribution of cluster sizes, sampling with probability proportional to size (PPS) has a strong potential to improve the survey results. Clearly, the size distribution of school districts is quite skewed, so sampling with PPS will select more larger districts and include more students in the sample. This will tend to make the statistics based on the sample data more representative and efficient.

However, some PPS sampling can also have some disadvantages that should be considered:

- Larger units often have higher data collection costs, so PPS sampling can raise data collection costs.
- When PPS sampling is used, the combination of the distribution of district sizes and the total sample size creates certainty sampling units. These are units whose probability of selection exceeds one. The usual methods of handling this is to remove the certainty units, reweight and reassign probabilities to the remaining units, and draw a second round. The minor problem with certainty units is the extra work required to handle them.
- Standard PPS sampling can sometimes shift the sample “too far” toward the large units and leave the smaller units underrepresented. For example, there could be a concern that smaller units are responsible for more innovations, deviations from regulations, or other behaviors that result in increased variability. PPS sampling in a very skewed population will gather very few observations on the smaller members.

Thus, while PPS sampling provides significant benefits, it seems to shift the sampling weights too far in favor of the larger districts. A solution is to draw the sample with probability proportional to a power of the size measure.<sup>1</sup> To be explicit, the weight,  $W_i$ , for the  $i$ th school district becomes:

$$W_i = S_i^\beta \tag{1}$$

where  $S_i$  is the measure of the size of the  $i$ th unit and  $\beta$  is a parameter with a value between zero and one. Setting  $\beta$  at zero simplifies to equal probability sampling; setting it at one yields simple PPS sampling. Choosing a value for  $\beta$  between zero and one offers a compromise that can capture the desirable features of both. A good, or even optimal choice of  $\beta$  can be based solely on judgement; in some cases it can be derived by formal means; and sometimes certain values of  $\beta$  fit in naturally with a feature or constraint of the sample design. All three derivations are relevant here.

---

<sup>1/</sup> “...sometimes it is actually desirable to select with probability proportional to a power of size.” Brewer & Hanif, *Lecture Notes in Statistics*, Vol. 15 “Sampling with Unequal Probabilities,” New York: Springer-Verlag, 1983, p. 3.

Considering the drawbacks of conventional PPS sampling noted above, we concluded that moving  $\beta$  to a point only a “little” below one both simplified and improved the sample design.

## 5. Sampling procedure

The first step in the sampling procedure was to allocate the 480 target samples to the ten geographic strata. Each stratum was assigned a fraction of the 480 samples,  $n_h$ , equal to its share of total enrollment. We refer to  $n_h$  as the net stratum sample size.

Within each stratum we used an ordered, systematic selection procedure to select school districts.<sup>1</sup> This guaranteed an even distribution with respect to school district size. The steps in this procedure for each stratum were as follows:

- Given the discussion above, an appropriate value for the  $\beta$  parameter, which was allowed to vary by stratum, was identified.
- The measure of size,  $S_i$ , was computed for each school district as enrollment raised to the  $\beta$  power.  $TS_h$ , the total of the size measures, was calculated.
- The gross stratum sample size,  $m_h$ , was derived.
- The stratum skip interval  $SI_h = TS_h / m_h$ , computed as the ratio of total size measures to the gross sample count, was found.
- Districts were sorted by size and to find  $CS_i$ , the cumulative size from the first to the  $i$ th district.
- A uniformly distributed random number,  $U$ , was drawn on the interval between zero and the skip interval. The first district selected was the  $i$ th one for which  $CS_{i-1} < U < CS_i$ .
- The remainder of the sample was drawn by repeatedly adding the skip interval to  $U$  and finding the district whose range in the  $CS$  series contains that value.
- The relative probabilities of selection,  $p_i = S_i / SI_h$  were recorded and saved for use in subsequent reweighting calculations.

---

<sup>1/</sup> William Cochran (*Sampling Techniques*, 3<sup>rd</sup> ed., p. 265) gives Madow and Murthy credit for this technique

After drawing the sample, one allocation remained: the assignment of samples to quarters. While there was no requirement for quarters within strata to be used as domains of study, a fourth of the selected districts in each geographic stratum were allocated to each quarter so that the enrollment variance of the districts in each quarter would be as close to equal as possible. This resulted in a dispersion of sample districts that was about the same in each quarter. It also helped prevent the chance allocation of all small or all large districts to a single quarter.

In addition, the selected commodity letter of credit and cash districts were distributed among the quarters so that the total enrollment of these districts per quarter was as even as possible. Because only five of these districts were selected, this constraint had to be applied to the overall sample rather than to each stratum.

## **B. Recruitment and Training**

### **1. Recruitment**

Before recruitment of school districts to participate in the study could begin, it was necessary to collect additional information about the individuals to be contacted in each school district. The QED database contained general information for each school district, including its address and recent student enrollment, but nothing about its food program. Basic information about the food programs in these districts was collected from the Child Nutrition (CN) Programs Directors in the 45 states with school districts in the sample.

Each state CN Director was notified by letter of the school districts within their state that were included in the sample and asked to: (a) verify that each school district on the list was participating in the NSLP, (b) provide the name, address, and telephone number of the school food director and information on the number and types of reimbursable meals served in October 1995 for each district, and (c) alert project staff to any special circumstances that should be considered in recruiting these districts to participate in the study. Of the 480 school districts in the sample, state CN Directors identified five districts that were not participating in the program in March 1996. This left 475 prospective participants in the sample.

Recruitment of participants got underway in May 1996, following approval of the study by the Office of Management Budget (OMB).<sup>1</sup> The 240 school districts selected for participation in the first two quarters of the school year – July-September and October-December, 1996 – were contacted first. A letter inviting their participation in the study and briefly describing its purpose and methodology was sent by mail. A 4-page description of the study and a copy of a letter from the Board of Directors of the American School Food Service Association endorsing the study were also enclosed. Addressees were notified that they would be contacted by telephone by a member of the project staff within the next few days to answer any questions they might have and to formally invite their participation in the study.

Within approximately 7 to 10 days of receipt of this letter, school food directors were contacted by telephone to seek their commitment to take part in the study. At the time of this call, they were also told of their eligibility to receive a small administrative allowance, should they agree to participate.<sup>2</sup> Names and addresses were also verified during this call.

Recruitment of school districts selected for third quarter (January-March, 1997) participation began in September, 1996 and recruitment of school districts selected for the fourth quarter (April-June, 1997) got underway in December, 1996. Most recruitment was completed by late February, 1997. Of the 475 school districts that were recruited, 381 (80.2 percent) initially agreed to take part in the study.

Recruitment of school districts to the study was conducted by a former school food director who had participated in a similar study while serving in that capacity. Beyond this experience, she had been active in professional organizations in school food service through which she had developed numerous professional contacts, particularly in her home state of California.

Despite the benefit of this experience (and the modest financial incentive that was being offered to participants), many school districts were either highly reluctant to participate or refused outright. While many reasons were given for this, the principal reason cited was the burden of collecting, copying, and forwarding procurement records for a three month period. For many

---

1/ As a condition of their approval, OMB required a fixed sample of 480 school districts rather than the original proposal to draw a sample of 400 with an additional 200 districts drawn as replacements for possible refusals. The sampling with replacement technique had been used in the 1984/85 study and was our first choice for use in this study as well.

2/ Given the time and out-of-pocket expenses associated with assembling, copying, and mailing food procurement records, a payment of \$70 to \$270 was made to participating SFAs. The amount of the payment was based on the number of reimbursable lunches the district served in October 1995, with a minimum payment of \$70 and a maximum payment of \$270.

SFAs, this was viewed as a substantial burden. Among the other reasons mentioned were: (a) SFA displeasure over recent USDA policy, particularly as it related to the new menu planning requirements, (b) the policy of some food service management companies to not permit school districts under their supervision to share procurement information, (c) the absence of vendor cooperation in making available food purchase summaries, and (d) the inaccessibility of past procurement records.

**Table A-1: Response Rates by Source of Data and by Quarter**

Source of data	Data collection quarter				Total
	1	2	3	4	
	-----number of school districts-----				
<u>Procurement records:</u>					
School districts recruited	119	118	118	120	475
School districts that initially agreed to participate	100	97	89	95	381
Percent of those recruited	84.0	82.2	75.4	79.2	80.2
School districts that ultimately participated	87	88	74	75	324
Percent of those recruited	73.1	74.6	62.7	62.5	68.2
<u>Procurement practices survey:</u>					
Surveys sent	87	89	76	77	329
Surveys returned	87	89	76	76	328
Percent returned	100.0	100.0	100.0	98.7	99.7

Source: *School Food Purchase Study, 1998.*

## 2. Training

Food procurement invoices come to SFAs in different forms and levels of detail. Some invoices are for individual deliveries while others are for multiple deliveries across a given period of time,



usually monthly. Most school districts receive delivery from several vendors since these vendors commonly specialize in one of eight or nine food categories, such as dairy products or bakery products. The study conducted in 1984/85 found that SFAs used an average of 8.7 vendors.<sup>1</sup>

Furthermore, the schedule and point and frequency of delivery vary among the food categories within a given school district. Highly perishable foods, such as fluid milk and bread, are often delivered directly to school cafeterias on a daily basis. For many school districts, the only records of these deliveries are the daily delivery statements collected by individual schools within a district. In contrast, staple foods are frequently received at a central delivery point and arrive weekly or every other week. USDA donated commodities are delivered to SFAs through a variety of different transport modes, depending on the size of the district and the type of distribution system used by the state.

At the time they agreed to participate in the study, each SFA was mailed a 13-page training document. This document briefly reviewed the background and purpose of the study, the role of SFAs participating in the study, and the major alternative ways of providing the requested food procurement data. SFA representatives were asked to review the document in advance of a follow-up telephone call from project staff.

Approximately one week after the training document was sent, training calls were made to the principal contact at each SFA. These calls averaged 20 to 30 minutes in length. They were made for three purposes. The primary purpose was to determine the most convenient form in which each SFA could provide its food procurement information. The options described in the training document were reviewed and discussed. The delivery and invoicing procedures of each district were discussed and recorded on a "vendor profile" form by the project representative. On the basis of this discussion, the SFA contact and the project representative identified an agreed-upon protocol for the SFA to follow in providing procurement information to the study.

A second purpose of the call was to review other key elements of the study and the nature of the SFA's involvement in it. This included discussion of the data summary sheet and the procurement practices survey (both are discussed below), the schedule for sending information, reimbursement procedures, and the availability of project staff to answer questions via a toll-free telephone line.

---

<sup>1/</sup> *School Food Purchase Study: Final Report*, February 1986, p. 5.16.

A final purpose of the call was to collect general information about the SFA and its operating procedures. The names of individual vendors and the frequency of deliveries was obtained to help interpret the procurement records and to insure that a complete set of records was received.

Immediately following the training call, a letter summarizing the conversation and protocol that had been agreed to was sent to each SFA contact. These letters identified the period of time to be covered by these records and listed the vendors by food category for whom it had been agreed the records would be provided. Mailing labels to be used in sending records to the project were also included.

### **C. Valuing Donated Commodities**

The valuation of deliveries of donated commodities to school districts taking part in the study required special consideration. Foods that are commercially purchased and contain no donated commodities are assigned a value by the vendor. For these foods there is no ambiguity with regard to their market value. The valuation of donated commodities and processed foods containing donated commodities is less straightforward. Commodities donated by the USDA are assigned dollar values by the Department based on what they pay, plus transportation charges. However, this value excludes some cost elements associated with the procurement, storage, and delivery of these foods to school districts and therefore underestimates their delivered market value.

In addition, some donated commodities are used as ingredients in foods that are processed expressly for schools participating in the NSLP. It was necessary to assign a value to these foods as well.

Given that neither USDA-assigned values nor processor prices for products containing commodity ingredients were considered reliable measures of market price, commercial prices of comparable foods were used in valuing these foods. This was done as follows:

1. Records of school district receipts were reviewed as they were received to determine if the district commercially purchased the same product during the quarter for which they submitted food purchase data.
2. If the district made a commercial purchase, the price paid for the commercial product was assigned to the value of the donated commodity.

3. If the district did not make a commercial purchase of the same product, other districts in the same region during the same quarter were examined for purchase of that product. To the extent more than one school district purchased this item during the quarter, a weighted average was calculated on the basis of volume of purchases.
4. If no school districts in the region purchased the product during the quarter in question, the search was extended to all districts in the quarter.
5. In those rare instances when no school district purchases occurred during the quarter, an estimated national average price based on published market price information was used.

#### **D. Transcription and Processing of Raw Data**

This study deviated in one important respect from the study conducted in SY 1984/85 with regard to data collection methodology. The earlier study provided participating school districts with ledger books that they were asked to use in recording their food acquisitions. Once completed, these ledger books were returned to the project staff for computer entry.

This approach to data collection was rejected for use in this study for two reasons. First, collecting, summarizing, and converting the requested data to a standardized form would have been enormously burdensome for the staffs of the participating school districts. (The project staff time required for transcribing data submitted to this study averaged approximately 38 hours per school district, and this was by trained transcribers who were supervised by managers with several years experience in working with school food acquisition records.) This level of burden might have further reduced the rate of participation in the study, a level already lower than desired.

A second reason for rejecting the approach used in the earlier study was the possible adverse effect on data quality. Since most school district personnel are unfamiliar with unit sizes and weights and are inexperienced in transcribing information from invoices to a standard form and in conducting edit checks, there would have been an increased opportunity for transcription errors.

For these reasons, a substantially different approach to data collection was used in this study. On the basis of telephone interviews with the principal contact for each participating district, the least burdensome, most cost-effective means of retrieving copies of existing procurement records from

school district archives were identified. The principal sources of this information were the following:

- *Vendor summaries.* Many vendors can provide summaries of purchases by month. This source was used whenever possible since these summaries generally provide a complete yet concise record. When vendor summaries were not on file but were thought to be available, school district contacts were encouraged to request them from their vendors. A form letter was provided for their use in making these requests.
- *Copies of invoices.* When vendors could not provide summaries, districts usually preferred to send copies of invoices. This required no knowledge on the part of the respondent of the foods acquired. SFA staff simply made copies of all invoices for the appropriate period and forwarded them to the study staff.
- *Tally sheets.* For food items such as bread, milk, and snack items, many districts preferred to send tally sheets compiled at the district. This method is generally quicker and more cost effective than copying invoices since there were generally few products, all at the same price and unit size, but many deliveries.
- *Bid specifications.* The quality of the data collected from invoices and tally sheets was greatly enhanced by reference to district bid specifications, when they were available. Although this form of documentation is not usually accurate enough for determining amounts of foods delivered, they were useful for providing more detailed information as to product specifications, e.g., the fat content of fluid milk or unit size and weight information.

Since data collection procedures were tailored to the particular situation of each school district, data arrived in a variety of forms. Data transcription, edit checks, reduction, and entry were conducted as follows:

1. Data were transcribed, in most cases, by vendor, by month for a given SFA. Then invoices for another vendor for the same month and same SFA. And so on until all vendors for that month for that SFA were done. The raw data were usually provided in more than one form including invoices, delivery slips, vendor summaries, bid specifications, and perpetual inventories.

2. Relevant data elements were copied from the SFA-provided document to a standard transcription form. One-by-one, information for all food items was similarly transferred. At this point, if any of the relevant data elements were found to be missing, an attempt was made to retrieve the missing information from vendor files, bid specifications, or whatever other SFA/vendor/processor-specific information had been provided. If necessary, phone calls were made to the SFA contact or the vendor (with SFA approval) to capture missing data elements. Food items that were missing weight/pack size information sometimes required additional research.

As a further source of information on USDA-donated commodities and processed foods containing donated commodities, State Distributing Agencies (SDAs) were asked to provide information from their records on deliveries to the SFAs in their states that were participating in the study. Many SDAs also provided information on commodities that were further processed under state processing agreements, which helped in the proper classification of these foods.

3. When a second purchase of the same product by the same SFA that month occurred, the purchase was added to the existing line for that product on the spreadsheet.
4. When all of the required information for a set of invoices had been transferred from the raw data sources to the standard transcription form, the entries on the spreadsheet were summed and entered onto the form as the total purchases of that product from that vendor for that month.
5. Transcription forms were clipped to the raw data set they represented and cued for review prior to data entry.
6. Manual reviews of the data sets were made just prior to data entry. Data sets were examined for completeness and accuracy. Spot checks were conducted to examine the overall quality of the transcription effort. Any discovered errors were corrected prior to data entry. Following and during data entry, other edit routines were performed, as described below.

### **E. Edit Checks**

Given the large volume of highly detailed data, it was necessary to conduct several edit checks to help ensure the highest possible degree of accuracy. The following edit checks were made during and following data entry:

1. Several programmed edit checks were made during data entry. They included acceptable SFA identification number, acceptable food codes, acceptable standardized unit size descriptions, numerals only in numeric fields, and acceptable entries in the rebate/discount field.
2. Entered data were printed out and matched to the original transcription sheets. It was verified that all records were entered and that all records were entered as transcribed. Discrepancies between total cost values and the product of cost per case and number of cases were flagged by computer screening.
3. Prior to entering changes, first edits were reviewed by data supervisors. Food codes and unit size were manually checked for consistency at this time.
4. Following review, edits were entered and printouts were run a second time for those forms that required change. The new printouts were matched against the edits to confirm accurate entry.
5. Data were reorganized by SFA, by food code and printed as one file, including calculated cost per pound columns. Cost per pound calculations for the SFA were compared to cost per pound for the same food code from previously edited data for several SFAs. A manual comparison was made to identify deviations.
6. Following any edits required as a result of the cost per pound comparison, data were reorganized by food description and collapsed by food code for like unit sizes. A new list was generated and checked to ensure the correct entry of edits. Data supervisors traded edit responsibility so that edit checks for each SFA were divided between the two supervisors.

7. Following these edit checks, a data summary sheet was prepared for each SFA and returned to the principal SFA contact for review and confirmation of the accuracy of the data.

### **F. Derivation of Final Weights**

Two sets of weights were derived for use with the survey observations, because the response rates were different for completing the survey questionnaire and providing food acquisition data. One set of final weights is called the “survey” weights while the other is called the “data” weights.

Both sets of final weights were derived from the draft weights that were created as part of the sample design. For each school district (SD) its draft weight is the inverse probability of being selected into the full, original, first-stage sample of 600 SDs. The original sample design provided for 400 of these SDs to become a primary sample, while 200 were to be assigned to a backup group to provide replacements for refusals. However, this full sample was not taken into the field, because OMB directed in its review that the target sample be reduced to 480 and that refusals not be replaced. At this point in the study, information on each of the 600 SDs had been collected from their administering State agencies. Rather than discard the original sample, we reduced the set of 600 to 480 by discarding one-fifth of the selected SDs. This random selection retained the distribution of the sample across SD enrollment sizes by sorting the SDs by enrollment, forming successive groups of about five SDs, and then selecting one SDs at random from each group to be discarded.<sup>1</sup>

Both because of the second stage of sampling and because of the nature of the probability sampling procedure used in the first stage, the draft weights were correct only in relation to one another. The first stage was drawn with probability proportional to a non-linear function of enrollment, so the weighted total enrollment did not match the known total enrollment. In a long series of such draws, it would match only on average. With untransformed PPS sampling, the match would be exact every draw. The anticipated correction for this was calibration to the known enrollment totals to derive a scaling factor by which to adjust the weights uniformly.

Moreover, the calibration was applied for each set of weights in a region/quarter combination. In the initial sample design, about one-fourth of the SDs in each region were allocated to each quarter. This allocation was made so as to give each quarter within a region about the same

---

<sup>1/</sup> The number of first-stage SDs per region was not always a multiple of five; so some groups of four and six had to be formed, too. When needed, these groups were placed at random in the sorted sequence of SDs.

average and standard deviation of assigned SD enrollments. Even so, it was not possible to assign exactly one-quarter of each region's weights to each quarter, so the calibration was required to provide weights that would yield unbiased national estimates in each quarter. This adjustment is particularly important for this application, because the purchases and consumption of many types of food vary significantly by quarter.

Finally, the weights were adjusted to account for unit non-response. Unit non-response is the refusal of the survey subject to participate at all, while item non-response is refusal to answer a particular question. Unit non-response was quite prevalent in this survey, but item non-response was not much of a problem. Unit non-response was found to vary significantly by size, but not in any systematic fashion and it did not vary uniformly by region. Therefore, the adjustment procedure we adopted was to assign SDs within a quarter and region to homogeneity response groups (HRGs)<sup>1</sup> and compute a non-response rate for each group to adjust the weights within the group uniformly. For the larger region/quarter combinations, groups were formed by taking the top third, middle third, and bottom third of SDs ranked by enrollment. Smaller sets of SDs were split into fewer subsets. Also, the boundaries between the groups were adjusted whenever a group was found that had no respondent. To keep the derivation as simple as possible, a single assignment of SDs to HRGs was found that could be used to compute both the survey and data response rates, but separate rates for each were computed.

For each HRG, the adjustments for data and survey non-response were obtained by computing the weighted average response rate as the sum of the student weights of the responding SDs over the sum of all student weights for the HRG. The final weights for each SD were then computed as the triple product of the SD's draft weight, its region/quarterly factor, and the inverse of the response rate in its respective HRG.

### **G. Standard Errors**

The standard errors of population means and totals were estimated using a bootstrap or resampling technique that is becoming increasingly more popular in survey data analysis. The major steps in our bootstrap estimation procedure were as follows:

- The sample data and weights serve as a basis for resampling. Region by region, a new sample of school districts is drawn with probability proportional to the

---

<sup>1/</sup> Sarndal, Swensson, & Wretman. *Model Assisted Survey Sampling*, New York: Springer-Verlag, 1992.



respective final weight of each district. As there were two sets of final weights, the set corresponding to the variable being analyzed was used. Each district in the sample is assigned the measure of size, student enrollment from QED, used in the sample design and the response that was actually obtained.

- By region, the new population was organized into a sampling frame just as the original population had been. Enrollment were transformed to the measure of size by raising to a beta power so that the target first-stage sample size could be drawn such that no SD had a probability of selection greater than one. The SDs were sorted by size, a skip interval was computed, and a total of 600 (for all regions) SDs were drawn with probability proportional to size.
- In the original sampling design we had intended to set aside one-third of the SDs as a replacement group and target a final sample size of 400, but as noted earlier, OMB required us to discard the replacement group, take 480 of the first-stage SDs to the field, and sample without replacement. The bootstrap program mimicked this step by assigning the first-stage SDs to groups of about five in sorted order and selecting about four SDs out of each group. This yielded a second-stage sample of 480 SDs in all regions.
- The second-stage SDs, still arrayed in sort order, were assigned to the same quarter of the year as the original SD. As the discussion above on the derivation of the final weights explained, each original second-stage SD was assigned after the survey to an HRG (homogeneity response group), so each artificial SD that fell into the same slot in sort order was assigned accordingly to its HRG within each region/quarter.
- Non-response was modeled by randomly selecting the number of cooperating respondents from each HRG that was actually obtained. The SDs in each HRG were selected with equal probability in this step, because (by definition) the response rate within an HRG is assumed to be constant among respondents. This yielded a third-stage set of SDs.
- The derivation of the final weights described above was mimicked using the third-stage SDs. These weights were then used to derive an estimate of the population total of the analysis variable for each iteration. The model performed 5000 such iterations, collected the results, and computed the standard deviation among those bootstrap estimates.

**APPENDIX B**

**PROCUREMENT PRACTICES SURVEY**

# SCHOOL FOOD PURCHASE STUDY

## PROCUREMENT PRACTICES SURVEY

This survey is being conducted for the Food and Consumer Service, U.S. Department of Agriculture as part of a study of school food purchases of public school systems throughout the nation. The information gathered through this survey supplements detailed information on food purchases and commodity donations collected over the past three months. All responses will be treated in strict confidence; only aggregated results will be reported.

To assist you in completing this survey, we have defined the terms that are used. They appear in shaded boxes like this throughout the survey. If you need help in answering any of the questions, please call us collect at (703) 739-9090 and ask for the School Food Study Project.

[Please return in the enclosed envelope by \_\_\_\_\_ ]

School District Name: \_\_\_\_\_

Date: \_\_\_\_\_

Name and address of  
Food Service Director

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Telephone: ( ) \_\_\_\_\_

Name and address of person  
filling out this survey if other  
than Food Service Director

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Telephone: ( ) \_\_\_\_\_

OMB Clearance Number: 0584-0471

Expiration Date: 06/30/98

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Agriculture, Clearance Officer, OIRM, Room 404-W, Washington, D.C. 20250; and to the Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, D.C. 20503.

# 1. SCHOOL DISTRICT CHARACTERISTICS

**In this section we ask several questions about the schools within your school district. In answering these questions please use the following definitions:**

**Elementary School:** Any school that has a kindergarten or Grade 1 or Grade 2 or Grade 3 and no class higher than Grade 6.

**Middle/Secondary School:** A school with no grade lower than Grade 6.

**Other School:** All other schools.

**Reminder:** The information requested here is for School Year 1996/97.

1.1 Number of Schools. How many schools are there in your school district and how many are participating in the National School Lunch Program (NSLP) and/or the School Breakfast Program (SBP) during the 1996/97 School Year? Please record separately for elementary and middle/secondary schools as defined above.

<b>Number of Schools</b>	<u>Elementary</u>	<u>Middle/Secondary</u>	<u>Other*</u>	<u>Total</u>
Total Number	_____	_____	_____	_____
Number participating in NSLP only	_____	_____	_____	_____
Number participating in SBP only	_____	_____	_____	_____
Number participating in both NSLP and SBP	_____	_____	_____	_____
Number of SBP severe-need schools	_____	_____	_____	_____

\*Briefly describe any "other" schools here: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

1.2 Student Enrollment. Indicate total student enrollment, average daily attendance, and the number of students approved to receive free and reduced price meals as of **October 31, 1996.**

<b>Number of Students</b>	<u>Elementary</u>	<u>Middle/Secondary</u>	<u>Other</u>	<u>Total</u>
Total Student Enrollment	_____	_____	_____	_____
Average Daily Attendance	_____	_____	_____	_____
Number approved to receive:				
free meals	_____	_____	_____	_____
reduced price meals	_____	_____	_____	_____

Do any of the students included in "Total Student Enrollment" **not** have access to school lunches or school breakfasts (e.g. kindergartners who are not in session at meal time)?

YES \_\_\_\_\_  
NO \_\_\_\_\_

If **YES**, indicate number of students who do **not** have access.

	<u>Elementary</u>	<u>Middle/Secondary</u>	<u>Other</u>	<u>Total</u>
NSLP	_____	_____	_____	_____
SBP	_____	_____	_____	_____

1.3 Number of serving days/number of meals served. Record the number of serving days and the number of student lunches and student breakfasts served, indicating whether they were full price, reduced price, or free. If your district operates under provisions 1, 2, or 3 of the NSLP regulations, you may indicate the number of meals claimed in each category. Please provide this information for **School Year 1995/96** and for the period **July-September, 1996.**

	<u>School Year 1995/96</u>	<u>July-Sept. 1996</u>
<b>Student Lunches</b>		
Number of serving days*	_____	_____
Number of <b>full price</b> lunches served/claimed	_____	_____
Number of <b>reduced price</b> lunches served/claimed	_____	_____
Number of <b>free</b> lunches served/claimed	_____	_____
<b>Student Breakfasts</b>		
Number of serving days*	_____	_____
Number of <b>full price</b> breakfasts served/claimed	_____	_____
Number of <b>reduced price</b> breakfasts served/claimed	_____	_____
Number of <b>free</b> breakfasts served/claimed (include severe need)	_____	_____
Number of <b>severe need</b> breakfasts served/claimed	_____	_____

\* If there are differences among schools within the school district, provide average number.

1.4 Year-round schools. Do any of the schools in your district that participate in the NSLP or SBP operate year round?

YES \_\_\_\_\_  
NO \_\_\_\_\_

If **YES**, indicate the number of schools.

	<u>Elementary</u>	<u>Middle/Secondary</u>	<u>Other</u>	<u>Total</u>
Year-round schools	_____	_____	_____	_____

If **YES**, indicate the number of students included in "Total Student Enrollment" (Question 1.2) but **not in session** during July-September, 1996.

	<u>Elementary</u>	<u>Middle/Secondary</u>	<u>Other</u>	<u>Total</u>
Students not in session	_____	_____	_____	_____

1.5 **Meal Prices.** As of **October 31, 1996**, what prices were charged to students for full price and for reduced price lunches and breakfasts in your school district by level of school? For full price lunches and breakfasts, we have provided space for more than one price if multiple prices were offered (e.g. higher price for larger portions or discount for weekly meal ticket). If you indicate more than one charge for full price meals, please indicate the share of meals sold at each price.

	<u>Elementary</u>	<u>Share of Full Price Meals</u>	<u>Middle/Secondary</u>	<u>Share of Full Price Meals</u>
<b>Student Lunch Prices</b>				
Full price lunch	\$ _____	_____ %	\$ _____	_____ %
	\$ _____	_____ %	\$ _____	_____ %
Reduced price lunch	\$ _____		\$ _____	
<b>Student Breakfast Prices</b>				
Full price breakfast	\$ _____	_____ %	\$ _____	_____ %
	\$ _____	_____ %	\$ _____	_____ %
Reduced price breakfast	\$ _____		\$ _____	

1.6 **Kitchen Types.** How many of each of the following types of kitchens does your school district currently operate? Each type is briefly described. If you have kitchen types not described here, please record under "Other" and provide a brief description.

<u>Type</u>	<u>Number of Kitchens</u>
<b>Central Kitchens</b> where meals are prepared for serving at receiving or satellite schools. No student meals are served on-site at a central kitchen.	_____
<b>Base Kitchen</b> where meals are prepared for serving on-site and for shipment to other locations (including multiple locations within the same school).	_____
<b>Receiving or satellite kitchens</b> which obtain partially or fully prepared meals from base or central kitchens or an outside vendor. Other than re-heating or refrigeration, no food preparation occurs at a satellite kitchen.	_____
<b>Combination kitchens</b> in which some food is prepared for on-site consumption and some food is received fully or partially prepared from a central or base kitchen.	_____
<b>On-site kitchens</b> where all meals served are prepared at the facility in which the kitchen is located.	_____
<b>Other (describe)</b> _____ _____ _____	_____ _____ _____
<b>Total number of Kitchens</b>	_____

1.7 A la carte food sales.

**A la carte** foods are those that are priced and sold on an individual item basis rather than as a unit or complete meal.

Do any of the schools in your school district offer foods on an a la carte basis?

YES \_\_\_\_\_

NO \_\_\_\_\_

If YES, what was the total dollar amount of receipts from a la carte sales for the entire 1995/96 School Year? What were receipts from a la carte sales for the period July-September, 1996?

**A la carte sales receipts**

1995/96 School Year: \$ \_\_\_\_\_

July-Sept. 1996: \$ \_\_\_\_\_

If YES, list the 10 top-selling a la carte foods for elementary and middle/secondary schools. Describe in general terms (e.g. hamburgers, french fries, potato chips, milk, ice cream, cookies, etc.). If possible, base your response on dollar sales for the period October-December 1996, ranked from largest to smallest. If that is not possible, please give us your best judgement as to what were the leading a la carte foods during this period.

For each item you list, please estimate the percentage share of total dollar sales of that item that was from a la carte sales for this same period. For example, if pizza is listed and approximately one-third of all pizza sales during this 3-month period were a la carte, record "33" in the appropriate column. Since most of the items included on this list will represent aggregations of several individual food products (e.g. "cookies" might include 10 or 20 different types, package sizes, flavors, etc.), record the percentage share that applies to the entire group of products.

**Leading A La Carte Items**

<u>Elementary</u>		<u>Middle/Secondary</u>	
<u>Name of Item</u>	Percent of total sales of item <u>a la carte</u>	<u>Name of item</u>	Percent of total sales of item <u>a la carte</u>
1. _____	_____	1. _____	_____
2. _____	_____	2. _____	_____
3. _____	_____	3. _____	_____
4. _____	_____	4. _____	_____
5. _____	_____	5. _____	_____
6. _____	_____	6. _____	_____
7. _____	_____	7. _____	_____
8. _____	_____	8. _____	_____
9. _____	_____	9. _____	_____
10. _____	_____	10. _____	_____



1.8 Number of schools offering food service options. How many of the schools in your school district **currently** offer the following options to your students?

	<u>Number of Schools</u>			
	<u>Elementary</u>	<u>Middle/Secondary</u>	<u>Other</u>	<u>Total</u>
A la carte items during breakfast	_____	_____	_____	_____
A la carte items during lunch	_____	_____	_____	_____
More than one NSLP entree	_____	_____	_____	_____
Offer vs. serve	_____	_____	_____	_____
Open campus at lunch time	_____	_____	_____	_____
Vending machines	_____	_____	_____	_____
Snack bars	_____	_____	_____	_____
Electronic debit cards	_____	_____	_____	_____
Student stores	_____	_____	_____	_____

1.9 Other food programs served. Some school districts use their facilities to prepare foods for purposes other than breakfasts and lunches for students in their school system. Some examples are listed below. Please indicate with a check (✓) which, if any, of these purposes you are **currently providing meals or food to**.

	<u>Check (✓) all that apply</u>
School staff meals	_____
Head Start	_____
Elderly Feeding	_____
Child and Adult Care Feeding	_____
Other day care	_____
Summer Food Service Program	_____
Other schools or school systems	_____
Disaster Feeding	_____
School related events (e.g. athletic events, PTA meetings)	_____
Public catering	_____
Other (specify) _____	_____

1.10 Other food program sales. If your school district had **other food program sales** (as noted in response to Question 1.9) during **July-September 1996**, are the foods used for any of these other programs included among the food purchase information you provided?

YES \_\_\_\_\_

NO \_\_\_\_\_

If **YES**, for those programs included in the food purchase data you submitted, please indicate separately the dollar amount of receipts for (a) those "other programs" that are provided on a per meal basis (e.g. Summer Food Service or food for other school systems), (b) those "other programs" that are provided on a non-meal basis (e.g. disaster feeding or catering), and (c) the total for both. If your response is an estimate, indicate with a check (✓) in the space titled "estimate."

**Receipts from other food program sales:**

	School Year <u>1995/96</u>	<u>Estimate</u>	July-Sept. <u>1996</u>	<u>Estimate</u>
(a) Meal basis	\$ _____	<input type="checkbox"/>	\$ _____	<input type="checkbox"/>
(b) Other than meal basis	\$ _____	<input type="checkbox"/>	\$ _____	<input type="checkbox"/>
(c) Total	\$ _____	<input type="checkbox"/>	\$ _____	<input type="checkbox"/>

For those other food programs provided on a per meal basis and included in the response on row (a) above, please indicate the number of meals served. If your response is an estimate, indicate with a check (✓) in the space titled "estimate."

**Number of other food program meals:**

	<u>Estimate</u>
School Year 1995/96	_____ <input type="checkbox"/>
July-Sept. 1996	_____ <input type="checkbox"/>

1.11 Total food expenditures. What was the school district's total expenditure for food during the **1995/96 School Year** and during the **July-September 1996** period? Do not include expenditures for nonfood supplies. If your response is an estimate, indicate with a check (✓).

Estimate

**Total Food Expenditures:**

School Year 1995/96	\$ _____	<input type="checkbox"/>
July-Sept. 1996	\$ _____	<input type="checkbox"/>

1.12 Number of schools using menu planning. How many of the schools in your school district use each of the following methods in planning their lunch menus?

Of the four options listed below, the first three are from the new FCS regulations issued in June 1995. The final option was provided by legislation approved in May 1996. They are defined as follows:

**Nutrient Standard Menu Planning** - Attainment of minimum weekly nutrient levels based on nutrient analysis of all meal items conducted by the SFA.

**Assisted Nutrient Standard Menu Planning**- Attainment of minimum weekly nutrient levels using approved menu cycles developed by other sources.

**Food-Based Menu Planning** - Attainment of minimum weekly nutrient levels by offering specific meal components in prescribed quantities.

**Traditional Meal Patterns** - Minimum quantities of meal components as prescribed by USDA in regulations issued prior to June 1995.

	Elementary	Middle/Secondary	Other	Total
<b>Number of Schools</b>				
Nutrient Standard Menu Planning	_____	_____	_____	_____
Assisted Nutrient Standard Menu Planning	_____	_____	_____	_____
Food-Based Menu Planning	_____	_____	_____	_____
Traditional Meal Patterns	_____	_____	_____	_____

1.13 **Waiver for implementation of nutrient standards.** Has your school district applied for a waiver to postpone implementation of nutrient menu planning beyond School Year 1996/97?

YES \_\_\_\_\_

NO \_\_\_\_\_

If YES, has your application been approved?

YES \_\_\_\_\_

NO \_\_\_\_\_

## 2. PROCUREMENT PRACTICES AND PROCEDURES

Questions in this section of the survey pertain to food procurement practices. Unless otherwise specified, they do not pertain to commercial food service, unless they have been used as ingredients in processed food that has been obtained commercially.

2.1 **Vendor selections.** Who in your school district has **primary responsibility** for determining **where** foods are purchased, i.e. which vendors are selected? (If this person has more than one position or if more than one person is responsible, please select the position that best describes the person's duties.)

Check (✓) one

- District Food Service Director/Manager
- Business Office/Purchasing Department
- Nutritionist
- Kitchen Manager/Head Cook
- School Board
- Other (specify) \_\_\_\_\_

2.2 **Food selection.** Who in your school district has **primary responsibility** for determining **which foods** are purchased? (Again, if more than one person or position is involved, select the **one** that best describes the person's duties.)

Check (✓) one

- District Food Service Director/Manager
- Business Office/Purchasing Department
- Nutritionist
- Kitchen Manager/Head Cook
- School Board
- Other (specify) \_\_\_\_\_

2.3 Food service management companies. Is your food service operation currently under the direction of a private food service management company?

YES \_\_\_\_\_

NO \_\_\_\_\_

**IF YES:**

How long has it been under the management of a food service management company (in years)?

\_\_\_\_\_ years

Is the food service management company responsible for determining **where** foods are purchased (i.e. vendor selection)?

YES \_\_\_\_\_

NO \_\_\_\_\_

Is the food service management company responsible for determining **which foods** are purchased (i.e. food selection)?

YES \_\_\_\_\_

NO \_\_\_\_\_

2.4 Branded products. Do you feature branded products (either **in-house** or **national** brands in your school food program?)

Note: In-house brands can include brands developed for use by more than one school district.

YES \_\_\_\_\_

NO \_\_\_\_\_

If **YES**, in how many schools are in-house and national brands featured?

<b>Number of Schools</b>	<u>Elementary</u>	<u>Middle/Secondary</u>	<u>Other</u>	<u>Total</u>
In-house	_____	_____	_____	_____
National	_____	_____	_____	_____

If **YES**, what types of branded products do you sell?

In-house National

Check (✓) all that apply

Hamburgers/cheeseburgers	_____	_____
Pizza	_____	_____
Subs/Sandwiches	_____	_____
Tacos/burritos	_____	_____
Desserts	_____	_____
Fruit products	_____	_____
Vegetable products	_____	_____

If **YES**, how does the vendor supply the product?

In-house National

Check (✓) all that apply

As ingredients, school prepares	_____	_____
As cold product, school heats	_____	_____
As finished item, delivered to school	_____	_____
Other (describe) _____	_____	_____

In some of the questions that follow, we ask for information related to particular types of food. These food types are described below.

**Dairy Products:** Fresh milk, cheese, butter, yogurt, and other milk-related products; fresh eggs; substitute dairy products. Ice cream is not included; it is treated separately.

**Bread and Bakery Products:** Bread, rolls, buns, cakes, cookies, crackers, donuts. Do not include snack items such as potato chips and pretzels (see below).

**Fresh Produce:** Fresh fruits and vegetables.

**Canned and Staple Foods:** All canned foods including canned fruits, vegetables, and meat; staple foods such as flour, sugar, rice, cereals, cooking oils, and beverages.

**Frozen Foods:** All frozen foods including frozen fruits and vegetables, frozen meats and frozen pizza. Ice cream is not included.

**Fresh meat/poultry/fish:** All fresh meat, poultry, and fish. Canned and frozen meat, poultry, and fish are not included.

**Snack Items:** Potato chips, pretzels, candy, individual packs of cookies.

**Ice cream:** Include all ice cream and ice milk products.

2.5 Level of purchasing. Are food purchase decisions (not orders) made at the level of the school district (centralized), at the level of the individual school (decentralized), or some combination of the two?

Check (✓) one

Centralized (school district)

\_\_\_\_\_

Decentralized (schools)

\_\_\_\_\_

Combined centralized/decentralized

\_\_\_\_\_

2.6 Level of ordering. Are food **orders** by your system made at the level of the school district (centralized) or at the level of the individual school (decentralized)? Check (✓) one space for each type of food.

	<u>Dairy</u>	<u>Bread</u>	<u>Fresh Produce</u>	<u>Canned/ Staples</u>	<u>Frozen Foods</u>	<u>Fresh Meats</u>	<u>Snack Items</u>	<u>Ice Cream</u>
Centralized	_____	_____	_____	_____	_____	_____	_____	_____
Decentralized	_____	_____	_____	_____	_____	_____	_____	_____

2.7 Selecting vendors. In selecting a food vendor, do you subject the vendors' products to any of the following tests or requirements?

	<u>Check (✓) all that apply</u>
Can cutting	_____
Taste testing	_____
Cooking tests	_____
Availability of nutrient analysis profile	_____
Availability of CN labels	_____
Other (specify) _____	_____
_____	_____
None of the above	_____

2.8 Product specifications. In purchasing individual food items, do you use product specifications to describe the product?

YES \_\_\_\_\_  
NO \_\_\_\_\_



If **YES**, which of the following specifications do you use? Check (✓) all that apply.

- Official quality/grade standards (e.g. Grade A) \_\_\_\_\_
- Style/variety of product (e.g. sliced cling peaches) \_\_\_\_\_
- Brand name \_\_\_\_\_
- Container weight \_\_\_\_\_
- Fat content \_\_\_\_\_
- Overall nutritional composition of the product \_\_\_\_\_
- Origin (where produced) \_\_\_\_\_
- Packaging unit (e.g. case of 6-#10 cans) \_\_\_\_\_
- Condition (e.g. temperature or evidence of spoilage) \_\_\_\_\_
- Use of Child Nutrition (CN) labels that identify contribution toward meal pattern requirements \_\_\_\_\_
- Official standards of identity \_\_\_\_\_

### 3. FOOD DELIVERY PRACTICES

This section of the survey asks questions regarding the receipt and distribution of purchased foods. The final question (3.5) applies to donated commodities. Please respond in terms of how your system currently operates.

3.1 Receiving locations. What type of receiving locations do vendors ship their products to? Check (✓) all that apply for each food type. (See Question 1.5 for descriptions of kitchen types)

		Fresh	Canned/	Frozen	Fresh	Snack	Ice	
	<u>Dairy</u>	<u>Bread</u>	<u>Produce</u>	<u>Staples</u>	<u>Foods</u>	<u>Meats</u>	<u>Items</u>	<u>Cream</u>
School District Central Warehouse	_____	_____	_____	_____	_____	_____	_____	_____
Commercial Warehouse	_____	_____	_____	_____	_____	_____	_____	_____
Central Kitchens	_____	_____	_____	_____	_____	_____	_____	_____
Base Kitchens	_____	_____	_____	_____	_____	_____	_____	_____
Receiving or Satellite Kitchens	_____	_____	_____	_____	_____	_____	_____	_____
Combination Kitchens	_____	_____	_____	_____	_____	_____	_____	_____
On-Site Kitchens	_____	_____	_____	_____	_____	_____	_____	_____

3.2 Frequency of delivery. In general, how often do vendors deliver food? Check (✓) one item for each type of food that most closely reflects the actual delivery schedule.

	<u>Dairy</u>	<u>Bread</u>	<u>Fresh Produce</u>	<u>Canned/ Staples</u>	<u>Frozen Foods</u>	<u>Fresh Meats</u>	<u>Snack Items</u>	<u>Ice Cream</u>
Daily	_____	_____	_____	_____	_____	_____	_____	_____
More than once a week	_____	_____	_____	_____	_____	_____	_____	_____
Weekly	_____	_____	_____	_____	_____	_____	_____	_____
Every other week	_____	_____	_____	_____	_____	_____	_____	_____
Monthly	_____	_____	_____	_____	_____	_____	_____	_____
Quarterly	_____	_____	_____	_____	_____	_____	_____	_____
Other (specify) _____	_____	_____	_____	_____	_____	_____	_____	_____

3.3 Delivery times. Are there set time periods or restrictions on when vendors can deliver foods (e.g., before 11:00 a.m.)?

YES \_\_\_\_\_

NO \_\_\_\_\_

If YES, indicate with a check (✓) who specified the delivery period.

Vendor \_\_\_\_\_

District \_\_\_\_\_

3.4 Warehouse storage. Do you use a central or public warehouse to store commercial foods?

YES \_\_\_\_\_

NO \_\_\_\_\_

If **YES**, how often are foods generally delivered from the warehouse(s) to preparation sites? Check (✓) one for each kitchen type.

	<u>Central Kitchens</u>	<u>Base Kitchens</u>	<u>Combination Kitchens</u>	<u>On-site Kitchens</u>
Daily	_____	_____	_____	_____
More than once a week	_____	_____	_____	_____
Weekly	_____	_____	_____	_____
Every other week	_____	_____	_____	_____
Monthly	_____	_____	_____	_____
Other (specify) _____	_____	_____	_____	_____

If **YES**, whose delivery vehicles are used to transport food from warehouse to preparation sites?

Check (✓) all that apply

- School district vehicles \_\_\_\_\_
- Contract hauler \_\_\_\_\_
- Other (describe) \_\_\_\_\_

If **YES**, what was the cost of transporting food from warehouse to preparation sites in **School Year 1995/96**. If this is an estimate, check (✓) box.

District transportation cost in 1995/96 \$ \_\_\_\_\_ Estimate

3.5 USDA donated commodities. How do USDA donated commodities reach your school district?

Check (✓) all that apply

- Commercial foodservice distributor \_\_\_\_\_
- Commercial trucking company \_\_\_\_\_
- State delivery \_\_\_\_\_
- Direct delivery by USDA \_\_\_\_\_
- School district pick-up \_\_\_\_\_
- Other (describe) \_\_\_\_\_

#### 4. VENDOR INFORMATION

4.1 Number of vendors. How many separate vendors do you currently use for each of the following food types? How many vendors serve your area and are willing to meet your food purchase requirements? If a vendor supplies more than one type of food, count it separately in each appropriate category. (If you don't know the number of vendors in the area, please make an estimate and indicate with a check (✓).)

	<u>Dairy</u>	<u>Bread</u>	<u>Fresh Produce</u>	<u>Canned/ Staples</u>	<u>Frozen Foods</u>	<u>Fresh Meats</u>	<u>Snack Items</u>	<u>Ice Cream</u>
<u>Number</u> of vendors used	_____	_____	_____	_____	_____	_____	_____	_____
<u>Number</u> serving area	_____	_____	_____	_____	_____	_____	_____	_____
Estimate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4.2 Total number of vendors. What is the total number of vendors from whom you currently purchase food?

Number of vendors \_\_\_\_\_

4.3 Vendor selection criteria. Which factors influence your selection of food vendors? Check (✓) all that apply

- Price \_\_\_\_\_
- Brands \_\_\_\_\_
- Service after sale \_\_\_\_\_
- Dependability \_\_\_\_\_
- Location \_\_\_\_\_
- Flexibility \_\_\_\_\_
- Food quality \_\_\_\_\_
- Delivery schedules \_\_\_\_\_
- Promotion programs \_\_\_\_\_

4.4 Procurement methods. Indicate **principal** method you use to purchase each type of food. Check (✓) one for each food type.

	<u>Dairy</u>	<u>Bread</u>	<u>Fresh Produce</u>	<u>Canned/ Staples</u>	<u>Frozen Foods</u>	<u>Fresh Meats</u>	<u>Snack Items</u>	<u>Ice Cream</u>
Formal line item bids (Items individually priced.)	_____	_____	_____	_____	_____	_____	_____	_____
Formal lump sum bids (Items priced in combination.)	_____	_____	_____	_____	_____	_____	_____	_____
Telephone bid/quote	_____	_____	_____	_____	_____	_____	_____	_____
Sales representative visits	_____	_____	_____	_____	_____	_____	_____	_____
Other (specify) _____	_____	_____	_____	_____	_____	_____	_____	_____

4.5 Cooperative buying. Are you participating with other school districts in the cooperative purchasing of food?

YES \_\_\_\_\_

NO \_\_\_\_\_

If YES, how long have you participated in a cooperative buying program (in years)?

\_\_\_\_\_ years

If YES, how many other school districts participate in the cooperative?

\_\_\_\_\_

If YES **and** you participated in a cooperative buying program in School Year 1995/96, please estimate the share of total food purchases by the school district in School Year 1995/96 that were purchased cooperatively (in percent).

\_\_\_\_\_ %

If YES, indicate with a check (✓) the foods you used in School year 1995/96 that were purchased through a cooperative buying program.

	<u>Dairy</u>	<u>Bread</u>	<u>Fresh Produce</u>	<u>Canned/ Staples</u>	<u>Frozen Foods</u>	<u>Fresh Meats</u>	<u>Snack Items</u>	<u>Ice Cream</u>
Purchased through cooperative program	_____	_____	_____	_____	_____	_____	_____	_____

The following questions pertain to your major vendor for each type of food purchase. If you have only one vendor in a category, answer the question for that vendor. Otherwise, answers should reflect the vendor from which you expect to make the largest volume of purchases in each category during the 1996/97 School Year.

4.6 Product pricing. For each food type below, indicate whether you have a **formal agreement** (contract) or an **informal agreement** with your major vendor. Within the category selected, check (✓) the one approach to pricing that best describes how your food purchase prices are determined.

	<u>Dairy</u>	<u>Bread</u>	<u>Fresh Produce</u>	<u>Canned/ Staples</u>	<u>Frozen Foods</u>	<u>Fresh Meats</u>	<u>Snack Items</u>	<u>Ice Cream</u>
<b><u>A. Formal Agreement</u></b>								
Fixed price contract	_____	_____	_____	_____	_____	_____	_____	_____
Fixed price with escalator clause (e.g., increase based on specific condition such as inflation rate).	_____	_____	_____	_____	_____	_____	_____	_____
Formula price (list plus fixed amount or percentage)	_____	_____	_____	_____	_____	_____	_____	_____
Cost-based price	_____	_____	_____	_____	_____	_____	_____	_____
<b><u>B. Informal Agreement</u></b>								
Bid or quote price (not contract)	_____	_____	_____	_____	_____	_____	_____	_____
Retail price	_____	_____	_____	_____	_____	_____	_____	_____
Mutually accepted discount rate	_____	_____	_____	_____	_____	_____	_____	_____
Other (specify) _____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____

4.7 Which of the following services do your major vendors supply. Check (✓) all that apply.

- Advice on purchasing \_\_\_\_\_
- Unloading at dock/school \_\_\_\_\_
- Placing packages in coolers/storage area \_\_\_\_\_
- Shelving delivered foods \_\_\_\_\_
- Inventory updating \_\_\_\_\_
- Summary of purchases on a monthly or quarterly basis \_\_\_\_\_
- Menu planning \_\_\_\_\_
- Delivery of USDA donated commodities \_\_\_\_\_
- Storage of USDA donated commodities \_\_\_\_\_
- Processing of USDA donated commodities \_\_\_\_\_

Thank you for completing the survey and for taking part in the study. Once all the data have been tabulated and the analysis completed, we will send you a copy of the results.

Please make a copy of the completed survey for your file (in the unlikely event that the original is lost in the mail) and send the original to us in the enclosed envelope.

**APPENDIX C**

**Table C-1: Top Fifty Foods Purchased by Public Unified NSLP School Districts  
in SY 1996/97, Estimated Value and Volume of National Purchases**

Food code	Food description	Value (dollars)	Volume (pounds)
500959	Milk, flavored, lo fat, 1%	225,281,321	770,347,867
501255	Milk, flavored, lo fat, fat solids unknown	105,263,661	363,372,448
500059	Milk, whole	99,398,321	320,405,060
500455	Milk, lo fat, 2%	97,286,128	331,730,128
457357	Hamburger and hot dog buns/steak and sub roll	96,213,128	124,426,923
370535	Potatoes, french fries/wedges, frozen	93,421,009	216,116,282
260274	Fruit drinks, individual	73,462,574	189,084,535
233171	Orange juice, individual	71,620,239	162,700,311
459477	Cereals, individual	66,648,582	18,901,110
500257	Milk, lo fat, 1%	64,099,295	217,764,144
903054	Pizza, w/real cheese	50,247,177	30,302,251
503152	Ice cream/ice milk novelties	50,025,696	45,916,013
903351	Pizza, sausage w/cheese blend	49,461,492	40,288,647
152157	Chicken, patties, white meat	47,458,699	26,977,177
904259	Pizza, pepperoni w/cheese blend	45,860,448	34,854,263
153155	Chicken, nuggets, white meat	43,000,672	25,793,249
458074	Cookies individual	40,597,344	20,336,272
153254	Chicken, nuggets, white/dark mix unknown	40,433,749	23,499,356
410654	Chips, tortilla/corn	40,308,708	25,440,733
500851	Milk, flavored, lo fat, .5%	39,600,465	126,190,739
501354	Milk, flavored, skim/nonfat	36,610,815	130,917,054
457753	Donuts/churros/honey bun/cinnamon rolls	36,223,418	24,103,810
200279	Apple juice, individual	34,835,918	77,883,639
506056	Cheese, American/processed	33,852,172	20,472,082
370659	Chips, potato or potato sticks	32,731,677	14,497,708
904151	Pizza, pepperoni w/real cheese	32,466,265	18,706,639
140351	Beef, patties cooked	32,346,516	19,447,408
200015	Apples, fresh	31,682,277	75,372,761
903459	Pizza, cheese, type unknown	30,377,056	20,888,797
903153	Pizza, cheese blend	29,979,931	23,090,172
370139	Potatoes, formed, frozen	29,530,001	67,830,866
601352	Sodas, carbonated	28,666,457	79,154,808
500554	Milk, lo fat, fat solids unknown	26,928,630	84,871,418
378470	Catsup, individual pack	26,503,451	37,203,271
456053	Bread, white	26,136,548	42,672,153
234228	Peaches, canned, light syrup	24,581,290	41,388,208
152256	Chicken, patties, white/dark mix unknown	24,446,484	14,345,796
904655	Pizza, pepperoni, cheese unknown	23,858,684	16,849,288
455559	Cookie dough	23,796,681	16,330,840
233015	Oranges, fresh	21,169,604	58,332,320
144154	Beef, breaded patties/nuggets	20,876,281	14,700,141
261222	Mixed fruit, canned, light syrup	20,196,615	30,440,697
340018	Lettuce, heads	19,235,979	60,890,476
260034	Fruit juice, bars, frozen	19,125,544	22,251,706
100157	Fish, nuggets/patties, breaded	18,910,901	11,234,766
457258	Biscuits and rolls	18,871,624	18,710,411
378017	Tomatoes, fresh	18,809,593	30,593,807
500752	Milk, flavored, whole	18,361,466	60,999,358
458272	Cakes/brownies, prepared, individual pack	17,707,014	11,950,840
900654	Meat filled pastry (includes Hot Pockets)	17,456,784	9,738,416

Source: *School Food Purchase Study*, 1998.



**APPENDIX D**

**Table D-1: Classification System Used in Coding  
A La Carte Food Items**

Code	Description	Code	Description	Code	Description
101	milk	121	nachos	141	corn dog
102	beverages-fruit drinks	122	water	142	milkshake
103	pizza	123	fruit roll-ups	143	string cheese
104	french fries	124	candy	144	potato items
105	soft drinks	125	donuts	145	baked potatoes
106	hamburgers	126	chicken nuggets	146	frozen fruit bars
107	cheeseburgers	127	chicken strips	147	vegetables
108	snack chips	128	pickles	148	hot chocolate
109	burritos	129	salad	149	cheese sticks
110	sandwiches	130	entrée items <sup>2/</sup>	150	rice
111	ice cream	131	meat snacks	151	cottage cheese
112	hot dogs	132	yogurt	152	sunflower seeds
113	cookies	133	pudding	153	peanuts
114	pretzels	134	snack crackers <sup>3/</sup>	154	cereals
115	snack cakes <sup>1/</sup>	135	egg roll	155	fruit snacks/dried fruit
116	popcorn	136	granola bars	156	onion rings
117	bagels	137	breadsticks/bread/rolls	157	desserts/baked goods
118	soup	138	mashed potatoes	158	chicken fillet
119	fruit	139	hot wings	159	misc. pockets sandwiches
120	tacos	140	tea	160	chicken sandwiches
				161	other

<sup>1/</sup> Snack cakes include: pastry, turnovers, whoopie pies, brownies, cup cakes, little debbies, honey buns, danish sweet buns, rice krispie treats, muffins, and churros.

<sup>2/</sup> Entree items include: breaded ravioli, turkey and stuffing, chicken gravy & biscuits, veg. pasta, fried chicken, breaded chicken, tenderloin, spaghetti, chicken fried steak, chili, chimichanga, and pickled sausage.

<sup>3/</sup> Snack crackers include: goldfish, cheese and crackers, graham crackers, teddy grahams, and crackers w/peanut butter.

Source: *School Food Purchase Study, 1998.*

**APPENDIX E**

**Table E-1: Top Fifty Foods Purchased by Public Unified NSLP School Districts  
in SY 1996/97, by Assigned Product Category**

Food code	Food description	Product category
100157	Fish, nuggets/patties, breaded	Frozen foods
140351	Beef, patties cooked	Frozen foods
144154	Beef, breaded patties/nuggets	Frozen foods
152157	Chicken, patties, white meat	Frozen foods
152256	Chicken, patties, white/dark mix unknown	Frozen foods
153155	Chicken, nuggets, white meat	Frozen foods
153254	Chicken, nuggets, white/dark mix unknown	Frozen foods
200015	Apples, fresh	Fresh produce
200279	Apple juice, individual	Canned/staples
233015	Oranges, fresh	Fresh produce
233171	Orange juice, individual	Canned/staples
234228	Peaches, canned, light syrup	Canned/staples
260034	Fruit juice, bars, frozen	Frozen foods
260274	Fruit drinks, individual	Canned/staples
261222	Mixed fruit, canned, light syrup	Canned/staples
340018	Lettuce, heads	Fresh produce
370139	Potatoes, formed, frozen	Frozen foods
370535	Potatoes, french fries/wedges, frozen	Frozen foods
370659	Chips, potato or potato sticks	Snack items
378017	Tomatoes, fresh	Fresh produce
378470	Catsup, individual pack	Canned/staples
410654	Chips, tortilla/corn	Snack items
455559	Cookie dough	Snack items
456053	Bread, white	Bread
457258	Biscuits and rolls	Bread
457357	Hamburger and hot dog buns/steak and sub roll	Bread
457753	Donuts/churros/honey bun/cinnamon rolls	Snack items
458074	Cookies individual	Snack items
458272	Cakes/brownies, prepared, individual pack	Snack items
459477	Cereals, individual	Canned/staples
500059	Milk, whole	Dairy
500257	Milk, lo fat, 1%	Dairy
500455	Milk, lo fat, 2%	Dairy
500554	Milk, lo fat, fat solids unknown	Dairy
500752	Milk, flavored, whole	Dairy
500851	Milk, flavored, lo fat, .5%	Dairy
500959	Milk, flavored, lo fat, 1%	Dairy
501255	Milk, flavored, lo fat, fat solids unknown	Dairy
501354	Milk, flavored, skim/nonfat	Dairy
503152	Ice cream/ice milk novelties	Ice cream
506056	Cheese, American/processed	Canned/staples
601352	Sodas, carbonated	Snack items
900654	Meat filled pastry (includes hot pockets)	Frozen foods
903054	Pizza, w/real cheese	Frozen foods
903153	Pizza, cheese blend	Frozen foods
903351	Pizza, sausage w/cheese blend	Frozen foods
903459	Pizza, cheese, type unknown	Frozen foods
904151	Pizza, pepperoni w/real cheese	Frozen foods
904259	Pizza, pepperoni w/cheese blend	Frozen foods
904655	Pizza, pepperoni, cheese unknown	Frozen foods

Source: *School Food Purchase Study*, 1998.