

Background

There has been growing concern about the sale in schools of foods with limited nutritional value. Of particular concern is the availability to school children of “competitive foods,” a term that includes a wide range of foods that do not qualify as reimbursable meals under the National School Lunch Program or the School Breakfast Program. Such foods can often be obtained from a la carte cafeteria sales, vending machines, and school stores.

While the widespread availability of competitive foods is well documented (Wechsler *et al*, 2001), there is relatively little detailed data on the *amounts* of various types of competitive foods that are sold in schools or about their nutrient content. Such information is needed to estimate the full prevalence of competitive food sales and to determine the types of changes and approaches needed to facilitate change. This “briefing report” summarizes research recently undertaken for the U.S. Department of Agriculture, Food and Nutrition Service to develop a methodological basis for obtaining detailed information on the competitive foods sold in schools.

Overall Research Strategy

Many school systems do not keep records of their food service operations in ways that allow them to directly provide detailed data related to the nutrient content of competitive foods. In light of this, the Food and Nutrition Service decided that, prior to undertaking a full-scale data collection on competitive foods, it would be useful to conduct methodological research on how such data could be collected. To this end, they contracted with two research firms, Abt Associates Inc. and Mathematica Policy Research, to develop and test two different methodologies for collecting these data.

One line of research used an inventory approach to collect data on sales of competitive foods. The other approach, focused on directly observing the purchases of competitive foods at their “points of sale,” such as cafeteria checkout lines or vending machines. Each approach was tested in three schools, and as part of each approach, data on competitive foods offered and sold were coded into a nutrient database and converted to information on nutrient content.

Inventory Approach

The inventory approach developed was implemented as a self-administered survey completed by school food service staff, and other school staff operating competitive food venues. These respondents completed data collection forms for a target week, listing all competitive food items offered to students, including information on manufacturer, brand, name of item, and package or serving size. Food service staff was unable to distinguish foods served a la carte such as french fries or pizza from those served in the reimbursable meal. The primary innovation in this study was the use of inventory forms for prepackaged food items. Inventory forms were used to record beginning-of-week stock, deliveries, and end-of-week stock. This approach moved data collection tasks outside of the meal periods and eliminated the need to account for sales of individual food items on a daily basis. Nutrient coding of foods was performed by contractor staff.

In addition to data collected about competitive foods, information about the school food environment was collected through mail surveys of principals and School Food Authority (SFA) directors. These surveys included questions about the number, type and location of competitive food venues; their operation and administration; and competitive food policies.

Point of Sale Approach

Under the Point of Sale (POS) approach, contracted data collectors directly observed and recorded the competitive foods used as they were purchased. The process began with telephone interviews with SFA directors through which study staff obtained basic descriptive information about how their food sales were organized, including how many serving lines there were, what foods were available on each line, and how many vending machines of various types were available; and whether there were school stores or other locations where competitive foods were being sold. Information was also obtained on hours of operation for the various points of sale, as well as which types of food venues were operational during various lunch periods.

For each school, contractor sampling personnel selected a stratified random sample of observation assignments, defined in terms of specific points of sale and specific time periods. These observation assignments were then carried out by two-person teams of data collectors who were trained ahead of time on how to draw samples of the transactions they observed and how to record details of what foods were purchased.

Key Findings

The findings presented in this section are based on implementation of the data collection plans in a very limited number of schools (three for each method) that were purposively selected for the study. Results are suggestive and should not be generalized to a larger population.

Inventory Approach

It was feasible to use the inventory approach to collect data on prepackaged competitive food items offered

The inventory approach was well accepted by school staff because it was straightforward and moved data collection activities outside of meal periods. This approach yielded acceptably

complete and accurate data, as indicated by validation data collected by outside observers; school staff accounted for 95 percent of all competitive food items offered during the day that validation occurred.

The main limitation of the inventory approach is that vending machines sales for a target week, derived from the inventory forms, may include sales outside the school day for vending machines that operate after school hours. Additional work is needed to investigate ways to correct for sales outside of school hours during a data collection week.

The inventory approach reduced data collection burden relative to other methods of collecting data from school staff, but did not eliminate the burden on school staff.

The inventory approach relied on school staff for data collection. These respondents were in the best position to provide complete and accurate data about the majority of competitive foods available during the school day. This study found that the burden is mainly related to the number of competitive food items offered, rather than the volume of sales. Based on available data, the total time for school staff to complete the competitive foods inventory forms ranged from less than 6 hours at the middle school to an average of approximately 15 hours at the high schools.

The majority of competitive foods available during the school day were offered in school cafeterias.

Competitive foods are defined as foods offered outside of the school meal programs. The majority of competitive foods, however, offered in school cafeterias, was available during lunch periods, and was the responsibility of the school food service. As a result, the majority of the data collection burden of the inventory approach fell on the school food service staff.

Obtaining accurate nutrient information and coding all competitive food items into a nutrient database requires significant effort.

More than 10 percent of competitive food items observed in this study were new products or brands fortified with vitamins and/or minerals. These items were not in the USDA nutrient database used to code food items, and had to be individually researched to provide accurate data on nutrient composition.

Point of Sale Approach

It was feasible to use the POS observation approach to collect reasonably accurate competitive foods data.

The POS approach was implemented successfully at each of the three sites tested. In particular, using this direct observation approach, it was possible to obtain data that appear to be reasonably accurate and substantively interesting, as discussed further below.

The POS data collection approach imposed minimal burden on the schools.

There was strong evidence that the data collection was not burdensome to district and school-level staff. During the on-site data collection, the observers were generally unobtrusive, and their presence did not appear to affect food service operations during food preparation and meal service. Overall, the time of school staff required to facilitate the data collection was quite low, ranging from approximately 2.5 hours to 6 hours at any one site. School staff explicitly indicated that they did not view the data collection as having been a problem for them.

Significant data collection resources are needed to implement this approach.

Researcher staff time was needed to obtain basic information about each school and to implement the sampling procedures, as well as to directly observe the actual foods purchased at the schools and to code and analyze the food/nutrient data.

The data collected appeared to be reasonable and roughly consistent with other data on foods eaten at school.

To provide a benchmark, data were also collected on reimbursable meals, using the same methods as described above. Estimates of nutrient content derived from these data were comparable to published findings from the School Nutrition Dietary Assessment Study-II. (This “SNDA-II” study did not obtain detailed data on competitive foods selected by students, so only the reimbursable meals were compared.) Since there is considerable cross-school variation in patterns of food use, and since there were only three schools in the sample, there was no reason to expect anything approaching an exact correspondence in the two data sets. However, the nutrient totals were sufficiently similar as to support the apparent validity of the POS approach.

Additional Findings

The findings detailed in the previous sections focus directly on the methodological questions that motivated the study. However, in the process of designing the methodologies, a number of other useful insights were obtained that were consistent across the studies. They include:

- **Limited potential for using electronic cash register data**

Data from POS cash register reports are seldom—if ever—detailed enough to permit tracking of sales to individual students. In addition, even schools with fairly sophisticated electronic equipment to track their food sales do not record items with enough detail to allow full nutrient coding.

- **Importance of focusing on both vending machines and a la carte competitive food sales**

Much of the policy concern about competitive foods has focused on vending machine sales. However, the research conducted here made it clear that to address the underlying policy issues, it is important to collect data on both vending machines *and* all forms of a la carte sales in cafeterias. Frequently, the same foods (fruit drinks, salty snacks, baked goods) are sold

simultaneously by the a la carte cafeteria venues and vending machines. Any data collection strategy that focused only on vending machines would omit substantial quantities of the specific foods those machines sell. Furthermore, the distinction between food venues operated by the school food service is not meaningful when comparing data across schools; the same food item may be observed in a vending machine in one school and at a cafeteria line or a snack bar in another school.

- **Difficulty obtaining vending machine data from vendors**

Both studies examined the possibility of obtaining data on vending machine sales, directly from the vendors. However, there does not appear to be a high probability of obtaining consistent data in most schools using this approach. In particular obtaining vending machine use data from the vending companies is problematic, because of problems (1) accessing the vending companies through the schools, (2) getting their cooperation to provide sales data, and (3) obtaining sufficient detail on the food items for nutrient coding. Furthermore, even if vending machine sales data are obtained, there are often difficulties knowing the degree to which they reflects sales to students rather than adults, and whether they reflect sales during school hours (the interest of the current study) or at other times of the day and week.

- **Lack of formal policies regarding competitive foods**

The study was motivated in part by the desire to monitor the impact of changes in competitive food policies. To test the feasibility of collecting information about current policy, school principals and SFA directors were asked questions about the types of specific foods required or prohibited, and the use of nutrition standards in approving competitive foods. Evidence from the three schools in each study indicated that most of these schools and SFAs did not have formal policies regarding competitive foods, and, as a result, respondents did not answer policy questions in a consistent manner.

Overall Conclusions

School food service operations are often quite complicated, and there appears to be no simple way to obtain detailed data on competitive food usage. The two studies described herein investigated alternative ways of reducing the burden of collecting these data: an inventory approach and an observational approach.

The inventory approach showed that, with minimal training, school staff could collect data about prepackaged competitive food sales for a target week without disrupting school food service during meal periods. The advantage of this approach is that complete data on all competitive foods offered and sold can be obtained for a full week, without sampling transactions within schools. The observational approach showed that, with sufficient “up-front” preparation and with sufficient resources for paid data collectors and nutrient data coders, reasonably accurate data on competitive food usage could be obtained at a lower burden to school staff.

Both approaches include tradeoffs that must be evaluated within a larger study design.

There is still a need to develop nutrient or other standards for what the competitive food landscape should look like and then to develop a method to judge a school’s performance.

The complete reports are available at:

<http://www.fns.usda.gov/oane/MENU/Published/CNP/cnp.htm>

For more information on competitive foods and the school food environment go to:



<http://www.fns.usda.gov/tn/Healthy/index.htm>