

## Appendix A

### Summary of Expert Panel Meeting

Mathematica Policy Research, Inc. (MPR) hosted a 1-day meeting at the offices of the Economic Research Service (ERS) on May 24, 2000, to discuss design options for studying the impact of the School Breakfast Program (SBP) on learning. All three expert panel members; two consultants; MPR project staff; ERS staff; representatives from the Food and Nutrition Service (FNS), U.S. Department of Agriculture (USDA); and representatives from the Center for Nutrition Policy and Promotion (CNPP) attended the meeting.

The meeting was held between the submission date of a draft report detailing the use of the Early Childhood Longitudinal Study, Kindergarten Cohort, (ECLS-K), to determine the effect of the SBP on learning, and the submission date of the Alternative Designs Report. The Alternative Designs Report presents four alternative designs for studying the relationship between SBP participation and academic achievement.

MPR staff presented the following four potential alternative designs at the meeting: (1) MPR's design for studying the Universal-Free School Breakfast Program (USBP), (2) various possible experimental designs, (3) a design based on the ECLS-K data, and (4) a design based on data from the forthcoming National Health and Nutrition Examination Survey (NHANES). Meeting participants were asked to comment on the designs, and to give their opinions about the most feasible and methodologically sound design of those proposed.

Before the meeting, all participants received briefing materials, including background information on the primary MPR project staff (including consultants), the nature of the work MPR is conducting for ERS, and the SBP. The materials also included a summary of the literature review and of the four alternative designs. The meeting agenda was structured around the materials.

After introductions by Mr. Jay Variyam, Dr. Phil Gleason briefly discussed the background of the study, a literature review (submitted to ERS by MPR in March 2000), and key elements of the alternative designs. More detailed presentations on the designs were by made Dr. Barbara Devaney (the USBP design), Dr. Phil Gleason (the possible experimental designs), Dr. Jon Jacobson (the ECLS-K design), and Dr. Ronette Briefel (the NHANES design). Each presentation was followed by a brief discussion. The meeting ended with a summary discussion of all the design options.

The *USBP design* is set up to measure the impacts of providing free school breakfasts to elementary school students, regardless of family income. The central feature of the evaluation strategy is an experimental design that first pairs 144 schools from six school districts, then randomly assigns each school in each pair to a treatment (USBP) group or a control (regular SBP) group. Thus, the treatment and control groups would each contain 72 schools.

The evaluation would collect detailed data on 30 students per school, for a total sample size of 4,320 students. Administrative records, student and parent survey data, student achievement

tests, and teacher survey data would be used to assess the impacts of the USBP on student and school outcomes.

Many topics were brought up in the discussion of the USBP design. The definition of breakfast, relevant to all designs, was mentioned as an important factor that must be determined prior to conducting an analysis. The fact that student participation in the SBP may carry a certain stigma was brought up, suggesting that it might be difficult to obtain sufficient numbers of SBP participants and to avoid “dilution.” Meeting attendees also raised a related issue: parents’ attitudes about the SBP might be a factor in determining a child’s participation. Finally, the difference between cognitive functioning and academic achievement as outcomes was discussed.

Four options for *experimental designs* were presented:

1. ***Random Assignment of Students.*** Under this design, a sample of students would be selected from SBP schools and then randomly assigned to treatment and control groups. The treatment group would receive some intervention to promote SBP participation and/or the control group would receive an intervention intended to discourage or prohibit SBP participation.
2. ***Random Assignment of Breakfast Delivery Type.*** Under this design, a sample of SBP schools would be selected and then classrooms within those schools would be randomly assigned to treatment and control classrooms that would use different SBP delivery methods. For example, some classrooms would have a bag lunch delivered to class, others would go to the cafeteria and would be given the opportunity to eat at that time; a third group would be left to its own devices to obtain a school breakfast.
3. ***Random Assignment of Schools’ SBP Starting Dates.*** This design would involve using the set of schools applying to USDA to participate in the SBP for the first time. These schools would be randomly assigned to a treatment group that began the SBP immediately and a control group that would be required to wait for one year before starting the program.
4. ***Random Assignment of Schools’ Provision 2 and 3 Funding.*** Under this design, a set of schools applying for provision 2 or 3 funding would be selected. These schools would be randomly assigned to a treatment group that would begin the funding cycle immediately and a to control group that would not. From students’ perspective, this would amount to randomly assigning treatment schools to begin offering meals free to all students and control schools to continue charging for meals as before.

The discussion relating to experimental designs centered on identifying a feasible social experiment in which students would be randomly assigned to a treatment group that would eat school breakfasts and to a control group that would not. Meeting participants raised concerns about identifying an ethical way to implement such an experiment.

Proposals ranged from randomly varying methods of breakfast delivery to varying the time of implementation of the SBP in a school. One issue focused on whether implementation of the program, rather than the program itself, would become the intervention being assessed. Meeting

participants also debated whether the experiment should examine the effect of nutrients on learning or the effect of eating school breakfast on learning. MPR argued that eating a school breakfast should constitute the intervention because it would be less feasible to randomly assign nutrient intake levels to students than to randomly assign SBP participation status. The participants also agreed that the timing and content of breakfast would be important in assessing the impact of SBP participation on learning.

Several panel members thought that, given the time required to establish the SBP in a school, obtaining the support of administrators, faculty, and parents would be crucial to successful implementation. Opinions varied, also, as to the level at which random assignment should occur (student, classroom, or school). During the discussion, it became clear that the design based on provision 2 and 3 funding applications would not be feasible, primarily because the provisions are administrative mechanisms that do not readily affect the SBP participation of children who often qualify automatically on the basis of food stamp use or receipt of Temporary Assistance to Needy Families.

The *ECLS-K design* proposed to use the ECLS-K dataset to investigate the link between SBP participation and learning outcomes. The ECLS-K is a nationally representative sample of students observed from kindergarten through grade five. Although the ECLS-K includes a rich set of information on learning outcomes, SBP participation, and family and school backgrounds, supplemental data collection could shed additional light on the factors affecting a school's decision to offer the SBP, and on a family's decision to let a child participate in the program.

The meeting participants agreed that it would be important to account for these participation decisions because of the risk that nonrandom selection into the sample of SBP participants would bias estimates of the impact of SBP participation on learning.

The presentation on the ECLS-K design sparked discussion about possible supplemental questions to be added to the ECLS-K questionnaire that would provide additional data for an examination of the effect of the SBP on learning. Regardless of the design, identifying an accurate measure of SBP participation can be problematic but is an even greater issue when existing data, such as the ECLS-K, are used.

The use of existing data reduces the choice of which information can be used for analysis. The group discussed various measures, as well as the ramifications of using a categorical or binary variable to measure SBP participation. The group also raised the issue of accounting for children who eat breakfast at home, as the ECLS-K does not ask any questions that provide this information. In addition, participants pointed out that the effect of participating in the SBP could be negative, rather than neutral, justifying the use of two-tailed tests of statistical significance. Finally, measures of achievement were discussed, particularly whether achievement should be measured in the absolute or as change over time.

The nonexperimental *NHANES design* proposed to use the NHANES dataset to study the relationship between participation in the SBP and learning outcomes. The NHANES includes a nationally representative sample of children and adolescents who are interviewed and examined in a mobile examination center. The NHANES provides a comprehensive picture of the dietary intake, SBP participation, nutritional status, and health status of school-aged children in the

United States. Supplemental data collection of cognitive, behavioral, and intelligence tests, which were successfully included in the 1988-1994 NHANES, and school records on attendance and achievement test scores, would provide information on learning outcomes. The analysis would compare dietary, nutrition, health, and learning outcomes among SBP participants, SBP nonparticipants, and students who do not eat breakfast.

Discussion about the NHANES design centered around the intricacies of using national data collected for purposes other than the one at hand. In particular, the forthcoming NHANES data collection effort will not collect data on academic achievement, so supplemental data collection would have to be added to acquire the information necessary to measure change in achievement over time.

The meeting participants also observed that resolving the issue of the lack of data on the individual schools that NHANES respondents attend would require obtaining school records long after the original data collection period—a difficult and costly enterprise. The possibility that parents might report inaccurate information about their children’s dietary intake or SBP participation was mentioned. (However, this issue would be relevant to any survey.)

Another potential difficulty with a nonexperimental design such as the proposed NHANES design is that schools participating in the SBP might differ significantly from nonparticipating schools. Finally, the meeting participants cited the advantages of using existing data, namely, the low cost and the ability to use a nationally representative sample.

During the concluding discussion, the participants decided that the strongest and most feasible *experimental* design to suggest as one of the four alternative designs would be one that grouped applicants to the SBP (in other words, schools) into control and treatment groups. The control group would then have to wait one year before implementing the program.

However, the group also concluded that the most feasible design was one that was based mainly on the ECLS-K, but that used data from NHANES III. NHANES III data were collected from 1988 to 1994. The group discussed the relative merit of an analysis of NHANES III data on SBP participation, dietary intake, and WISC-R/WRAT-R scores to inform the ECLS-K design. Thus, the ECLS-K would provide information on the characteristics of students and their schools, and the NHANES III would provide dietary intake and nutritional status data on SBP participants and nonparticipants. In addition, the combination of these two datasets would supply information on both intermediate and final outcomes.

# AGENDA

## DESIGN AND FEASIBILITY STUDY OF THE IMPACT OF THE SBP ON LEARNING

### *Expert Panel Meeting*

*May 24, 2000*

Economic Research Service  
U.S. Department of Agriculture  
Rm. N4166, 1800 M Street, NW (North Tower)  
Washington, DC 20036-5831

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| <b>8:30 – 8:45</b>   | <b>Welcome / Coffee and Donuts</b>   |
| <b>8:45 – 9:00</b>   | <b>Introductions</b> (Jay Variyam)<br>Study Background (Phil Gleason)                |
| <b>9:00 - 9:45</b>   | <b>Literature Review / Key Elements of Potential Study Designs</b><br>(Phil Gleason) |
| <b>9:45 - 10:30</b>  | <b>Summary of USBP Design</b> (Barbara Devaney)                                      |
| <b>10:30 - 10:45</b> | <b>Break</b>   |
| <b>10:45 – 11:45</b> | <b>Summary of Possible Experimental Designs</b> (Phil Gleason)                       |
| <b>11:45 - 12:45</b> | <b>Lunch</b>   |
| <b>12:45 - 1:45</b>  | <b>Summary of ECLS Design</b> (Jon Jacobson)   |
| <b>1:45 - 2:45</b>   | <b>Summary of NHANES Design</b> (Ronette Briefel)                                    |
| <b>2:45 - 3:30</b>   | <b>Wrapup Discussion of Four Alternative Designs</b> (Phil Gleason)                  |

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