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NSLP/SBP Access, Participation, Eligibility, and Certification Study

Final Study Design Plan

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I. INTRODUCTION

The National School Lunch Program (NSLP) and School Breakfast Program (SBP) play a critical role in America's strategy to ensure that all its citizens have access to adequate food. In particular, these programs provide free and reduced-price school meals for students from low-income families. The NSLP is available in more than 99,000 public and nonprofit private schools and residential child care institutions, where more than 28 million children receive nutritionally balanced lunches each school day free or at low cost. The SBP operates in more than 72,000 schools and institutions. In fiscal year 2002, it provided 8.2 million students with subsidized breakfasts each day. For many of these children, the food consumed at school is an important component of their overall nutritional intake.

The accuracy of the information that families provide on applications for free and reduced price school meals, the accuracy with which School Food Authorities (SFAs) classify student eligibility, and the effectiveness of procedures that Local Education Authorities (LEAs) use to approve and verify applications are key components of the integrity of the NSLP and SBP. In recent years, however, there has been evidence from auditing studies, aggregate data on participation, and other more specialized studies that a significant number of ineligible students have been approved for free and reduced-price meals, as well as evidence of the existence of other sources of payment errors (such as schools or school districts submitting improper meal counts for reimbursable meals). This evidence has raised concerns in the U.S. Department of Agriculture (USDA), which administers the program, and in Congress.

Under the Improper Payments Information Act of 2002 (Public Law 107-300), federal agencies are required to report annually on the extent of the erroneous payments in programs which may be susceptible to significant erroneous payments and report the actions they are

taking to reduce them. USDA must identify and reduce erroneous payments in various food and nutrition programs, including the NSLP and SBP. Erroneous payments under the NSLP and SBP can result from misclassification of the school meal eligibility status of participating students due to administrative errors or misreporting by households at application or at the time of verification.[1] Payment errors also result when schools and school districts submit improper meal counts and claims for reimbursable meals.

To comply with this legislation, USDA needs a reliable national estimate of erroneous payments in the NSLP and SBP for SY 2005 - 2006. In addition, since it is not feasible to field a national study each year, USDA also needs reliable estimation models based on readily obtainable, extant data sources that it can use for updating erroneous payment estimates annually. The Food and Nutrition Service (FNS) has contracted with Mathematica Policy Research, Inc. (MPR) to conduct the Access, Participation, Eligibility, and Certification Study of the NSLP and SBP that will:

- Collect data related to certification accuracy, meal counting and claiming, and NSLP and SBP participation, together with related topics as appropriate, from nationally representative samples of schools and households for school year (SY) 2005-2006 and generate a national estimate of NSLP and SBP overpayment, underpayment, and overall erroneous payments
- Develop estimation models for USDA's FNS staff to use to update the erroneous payment estimate annually with NSLP and SBP administrative records and extant data

[1]Before the recent Child Nutrition Programs reauthorization (Child Nutrition and WIC Reauthorization Act of 2004), erroneous payments could also occur when properly classified households failed to declare subsequent changes in income, household size, or other factors that would have changed the school meal eligibility status of students in the household. Under the new law, the eligibility determinations for free/reduced-price meal benefits are now valid for the entire school year, whether or not household income or other circumstances change in ways that affect eligibility. Therefore, receipt of school meals by households that are properly certified but that later experience a change in circumstances that affect eligibility is no longer considered to be an erroneous payment and will not be included in the study's estimate.

- Examine the characteristics of households that apply for free or reduced-price meal benefits and of those denied benefits to inform issues of program participation and access

This report presents the study design.[2] Chapter II provides an overview of the study design and identifies key design issues and MPR's plans for addressing them. Chapter III presents the sample design and precision. Chapter IV describes data collection plans, and Chapter V describes analysis plans. Chapter VI presents the study's schedule and schedule for deliverables.

In the rest of this chapter, we describe the school meal programs and relevant policies. We then present the definition of erroneous payments that the study will use.

A. OVERVIEW OF THE NSLP AND SBP

The National School Lunch Program (NSLP) was enacted in 1946 to "safeguard the health and well-being of the Nation's children and to encourage the domestic consumption of nutritious agricultural commodities and other foods." In 1975, Congress expanded the federal role in providing students' access to nutritious food by authorizing the creation of a permanent School Breakfast Program (SBP). The NSLP and SBP provide federal financial assistance and commodities to schools to facilitate serving meals that meet required nutritional standards. USDA's FNS administers the program at the federal level. At the state level, the NSLP and SBP are usually administered by state education agencies, which operate the program through agreements with SFAs.

USDA provides substantial policy guidance and structure for operating the school meal programs. Nonetheless, there is considerable variation across SFAs in the procedures used to

[2]See "NSLP/SBP Access, Participation, Eligibility, and Certification Study: Supporting Statement for Request for OMB Approval of Data Collection," Final Version submitted to Food and Nutrition Service, U.S. Department of Agriculture, Mathematica Policy Research Inc., August 2005, for additional information on the study. That document contains all data collection instruments and forms used in the study.

certify households for meal benefits, issuing benefits, serving meals to students, and counting meals and claiming meal reimbursements. In addition, even within a specific district, the relevant systems may vary from school to school.

The remainder of this section describes the meal programs and procedures SFA and schools use to certify students for meal benefits, issue benefits, count meals, and claim reimbursements.

1. Certification for Meal Benefits

All children enrolled in NSLP/SBP participating schools are eligible to receive reimbursable meals under the program. Children from families with incomes at or below 130 percent of the federal poverty level are eligible for free meals. Those with incomes between 130 and 185 percent of the poverty level are eligible for reduced-price meals, for which students can be charged no more than 40 cents for lunch and 30 cents for breakfast. SFAs establish the price for meals served to children from families with incomes more than 185 percent of poverty, although there is still some degree of federal subsidy paid for these meals.

Students must be certified in order to receive free and reduced-price meals. They become certified for free or reduced-price meals in one of two ways:

1. ***Certification Based on Submitted Applications.*** Most students who are approved to receive free or reduced-price meals are approved each school year on the basis of self-reported information on an application that their household submits to the school or school district. Households must self-report (1) information on household size and monthly income, or (2) for "categorical eligibility," a case number indicating participation in the Food Stamp Program (FSP), Temporary Assistance for Needy Families (TANF), or Food Distribution Program on Indian Reservations (FDPIR).
2. ***Direct Certification.*** Students from households that receive FSP or TANF benefits or FDPIR commodities before a school year starts can be directly certified for free meals through processes by which state FSP/TANF/FDPIR agencies and state child nutrition agencies and school districts share eligibility information. These children are considered categorically eligible and can be directly certified to receive free meal benefits without the household having to submit an application. In addition to direct certification, students may be certified eligible for free meals without submitting an

application for other reasons, such as if they are homeless, children of migrant workers, runaways, and this year students displaced by hurricanes such as Katrina.

2. Verification

Verification is the process that SFAs/LEAs follow to assess the accuracy of their certification decisions. At the beginning of each school year, SFAs must select and verify a sample of the applications approved for meal benefits, unless the State Education/Nutrition Agency assumes responsibility for verification or the SFA is otherwise exempt from the verification requirement.[3] (Students who are approved for free meals on the basis of direct certification or membership in certain other categories--runaway, homeless, or migrant--are not subject to verification.) SFAs must select their verification samples based on the number of applications on file as of October 1. SFAs must report the findings to their state agency by November 15. State agencies are required to submit the Verification Summary Report Data for their SFAs in electronic file format to FNS by April 15. When selecting their verification sample, SFAs may either: (1) select a random sample of approved applications, (2) select a focused or error prone sample (those applications most likely to be in error), (3) a combination of random and focused/error prone sample, or (4) verify all approved applications.[4] SFAs send households selected for verification a letter requesting them to document the information on their application. If the household is categorically eligible, it must provide a TANF or food stamp case number. If the household was approved on the basis of income, it must provide pay stubs

[3]For example, verification is not required when SFAs administer the program only in Residential Child Care Institutions.

[4]Beginning in SY 2005 – 2006, SFAs must determine their response rate for verification in the preceding year in order to determine their current year verification sample size and method and whether they are required to select error-prone applications for verification. SFAs which are required to select error-prone applications, or which qualify for the alternative sample size and choose to select error-prone applications, must select additional applications at random if they do not have enough error-prone applications to meet their minimum sample size.

and other documentation. If a household does not respond, its certification status is automatically changed to "paid" status. The status of approved applicants who respond to the verification request may also change depending on the outcome of verification (e.g., a household certified for free meals may be changed to reduced-price or paid; a household certified for reduced-price meals may be changed to "free" or "paid").

3. Meal Reimbursements

USDA subsidizes, in the form of cash reimbursements and commodities, all school lunches and breakfasts served to children. The subsidies are largest for meals served to children from families with relatively low incomes. For SY 2005-06, the usual reimbursement rates in the coterminous United States are $2.32 for each free lunch, $1.92 for each reduced-price lunch, and $0.22 for each paid lunch (see Table I.1).[5] For the SBP, the reimbursement rates for breakfasts are $1.27, $0.97, and $0.23, respectively.[6]

To receive reimbursements, SFAs or schools distribute free and reduced-price meal applications and determine eligibility for participating children, take daily meal counts by type (free, reduced-price, and paid) at the point of sale, report these counts for claiming meal reimbursement, and receive federal reimbursement based on these counts. School districts may also claim free, reduced-price, and paid reimbursement under one of three special provisions (Provisions 1, 2, and 3). These provisions do not involve annual eligibility determinations for individual students or, under two of the three provisions, daily meal counts by eligibility

[5]These reimbursement rates apply to school districts that claim less than 60 percent of total lunches at the free and reduced-price rate. School districts that claim 60 percent or more of total lunches at the free and reduced-price rate receive an extra two cents for each lunch claimed.

[6]Schools that claim more than 40 percent of their lunches at the free and reduced-price rate may be entitled to extra "severe-need" reimbursement of up to 24 cents per meal for all free and reduced-price breakfasts claimed.

TABLE I.1

MEAL REIMBURSEMENT RATES: SY 2005-2006[a]
(in Dollars)

	NSLP		SBP	
Meal Category	Less than 60 Percent[b]	60 Percent or More[b]	Non-Severe Needs	Severe Needs
Free	2.32	2.34	1.27	1.51
Reduced-Price	1.92	1.94	0.97	1.21
Paid	0.22	0.24	0.23	0.23

[a]For coterminous United States.

[b]Percentage of meals claimed free and reduced-price.

category at the point of service, after a base year. Congress authorized these provisions to reduce paperwork at the local level and simplify meal counting and claiming procedures.

The Provisions are as follows:

- ***Provision 1.*** Schools with 80 percent or more of enrollment eligible for free or reduced-price meals can use approved free applications for two consecutive years. In the second year, households which do not have an approved free application on file from the prior school year, including those with children receiving reduced-price meals, must be given a meal application and allowed to apply for meal benefits. There is no requirement to serve meals at no charge to all students. Schools must continue to record the number of free, reduced-price, and paid meals served daily as the basis for calculating reimbursement claims.

- ***Provision 2.*** Schools operate in a "base year" in which they serve all meals at no charge but use normal program procedures to take applications and count meals by eligibility category. The schools then may continue to serve all meals at no charge and take only a daily aggregate count of meals served for up to four additional years, during which they claim reimbursement based on the percentage of free, reduced-price, and paid meals served during the base year. The schools may be able to extend the use of the base-year claiming percentages for additional four-year periods if they can establish that economic conditions in the school's attendance area have not changed significantly from economic conditions in the base year. Otherwise, if they wish to continue operating under Provision 2, they must conduct a new full or streamlined base year.

- ***Provision 3.*** Schools serve all meals free for up to four years, and reimbursement is based on the total dollar reimbursement, which a school received during a base year in which applications were taken and meals were counted and claimed by category. It is not necessary that all meals be served free during a Provision 3 base year. The reimbursement is adjusted each year for inflation and enrollment, and the provision may be renewed for successive four-year periods if a district can establish that economic conditions in the school's attendance area have not changed significantly from economic conditions in the base year.

Provision 1 reduces application burdens by allowing free eligibility to be certified for a two-year period. Few schools use Provision 1.[7] Provisions 2 and 3 reduce application burden and simplify meal counting and claiming procedures. Provision 2 allows schools to establish claiming percentages in a single (base year) and then use those percentages for a four-year period. Provision 3 allows schools to simply receive the same level of federal cash and commodity assistance each year, for a four-year period, with some adjustments. Approximately five percent of public schools nationwide participate in Provision 2 or 3.[8] Provision 2/3 is more prevalent when looked at in terms of certified students: approximately 10 percent of certified free and reduced-price students nationwide are in schools that operate under Provision 2/3.

Definition of Reimbursable Meals. In order to receive reimbursement, a school meal must meet USDA's minimum nutritional requirements and be served to eligible students. Second meals served to students, meals served to adults or other ineligible persons (preschool children or visitors), meals not meeting minimum nutrition requirements, and a la carte food items are not eligible for reimbursement and should not be claimed for reimbursement.[9] To summarize: the

[7]Thirty-three schools nationwide (less than 0.03 percent) used Provision 1 in SY 2003-2004 (FNS Voluntary Survey on Schools Receiving Special Assistance, May 2004).

[8]The *Digest of Education* reports that there are 93,000 public schools nationwide. Ninety-two percent (86,000) of public schools have the NSLP. Based on data provided by FNS, approximately three percent of public schools use Provision 2/3 in both the NSLP and SBP, and two percent of schools use Provision 2/3 in the SBP.

[9]Food items taken that are not part of the meal or are in addition to the meal (e.g., in traditional method, taking more than 5 menu items) are considered ***a la carte*** and will be charged separately. These are food items available

reimbursable school lunch (breakfast) is a meal that meets USDA requirements for being a nutritious lunch (breakfast) and is served to an eligible student. It is the lunch (breakfast) received at school that consists of a set of food items from the menu that is either free, or if paid for, is purchased for a single price (priced as a unit).

There are different ways meals may meet nutritional requirements: traditional food-based menu planning approach and enhanced food based menu planning; and nutrient-based menu planning (such as Nu-menus). The menu planning method implemented, combined with whether the school uses the "offer-versus-serve" option, determines the number of food components and menu items there are, and the minimum number of menu items that may be chosen by students to constitute a reimbursable meal (see Exhibit I.1).

4. Issuing Benefits, Counting Meals, and Claiming Reimbursement

To obtain meal reimbursements, school personnel must accurately count, record, and claim the number of program meals actually served to students by category—free, reduced-price, and paid (exceptions are for schools using Provision 2 or 3 in a non-base year—see discussion below). To do this, SFAs must put in place a system at each school that issues benefits, records meal counts at the point of service, and reports them to the SFA; and the SFA must process reports of meal counts from the schools, consolidate them, and submit claims for reimbursement to their state agency. The specific procedures chosen by a school food authority may vary across districts and across schools within a single district. The kinds of forms that are developed and used, the personnel who are responsible for counting meals and consolidating the counts and

(continued)
for cash sale independent of the reimbursable meal. This includes incomplete meals, adult meals, milk, and snack items.

EXHIBIT I.1

DEFINITION OF REIMBURSABLE MEALS UNDER ALTERNATE MENU PLANNING APPROACHES

Food-Based Menu Planning			Nutrient-Based Menu Planning
	Traditional	Enhanced	NSMP/ANSMP
Planning Method	Meal Pattern	Meal Pattern	Nutrient Analysis; Must contain minimum required menu items
Serving Sizes	Minimum quantities as established for meal pattern	Minimum quantities as established for meal pattern	As established by the menu planners to meet the nutrient standards
Reimbursable Lunch	A minimum of five food items in specific quantities must be offered from the four components: ■ 1 M/MA ■ 2 F/V ■ 1 G/B ■ 1 fluid milk	Same as Traditional (Except increased quantities of F/V and G/B)	The number of menu items for the day in the planned quantities to meet the week's target levels must be offered (with a minimum of three menu items): ■ 1 Entrée ■ 1 Side dish ■ 1 Fluid milk
Offer vs. Serve: Lunch	High School: ■ Required ■ Must select 3 of 5 items Other Grades: ■ Optional ■ Select 3, 4, or 5 items	Same as Traditional	High School: ■ Required ■ If 3 items offered, must take 2 and one must be the entrée ■ If 4 or more items offered, can decline no more than 2 and must take the entrée Other Grades: ■ Optional ■ If 3 items offered, must take 2 and one must be the entrée ■ If 4 or more items offered, can decline no more than 2 and must take the entrée

EXHIBIT I.1 (*continued*)

Food-Based Menu Planning			Nutrient-Based Menu Planning
	Traditional	Enhanced	NSMP/ANSMP
Reimbursable Breakfast	A minimum of four food items in specific quantities must be offered from the four components: ■ 1 fluid milk ■ 1 F/V ■ 2 M/MA or 2 G/B or 1 M/MA and 1 G/B	Same as Traditional	The number of menu items for the day in the planned quantities to meet the week's target levels must be offered (with a minimum of three menu items): ■ 1 Entrée ■ 1 Side dish ■ 1 Fluid milk
Offer vs. Serve: Breakfast	■ Optional for all grades ■ Must select at least three food items from the four items offered	Same as Traditional	■ Optional for all grades ■ Must take entrée ■ May decline a maximum of one menu item, regardless of number of items offered

Source: U.S. Department of Agriculture, Food and Nutrition Service.

Note: This exhibit does not include the Alternate Planning Approach (any reasonable approach).

submitting the claims, as well as how the information is collected and presented, also vary by SFA.

Benefit Issuance. Schools use a benefit issuance document (sometimes referred to as a list or roster) at the point of service to determine the price of a meal to a student (free, reduced-price or full price) and therefore the category a meal served to a student will be claimed for reimbursement. This documentation is based on information from the office that conducts the certifications (usually the SFA or Local Education Authority).

Schools vary in the type of benefit issuance documentation used and its location. These types of documentation include:

- ***Hard-Copy Rosters or Lists.*** The school uses a hard-copy roster or master list of students in determining student reimbursement status—maintained either at the cash register or at a location where meal tickets or tokens are being distributed (such as classrooms), or a combination of both.
- ***Point-of-Sale Computerized Files.*** Increasingly more common, the list of students' reimbursement statuses is essentially an electronic file embedded in point-of-sale equipment.

Payment Collection Procedures. Schools establish procedures for obtaining payment from students for meals they receive and for collecting the medium of exchange (that is, cash or any kind of ticket, token, ID, number, name, or electronic swipe card) which the students use to obtain a program meal. It is not possible in this training manual to describe every system. Each system usually has a number of variations and modifications. However, some common systems include:

- **Roster systems including coded/uncoded rosters, number lists, and class lists.** In roster systems, a list of eligible students at the point of service is used to record reimbursable meals served to students. These rosters may be manually prepared lists or computer-generated printouts. Codes appear on the list next to each student's name that identify the student's meal status—free, reduced-price, or paid (full-price). These codes are selected such that a student's status cannot easily be identified to

others outside the school's food service personnel (such as other students) but easily identified by the school staff recording and counting meals. Codes include four-or five-digit numbers in a series, student ID numbers, number of digits, etc. Rosters are set up such that for each student, the roster lists the student's name, the student's current meal eligibility category in code, and a place to record whether the student was served a reimbursable meal.

- **Coded ticket/token systems with various ticket procedures.** This system includes any kind of ticket or token which is presented by the student to the cashier to obtain a meal. Tickets are coded to reflect eligibility categories of the students so the counts by category can easily be made. Codes are selected such that a student's status cannot easily identified to others outside the school's food service but easily identified by the school staff recording and counting meals. Codes include four-or five-digit numbers in a series, student ID number, and number of digits.

- **Automated tab tickets.** In this system, tickets are used in an automated system. Tickets are coded and sectioned (tabbed) so that when students present them at the point of service, the cashier sticks the tabbed tickets into a programmed register or automated terminal and a section of the ticket is cut off by the machine. As the section is cut off, the machine reads the number on the tab and counts each meal served automatically by meal category. At the end of the meal service, the machine counts the meals served by category.

- **Bar-coded and magnetic strip cards.** Bar-code identification systems are similar to the scanner systems used in grocery stores where a bar code, placed on the label of the merchandise, is passed over an electronic scanner that reads it and determines what it is and records the price to be paid. Here, the bar code or strip card, identifies the student on a database, that contains the student's name, meal eligibility category, and account balance.

- **Coded ID cards.** Students are issued ID cards that are coded to indicate meal eligibility status. These cards are presented to the cashier or other person recording the number of meals served at the point of service. ID cards may be used as part of a manual or automated system. Some schools incorporate the school meal coding information onto the a general school ID that all students receive at the beginning of the school year.

- **Verbal identifiers.** Students are given some form of verbal identifying code (i.e., name, number, etc.) which they tell the cashier at the point of service as meals are received. Each student's eligibility category is coded into the student's number or based on the name that was given. The cashier then marks either a coded roster or number sheet or keys the code into a computer.

Obtaining Meal Reimbursements. Each day, schools must count the numbers of reimbursable free, reduced-price, and paid (full-price) meals served to eligible students, and then report them daily to the SFA. School reports may be referred to as "daily record of operations,"

"daily/weekly food service reports," "daily report of participation," and so on. Regardless of the name, the report must adopt a format that shows a detailed record of the day's meal service so that the required information can be transferred to the SFA. Schools perform daily and monthly edit checks based on numbers of approved free and reduced-price students, average attendance, and number of serving days during the reporting period. The SFA then consolidates the meal counts across schools in its district and submits meal counts (usually monthly) to their state agency to obtain reimbursement from USDA.[10] Increasingly, SFAs are submitting claims for reimbursement to their state agency electronically (on-line) each month. The state agency is responsible for paying the Federal reimbursement for the reimbursable meals claimed as served by category during the claiming period.

Meal Counting and Claiming Procedures at Provision 2 or 3 Schools. Procedures for counting and claiming meals at Provision 2 or 3 schools in their base year are exactly the same as those in non-Provision 2 or 3 schools. Provision 2 or 3 base year schools must count the number of reimbursable meals served by category (free, reduced-price, and paid/full-price) each day separately for each eating occasion (breakfast and lunch), report them to the SFA, and the SFA reports meal counts to the state agency to obtain reimbursement.

Procedures are different at Provision 2 and 3 schools in non-base years. Provision 2 schools in a non-base year count the total number of reimbursable meals served each day, separately for breakfast and lunch, then apply their base-year claiming percentages to the total, to obtain the number of meals that can be claimed free, reduced-price, and paid. These schools have the option of either (1) applying a monthly claiming percentage (e.g., use the October base year claiming percentage when claiming reimbursements in October of a non-base year), or (2) using

[10]Some states may still require SFAs to submit meal counts by school as opposed to aggregating counts across the district.

an annual claiming percentage (that is, use the annual claiming percentage for the base year for each day's total or monthly total).

Provision 3 schools in a non-base year base their monthly claims on the dollar amount claimed in their base year, adjusting the dollar amount for changes in enrollment and inflation. Similar to Provision 2 non-base year schools, Provision 3 non-base year schools count the total reimbursable meals served at breakfast and lunch, separately, and then report these daily meal counts to their SFA. There does not appear to be a consistent approach whether the meal counts then get broken down by meal type (free, reduced-price, or paid) based on the base year claiming percentages. Some schools and SFAs provide counts by meal category, whereas others simply provide total counts and the SFA performs the calculations to distribute them by meal claiming category—free, reduced-price, or paid.

B. CONCEPTUAL FRAMEWORK FOR MEASURING ERRONEOUS PAYMENTS

The study distinguishes two major sources of erroneous payments: (1) those that result from misclassification of school meal eligibility status of participating students, and (2) those that occur after eligibility is determined up through when school districts submit reimbursement claims. The study will obtain separate estimates of erroneous payments from these two sources; they will not be combined.[11] We will derive separate estimates for the NSLP and SBP.

1. Erroneous Payments Due to Eligibility Misclassification Errors

The level of reimbursement that a school is entitled to receive for an NSLP or SBP meal depends on the eligibility status of the child who receives the meal. A misclassification error

[11]FNS believes that determining how the interaction between misclassification and improper counting and claiming may affect the overall level of erroneous payments in the NSLP and SBP presents difficult technical and methodological issues. Therefore, for this study, FNS is requesting separate national estimates for NSLP and SBP of the erroneous payments associated with improper meal counting and claiming by schools and school districts.

will result in an overpayment or underpayment when a student receives a reimbursable NSLP or SBP meal that is claimed for reimbursement at a rate that does not correctly reflect the student's income eligibility status. For example, if a student's documented certification status is free, but that student's actual eligibility is reduced-price, then FNS is overpaying the district each time the student consumes an NSLP or SBP meal during the year. Alternatively, if a student's certification status on file is reduced-price, but that student's actual eligibility should be free, then FNS is underpaying the district each time the student consumes an NSLP or SBP meal.

Misclassification of eligibility status occurs for two reasons: (1) administrative errors that school or school district staff make during the approval or verification of applications, the processing of direct certification information, or the recording or updating of student status; and (2) misreporting by households of their total income, household size, or qualifying program participation (that is, participating in FSP, TANF, or FDPIR) on the application form or at the time of verification.

For the study, FNS wishes to focus exclusively on incorrect payments made for meals consumed by students certified to receive free and reduced-price meals. Erroneous payments due to misclassified eligibility equal the sum of the absolute value of overpayments and underpayments for reimbursable meals served to students incorrectly certified as free or reduced-price eligible. There are four sources of these erroneous payments: (1) certified free—should be reduced-price, (2) certified free—should be paid, (3) certified reduced price—should be free, and (4) certified reduced price—should be paid (see Table I.2).

Under USDA's definition, total erroneous payments then are the sum of all overpayments and underpayments for the school year across these four types of errors. It is the gross total, not the net total, of over- and underpayments. For example, if overpayments equal $15 million and

TABLE I.2

ERRONEOUS PAYMENTS IN THE NSLP

Approved Certification Status on File	Actual Eligibility	Student Received Reimbursable Meal	Type of Error Payment	Per-Meal Error Amount (in Dollars)[a]
Erroneous Payments Included in Study				
Free	Reduced-Price	Yes	Overpayment	0.40
Free	Paid	Yes	Overpayment	2.10
Reduced-Price	Free	Yes	Underpayment	0.40
Reduced-Price	Paid	Yes	Overpayment	1.70
Erroneous Payments Not Included in Study				
Paid	Free	Yes	Underpayment	2.10
Paid	Reduced-Price	Yes	Underpayment	1.70

[a]Error amounts shown in table are based on regular NSLP, SY 2005-2006.

underpayments equal $5 million in a given year, total erroneous payments equal $20 million, not $10 million.

In assigning the dollar value of erroneous payments, FNS is interested in only the portion of payments made as part of the free or reduced-price subsidy. All NSLP and SBP reimbursable meals served to enrolled students at participating schools are eligible for reimbursement at least at the "paid eligible" rate (that is, the rate that applies for meals served to students who are not certified as eligible for free or reduced-price meals). Meals served to students certified for free or reduced-price meals receive additional reimbursement. The amount of the additional reimbursement is determined differently for the NSLP and the SBP:

- In the NSLP, the "paid" rate is established in Section 4 of the National School Lunch Act (NSLA). Section 11 of the NSLA ("special assistance payment") establishes reimbursement above the Section 4 paid rate for meals served to students certified eligible for free and reduced-price meals. The Section 11 payment is in addition to the Section 4 payment for those meals served to children certified eligible for free or reduced-price meals. For the NSLP, FNS is interested in determining the erroneous payments under Section 11 of the NSLP.

- In the SBP, payment rates for paid, reduced-price, and free meals are established in Section 4 of the Child Nutrition Act of 1966. For the SBP, FNS is interested in determining the erroneous payments related to the difference between the reimbursement rate for paid meals and the reimbursement rates for reduced-price and free meals (including the additional payments for "severe-need" free and reduced-price meals, as appropriate).

Note that estimates of payments made to erroneously denied "paid" participating students (see last two rows of Table I.2) will not be included in the study's main estimate of erroneous payments. These erroneous payments are excluded because FNS believes that it is not possible to ascertain what these students' true participation in the NSLP or SBP would have been had they been accurately certified to receive free or reduced-price meals.[12] Omitting these sources of error, however, will yield a downward-biased estimate of underpayments, as well as of gross erroneous payments.[13] We plan to produce estimates of erroneous payments that include erroneously denied "paid" participating students using different assumptions about these students' participation.

2. Erroneous Payments Due to Counting and Claiming Errors

The other source of error that the study will consider (denoted "counting and claiming error") occurs at various points in school and district operations after eligibility is determined. First, information on children's eligibility status, which usually is collected through a school or district office, must be transmitted to cafeteria cashiers or entered into cash register equipment (if the school has the relevant automated point-of-sale equipment). Errors can occur if this

[12]These errors, however, will be used for determining case error rate (that is, for computing what percentage of all applications—approved and denied—are erroneously certified or denied).

[13]While the project specifications do not currently involve obtaining separate estimates of the amount of underpayment that occurs for students who paid for lunches after being incorrectly denied free or reduced-price benefits, inclusion of this component in the overall erroneous payment estimate will be determined based on future discussions with the Office of Management and Budget (see Amendment #1 to the RFP, dated May 13, 2004).

information is incomplete or out of date. Second, as children take meals through the school cafeteria lines, there must be a way to determine whether the meal is a reimbursable meal, and, if so, whether the child taking the meal is eligible for a free, reduced-price, or paid meal. Errors may arise in both of these assessments. Third, cashiers' totals must be tallied and recorded (either manually or by computer) at the end of the day to obtain total school meals sold in each meal price category. Counts then must be forwarded to the district level at some set interval (such as weekly or monthly), where claim forms are prepared. Errors may arise when performing these counting, consolidation, and claiming functions. There are monetary costs associated with each of these types of error. The sum across these three types of errors equals total erroneous payments due to "counting and claiming" errors.

II. OVERVIEW OF THE STUDY DESIGN AND KEY DESIGN ISSUES

This chapter presents an overview of the study design for measuring erroneous payments in both the NSLP and SBP. Section A describes the study's objectives and technical approach. Section B identifies key design issues and MPR's approaches for addressing them.

A. OVERVIEW OF THE STUDY DESIGN

1. Study Objectives

USDA seeks to identify and reduce erroneous payments in the NSLP and SBP. This study will provide national estimates for overpayments, underpayments, and overall erroneous payments made under the NSLP and SBP based on on-site data collection in SY 2005-2006. It will provide estimation models for FNS staff to use to annually update erroneous payment estimates for the NSLP and SBP using available extant data. Finally, the study will also address NSLP and SBP participation and access issues related to administrative procedures designed to reduce erroneous payments.

The following list highlights some specific research questions pertinent to meeting each objective:

- ***Produce National Estimates of Erroneous Payments Due to Certification Errors and of Meal Counting and Claiming Errors.*** What is the extent of overpayments, underpayments, and overall erroneous payments made under the NSLP and SBP as a result of the misclassification of the school meal eligibility status of the students who participate in these programs? What are erroneous payments in Provision 2/3 schools and how do they compare with erroneous payments in non-Provision 2/3 schools? What are the sources of erroneous payments—what fraction is due to administrative error and what fraction is due to misreporting income and/or household size at the time of application/reapplication and at verification? What proportion of households experience changes in incomes, and what proportion of households would be certified toward the end of the school year based on income data collected at that time? What is the payment error rate and amount associated with meal counting and claiming activities for the NSLP and SBP?

- ***Develop, Test, and Validate Estimation Models of Annual Erroneous Payments.*** What modeling strategy will maximize accuracy in predicting errors? How do the overpayment, underpayment, and overall erroneous payment estimates for the NSLP and SBP that were generated by the estimation models compare with the estimates based on the on-site data collected in SY 2005-2006? What additional data could help improve the estimates generated by the estimation models? How do changes in the verification system (such as changes in verification requirements, shifts in the proportion of applications selected for random and focused sampling) affect the erroneous payment estimates?

- ***Assess NSLP and SBP Access and Participation.*** What are the characteristics of students approved for free meals, students approved for reduced-price meals, and denied applicants? What are the major reasons denied applicants do not reapply? Why do denied applicant households not re-apply for free or reduced-price meals if changes in income, household size, or program participation make them eligible to receive these benefits? What would it take to make households consider reapplying for meal benefits? How many families become eligible after the start of the school year (or move from reduced-price to free eligibility), and what proportion apply for (increased) meal benefits? Why do students from households certified for free or reduced-price meals not participate in the NSLP or SBP or participate more frequently? What would it take to make them participate more? What is the relationship of perceived quality of meals to application and participation in the NSLP and SBP? To what extent do students participate in the Summer Food Service Program (SFSP)? Why do they not participate in the SFSP?

2. Technical Approach

Here, we provide a systematic summary of the proposed technical approach for addressing the study objectives, thus developing a context within which to discuss the details of specific components in subsequent chapters. Table II.1 summarizes the overall research design, explicitly linking the proposed research plans to the objectives. Figure II.1 summarizes the study sample design. The discussion that follows highlights key aspects of the design.

a. Objective 1: Generate National Estimates of Erroneous Payments

We will produce, separately, national estimates of overpayment, underpayment, and overall erroneous payments made under the NSLP and SBP in SY 2005-2006 as a result of the

TABLE II.1

OVERVIEW OF STUDY DESIGN

Research Questions/Key Outcomes	Samples[a]	Data Collection	Analysis Methods
Objective 1: Generate National Estimates of Erroneous Payments and Meal Counting/Claiming Errors			
(1) Estimate Erroneous Payment Errors -- Amount of overpayments -- Amount of underpayments -- Sum of absolute value of over- and underpayments	Nationally representative cross-sectional sample of free and reduced-priced students/households -- 2,880 students/households	On-site data collection in SY 2005-2006 from school districts and households -- Household survey -- Record abstraction	Descriptive tabular analysis Separate estimates for NSLP and SBP 90% confidence interval of plus or minus 2.5% around the estimate of the percentage of erroneous payments
(2) Estimate Erroneous Payments for Direct Certification Districts	Nationally representative cross-sectional sample of free/reduced-price households attending direct certification districts (n = 432)	On-site data collection in SY 2005-2006 from school districts and households -- Household survey -- Record abstraction	Descriptive tabular analysis Separate estimates for NSLP and SBP
(3) Decompose Erroneous Payments by Source of Error -- Administrative error at application or verification -- Household misreports information at application	Nationally representative cross-sectional sample of free and reduced-price students/households -- 2,880 students/households	Data collection in SY 2005-2006 from school districts and households -- Household survey -- Record abstraction	Descriptive tabular analysis Estimate the source of error based on the full cross-sectional sample Separate estimates for NSLP and SBP
(4) Estimate the Proportion of Certified Households Experiencing Changes in Circumstances Over the School Year	Nationally representative sample of free and reduced-price students/households -- Panel sample (n = 800 students/households)	Data collection in SY 2005-2006 from school districts and households -- Household survey -- Record abstraction	Descriptive tabular analysis Separate estimates for NSLP and SBP
(5) Assess Verification Accuracy -- Certification error rate detected by SFA's current verification activities	Nationally representative sample of 80 SFAs	Data collection in SY 2005-2006 from school districts	Descriptive tabular analysis
(6) Estimate Meal Counting and Claiming Errors -- Error rates and dollar amounts -- Decomposition by source of error	Nationally representative sample of 80 school districts and 264 schools	Data collection in SY 2005-2006 from school districts and schools -- Review benefit issuance list -- Observation at point of sale -- Review of meal count records -- Review of processes	Descriptive tabular analysis Separate estimates for NSLP and SBP

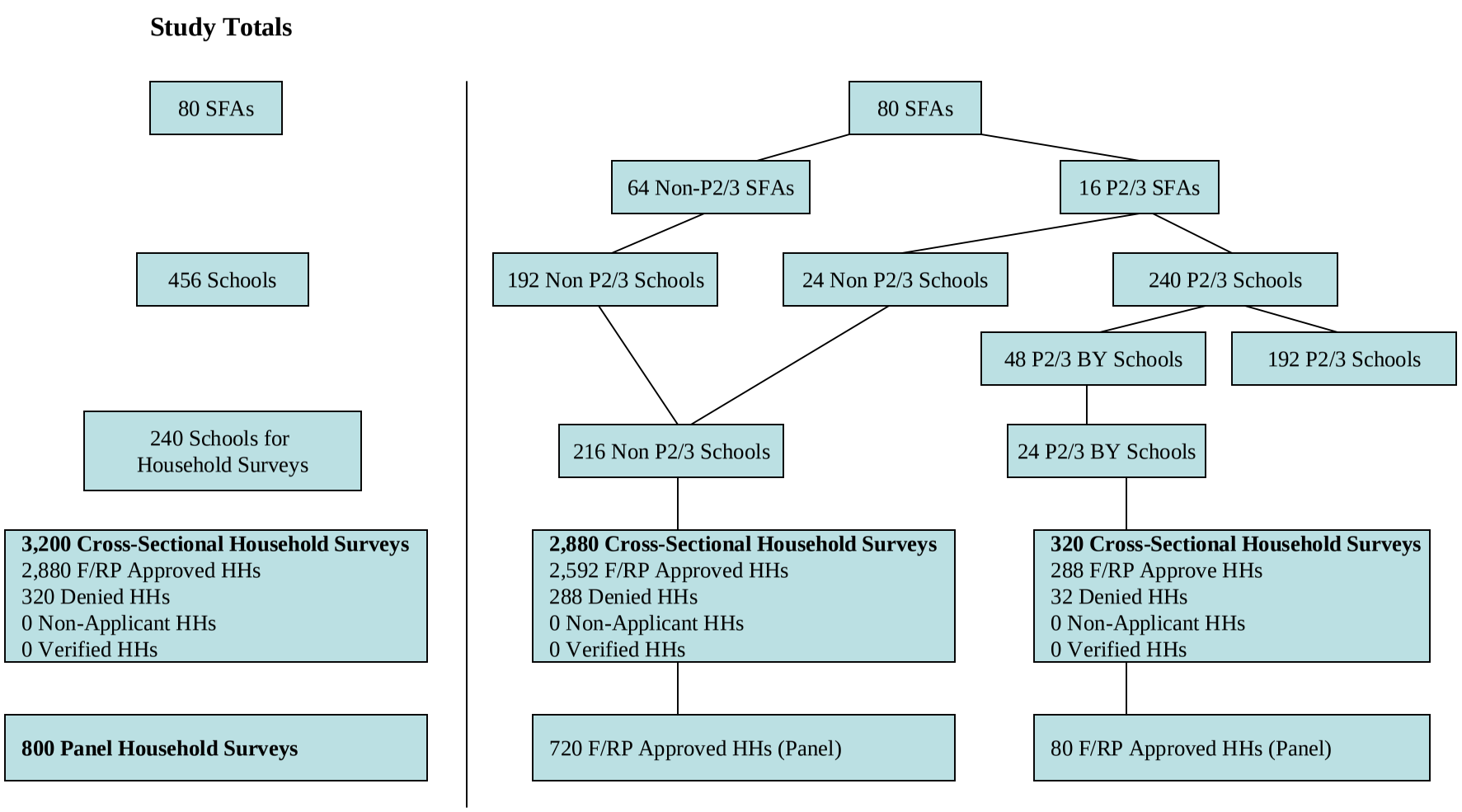
TABLE II.1 (*continued*)

Objective 2: Develop Estimation Models for Updating Annual Estimates of Erroneous Payments Based on Extant Data			
Annual Estimates of Erroneous Payments -- Amount of overpayments -- Amount of underpayments -- Gross total (sum of over- and underpayments) -- Predict changes in erroneous payments when verification requirements and other parameters change	Nationally representative sample of free and reduced-price students/households -- Separate cross-sections monthly covering entire school year (n = 2,880 students/households) -- District-level data on all districts in U.S.	Data collected from school districts and households in SY 2005-2006 Extant data on districts: -- Common Core of Data (CCD) -- Census data -- Administrative data from FNS agencies (e.g. Form FNS-742)	Regression modeling and estimation Separate estimates for NSLP and SBP
Objective 3: Assess Program Access and Related Issues			
(1) Determine the Characteristics of Households That Apply	Nationally representative samples of: -- Free/reduced-price approved students/ households (n = 2,880) -- Denied applicants (n = 320)	Data collected from households in SY 2005-2006 Household survey	Descriptive tabular analysis Multivariate analysis
(2) Determine Reasons Denied Applicants (Denied due to Administrative Error) Do Not Reapply	Nationally representative sample of denied applicants (n = 320) *Note*: Sample of denied applicants denied due to administrative error will be smaller.	Data collected from school districts and households in SY 2005-2006 -- Household survey -- Record abstraction	Descriptive tabular analysis Multivariate analysis
(3) Determine the Proportion of Households That Qualify for Increased Meal Benefits During the School Year	Nationally representative samples of: -- Free/reduced-price approved students/ households (n = 800, panel sample) -- Denied applicants (n = 320)	Data collected from school districts and households in SY 2005-2006 -- Household survey -- Record abstraction	Descriptive tabular analysis Multivariate analysis
(4) Identify the Reasons for NSLP/SBP Nonparticipation	Nationally representative samples of: -- Free/reduced-price approved students/ households (n = 2,880) -- Denied applicants (n = 320)	Data collected from school districts and households in SY 2005-2006 -- Household survey	Descriptive tabular analysis Multivariate analysis
(5) Determine Relationship of Perceived Meal Quality to Participation	Nationally representative samples of: -- Free/reduced-price approved students/ households (n = 2,880) -- Denied applicants (n = 320)	Data collected from school districts and households in SY 2005-2006 -- Household survey	Descriptive tabular analysis Multivariate analysis
(6) Assess SFSP Participation and Reasons for Nonparticipation	Nationally representative samples of free/reduced-price approved students/households and denied applicants (n = 3,200)	Data collected from school districts and households in SY 2005-2006 -- Household survey	Descriptive tabular analysis Multivariate analysis

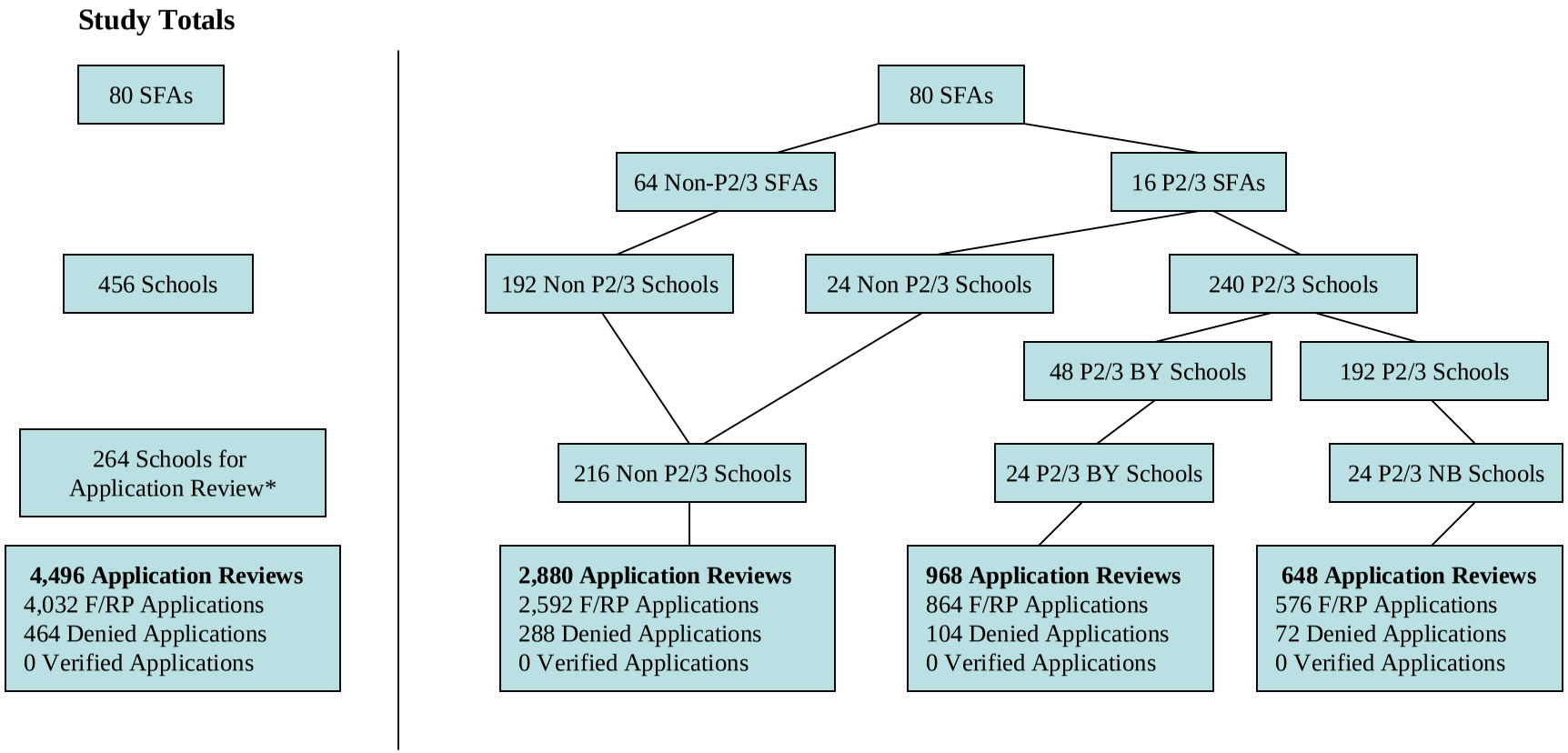
[a]Number of completed interviews.

FIGURE II.1

SAMPLE DESIGN FOR NSLP/SBP
ACCESS, PARTICIPATION, ELIGIBILITY AND CERTIFICATION STUDY
HOUSEHOLD SURVEYS



SAMPLE DESIGN FOR NSLP/SBP
ACCESS, PARTICIPATION, ELIGIBILITY AND CERTIFICATION STUDY
APPLICATION REVIEWS



*Note all schools selected for application reviews would also include data collection for counting and claiming errors

misclassification of school meal eligibility status of students who participate in these programs, and we will decompose erroneous payments into their component sources (Table II.1).

Our approach for estimating erroneous payments and addressing related research issues takes advantage of a mixed cross-sectional and longitudinal sampling design of free and reduced-price students/households to address different research questions requiring different analytic approaches. Specifically, we will use household survey data, data abstracted from applications, and other data collected on a cross-sectional sample of free and reduced-price students selected from 240 schools in SY 2005-2006 (n = 2,880 students) to measure erroneous payments each month throughout the full school year, assess the sources of erroneous payments (administrative error versus household misreporting), and generate an annual estimate of erroneous payments. We will use a longitudinal sample with data collected at two points in time for a subsample (n = 800) of the cross-sectional sample to (1) measure changes in households' income over time; and (2) provide a back-up measure of NSLP and SBP participation, to see if participation changes at any time after the application is made and approved. We will administer the household surveys in person to the parents or guardians of free- and reduced-price-approved students. The surveys will collect data on household income, family size, NSLP and SBP participation, perceptions of meal programs, SFSP participation, and reasons for nonparticipation. The free and reduced-price household samples meet the OMB precision requirements (Improper Payments Information Act)—namely, they yield estimates equivalent to a statistical random sample with a precision requiring a sample of sufficient size to yield an estimate with a 90 percent confidence interval of plus or minus 2.5 percent around the estimate of the percentage of erroneous payments, separately for the NSLP and SBP.

Under Objective 1, MPR also will examine erroneous payments in districts using direct certification. Based on a subsample of students in the cross-sectional sample who are attending

schools in districts using direct certification (estimated to be about 432 students/households), we will use data from the household survey and record abstraction to estimate the certification error rate under the direct certification approaches used in the districts.

We also will assess the accuracy with which SFAs perform verification. We will obtain reports from a nationally representative sample of 80 public SFAs regarding the results of the verification process. We will determine the proportion of households selected for verification that fell into the following exhaustive set of outcome categories: (1) approved free, responded or directly verified, no change; (2) approved reduced price, responded, no change; (3) approved free, did not respond; (4) approved reduced price, did not respond; (5) approved free, responded, changed to reduced price; (6) approved reduced price, responded, change to free; (7) approved free, responded, changed to paid; and (8) approved reduced price, responded, change to paid. In addition, we will sample households selected for verification by SFAs and assess errors associated with administrative errors and with households misreporting income or household size at the time of verification.

Finally, we will estimate meal counting and claiming errors—both amounts and sources, based on a sample of 80 SFAs and 264 schools. We will estimate errors at key functional points in the administrative process, including (1) errors in communicating meal price status to the cash register (for example, meal price status change not communicated to point of sale); (2) errors that cashiers make at the point of sale; and (3) aggregation errors (such as in transcribing and totaling data from individual cash registers and errors in districts' claims to state agencies for reimbursement). These errors will be aggregated at the school level, and then at the district level, to produce national estimates of erroneous payments arising from meal claiming and counting errors, separately for the NSLP and SBP. We will examine error counts as a percent of reimbursable meals, and dollar errors as a percent of total dollars of reimbursements.

b. Modeling and Predicting Annual Erroneous Payments

Under Objective 2, we will develop an estimation model that FNS staff can use to update annual estimates of overpayments, underpayments, and overall erroneous payments in the NSLP and SBP (see Table II.1). This model also will be used to estimate how changes in the verification process required of, and used by, districts affect the erroneous payments estimates. For example, the estimation model will be extended to produce estimates of erroneous payments for directly certified students.

Our proposed model begins with a *district-level econometric model of error rates*, estimated from the survey sample. The model then predicts error rates for all participating school districts in the country based on extant data, both for survey and nonsurvey years. The predicted error rates will then be used in conjunction with administrative data on number of meals reimbursed in each district each year to compute total erroneous payments in each district. Estimated erroneous payments will then be summed across all participating districts in the country to compute national estimates of underpayments, overpayments, and overall erroneous payments for both the NSLP and SBP.

The estimation model will draw on data from a wide variety of sources to predict future erroneous payments. In part, it will rely on data collected on erroneous payments from the household survey that MPR will administer during SY 2005-2006 (to estimate the model parameters in the survey year). Another key source of data will be administrative records from FNS, including data from the Form FNS-742 that districts will be required to complete beginning in 2004-2005 and other district-level data collected from State Education Agencies. The model will also use data from a variety of secondary sources, including the Common Core of Data (CCD), the Private School Survey (PSS), the Decennial Census, and the Bureau of Labor Statistics' Local Area Unemployment Statistics (LAUS).

An important phase of the model development will be testing and validating the specification. MPR will examine the specification of the model in a variety of ways to find the set of variables (and specification) that most effectively predicts erroneous payments nationally. We will initially assess the model using traditional methods of assessing model fit, such as examining changes in the adjusted R^2 value as variables are added to the model, dropped from the model, or entered in the model using different specifications. We also will compare different specifications of the model by using the extant data on all districts nationally to predict erroneous payments in the survey year (in the same way we are proposing the predictions to be made in nonsurvey years). We then will compare the models' prediction of total erroneous payments in the survey year to a target erroneous payments estimate based on the survey data to assess the accuracy of alternative model specifications.

c. Assess Program Access and Participation

Under Objective 3, we will examine access to, and participation in, the school meal programs (see Table II.1). Ideally, addressing these issues requires data on the full universe of schoolchildren, not just those who are certified for free or reduced-price meals or are denied applicants. But because of limited resources, we instead focus on a subset of access issues for certified and denied applicant households. In particular, we will draw national cross-sectional samples of students whose applications were denied (both complete and incomplete applications) and combine them with the samples of certified students used to address Objective 1. Data to support the analyses will be based on record abstraction, a household survey, and other administrative records data on sampled students.

Our analyses of program access will begin by describing the characteristics of students and their families by application and eligibility status. To address the research questions about the

application process, we will examine the results of the application process according to administrative records and as reported by parents, separately for certified and denied applicant households. We also will compare certified and denied applicants in their knowledge of the application process. We will identify the reasons denied applicant households report for not reapplying for free or reduced-price meal benefits. We also will determine the prevalence of, and reasons for, incomplete applications, using the application forms. We also will ask denied applicant households what it would take to get them to reapply. In addition to the descriptive analysis, analysts will explore approaches using multivariate methods to model the reapplication decision and other outcomes.

Our analysis of participation issues will use both school-level administrative records data and household survey data. Using administrative records data, we will tabulate the average daily participation rate for free, reduced-price, and paid students in different types of schools. These rates would not be subject to the reporting error that would likely occur in parent reports on their child's participation. We will assess participation as reported by parents, using carefully structured questions. Participation will be measured for the previous day and as the number of days participating in the previous week; separate measures will be constructed for breakfast and lunch. We will identify reasons certified students do not participate or participate more often and what it would take to get them to participate more. We will ask parents for their views and their child's views on the quality of school meals along several dimensions: for children—taste, amount of food, and overall satisfaction; for parents—healthfulness and overall satisfaction. We will use these variables, along with other characteristics data, to analyze how the perceived quality of school meals is related to participation among students whose certification status is free, reduced-price, or denied applicant (paid).

B. KEY DESIGN ISSUES AND APPROACHES FOR ADDRESSING THEM

The study presents some formidable challenges. To provide a basis for describing MPR's strategies for conducting the study, we highlight the most pressing challenges here, then discuss how we plan to address them:

1. Estimating erroneous payments in Provision 2 and 3 schools in nonbase years
2. Measuring the frequency with which sampled students participate in the NSLP and SBP
3. Defining, identifying, and sampling denied applicants
4. Accounting for students transferring into and out of districts and schools
5. Accounting for students who carry over meal program eligibility from the previous school year
6. Accounting for year-round schools
7. Finding variables based on existing data sources that cover all districts offering school meals nationally and that are both easily available annually in a timely fashion and highly predictive of a district's level of erroneous payments

Next, we discuss each of these challenges and our approach for addressing it.

1. Estimating Erroneous Payments in Nonbase-Year Provision 2 and 3 Schools

Provisions 2 and 3 offer participating schools a reduction in certain administrative burdens associated with the distribution of free and reduced-price meal applications and the determination of household eligibility and also eliminate meal counts by type for all but the base year.

For Provision 2 schools in nonbase years, meal claiming percentages depend on student eligibility determinations made in the school's base year, not a nonbase year. Base-year claiming percentages are determined by three factors, all as of the base year: (1) the eligibility status of students, (2) students' meal program participation, and (3) the number of meals claimed in each type of meal reimbursement category. Errors classifying students' eligibility in the base

year can cause the base-year claiming percentages to be incorrect. Since Provision 2 schools use their base-year claiming percentages to determine reimbursements in nonbase years, erroneous payments can occur in nonbase years.[1] Therefore, to fully capture erroneous payments, we need to make sure we include erroneous payments in Provision 2 schools in their nonbase years during SY 2005-2006.[2] For Provision 3 schools in nonbase years, meal reimbursements received depend on reimbursements and, therefore, student eligibility determinations made in the school's base year, not nonbase year. Again, we need to include erroneous payments in Provision 3 nonbase years to accurately assess total erroneous payments during SY 2005-2006.

Overview of the Estimation Problem Posed by Provision 2 and 3 Schools and Our Approach for Addressing It.[3] Following are the key elements of the estimation problem for estimating erroneous payments in Provision 2 and 3 schools in their nonbase years and our approach for addressing it:[4]

- ***Measuring erroneous payments requires three critical data elements on students' circumstances: (1) actual certification status, (2) true eligibility status, and (3) meal program participation during the year.*** Erroneous payments are defined as the difference between the reimbursement amount for the type of meal for which students

[1]A school's base-year claiming percentage could be in error even if the school accurately determined the eligibility of all its students (no misclassification of eligibility). This could occur if the school incorrectly counted meals by reimbursement type. Our approach addresses this and other related issues.

[2]Not all Provision 2 and 3 schools in nonbase years pose an estimation problem. If a sampled school uses Provisions 2 and 3 for breakfast only, then it would still calculate students' eligibility status for lunch, and we would treat it as we do when calculating erroneous payments in non-Provision 2/3 schools and Provision 2/3 schools in their base year, when calculating erroneous payments for the NSLP in a nonbase year.

[3]Provision 1 schools operate like regular (non-Provision) schools. The only difference is that students certified free in a given year do not have to submit a new application until the third year (their application is good for two consecutive years). This means that some of the certified free students in the study sample will be in their second year of eligibility, which was determined during the previous year. For those households, we will need to ask in the household survey about their income and household circumstances for a period approximately one year earlier. This will not be a serious problem for the study, however, since few schools use Provision 1. In the rest of this section, we focus on Provision 2 and 3 schools.

[4]Unless specified otherwise, when we refer to erroneous payments hereafter, we mean erroneous payments due to misclassifying eligibility (not from counting and claiming errors).

are certified and the reimbursement amount for the type of meal for which they are eligible times the number of meals they received during the year. Erroneous payments are calculated across four types of certification errors: (1) when the student is certified free but should be reduced-price (overpayment), (2) certified free but should be paid (overpayment), (3) certified reduced-price but should be free (underpayment), and (4) certified reduced-price but should be paid (overpayment).[5]

- ***This method can be applied in schools that are not using Provision 2/3 or are using Provision 2/3 but are in their base year.*** In both cases, schools take applications, determine eligibility, and count meals by eligibility type using normal program procedures. Actual certification status is known from school records, and "true" eligibility status can be estimated through the collection of data on *current* household income and household size (or categorical eligibility) in a survey administered shortly after certification.

- ***Erroneous payments differ in one key respect for Provision 2/3 schools that are not in their base year: they depend on students' certification errors in the base year, not in the current (nonbase) year.*** The claiming percentages used to obtain reimbursements in nonbase years were determined in the base year. Therefore, the accuracy of the reimbursement in the nonbase year depends solely on households' circumstances at the time of certification in that base year, not on their circumstances in the current nonbase year.

- ***This creates a problem for the measurement of erroneous payments in Provision 2/3 schools in their nonbase years, because it is impossible to reliably measure household income in the base-year month in which certification for establishing claiming rates is conducted.*** For example, suppose the base year in a Provision 2/3 school was SY 2003, and we observe this school in SY 2005. The accuracy of reimbursements made for meals in October 2005 depends on household income at the time of application in the base year, or roughly in August or September 2003. It is not feasible to interview a household in October 2005 and obtain sufficiently accurate data on its income in August or September 2003 to make a reliable estimate of its true certification status at that time. The recall period involved is too long to expect the same accuracy that we can expect to obtain on income in August or September 2005 from an interview conducted in October 2005. Another complication arises because of student turnover. To correctly determine the true claiming percentages in the base year, we would need a sample of students attending in the base year, including those who may have transferred to other schools in the same district or to different districts. Identifying such transfers and interviewing them would be expensive.

- ***To measure erroneous payments of Provision 2/3 schools that are in a nonbase year during SY 2005-2006, we will need to impute a measure of their base-year certification errors. Our approach is to focus on a sample of Provision 2/3 schools in their base year and use them to extrapolate to Provision 2/3 schools not in their***

[5]Erroneous payments (underpayments) attributable to denied applicants who participate as "paid" but who should be either free or reduced-price are not included in the study's definition of erroneous payments.

***base year*.**[6] This approach, described in Chapter V, uses information from a sample of free/reduced-price and denied applicants attending 24 sampled Provision 2/3 schools in their base year during SY 2005-2006. It assumes that the distribution of certification errors that would have occurred in the base year for our sample of nonbase-year Provision 2/3 schools *is the same* as that which we observe in our sample of Provision 2/3 schools currently in their base year. Implementing this approach will require MPR to oversample Provision 2/3 schools in their base year.

This approach yields a measure of erroneous payments in nonbase-year schools that closely matches the conceptual definition of erroneous payments used in other schools in the study. It assumes that base-year schools are similar enough to nonbase-year schools that they can be used to produce an estimate of erroneous payments in nonbase-year schools.

We need to mention two issues with this approach, however. First, many of the nonbase-year schools first started using Provision 2/3 a long time ago, especially if they have received extensions, so they may differ systematically from current base-year schools. In addition, our approach relies on information from a relatively small number of base-year Provision 2/3 schools as the basis for erroneous payments in the larger group of all Provision 2/3 schools. If these schools, selected randomly, happen to be unusual in some way, that will influence the overall estimate. Nevertheless, we believe that the proposed approach represents the best feasible strategy available for estimating error at Provision 2/3 schools not in their base year.

[6]Estimating erroneous payments in Provision 2/3 schools in nonbase years is complicated by the fact that our sample of Provision 2/3 schools will be made up of schools that vary in their meal program status (whether they operate the NSLP or SBP or both programs) and Provision 2/3 status (whether they use Provision 2/3 and, if they do, whether they are in their base year or a nonbase year) during SY 2005-2006. This has implications for the sample of base-year schools we will use when extrapolating erroneous payments for a given Provision 2/3 school in a nonbase year. For example, we will want to impute nonbase year Provision 2/3 errors separately for Provision 2/3 schools with SBP programs that also have Provision 2/3 NSLP programs and Provision 2/3 SBP schools that have non-Provision 2/3 NSLP programs. This is because the socioeconomic characteristics of districts and schools that use the provision for both the NSLP and SBP are likely to be very different from the characteristics of a district and schools with Provision 2/3 in the SBP but not Provision 2/3 in the NSLP. The former group will have very high rates of students certified free and reduced-price. The latter group may not, since it may be simply taking advantage of the fact that most students who use the SBP are poor, whereas both poor and nonpoor students use the NSLP.

2. Measuring Students' NSLP and SBP Participation

Obtaining accurate measures of sampled free and reduced-price students' frequency of NSLP and SBP participation during the entire SY 2005-2006 is critical for deriving a national estimate of annual erroneous payments. This would be relatively straightforward if all schools tracked NSLP and SBP participation of individual students (for example, by using electronic point-of-sale transaction card systems that record data on individual-student NSLP and SBP participation). For districts that compile individual-level participation data and keep them for a reasonable amount of time, these data could be used to measure an individual student's participation during a given month or for the entire school year in which a student attends the school. Unfortunately, many schools do not record student-level NSLP and SBP participation at the individual student level, either electronically or by other means.

Our approach for measuring meal program participation has two parts. For those students in schools that track individual student participation, we plan to use administrative records to measure participation.[7] In schools that do not track NSLP and SBP participation of individual students, we will use survey data of parents' report of student participation.

Two main issues arise due to the limited amount of participation data available at schools that do not track student participation: (1) parents' interview responses concerning their

[7]We anticipate that most schools that track participation do so electronically. But while they track it electronically they may not be able to provide us with the data in a file but hard copy instead. Some schools that track individual-student participation may not do so electronically, but may keep paper records instead. The data from these paper records may in some cases be transferred to an electronic format after being collected at points of sale in the school. For example, the data could be recorded manually at the cash registers but later entered into a school billing system (to bill the accounts of full-price and reduced-price parents). Sometimes the data may be kept only on hard copy. In either case, we plan to ask the schools for these data. Where schools are willing and able to supply them, we will data-enter or reformat these data as necessary, and essentially use them the same way we will use the point-of-sale files.

children's participation at the time of the interview may not always be accurate;[8] and (2) even if the initial interview responses about the current period accurately characterize the students' participation at that time, participation patterns may change during the school year.

To deal with the first issue, MPR's proposed approach is to assess the accuracy of the interview data, based on comparisons with point-of-sale data, *for those students and schools where both types of data are available.* If these comparisons reveal any systematic error in the interview data, we will use regression analysis (again based on the subsample with both kinds of information) to develop appropriate correction factors to apply to the interview data for students attending non-point-of-sale schools.

We will use a similar approach to deal with the second issue: the possibility of changes in participation levels over time. For schools where point-of-sale data for the entire year are available, we will again use regression analysis to examine patterns of participation over time. If we find that participation changes during the school year in systematic ways, we will use the same regression analysis approach to develop appropriate correction factors for students attending non-point-of-sale schools.

Details of the Approach. Key elements of implementing our overall strategy are:

- ***Obtain Administrative Records Data on Student's NSLP and SBP Participation for Sampled Students Attending Point-of-Sale Schools.*** For districts that compile and keep individual-level participation data, we will collect these data for sampled students and use them to measure participation of individual students during a given month and for the entire school year in which a student attends the sampled school.

[8]The Evaluation of the NSLP Application/Verification Pilot Projects Gleason et al. 2004, Appendix A) found that parents reported higher levels of NSLP participation on the household survey than are consistent with the administrative data on participation. However, the rate of overreporting participation was substantially less for parents of children approved for free or reduced-price lunches (1.9 to 2.9 percentage points higher), which are the focus of the erroneous payments analyses, compared to households that were not approved (16.3 to 22.6 percentage points higher).

- ***Obtain Parent's Report of Sampled Student's NSLP and SBP Participation at Time of Certification.*** For all students in the free/reduced-price sample (3,600 students), whether or not they attend schools that track meal program participation of individual students, MPR will obtain a measure of NSLP and SBP participation each day during a target week based on parents' responses to a detailed set of questions in the household survey administered near the time of certification. This measure will then be converted to a monthly measure of NSLP and SBP participation.

- ***Determine Accuracy of Parent Reports of Meal Program Participation for Students Attending Schools That Track Participation of Individual Students.*** For students in schools that track meal program participation of individual students (for example, with electronic point-of-sale data), we will compare our measure of monthly participation based on parent reports with participation data for the month from administrative records (actual participation from administrative records data on participation for the month). If the two measures are reasonably close for students on an individual basis, as is likely for free and reduced-price students, we can use the direct reports of parents about their children's participation to derive our monthly measure for sampled free/reduced-price students attending non-point-of-sale schools.

- ***Develop Model to Statistically "Adjust" Parent Reports of NSLP and SBP Participation for Students Attending Non-Point-of-Sale Schools.*** We may find that measures of participation based on parent reports and those based on administrative data are not the same for students in schools that track participation of individual students. If they are not reasonably close, then we propose to develop a multivariate model to statistically "adjust" parent reports of NSLP and SBP participation for students who do not attend schools that collect data on meal program participation of individual students. This model will include, as predictors, parent-reported NSLP and SBP participation, and student/household characteristics and district/school characteristics that influence school meal program participation, thereby improving the prediction capabilities of our approach.

- ***Assess Whether Participation Varies During the School Year.*** Each month, we will construct a nationally representative cross-sectional sample of free and reduced-price households for a given month from the initial sample selected in September-October 2005 that remain enrolled at their sampled school as of the current month and from the sample of newly certified households—that is, households that were certified sometime after September-October 2005 and up to and including the current month. We will base erroneous payments for a given month on the student's certification/eligibility category and the number of meals the student consumed during the month for the constructed cross-sectional sample. We will repeat the process for each month during the school year, with an annual estimate derived from summing the monthly estimates over the school year. The steps described under the first four bullets above will generate an estimate of monthly participation for the month during, or immediately following, certification. NSLP and SBP participation may differ in months subsequent to certification. We address this possibility in this way: for schools where point-of-sale data for the entire year are available, we will again use regression analysis to examine patterns of participation over time.

- ***Statistically "Adjust" Parent Reports of NSLP and SBP Participation in Months Subsequent to Certification for Students Attending Non-Point-of-Sale Schools.*** If, in the above analysis, NSLP and SBP participation is found to change during the school year in systematic ways, we will use the same regression analysis approach described earlier to develop appropriate correction factors for students attending non-point-of-sale schools.

Audits have uncovered situations in which districts incorrectly claim meals that were not actually consumed (for example, claiming reimbursable meals for certified students who were absent on a particular day). Given this, one could question whether the electronic data are better (more accurate) than parent-reported data. MPR believes that our approach is a reasonable way to approximate erroneous payments due to certification error. We will address this other type of error under our analysis of counting and claiming error. If a school claims a meal for an absent student, this is clearly an erroneous payment (that is, it is a payment received that should not be received). We need to identify and measure this type of error in the meal claiming and counting analysis of erroneous payments. We plan to compare the meal counts against attendance data to estimate the number of claimed meals going to students who did not attend during our target week.

3. Treatment of Denied Applicants

The study will select a national sample of students whose applications were denied. Three issues regarding denied applicants need to be resolved: (a) the analytic definition of denied applicants, (b) the operational definition used for sampling denied applicants, and (c) the treatment of erroneously denied applicants when estimating erroneous payments. In this section, we describe our approach to these issues.

a. Analytic Definitions of Denied Applicants Used in the Study

For several of the analyses of denied applicants under Objective 3 access and participation, FNS wants to focus on only those applications that were "complete"—that is, required information on the application was not missing. Since SFAs can classify an application as incomplete when it really is complete, the sample of denied applicants for these analyses should be made up of denied applicants with complete applications *and* those incomplete applications that were erroneously determined incomplete (that is, were really complete).

In addition, some research questions in the RFP focus on incomplete applications: "How frequent are incomplete applications? What information is most frequently omitted? Why do households submit incomplete applications? And does this differ by income eligibility level or demographic characteristics?" To address these questions, the denied applicants group needs to include incomplete applications.

For the study, MPR will adopt a definition of denied applications most relevant to the particular research question under consideration. For some research questions, we will analyze denied applicants based on the definition of "denied applications that are complete only." For others, we will use a broader definition in which denied applicants include both complete and incomplete applications (sometimes referred to as "not approved" applications).

b. Operational Definition Used for Sampling Denied Applicants

While the denied applicant sample needs to be drawn so that we can analyze the circumstances under both definitions, we will focus on the group of denied applicants that submitted complete applications. Thus, we want to select the sample in a way that ensures we end up with enough denied applicants—complete only—and, in fact, that these cases make up a greater share of the denied applicant sample. When drawing the sample, field interviewers will

stratify a school's denied applicants into two groups when possible: (1) denied applications that are complete, and (2) those that are incomplete. Field interviewers will oversample denied applications that are complete. Of the 400 denied applicants selected, our target is to end up with 260 denied applications that are complete and 140 that are incomplete. We expect that 80 percent of the sample of denied applicants selected will participate in the study, resulting in 208 complete and 112 incomplete denied applications for analysis.[9]

c. Treatment of Denied Applicants in Erroneous Payment Estimation

The RFP specified that estimates of payments that would have been made for "paid" participating students, had they not been incorrectly denied free or reduced-price benefits (that is, erroneously denied applicants), are not to be included in the estimate of erroneous payments due to eligibility misclassification.[10] The basis for this decision is that FNS believes it is not possible to ascertain what these students' actual participation in the NSLP or SBP would have been had they been accurately certified to receive free or reduced-price meals. In addition, the definition is consistent with how erroneous payments are defined for other programs within USDA. However, omitting these sources of payment error will yield a downwardly biased estimate of erroneous payments in the NSLP and SBP.

MPR's estimate of erroneous payments therefore will not include erroneous payments that would have been made for paid participating students had they not been incorrectly denied free or reduced-price benefits. However, because we believe the study may be criticized for not including erroneous payments (underpayments) attributable to erroneously denied applicants, we

[9]The Evaluation of the NSLP Application/Verification Pilot Projects found that in the study's comparison sites, approximately 75 percent of non-approved applications were incomplete, suggesting that the majority of denied applications are denied because they are ruled incomplete.

[10]These errors, however, will be used for determining case error rate.

plan to generate estimates that include incorrectly denied applicants to examine how their inclusion affects findings.

4. Accounting for Students Transferring Into and Out of Sampled Districts/Schools

During SY 2005-2006, when MPR is collecting data during the full school year, students will transfer into and out of sampled districts and schools. Policy regarding such transfers is that students can carry over eligibility to a new district. This is not a requirement, however. Therefore, in some districts, students will carry over their meal eligibility "status" to the new school; in others, they will need to complete a new application.

We have developed plans to handle both policies. We will then implement the approach corresponding to the policy actually implemented in a particular sampled district. If we know when a student in our sample moved out of the district at which selected, and we know when a newly certified student selected to our sample moved in, we can handle such moves appropriately. To do this, we need attendance stop dates on leavers and attendance start and stop dates on new enterers.

a. New Application Required

If a family transferring to a different district must complete a new application in the new district, our current design enables that child to enter our free and reduced-price cross-sectional sample as a newly certified student in the new district after the move. Using our basic approach, we will use information from their new application and the household survey (administered within a month of the application) to determine whether their eligibility is misclassified, and if so, the amount of erroneous payment associated with each meal received. We will use that information, along with information on participation, to estimate erroneous payments for the time in which the student is at the new school during the rest of SY 2005-2006.

As mentioned, our basic approach handles cases that complete new applications. We need to obtain attendance start and stop dates on these new enterers in their new school to appropriately measure erroneous payments attributable to them.

b. Eligibility Status Carries Over

When the transferring student's meal program status carries over, that student's existing application/certification status applies in the new school. This raises two issues that need to be accounted for in the study design.

Identifying and Sampling Transfer Students Whose Eligibility Carries Over. Transferring students whose eligibility carries over will not have to complete a new application. MPR must develop procedures for field staff to follow to identify these individuals and ensure they are included in the "newly certified" frame when making their selections. We assume that the school will have some record documenting the status of such transfers (since the school needs to know their status so it can enter them into the system for point-of-sale transactions and counting and claiming meals) and that field interviewers can access these records or a list of such transfers when sampling new entrants. We plan to call some districts and schools to find out procedures so we can refine plans for identifying these individuals and including them in our free/reduced-price sample frame.

Determining Correct Eligibility Status of Carry-Overs. The more challenging issue that arises when eligibility status "carries over" is that we cannot use our standard approach of asking about prior completed month's income to determine whether the student's eligibility is misclassified due to reporting error, since the application would have been submitted several months earlier. In addition, it may be difficult or costly to obtain the original application from the originating district or school, if the originating school is not part of our sample of districts or

schools. We will implement plans to handle these circumstances. For the household survey, we will ask about income and family size for the most recently completed month, then ask follow-up questions to determine by how much circumstances (income and family size, program categorical eligibility) differ now compared to when they submitted their application, to provide a measure of meal program eligibility at time of application.

5. Accounting for Carrying Over Eligibility Status from Prior Year Until Certified

Districts may allow households to use the certification status from the prior school year for up to 30 school days at the start of the new school year before a new application must be submitted and processed. (This is an option, not a requirement.) For example, in a school operating from September to June, the payment in September would be erroneous if the student was not eligible during the previous school year. Under the new regulations, their eligibility in the previous school year could have been determined by their income status at the beginning of that school year (when they applied for benefits) or later, if they applied after the beginning of the school year. Our basic approach for identifying erroneous payments for students with carry-over status in this one-month period does not work, since it asks for eligibility information in the month before the survey, which is not appropriate in this case. Since the student is attending in the same district or school, we believe the application from the previous year will be available to us.

As with carry-over transfer students, for the household survey, we will ask about the most recently completed month before the survey, then ask questions to determine whether, and by how much, circumstances (income and family size) differ now, compared to when they submitted their application, to measure eligibility at time of application. We also need to find out at the time we sample these individuals (and thereafter) whether those in carry-over status complete an application and continue to be certified. Such students might be erroneously

classified in the first month of the school year and correctly classified in the months following reapplication, or vice versa (or they may not reapply). We must take this into account when calculating erroneous payments.

6. Accounting for Year-Round Schools

Some schools or school districts (for example, in California and some other states) have yearlong schedules, although individual students do not attend for the entire year. In these year-round schools, the school calendar is organized into instructional blocks, and vacations are distributed across the calendar year. These schools do not add instructional days; rather, they reallocate the 180 instructional days throughout the year. Students are divided into groups, or tracks, that share the same schedule rotation. There are two types of year-round schedules: single-track and multitrack (although districts may operate combinations of the two). In single-track schools, all students follow the same calendar with the same vacation periods—that is, all students are in school or on vacation at the same time. Multitrack schedules organize students into groups with staggered instructional blocks and vacation periods. While one track is on vacation, another uses the vacationing track's space, thereby increasing the school's capacity. Whether on a single- or multitrack schedule, students attend school for a prescribed length of time and then have a vacation, or intersession. Some of the more common schedule configurations are 45 days on, 10 days off; 45 days on, 15 days off (these two account for 40 percent of all year-round schools); 60 days on, 15 days off; 60 days on, 20 days off (these two account for 37 percent of all year-round schools); and 90 days on, 30 days off.

We will adapt our basic plans to handle data collection from year-round schools. A key item we need information on is when year-round schools take applications. Do all students who are enrolled (whether they are actually attending at the beginning of the school year or are in a track

that begins a month or so later) receive applications at the beginning of the school year, or is the initial window for distributing and processing applications longer?

MPR will include year-round schools in the study's sample of schools. Since we want to make sure they are represented in our sample, we will sample them in proportion to their prevalence in the school population; we will not oversample year-round schools. We will use our basic approach to estimate erroneous payments from these schools. Special procedures will be required for collecting on-site data from schools and households, with the specific approaches used depending on, for our sampled year-round schools: (1) timing of when applications are taken, and (2) whether the school is a single- or multitrack school.

a. Single-Track Year-Round Schools

In single-track programs, the entire student body and staff follow the same school calendar. For the study, the only substantive difference between single-track schools and traditional schools is that their instructional blocks and vacation time will differ. For example, whereas all traditional schools in our sample will be attending in December, for sampled year-round schools, December could be the "vacation" time. We need to make sure we do not schedule visits or household data collection during a vacation block. In addition, we will need to extend data collection beyond September 2005-June 2006 and allow collection in July and August, if the sampled year-round schools operate at that time. For example, should a few of our sampled schools begin in July 2005, and in particular, take applications in that month, we would need to sample students and conduct surveys during that time. Because we expect a minority of our schools to be all-year schools, we do not want to change our interviewer recruiting and training plans to accommodate only a few schools. In the case illustrated here, rather than advancing the hiring and training schedule for all interviewers, we would most likely send trained MPR staff to

conduct data collection in these schools beginning early in the school year. Finally, since we need to know enrollment start and stop dates of sampled students to appropriately estimate erroneous payments for the school year, we will need to contact year-round schools after June.

b. Multitrack Year-Round Schools

All the issues raised under single-track year-round schools also apply to multitrack year-round schools. For example, because students rotate throughout the school year in groups, off in some months and on in others, we must be careful, when scheduling household surveys, to make sure the reference period covers a month when children are attending school. There are other data collection issues, and the solutions depend on when schools begin taking applications in year-round schools. For example, consider a multitrack school that uses the 60-20 schedule (in school for three months, followed by one month off). There would be four student rotation groups—for any given month throughout the year, three groups attend and one group is off. Our data collection procedures will depend on the timing in which applications are distributed and processed. Suppose the school sends out applications in August to all enrolled students (whether or not they are attending that month). Suppose we sample someone from Rotation Group 4 who is off in September but who is sampled because they submitted an application in September and were approved. We would want to interview the household in September to obtain information on August income. However, our survey asks about participation during the most previously completed week, and, in this case, the student is not currently attending school. We cannot ask about participation in August, since this might refer to participation before being certified free or reduced-price. In this case, we would need to delay the survey for one month and ask about income two months before the survey so we could get relevant participation information on the sampled student. If the applications are not distributed until the first month in which a child

attends in the school year, we will not have to modify procedures. We will develop these and other plans in the study plan and data collection plan deliverables.

7. Obtaining Relevant and Timely Data for the Erroneous Payments Estimating Model

The second study objective listed above in Section II.A.2.b calls for developing estimation models of annual erroneous payments that FNS can use in future years to estimate erroneous payments without having to conduct a costly large-scale survey. Meeting this objective will require the study team to develop models that are highly predictive of erroneous payments and that FNS can use in the future relatively easily and at reasonable cost. A key challenge here will be to find variables based on existing data sources that cover all districts offering school meals nationally and that are both easily available annually in a timely fashion and highly predictive of a district's level of erroneous payments. Without such data, the estimation model will either be impractical—if the required data are not easily available on an annual basis—or not useful—if the model cannot predict changes in the overall level of erroneous payments as conditions change.

Our proposed approach will incorporate several features designed to help us meet this challenge. Three of these features are (1) developing an estimation model based on district-level data; (2) relying on data from multiple data sources, including, but not restricted to, district-level administrative data that are likely to be reasonably easily available to FNS and potentially highly predictive of erroneous payments; and (3) thoroughly testing a wide range of variables and data sources to find the appropriate balance between the predictive power of the model and its ease of use.

In developing the estimation model to predict future erroneous payments, we carefully considered two alternative frameworks for the model. One possibility would be an individual student-level model. This type of model would be straightforward to estimate in the survey year

(since our survey-year data will be measured at the student level) and would also be analogous to the microsimulation model that MPR has developed for FNS in other contexts. The other possibility is a district-level model. Although the survey-year data were collected for individual students, they are easily aggregated to the district level. Furthermore, many of the key variables we believe may be highly predictive of erroneous payments (such as a district's verification results) are defined at the district level.

Ultimately, we decided that a district-level model would be best. In addition to the advantages mentioned above, the main advantage of a district-level model is the availability of annual district-level data in future years to predict future erroneous payments. While data available in the survey year can be organized either with students or districts as the unit of analysis, data expected to be available in future years for use with the model will be district-level data. These district-level data sources typically cover the universe of school districts nationally and include a wide range of information on district characteristics.

Given the reliance on a district-level model with district-level data, our approach uses a wide range of district-level data sources. Primary among them is FNS administrative data, including, but not limited to, data from Form FNS-742 ("SFA Verification Summary Reports"), as well as other district-level meal program data that will need to be collected from State Education Agencies. Given that the estimation model is designed for FNS staff to use in the future, we believe it is important, to the extent possible, that the model take advantage of FNS administrative data, which are likely to be easily available to FNS staff and easily used by them. However, other data sources will likely also provide useful information for the estimation models. Our approach takes advantage of data sources like the CCD, the PSS, the U.S. Decennial Census, and the U.S. Department of Labor's LAUS.

Finally, given the wide range of data sources and potential variables to be included in the model, along with the fact that the model should be reasonably easy to use, our approach incorporates thorough testing of potential variables to be included in the model (as well as competing model specifications). In particular, we propose to assess potential variables one at a time by estimating alternative model specifications. In doing so, we will assess the contribution of each potential variable with respect to its predictive power in the model, as well as to its cost and availability on an annual basis. Ultimately, the variables to emerge in the final estimation model will be those that contribute to the model's ability to predict future trends in erroneous payments, are available fairly quickly, and can be obtained and linked with the other data sources reasonably easily and at low cost.

III. SAMPLING PLAN

In this chapter, we present our plan for sampling SFAs, schools in those SFAs, and students. We (1) summarize the study requirements that motivate the sample design, (2) discuss the target populations and sampling frames, (3) present the procedures for selecting the samples, (4) discuss sample size and precision, and (5) describe procedures we will use to weight the data.

A. OVERVIEW

The major focus of this study is to estimate the amount of erroneous reimbursements for free and reduced-price meals, in aggregate (absolute dollar value of all reimbursement errors for the nation for a full school year) and the rate (annual erroneous payments divided by total reimbursements for free and reduced-price meals). Separate estimates are needed for the NSLP and the SBP. Private schools, as well as public ones, are to be included, as are schools using Provision 2 or 3 (both in their base and nonbase years during SY 2005-2006).

We will select a national probability sample of SFAs, schools, certified students and their households, and households that applied and were denied for the NSLP and SBP in SY 2005-2006. The units sampled at the first two stages—SFAs and schools—are important information units themselves, as well as being the means for facilitating access to, and creating efficient sampling frames of, units at each successive stage. The third stage—students—also identifies a sample of meals (lunches and breakfasts) in sample schools. We will obtain data about these meals from household interviews and from data obtained by schools that track meal program participation at the student level.

The need for separate estimates of erroneous payments for the NSLP and SBP affects much of the sample design. Only three-fourths of the schools participating in the NSLP also participate in the SBP, and, at the student level, only about one-third as many eligible students consume free/reduced-price breakfasts as do lunches. Therefore, to achieve OMB precision standards for estimating the rate of erroneous payments for both the NSLP and SBP, our proposed main sample includes completing interviews with the parents of 2,880 students certified for free or reduced-price meals, including those attending schools that participate in Provision 2 or 3. We anticipate that at least 960 of these households will include students who participate in the SBP. For 800 of the students from the main F/RP sample, making up a panel sample, we will complete a second household survey later in the school year. We will complete interviews with the parents of a sample of 320 denied applicant households. Students selected for the household survey will be sampled from 240 schools in 80 SFAs.

An additional consideration is the need to sample enough Provision 2 and 3 schools so that separate estimates of erroneous payments can be made for that group. Because of the nature of Provisions 2 and 3, obtaining enough Provision 2 and 3 schools *in their base year* is critical, since information about certification error in base-year schools will also be used to derive estimates of erroneous payments in Provision 2 and 3 schools in their nonbase year during SY 2005-2006. FNS data suggest that approximately 20 percent of all Provision 2 and 3 schools will be in their base year in SY 2005-2006. We plan to sample 240 Provision 2/3 schools, expecting to obtain 24 base-year schools and complete 320 household interviews from those 24 schools (288 free and reduced-price households, 32 denied applicant households). Meal-counting and -claiming error data will be collected from 264 schools: 216 non- Provision 2/3 schools, 24 Provision 2/3 base year schools, and 24 Provision 2/3 non-base year schools.

B. TARGET POPULATIONS AND SAMPLING FRAMES

The target populations are as follows:

- ***SFAs.*** At the district level, the study population refers to local SFAs that operate the NSLP and/or SBP. We will include both public and private SFAs.
- ***Schools.*** The target population consists of elementary and secondary schools (kindergarten through 12th grade). Both public and private schools are included.
- ***Students.*** We will sample two groups of students from schools: (1) students certified for free or reduced-price meals; and (2) denied applicants (which include completed applications, as well as incomplete ones).

To conduct the sampling, we started with a sampling frame, or list of SFAs in the contiguous United States and District of Columbia. The main frame for this study was the sample of public school SFAs selected for FNS by MPR as part of the NSLP Sample Frame Construction Project. This frame is being used for the current School Nutrition and Dietary Assessment Study (SNDA-III). It includes SFAs selected from the NCES Core of Common Data (CCD), plus data from three surveys with SFAs that collected information about participation in the NSLP and SBP, meal-planning methods, participation in Provisions 2/3, and other topics. Since public school SFAs cover geographically defined areas (that for the most part do not overlap), and since private SFAs tend to be schools themselves, rather than districts, we plan to include private schools in the frame at a subsequent stage of selection, described below.

For each SFA selected, we compiled a sampling frame of schools to select the sample of schools. Public schools were added using data from the most recent CCD, and private schools are added from Quality Education Data (QED).[1] Since the public school SFAs cover all geographic areas in the contiguous United States, we added private schools to the frame for each

[1] The CCD does not contain information on private schools.

sampled SFA, based on the private school's zip code. To give the schools not on the supplemented frame (the "new" schools) a chance to be selected, SFAs are asked to provide names, enrollment, and program participation data for schools that have come into existence since the last CCD. We discuss sampling of such schools below.

Finally, after the sample of schools is selected, each SFA (or school, as appropriate) will be asked to provide student lists with the information needed to stratify and select students, as well as to contact participating households. With support from MPR's central office, MPR field staff will compile the lists and perform the sampling on-site. Team leaders will visit sampled schools on or close to the first of each month of the school year to compile the lists and select samples of students for the household survey, including certified free and reduced-price students and students whose applications were denied.

Some school districts have policies that do not permit the release of the names and addresses of students without receiving prior, signed parental consent. MPR is working with school districts that have this policy by having the districts distribute consent packets to all enrolled students in the district's study schools. Only those parents who return signed consent forms would be included in the student frame and eligible for selection.

C. SAMPLE SELECTION PROCEDURES

Because of resource constraints, we had to scale back the scope of the sample design for the APEC study after we initially selected 100 SFAs. When we determined we needed to scale back the study's scale, we randomly selected a subsample of the 100 districts designed to yield 80 cooperative districts. In the remainder of this section, we first describe the procedures for selecting the initial sample of districts, and then describe procedures for ending up with the final sample design--80 districts.

a. The Initial Sample Design

We initially selected a sample of 100 SFAs.[2] We used stratification at several stages to increase statistical efficiency. This included:

- **SFA-Level Stratification.** We stratified the frame of SFAs by the geographic region and prevalence (estimated from the NSLP Sample Frame Construction Project) of schools with SBP and those using Provision 2/3, and by poverty. For the most part, we implicitly stratified (sorting based on the stratifying variables) the sample frame rather than used explicit stratification. A random, sequential selection at this stage from the sorted schools produced a stratification effect that ensures representation of schools in the range of the factors (see the next section for a description of the sorting and selection method used). The only instances in which we used explicit stratification are those where oversampling is called for. Explicit stratification was used to ensure selection of an adequate number of SFAs where Provision 2/3 is used.

- **School-Level Stratification.** The original design provides for selecting, on average, only three schools per SFA in non-Provision 2/3 SFAs, and approximately 16 to 17 schools per SFA in Provision 2/3 SFAs (data will be collected from only a subset of these Provision 2/3 schools, however). In SFAs where Provision 2 and 3 are not used, we plan on stratifying schools into two groups: (1) elementary schools and (2) middle- and high-schools, and then selecting schools from these two groups, reflecting that a larger percentage of reimbursements go to elementary schools than middle- and high schools. In these SFAs, we used implicit rather than explicit stratification if oversampling is not called for based on the distribution of the study population (certified students). (Where oversampling is not needed, we used implicit stratification at the school level, because it is easier to implement and should lead to less variability in student level probabilities of selection, and hence in sampling weights, than would explicit stratification.) For example if on average half the study population is in the elementary group, implicit stratification will result in about half of the sampled schools being in the elementary group. If this distribution matches the desired sample distribution, no oversampling will be needed. In SFAs where Provision 2 or 3 is used, we stratified explicitly on that characteristic, so that this group can be adequately represented. Within these explicit strata we stratified on grade level. This second level of stratification was explicit or implicit based on the same considerations discussed for SFAs where Provision 2 and 3 are not used.

- **Student-Level Stratification.** Students in sampled schools will be partitioned into two frames: (1) certified free/reduced-price, and (2) denied applicants. Based on our

[2]Based on our experience with SNDA-III, we expected that one or two SFAs will be selected with certainty. If these "certainty" SFAs are large enough, we would treat them as multiple SFAs and allocate more schools and students to them. In fact, there were initially eight certainty selections accounting for 10 district equivalents (New York City and Los Angeles were certainty selections and were given a double allocation). In this case, we selected 89 additional (noncertainty) SFAs.

experience using the same frame for selecting the SNDA-III sample, we expected that 20 of the SFAs will be those that use Provision 2/3. From these 20 SFAs, we planned on selecting 300 schools that use Provision 2/3 and would screen them to find 60 schools in their base year. In SFAs without Provision 2/3, we planned on selecting three schools, on average, or a total of 240 schools. In other SFAs (those with and without Provision 2/3 schools), we planned on selecting, on average, 16 to 17 schools (15 Provision 2/3 and 1 to 2 non-Provision 2/3, on average), or 330 schools. Allocation of the sample in this way would ensure that all schools in SFAs where Provision 2/3 is used have a chance of being sampled.

For the household survey, under the original sample design, we planned on sampling students in 300 schools from the 100 districts—270 schools not using Provision 2/3 and 30 Provision 2/3 schools in their base years. From those 300 schools, we planned to select samples large enough to yield completed interviews with 3,600 students certified for free and reduced-price meals and 400 denied applicant households. The distribution of the free and reduced-price sample during the year would mirror the proportion certified in each month, with most coming from those certified in August through October 2005. This is done so that interviews can take place near the time of certification. In each successive month from November 2005 through the end of the school year, MPR would augment this sample with a sample of 75 free and reduced-priced households newly certified during the current (and preceding month), totaling 600 households.[3] We planned on selecting and interviewing a panel subsample of 1,000 free and reduced-price students/households from the 3,600 related in the main sample.

[3]We had proposed to allow the possibility that applicants who were originally included in our "denied applicant" sample could reenter the data collection as part of the sample of free and reduced-price "new entrants," if they reapply, are determined eligible by the program, or happen to be drawn into the "new entrant" sample. Our basic reason for proposing to allow this to happen is that it is the appropriate thing to do from the point of view of sampling methodology—denied applicants who reapply later and are certified should be eligible for the newly certified free/reduced-price sample, since that is their new status. More formally, to have a valid statistical sample of free/reduced-price students/households requires that all members of the universe have a nonzero probability of selection; failure to allow them into the sample would violate this.

Data from the meal program applications and surveys with the parents of the 3,600 certified free and reduced-price students and 400 denied applicants from the 270 non-Provision 2/3 schools and 30 Provision 2/3 base-year schools would be used to estimate erroneous payments due to certification error as well as total case error rates (case error rates here will be defined as resulting from either administrative error or household misreporting), separately for the NSLP and SBP. In addition, we will augment our sample of approved and denied applications by selecting samples of applications from the 60 Provision 2/3 schools (30 Provision 2/3 base year schools and 30 Provision 2/3 non-base year schools) where we are not conducting household surveys. This larger sample of applications (5,600 applications from 360 sampled schools) will be used to estimate the case error rate *due to administrative error* and to assess differences in this error by Provision 2/3 status.[4]

Since the main analytic variables of interest are at the student or meal reimbursement levels, the samples of SFAs and schools in sampled SFAs were selected with probability proportional to size (PPS). The frame we used comprises a sample of public school districts selected with PPS from the CCD where the measure of size (MOS) was the square root of the estimated enrollment.

Using a square root-based MOS is a common practice for multipurpose surveys and has been used in selecting other samples of SFAs and schools for FNS. However, because this study focuses on the precision of estimates regarding reimbursement errors for meals served to students, the use of the square root MOS is not optimal for this study. To select a sample of SFAs from the frame, we set the probability of selection (from the frame) for each SFA such that

[4]This overall sample of applications was to be comprised of 3,240 approved F/RP and 360 denied applications from the 270 non-Provision 2/3 schools, 1,080 approved F/RP and 120 denied applications from 60 Provision 2/3 base year schools, and 720 approved F/RP and 80 denied applications from 30 Provision 2/3 non-base year schools. The applications for the non-base year schools refer to those from the base year of their current Provision 2/3 cycle.

when schools are selected PPS within SFAs and an equal number of students are sampled per school, the resulting sample of students will be approximately self-weighting.[5] This will lead to greater precision for meal and student level estimates. PPS methods were also used in selecting schools within SFAs. We used an estimate of the number of certified students as the MOS for selecting schools.

MPR used SAS PROC SURVEY SELECT, to sequentially select stratified or zoned (implicitly stratified) samples. Where we do not use explicit strata, we used a probability minimum replacement (PMR) approach as defined in Chromy (1979). The units on the file are sorted in a manner that maximizes proximity of similar units within explicit strata.

While we have made every effort to ensure participation of the initial sample of SFAs and schools, some may refuse to participate. In these situations, we use substitution of random units from the same stratum. Substitute SFAs are selected at the same time as the main sample and released if necessary because of nonresponse. Where explicit stratification is used, we select a double sample in each stratum randomly pick half of the selection to serve as substitutes. Where implicit stratification is used we select a sample twice as large as desired and form pairs of SFAs belonging to adjacent zones. One of each pair was randomly selected to serve as the substitute. As with SFAs, we selected a substitute sample for schools. In addition, we allowed for selection of schools that have come into existence since the most recent CCD was compiled. SFAs are contacted after schools are selected and asked if any schools have come into existence since the

[5]Essentially, this will be done by developing an adjusted measure of size with which to select SFAs from the existing frame into the erroneous payments sample. The adjusted measure of size is relatively larger for larger schools and is set so that the overall probabilities of selection for the SFAs (taking account both of the initial into the frame and the secondary selection into the current sample) are approximately proportional to the numbers of students in the SFAs. A similar procedure was used in the SNDA-III study.

date of the most recent CCD. The new schools have been given a chance of selection proportional to their share of the sum of their MOS plus the MOS of the schools on the frame.[6]

As mentioned, students will be sampled by field interviewers from lists they will compile onsite from SFAs and schools. They will review lists to make sure only eligible students appear on the list and to make sure that the lists are sorted so that samples can be randomly selected. Field interviewers will use laptop computers with specially designed sampling programs to help them select the student samples. This usually involves entering the number of eligible students for a target group (e.g., free or reduced-price students) and clicking on a button that makes the random selections. The computer will provide a list of the random selections, identifying the selections by the student's position (line number) on the sample frame (list) and indicating the selection's "selection order." For students, a supplemental sample will be used that allows for nonresponse of households. For example, our target is 10 completes with free or reduced-price student households and our estimate is that on average we need to sample 13. The computer will make 20 selections, where 10 are "main" selections designated from immediate use and the remaining 10 are "replacements," for use if more parents than expected are uncooperative or ineligible. Some households may have more than one student attending the sampled school.

[6]It would be better to update the school frame before final selections were made, and this procedures is being followed in most districts. Schools will be selected within strata within LEA, after the LEAs are selected from the most recent CCD before contact with the LEA. LEAs will be asked if they have any schools that are new (opened since the date of the CCD) and eligible (participate in NSLP). If they report any, we will obtain information about enrollment numbers of certified students and participation in Provision 2/3. We will then: (1) check that each reported "new" school was not on the CCD (schools that were on the CCD will have already had a chance of selection); (2) assign new schools to their appropriate strata; (3) compute a new total measure of size (MOS) for each stratum (Revised_Total_MOS = Old_Total_MOS + New_Total_MOS); and (4) select a new sample of schools.

Should we happen to sample more than one child from a household, we will randomly select one child to serve as the "sampled student" for that household.[7]

b. The Final Sample Design

For the APEC study, our original design specified 100 districts. We selected a sample of 10 certainty districts (8 certainty selections equal to 10 district-equivalents) and then selected 89 "pairs" of districts (noncertainty selections), randomly assigning one district in each pair as the "main" selection and the other as the "replacement" should the main selection refuse to participate. Districts were sampled from two strata: non-Provision 2/3 (districts that did not include Provision 2/3 schools) and Provision 2/3 (districts that included at least one Provision 2/3 school). Districts with P2/3 schools were oversampled. Implicit stratification was used to help assure proportional representation on such district level characteristics as region, poverty level and participation in the SBP.

Because of resource constraints, we needed to reduce the study sample to approximately 80 districts. (As shown in Section D, the study's estimates of erroneous payments will still remain well within the OMB precision standard of +/- 2.5 percent with this smaller sample of districts.) In reducing the district sample, we wanted to accomplish the following objectives: (1) maintain

[7]There are two possible approaches for treating situations where more than one student is selected from a particular household. Under the first, we could include all children that were sampled. For example, if the household had three children attending a school, and two were sampled, we would keep both. We would abstract their application. We would interview the household once. Under this approach we would need to expand the NSLP and SBP participation section to allow responses on each sampled child in the household. A second approach is to sample just one student per household. That is, in cases where more than one child from the same household is selected, we would randomly select one child to be the "Sample Student" for all data collection. Each has advantages and disadvantages. The sampling is easier under the first approach, but the household survey would be substantially longer since the questions on participation in the survey ask about participation on each day separately for the entire prior week before the interview, and separately for the SBP and NLSP. Sampling students under the second approach is somewhat more difficult to implement (field interviewers will need to sample one child per household and replace the student not selected with another selection), but is easier in terms of data collection. We are proposing to use the second approach and limit the sample to one child per household in order to minimize burden on parents when responding to the household survey.

the probabilistic nature of the sample, (2) have a distribution of districts that reflects that of the original sample, and (3) assure to the extent possible that at least 80 districts would participate in the study.

The approach we implemented entailed selecting a random subsample from all 100 districts (plus the alternates in the case of the noncertainty districts). We are currently recruiting only the those districts that included in this subsample of 80 districts. The selection employed explicit stratification on Provision 2/3 and implicit stratification on other characteristics to maintain the probabilistic nature of the sample and resulted in a distribution of the new sample that reflects the original sample. Under this approach, some districts that were already recruited (e.g., agreed to participate and signed letters of understanding) needed to be dropped.

In the original design, if a "main" selection declines to participate, we release its alternate and attempt to recruit the alternate. We continue this method with the reduced sample. However, there have been two cases in which both the main and alternate selections have declined to participate. Because sampled districts that have not yet executed letters of understanding and their alternate could both decline to participate, we could end up with less than our target of 80 districts. We therefore selected 84 main districts (instead of 80), plus a reserve sample of three additional main districts (for a total of 87 districts overall in the new study design) to provide some margin should this occur. The reserve sample will be used, if in contacting the 84 main districts (and their alternates if needed) we obtain cooperation from fewer 80 districts. In this case we will take replacements from the reserve sample in random order until we obtain cooperation with 80 districts.

D. STATISTICAL PRECISION

OMB specifications for statistical precision require a 90 percent confidence interval of ±2.5 percent around the estimate of the percentage of erroneous payments.[8, 9] To obtain this level of precision for both the NSLP and SBP, we plan to complete household surveys with parents of 2,880 certified free and reduced-price students. Table III.1 presents the precision expected under the final sample design for estimates relating to the erroneous payments, expressed as a percentage of all free and reduced-price reimbursements. Precision values are 90 percent confidence intervals. The confidence interval for the study's estimate of the rate of erroneous payments in the NSLP is ±1.34 percentage points and ±2.03 for the SBP. Both are within the OMB precision standard of ±2.5 percentage points.[10]

Because we also are interested in the characteristics of households belonging to each of the categories, the precision for a range of percentage estimates (of binary variables) are presented, in Table III.2. This table presents confidence intervals of estimates percentages for the NSLP, the SBP and denied applicants. The precision of the estimates of the total case error rate (case error due to either administrative error or household misreporting) can be obtained from

[8]OMB's guidance on erroneous payments states that "significant erroneous payments are defined as annual erroneous payments in a program exceeding both 2.5% of program payments and $10 million." Programs and activities susceptible to significant erroneous payments, as defined above, are to determine an annual estimated amount of erroneous payments made in those programs and activities, identify the reasons the programs and activities are at risk of erroneous payments and implement a plan to reduce erroneous payments. OMB calls the first threshold the "error rate" and the second threshold the "error amount." We interpret this as meaning the error rate is the ratio of two "dollar-denominated" sums: total annual erroneous payments divided by total annual payments. For the NSLP (or SBP), the error rate will equal the total dollar amount of erroneous payments made to free approved and reduced-price approved students divided by total reimbursements for free and reduced-price meals under the NSLP (or SBP). The study also assesses the prevalence of "case error" rate: the percentage of all applicants erroneously certified or denied.

[9]This is mathematically equivalent to the requirement that the confidence interval around the ratio of average error, as a percentage of average reimbursement per meal, be plus or minus 2.5 percentage points.

[10]The error categories used in making our precision estimates for Table III.1 are defined on the basis of the lunch reimbursements for SY 2004-2005. Assumptions about the frequencies of these error values, based on previous studies, are used as the basis for estimating the population parameters for school lunches. That is, the means and variances are obtained for each of the error situations (aggregate, underpay, and overpay).

TABLE III.1

90 PERCENT CONFIDENCE INTERVALS: ABOUT MEAN AMOUNT IN ERROR (REVISED DESIGN)

Mean Amount in Error	Sample Size (Students)	90 Percent Confidence Interval Error for Payments in Error[a]
NSLP		
Overall[b]	2,880	±1.34
Non-Provision 2/3[b]	2,592	±1.41
Provision 2/3[c]	288	±4.14
SBP[d]		
Overall[e]	960	±2.03
Non-Provision 2/3[e]	864	±2.14
Provision 2/3[e]	96	±6.25

[a]In percentage points.

[b]Assumes design effect equals 2.4.

[c]Assumes design effect of 2.3.

[d]Assumes one-third of sampled approved free/reduced-price students will participate in the SBP. This is a conservative assumption. It is likely that 40 percent of free/reduced-price students will participate in the SBP, which means the precision of these estimates will increase over what the table shows.

[e]Assumes design effect equals 1.8.

TABLE III.2

90 PERCENT CONFIDENCE INTERVALS FOR PERCENTAGE ESTIMATES ABOUT TOTAL SAMPLE AND PROVISION 2/3 SUBGROUPS
(Entries Are Percentage Points)

REVISED DESIGN

		Estimated Proportion (P) Equals		
	Sample Size	10% or 90%	30% or 70%	50%
NSLP				
Total Free/Reduced-Price Sample	2,880	± 1.42	± 2.17	± 2.37
Non-Provision 2/3 Free/Reduced-Price	2,592	± 1.50	± 2.29	± 2.50
Provision 2/3 Free/Reduced-Price	288	± 4.40	± 6.72	± 7.33
SBP[a]				
Total Free/Reduced-Price Sample	960	± 2.13	± 3.25	± 3.55
Non-Provision 2/3 Free/Reduced-Price	864	± 2.25	± 3.43	± 3.74
Provision 2/3 Free/Reduced-Price	96	± 6.74	± 10.29	± 11.23

[a]Assumes one-third of sampled approved free/reduced-price students will participate in the SBP. This is a conservative assumption. It is likely that 40 percent of free/reduced-price students will participate in the SBP, which means the precision of these estimates will increase over what is shown in the table.

Table III.2 since one can treat the proportion of approved applications that are in error as a characteristic of all approved free and reduced price students. For estimating the *percentage of cases in error* (defined over approved applicants and including certification error due to administrative error or household misreporting), the 90 percent confidence interval will be ±2.17 percentage points for the NSLP and ±3.25 percentage points for the SBP, assuming a case error rate due to both administrative error and household misreporting near 30 percent (see Column labeled ".30 or .70"). Note that these precision estimates apply to case error rates defined only for approved applicants (free and reduced-price certified students). That is, it excludes denied applicants from the base. For these analyses, we are treating erroneous payments and total case error (erroneously certified applicants) similarly in that they are both defined over approved applicants only. We also plan to estimate total case error rates over all applicants (those approved for free and reduced-price meals *and* denied applicants). The precision of the estimates for case error defined over all applicants is shown in Table III.3 and III.4. For estimating the *percentage of cases in error* (defined over all applicants and including certification error due to administrative error or household misreporting), the 90 percent confidence interval will be ±2.13 percentage points for the NSLP and ±3.20 percentage points for the SBP, assuming a case error rate due to both administrative error and household misreporting near 30 percent.

The study's sample design will provide a sample of 4,496 applicants from 264 sampled schools in which to estimate case error rate *due to administrative error*. This sample will be comprised of 2,592 approved F/RP and 288 denied applications from the 216 non-Provision 2/3 schools, 864 approved F/RP and 104 denied applications from 24 Provision 2/3 base year schools, and 576 approved F/RP and 72 denied applications from 24 Provision 2/3 non-base year schools. We will use this sample to estimate the overall prevalence of certification error due to

TABLE III.3

90 PERCENT CONFIDENCE INTERVALS FOR PERCENTAGE ESTIMATES OF TOTAL CASE ERROR FOR ALL APPLICANTS[a,b]
(Entries Are Percentage Points)

		Estimated Proportion (P) Equals		
	Sample Size	10% or 90%	30% or 70%	50%
NSLP				
Total Sample	3,200	± 1.39	± 2.13	± 2.32
Non-Provision 2/3	2,880	± 1.46	± 2.23	± 2.44
Provision 2/3	320	± 4.31	± 6.59	± 7.19
SBP				
Total Sample	1,067	± 2.09	± 3.20	± 3.49
Non-Provision 2/3	960	± 2.19	± 3.35	± 3.66
Provision 2/3	107	± 6.40	± 9.83	± 10.73

[a]Calculated over approved and denied applicant students.

[b]Case error here includes error due to administrative error *and* household misreporting.

TABLE III.4

90 PERCENT CONFIDENCE INTERVALS FOR THE DIFFERENCE IN ESTIMATES OF CASE ERROR BETWEEN NON-PROVISION 2/3 AND PROVISION 2/3[a,b]
(Entries Are Percentage Points)

	Estimated Proportions (P) Equal to or Near[c]		
	10% or 90%	30% or 70%	50%
NSLP	± 4.50	± 7.00	± 7.63
SBP	± 6.84	± 10.45	± 11.40

[a]Calculated over approved and denied applicant students.

[b]Case error here includes error due to administrative error *and* household misreporting.

[c]Table entries show the confidence intervals around the difference in proportions between Provision 2/3 and non-Provision 2/3 when both proportions are equal to or "near" the percentage shown in the column heading. For example, if the certification error rate was .09 in non-Provision 2/3 and .11 in Provision 2/3 for the NSLP, then the confidence interval around the difference, .02, would be +/- .0450, since the estimates of certification error are both near 10 percent. If the certification error rate was .29 in non-Provision 2/3 and .31 in Provision 2/3, then the confidence interval around the difference, .02, would be +/- .0700, since the estimates of certification error are both near 30 percent.

administrative error separately for the NSLP and SBP; and we will provide separate estimates for case error rates due to administrative error in non-Provision 2/3 and Provision 2/3 schools. The estimates of case error rates due to administrative error are based on all applicants, approved and denied. Tables III.5 and III.6 provide estimates of expected precision. For this analysis of *case error due to administrative error only*, which will be based on a larger sample of applications, the 90 percent confidence interval will be ± 1.17 percentage points for the NSLP and ± 1.73 percentage points for the SBP, assuming a case error rate due to administrative error near 10 percent.

E. ANALYSIS WEIGHTS

In this section, we present our procedures for calculating the weights to be used in analyzing the data collected for this study. An initial adjustment factor—the sampling weight—adjusts for difference in probabilities of selection. Subsequent weighting adjustment factors will adjust for nonresponse; also, if needed, a trimming factor will be used to reduce the influence of extremely large weights (outliers). Sampling weights will be calculated for each SFA, school, and student included in the sample.

Sampling weights equal the reciprocal of the selection probabilities, which are the primary sampling unit selection probabilities multiplied by the product of conditional selection probabilities at each subsequent stage of sampling. These are the basic weights needed to obtain unbiased results. Obviously, unequal sampling weights are needed for developing SFA- and school-level estimates, because they are selected with PPS (larger units will be more prevalent in the sample than in the population). Depending on the selection method used, the sample of students will be included with approximately equal inclusion probabilities. However, even in this case, weights will be different due to possible errors in size measures and different levels of nonresponse.

TABLE III.5

90 PERCENT CONFIDENCE INTERVALS FOR PERCENTAGE ESTIMATES OF CASE ERROR DUE TO ADMINISTRATIVE ERROR[a,b]
(Entries Are Percentage Points)

		Proportion (P) Equals	
	Sample Size	10% or 90%	20% or 80%
NSLP			
Total Sample	4,496	± 1.17	± 1.56
Non-Provision 2/3	2,880	± 1.39	± 1.85
Provision 2/3	1,616	± 2.79	± 3.72
SBP			
Total Sample	1,498	± 1.73	± 2.31
Non-Provision 2/3	960	± 2.13	± 2.84
Provision 2/3	539	± 3.50	± 4.66

[a]Case error here is defined as due to administrative error only. It does not include certification error due to household misreporting.

[b]Calculated over approved and denied applicant students.

TABLE III.6

90 PERCENT CONFIDENCE INTERVALS FOR THE DIFFERENCE IN ESTIMATES OF CASE ERROR DUE TO ADMINISTRATIVE ERROR BETWEEN NON-PROVISION 2/3 AND PROVISION 2/3[a]
(Entries Are Percentage Points)

	Estimated Proportions (P) Equal to or Near[c]	
	10% or 90%	20% or 80%
NSLP	± 3.13	± 4.18
SBP	± 4.12	± 5.49

[a]Case error here is defined as due to administrative error only. It does not include certification error due to household misreporting.

[b]Calculated over approved and denied applicant students.

[c]Table entries show the confidence intervals around the difference in proportions between Provision 2/3 and non-Provision 2/3 when both proportions are equal to or "near" the percentage shown in the column heading. For example, if the certification error rate due to administrative error was .09 in non-Provision 2/3 and .11 in Provision 2/3 for NSLP under the design, then the confidence interval around the difference, .02, would be +/- .0313, since the estimates of certification error are both near 10 percent. If the certification error rate was .19 in non-Provision 2/3 and .21 in Provision 2/3, then the confidence interval around the difference, .02, would be +/- .0418, since the estimates of certification error are both near 20 percent.

Note that we have indicated this additional source of unequal weighting for meal observation, not for sample students. The reason is that sample SFAs, schools, and students will be stochastically assigned to month (meals cannot be so assigned, but the different sampling rates by month must be accounted for because of the time-dependent observations—more meals tend to be in error near the end of the school year). That is, each sample SFA, sample school, and sample student will have a known probability of being assigned to one of two sampling rates (panel month or other month). Thus, the sampling weight for each unit reflects both the inclusion probability for the panel months and the inclusion probabilities for the other months.

We will take several steps to adjust the sampling weights to obtain valid survey results. Essentially, these adjustments will be made to account for the nonresponse of sample SFAs, schools, and students; thus, the weights will sum to selected control totals, such as known number of program participants. We also will check for extreme weights, which may unduly affect estimates or estimation variances; these will be considered for trimming (see Potter 1993).

Two methods often used to adjust sampling weights for nonresponse are (1) weighting class adjustments, and (2) propensity modeling using logistic regression. Which of these is preferred depends largely on the extent of the nonresponse and the amount of information known about the units, both responding and nonresponding. We anticipate that the levels of nonresponse at the SFA and school levels will be relatively low; thus, it may be preferable to use weighting class adjustments based on frame information. Student (household) nonresponse, on the other hand, may be more serious. In addition, since a substantial amount of information is known about program applicants, we consider the use of propensity modeling.

The propensity models predict the probability that households of sample students with a particular set of characteristics, based on the application and frame information, will respond to

the survey. The weights of all respondents will be divided by these estimated probabilities to obtain the analysis weights.

IV. DATA COLLECTION PLAN

To address the study's comprehensive set of research questions, we will collect data from several sources. In this chapter, we describe the study's data collection plans. For each data source, we describe the required data items and our approach for collecting them. First, to provide a context for the more detailed discussion to follow, we present an overview of our data collection design. We then describe specific plans for each source.

A. OVERVIEW OF THE DATA COLLECTION DESIGN

The data collection plan for the study has five components: (1) an SFA survey, (2) household surveys, (3) application record abstraction and collection of other administrative records data on students, (4) observation and record review of meal counting and claiming processes, and (5) collection of administrative data for developing and testing models of estimating erroneous payments. Table IV.1 summarizes our data collection plan. The table shows, for each data collection, the mode, respondent, target number of completed interviews and response rates, and key data elements to be collected.

B. THE SFA SURVEY

MPR executive interviews will administer a telephone interview with school food service directors from a representative sample of SFAs selected from the population of all SFAs in public and private school districts that participate in the NSLP and SBP and are located within the 48 states and the District of Columbia.

1. SFA Data

The SFA survey will collect information on the characteristics of the sampled SFA and on selected characteristics of the schools sampled in each SFA (see Table IV.2). We will

TABLE IV.1

OVERVIEW OF DATA COLLECTION

Instrument	Mode	Respondent/ Data Source	Number of Completes	Response Rate (Percent)	Key Data Elements
SFA Survey and Fax-Back Fact Form	Telephone	SFA director	80	80	*District characteristics:* institutional characteristics; meal program participation; certification procedures; verification procedures and outcomes *School characteristics:* For each of the three sampled schools per district, data on meal program participation characteristics and outcomes
Household Survey					
Approved Free/Reduced-Price	In-Person	Parent/Guardian	2,880	80	Certification status; NSLP and SBP participation; household income; family size and composition; perceptions of meal program quality; knowledge and perceptions of application and verification processes; SFSP participation and reasons for nonparticipation; demographic characteristics
Denied Applicants	In-Person	Parent/Guardian	320	80	Household income, family size; NSLP and SBP participation; knowledge and perceptions of application process; perceptions of meal programs; reasons not reapplied; retrospective questions on changes in income or household composition; demographic characteristics
Approved Free/Reduced-Price (Panel—2nd Interview)	Telephone	Parent/Guardian	800	80	Certification status; NSLP and SBP participation; household income; family size and composition
Record Abstractions					
Approved Free/Reduced-Price[a]	Interviewer Abstraction	n.a.	4,032	100	Meal program application information; NSLP/SBP participation (if school tracks participation); enrollment start and stop dates during school year
Denied Applicants[b]	Interviewer Abstraction	n.a.	464	100	Meal program application information; NSLP/SBP participation (if school tracks participation); enrollment start and stop dates during school year
Meal Claiming/ Counting Data					
Roster and Certification List Abstraction Form	Interviewer Abstraction	Records	25 students per school/ 240 schools	100	Certification status of sampled students on roster at point of sale and on certification list

TABLE IV.1 (*continued*)

Instrument	Mode	Respondent/ Data Source	Number of Completes	Response Rate (Percent)	Key Data Elements
Cashier Transactions Observation Form	Interviewer Observation	Cashier	100 lunch transactions/ 50 breakfast transactions per school covering target week, 264 schools	100	Food items on each tray; whether cashier records meal as reimbursable or not; type of individual purchasing meal (student or adult)
Meal Count Forms, Reimbursement Claiming Forms	Interviewer Abstraction	n.a.	264 schools and 80 SFAs	100	Day and week totals from all individual cash registers by meal type; week and month totals by meal type; week and month totals claimed by districts for sampled schools
Extant Data					
District Meal Program Data	Request electronic data files by telephone	State Education Agency Director	55	100	For all districts within a state: Number of NSLP and SBP reimbursable meals by meal claiming status type; number of schools by Provision 2/3 status; number of students enrolled by Provision 2/3 status
FNS Form 742 Data	Request electronic data files by telephone	FNS Central Office Staff			For all districts in the country, verification results data and other data for SY 2005 2006
Public Use Datafiles		Common Core of Data (CCD) Census data Other Adm. data	n.a.	n.a.	Other district-level data: Locale; enrollment; percent certified for free and reduced-price lunch; grade span of district; Title 1 status of schools; poverty rates; income levels; verification results; eligibility determinations made; NSLP and SBP certification and participation rates

[a]For 1,440 of the 4,032 free or reduced-price students we are only abstracting applications and not collecting any of the other data listed under "key data elements."

[c]For 176 of the 464 denied applicants we are only abstracting applications and not collecting any of the other data listed under "key data elements."

n.a. = not applicable.

TABLE IV.2

SFA SURVEY DATA ITEMS[a,b]

Domain/Elements	District-Level	School-Level[c]
Institutional Characteristics		
Type of SFA (Public, Private)	X	
Beginning/End Dates of Current School Year	X	X
Grade Span	X	X
Number of Schools, by Type of School	X	
Total Enrollment[a]	X	X
Enrollment, by Type of School[a]	X	
Enrollment, by Race/Ethnicity, Gender, Grade[a]	X	
Number of Title 1 Schools	X	
Whether Title 1 School		X
Number of School Districts Within the SFA	X	
Meal Program Participation		
Number of Days Provide Breakfast, Lunch[a]	X	X
Whether Participates in NSLP, SBP	X	X
Number of Schools Operating NSLP, SBP, or Both, by School Type	X	
Number Enrolled in Schools Operating NSLP, SBP, or Both	X	
Provision 2/3 Status for NSLP and SBP	X	X
Number of Schools Using Provision 2—NSLP	X	
Number Enrolled in Schools Using Provision 2—NSLP	X	
Number of Schools Using Provision 2—SBP	X	
Number Enrolled in Schools Using Provision 2—SBP	X	
Number of Schools Using Provision 3—NSLP	X	
Number Enrolled in Schools Using Provision 3—NSLP	X	
Number of Schools Using Provision 3—SBP	X	
Number Enrolled in Schools Using Provision 3—SBP	X	
Provision 2/3 Base Year (if More than One, Most Common)	X	
Provision 2/3 Base Year or Nonbase Year		X
Number of Students Certified for Free Meals[a]	X	X
Number of Students Certified for Free Meals, by School Type[a]	X	
Number of Students Certified for Reduced-Price Meals[a]	X	X
Number of Students Certified for Reduced-Price Meals, by School Type[a]	X	
Number of Reimbursable Lunches, by Meal Type	X	X
Number of Reimbursable Lunches, by Meal Type and School Type[a]	X	
Number of Reimbursable Breakfasts, by Meal Type	X	X
Number of Reimbursable Breakfasts, by Meal Type and School Type[a]	X	
Whether Track Participation at Individual Student Level	X	X
Medium in Which Store Data—Electronically Versus Hard Copy	X	X

TABLE IV.2 (*continued*)

Domain/Elements	District-Level	School-Level[c]
Certification		
Currently Use Direct Certification	X	
Year District Began Using Direct Certification	X	
Ever Use Direct Certification (if Currently Not Using)	X	
Reasons No Longer Use Direct Certification	X	
Total Number of Students Eligible for Free Meals[a]	X	X
Number of Students Certified for Free Meals Directly Certified, by School Type[a]	X	
Number of Students Certified for Free Meals Directly Certified		X
Number of Students Certified for Free Meals by Application, by School Type[a]	X	
Number of Students Certified for Free Meals by Application		X
Percent of Students Certified Free Eligible Not Subject to Verification	X	X
Percent of Students Certified Free Eligible Based on Household Income and Size	X	X
Percent of Students Certified Free Eligible Based on Categorical Eligibility	X	X
Type of Direct Certification Method Used	X	X
Total Number of Applications[a]	X	X
Type of Application—Individual Child; Household		X
Total Number Denied Applications During Initial Certification[a]	X	X
Total Number of Approved Applications, by Meal Type (Free, Reduced-Price)[a]	X	X
Total Number of Approved Applications Based on TANF or Food Stamp Case Numbers[a]	X	X
Verification		
Verification Method (Random, Focused/error prone, or mixture)[a]	X	
Whether Use Verification for Cause[a]	X	
Number of Applications Verified in Fall 2005, by Meal Price Status[a]	X	
Number/Percent Certified as Free Eligible—Not Subject to Verification Because Directly Certified[a]	X	
Number/Percent Certified as Free Eligible—Not Subject to Verification Because Other Reason[a]	X	
Number of Verifications by Resulting Status (No Change; Change from Reduced-Price to Free; Changed from Free to Reduced-Price; Terminated), by Meal Price Status[a]	X	
Total Number of Verifications Resulting in Termination or a Reduction in Benefits Due to Household Income Too High, Incomplete Information, Failure to Respond, Other Reasons[a]	X	
Number of Applications Verified for Cause[a]	X	

[a]To facilitate administration of the survey, we will send a Fax-Back Fact Form to districts to record items marked with superscript "a".

[b]All enrollment, meal participation, and related figures refer to target month (October 2005).

[c]District is asked to provide information separately for each of the sampled study schools from its district.

collect information on institutional characteristics of SFAs that participate in the NSLP and SBP. This information will include grade span, number of schools in the SFA by type of school (elementary, middle, and high school), enrollment, presence of charter schools, and number of school districts in the SFA (single-district SFA versus supervisory union of districts as the SFA). We also will collect district-level information on participation in the meal programs, including actual rates of certification by type, meal program participation (number of meals by type), Provision 2/3 status, and number of meals by provision status. We also will collect information on certification and verification procedures and outcomes: whether or not the SFA uses direct certification, the implementation of direct certification, and the free and reduced-price application and verification process (including information on the verification error rate). The SFA survey also will collect selected information on meal program participation and characteristics of the three schools sampled from the district for on-site data collection, primarily on meal program characteristics and participation outcomes at the school level.

2. SFA Data Collection Procedures

MPR will conduct a telephone interview with 80 SFA directors in the sampled school districts. The respondent we will target for interviewing will be the person who knows the most about the district's administrative practices regarding the school meal programs—this typically will be the district's food service director. To expedite the interview, we will first send the SFA director a "Fax-Back Fact Form" to be completed and faxed to MPR before the interview. The form contains quantitative questions that will require the SFA director to look at reports or other sources to respond. There are three versions of the fax-back form: (1) one for districts using one of the special provisions (Provision 2 or 3), (2) a shorter version for those districts not participating in Provision 2 or 3, and (3) a version for private schools that perform the SFA function. We will send the appropriate fax-back form and an advance letter to districts in mid-

February 2006. We will conduct the telephone interview after we receive completed forms from SFAs and review them. The telephone survey is short, approximately ten minutes, and collects qualitative information on processes, such as whether the district uses direct certification and if so, how direct certification is performed. We anticipate completing the telephone follow-up survey by end of June 2006. MPR's executive telephone interviewers will conduct the SFA director interviews, and interviewers will be instructed to conduct these interviews at the SFA director's convenience. To complete some SFA director interviews, more than one session or more than one respondent may be required.

C. THE HOUSEHOLD SURVEYS

MPR field staff will administer in-person household interviews to parents of children selected in our samples of certified free and reduced-price and denied applicant households. Interviews will be conducted throughout the school year, with most occurring during the first few months, when most applications are received and certification activities take place.

1. Household Survey Data Items

The household surveys are structured so that all households will be administered a common core set of questions. Specific modules, depending on the household's certification status, then follow this core set of questions. For all sampled households, the household survey will collect information on (1) household composition (who lives with the sampled student); (2) income from jobs for each household member and income from sources other than from employment; (3) the household's participation in TANF and food stamps; (4) sampled students' participation in the school lunch and breakfast programs; (5) parents' (and their children's) perceptions of meal program quality; and (6) demographic information about the student and household, such as parents' age and education, race/ethnicity, language spoken at home, the child's age and gender,

and the number of school-age children in the household (see Table IV.3). We also will ask parents or guardians of all sampled students about their students' SFSP participation and reasons for nonparticipation. We will ask denied applicant households why they were denied and what they did about it. In particular, we will ask whether they reapplied or have plans to do so during the rest of the school year. To gauge how eligibility may change over time, we will ask denied applicant households retrospective questions on changes in income and household composition since the previous school year.

In the rest of this section, we provide more detail on the data items being collected on the household survey to address program access and participation issues.

Data Concerning the Application Process. We will ask applicant households questions to determine if they understand the application process and when applications can be submitted. For those who report they did apply, we will ask them why they applied and about their experiences—any problems they had with the application process, whether the school contacted them about their application, and whether the application was approved.

We will include a number of questions in the household survey related to the research questions concerning households' difficulties with the application process. We will ask those who report being denied why they believe they were denied (to compare their responses to the administrative data). We will ask all applicants who see themselves as having been denied why they decided not to appeal or to reapply and consider whether there are differences by reasons for denial. In addition, we will ask all applicant households about difficulties completing the application, such as not understanding what was needed or not having information readily available. These difficulties can be assessed separately for those applications we find were incomplete. We also will ask whether the school contacted them about the application and the

TABLE IV.3

HOUSEHOLD SURVEY DATA ITEMS

Data Domain/Elements	Free/Reduced-Price Households	Denied Applicants
Certification Status		
Whether or not student is certified for free meals or reduced-price meals	X	X
If certified for free meals, did household complete an application or were they directly certified	X	
NSLP Participation		
Whether child had school lunch on the day prior to interview	X	X
Number of times per week child eats a school lunch during recently completed week prior to interview	X	X
SBP Participation		
Whether child had school breakfast on the day prior to interview	X	X
Number of times per week child eats a school breakfast during recently completed week prior to interview	X	X
SFSP Participation		
Whether participated in a program that offered free meals to all children in community	X	X
Whether attended summer school and received free meals there	X	X
Whether participated in SFSP during previous summer	X	X
Frequency participated	X	X
Other activity associated with program: none; school; camp; recreation program; other	X	X
Location of program—school; park; housing project; church; community center	X	X
Distance from program (blocks or miles)	X	X
Whether child liked the food	X	X
If not participating, aware of program nearby	X	X
If did not participate, reasons for not participating	X	X
If program opened up nearby, would child attend	X	X
Sources of breakfast and lunch for nonparticipants	X	X
Public Assistance Receipt		
TANF; food stamps; emergency assistance, Medicaid, public housing, Food Distribution Program on Indian Reservations	X	X
Household Income		
Income sources received (reference month)	X	X
Monthly income by source (reference month)	X	X
Total monthly income (reference month)	X	X
Regular total monthly income of household	X	X
Whether and how income has changed from previous school year until survey reference month		X

TABLE IV.3 (*continued*)

Data Domain/Elements	Free/Reduced-Price Households	Denied Applicants
Knowledge of Meal Program Application Procedures		
Aware of availability of free/reduced-price benefits	X	X
Received letter and/or application form from school	X	X
Perceptions of application materials—whether clear and easy to understand	X	X
Was contacted by school and encouraged to apply	X	X
Knows where to obtain an application	X	X
Knows eligibility criteria	X	X
Understands can apply for benefits at any time during the year	X	X
Whether applied	X	X
Reasons why applied	X	X
Perceptions whether application process burdensome	X	X
Experiences of Denied Applicants		
Reason application denied—ineligible; application incomplete		X
If ruled ineligible, did you think that was the correct decision		X
Take follow-up action to address issue; if not, why not		X
If application incomplete, what information was missing		X
Receive a letter indicating application was incomplete		X
Take follow-up action to address issue; if not, why not		X
Plan to reapply		X
What it would take to get household to reapply		X
Experiences with Verification Process		
Aware of verification process	X	X
Asked to send in proof of eligibility	X	X
Whether complied	X	X
Is verification burden reasonable	X	X
Reasons for Not Participating		
Reasons do not receive school breakfast[a]	X	X
Reasons do not receive school lunch[a]	X	X
Most important reason do not receive school breakfast[a]	X	X
Most important reason do not receive school lunch[a]	X	X
What it would take to participate or participate more frequently in SBP	X	X
What it would take to participate or participate more frequently in NSLP	X	X

TABLE IV.3 (*continued*)

Data Domain/Elements	Free/Reduced-Price Households	Denied Applicants
Perceptions of School Meals		
Child's satisfaction with taste[b]	X	X
Child's satisfaction with amounts[b]	X	X
Child's overall satisfaction[b]	X	X
Parent's satisfaction with healthfulness	X	X
Parent's overall satisfaction	X	X
Demographics		
Student's grade	X	X
Student's gender	X	X
Student's race/ethnicity	X	X
Location—urban, suburban, rural	X	X
Parent's education	X	X
Marital status	X	X
Primary language spoken in household	X	X
Household structure and size for reference month—names of household members and their ages and relationships to the respondent	X	X

[a]Asked of parents of students who either do not receive school breakfast (lunch) at all or participate but receive fewer than four meals per week.

[b]As reported by parents on behalf of their children.

results of such contacts. One limitation of this data collection approach is that those who were not approved may not realize the reason or may have forgotten they had applied. In these cases, we will consider the administrative data on application status to be correct, but households that report a different status may not be asked relevant survey questions. (For example, denied applicants who report not applying or not having been denied will not be asked questions about reapplying, designed for denied applicants only.)

Meal Program Participation. In the household survey, we will collect data on students' participation in the meal program as reported by parents, using carefully structured questions, for all sampled students. We will ask parents about students' participation on the day before the interview, then how frequently their child ate school meals in the most recent completed week before the survey, separately for breakfast and lunch.[1] In addition, we will ask parents who report that their children do not eat school meals every day they attended school why their children do not always participate and what it would take to get them to participate more.[2] We will ask parents why they do not have their child participate (if they make the decision) or their perceptions of the child's reasons for not participating (if the child makes the decision). To assess the role of perceived meal quality in applications and participation, we will combine the samples of certified students/households, nonapplicants, and denied applicants. In the interviews, we will measure perceived quality by asking parents about how their child views the meals and about their own views. Questions about meal quality will be adapted from the NSLP Application/Verification Pilot Projects Study and other previous studies. Typical questions ask

[1]The survey will ask parents to differentiate between a la carte and full reimbursable meals.

[2]Although the children themselves might be the ideal respondents for such questions, interviewing the children is not feasible, for reasons related to consent and cost. Particularly for younger children, parents may be aware of participation and reasons for not participating.

about the child's satisfaction with the amount of food, the quality or taste of the food, and the time spent in line; parents can be asked about their satisfaction with the healthfulness of the food and/or overall satisfaction with school meals.

Data on Families' Behavior When Eligibility Changes. Data needed to address questions related to increases in eligibility after the start of the school year are complex. Our design will allow us to address this issue directly for certified households through data collected from households in the longitudinal sample (800 certified free and reduced-price households). For these households, we will collect data on income and other household circumstances twice during the 2005-2006 school year.

To examine changes in eligibility status from paid to free or reduced-price, we will need samples of households whose early applications were denied. We considered selecting a longitudinal sample of these groups similar to the longitudinal sample of certified students but concluded that it was not cost-effective for addressing just one of many research questions related to Objective 3. Instead, we will use our cross-sectional samples of denied applicant and nonapplicant households to address this issue. We will use cross-sectional samples of nonapplicants and denied applicants, using retrospective questions to examine changes in household circumstances. Since we are sampling and interviewing these groups only once, in September or October, we will not be able to collect data on changes in their circumstances over the current school year. Instead, we will ask detailed questions about current income and household size, then ask how these circumstances might have changed *since the previous school year*.

Data on SFSP Participation. The household survey will include questions on SFSP participation.[3] Since the SFSP funds meals for children in the summer in a wide variety of contexts, parents may not know that USDA funded the meals their children received. Thus, rather than asking, "Did your child participate in the Summer Food Service Program last summer?" we will ask a question such as, "Did your child receive free meals last summer at a community feeding site, as part of a day camp or recreation program, or through summer school?" We then will follow up with questions about the frequency, type, and location of the program, as well as about perceptions of the quality of the meals.[4] SFSP nonparticipants will be asked reasons for not participating, including whether they are aware of the existence of the program and whether one is located near their home. In addition, we will include questions on other strategies parents may use to feed their children during the summer, if they do not participate in the SFSP. These strategies may include, for example, asking relatives for help, using a food pantry, spending food dollars more carefully, or buying less expensive types of food. See Table IV.3 for proposed questions.

2. Household Survey Data Collection Procedures

Key activities include selecting samples of students and contacting parents to conduct the household survey and obtain permission from them to abstract student records.

[3]The RFP states "Offerors shall collect information on whether the free and reduced-price NSLP students in the study sample participated in the Summer Food Service Program (SFSP) during the Summer of 2005. They shall also collect information on reasons for SFSP non-participation from parents or guardians of eligible students who do not participate in SFSP. They shall also obtain information on how parents or guardians of eligible non-participants in SFSP or NSLP feed their children during the summer months i.e. when school is out. This SFSP information will be part of the description and characteristics of the study sample." In our original proposal, we had interpreted this as meaning to ask the SFSP series only of those certified for free or reduced-price meals. Since the SFSP module is short, we propose asking all household samples the sequence, including denied applicant households.

[4]Although this information does not identify SFSP participation exactly, it will be a useful overall measure of participation in summer feeding programs. Furthermore, it might be possible to analyze the data in the context of

a. Selecting Samples of Students

For on-site data collection, MPR is using regionally located teams of field staff to conduct household interviews and to collect school- and student-level data. In the first few months of data collection, when demands are heaviest, most teams will be made up of four people: (1) a team leader, who will have overall responsibility for data collection; and (2) three in-person interviewers, whose main task will be to conduct household interviews but who will help the team leader with school-level data collection when needed.[5] Survey team leaders will visit school districts and select samples of students while on-site, with support from MPR's central office.

Reasons for Using a Decentralized Approach to Select the Student Samples. MPR is planning to have survey team leaders select samples of students on-site for the first round visits to districts (with survey staff in MPR's Princeton office providing ongoing review and oversight of the sampling they perform), rather than having the districts and schools send the information to MPR's office to select samples centrally. MPR routinely implements both types of approaches in its national evaluations. In some cases, when clean and comprehensive sample frame data are readily available, MPR uses centralized procedures, requesting sites to submit the information directly to MPR, where MPR will process the data, construct the frame, and conduct the sampling. This approach is preferable because it allows MPR staff to maintain direct control of the sampling process. In other cases, when clean sample frame data are not readily available and assembling the data is more complex and burdensome to local staff, MPR implements

(continued)
administrative data on the number of SFSP feeding sites in the local area, to develop a closer proxy for SFSP participation.

[5]In sampled districts using Provision 2/3, we initially will use five-person teams.

decentralized approaches, where field staff conduct the sampling under the direct oversight of central staff.

We originally considered a centralized approach but decided against it mainly because school record systems vary tremendously, data are not readily available on all the household samples that need to be selected, and the burden this would impose on district and school staff to supply "lists" or other relevant information would be excessive and costly. MPR used a centralized approach for the evaluation of the NSLP Application/Verification Pilot Projects and found it to be excessively expensive and burdensome on school staff. FNS's Study of Income Verification in the NSLP successfully used field staff to perform on-site sampling of students and households. Key to that success was extensive training and frequent monitoring by central office staff.

We require three distinct samples of students at schools included in the study: (1) in all schools, a sample of students newly certified in the period August through October 2005; (2) in all schools, a sample of newly approved applicants in a specific month from November 2005 to the end of the school year; and (3) in all schools, a sample of denied applicants as of August through October 2005. Team Leaders will select the samples identified in (1) and (3) above during their first round visits to districts.[6] To select these samples and conduct the interviews, the study team must have access, at each SFA or school selected for the study, to lists of all students approved for free or reduced-price meals, lists (or the actual hard-copy applications) of denied applicants, and parent names and contact information for the students who are selected for the study.

[6] MPR central office staff will select the samples of newly certified students for the second round visits. We will request lists of newly certified students and select the samples and then ask the SFA director to provide parental contact information for those students selected.

Two factors, among others, are critical for the success of the study. First, a large percentage of the districts and schools selected for the study must agree to participate. Second, a key feature of the study design is that each sampled family is to be interviewed about their income and household composition for a specific, scientifically selected month. Furthermore, the information necessary to select the sample only becomes available shortly before the period when the interview ideally should be conducted. Thus, to keep the interval short between the reference month (the month about which we seek income in the interview) and the time of the interview, sample selection, recruitment of parents to the study, and interviews with parents must occur within a specific, narrow window of time. We propose that sampling be conducted on-site by a member of the MPR data collection team rather than centrally at MPR because of the need for high cooperation rates among selected schools and districts, as well as the requirement to select and recruit the sample of families and conduct interviews in a specific, short time.

Selecting samples at the schools and districts has several specific advantages. First, the burden on district staff is likely to be less than it would be under a centralized sampling plan. Under a centralized sampling plan, we would need to ask that district staff send electronic or paper copies of the lists described above. For some of the required lists (such as lists of currently approved students), this would usually be straightforward. However, districts do not usually keep lists of denied applicants or lists of newly approved students in a given month—they keep the denied applications and the approved applications in files (this was our experience on the recently completed NSLP Application/Verification Pilot Projects Study). Asking district staff to create such lists imposes significant burden that would reduce the percentage of schools willing to participate in the study. We anticipate that we can review lists, select the required samples, and acquire name and contact information for the parents of selected students in a single, one-day visit to the school or district office. We believe that telling districts MPR will furnish the

staff to perform the sampling work at their location and that the work can be accomplished in one day will be important in securing the cooperation of districts and schools.

A second aspect of the proposed plan that will promote the cooperation of schools and districts with the study is that many will be reluctant to send the requested lists of students to MPR because of concerns about confidentiality. For many school staff, having MPR data collection staff visit the district and view applications and lists of students raises fewer concerns about confidentiality than sending this information to us. Furthermore, federal law and regulations require that SFAs make available to representatives of FNS for inspection specific information pertaining to NSLP certification processes. This is often useful in persuading districts that research contractors working for FNS are entitled to review NSLP documents (such as applications or lists of approved students), which district staff are trained to treat as highly confidential.

Third, as the example of denied and newly approved applications highlights, judgment will be required in defining the universe to be included in the sampling frame. Where this must be accomplished quickly, we can better control the process and ensure consistency across schools by having trained data collection team members perform the work. In the NSLP Application/Verification Pilot Projects Study, project staff acquired several lists of students and matched these lists against each other to identify all members of specific groups of interest. This allowed MPR staff to maintain control of the process and ensure that groups were defined correctly. However, acquiring and processing the lists was time-consuming. We believe that, for the proposed project, with relatively small samples in any one school, on-site sampling will produce the greatest consistency across locations.

Fourth, we believe that on-site sampling will facilitate the timely selection of samples so that interviewing can be conducted as close to the reference month as possible, thereby enhancing the accuracy of respondents' recall.

Sample Selection Procedures. Team leaders will visit sampled schools on, or close to, the first of each month of the school year to select samples of students for the household survey. During these visits, samples will be selected of certified free and reduced-price students and students whose applications were denied. The process of selecting students will follow two discrete steps. First, we will select samples of free and reduced-price approved students and then select those whose applications that were denied.

Sampling Free- or Reduced-Price-Approved Students. Team Leaders will meet with SFA directors and obtain lists of students who are approved to receive free or reduced-price meals at each study school at the time of their visit. They will then process the lists to remove any ineligible students (e.g., denied applicants, non-applicants). Team Leaders will then count the total number of eligible F/RP certified students and enter this information into Excel programs loaded onto their laptop computers. The computer will select the sample of F/RP students for each study school. We will program the computer to select 10 main selections (and 10 replacement selections).

Sampling Denied Applicants. While SFAs keep clear records of which students were approved to receive free or reduced-price meals, identifying subgroups of applications that were not approved will be more complicated. For analysis, we need to distinguish complete versus incomplete applications. For complete applications, we will want to determine whether a denial was the result of administrative error; this will require reviewing application materials. Although SFAs must keep denied applications on file, they are unlikely to have compiled lists of which applications were incomplete. Moreover, we need to review incomplete applications to

determine the extent to which they are erroneously designated as incomplete when in fact they are complete.

Field interviewers will be able to determine which applications are not approved and, perhaps, whether they are complete versus incomplete. However, finer subgroups (whether completed application was erroneously denied due to administrative error or an incomplete application erroneously determined incomplete) are not readily identifiable in the sampling lists we will receive. These subsamples can only be determined through a combined analysis of application and survey data after the interviews are complete.

For sampling, we will define our denied applicant sample as applications submitted but not approved—either complete applications that were denied or incomplete applications. When drawing the sample, field interviewers will stratify a school's denied applicants, when possible, into two groups: (1) denied applications that are complete, and (2) those that are incomplete. Field interviewers will then select denied applicants from both groups, using a sample allocation that selects relatively more completed applications that are denied than incomplete applications (60 - 40 split). Denied applicants will be selected by Team Leaders using sampling programs loaded on their laptop computers.

Obtaining Household Contact Information. After each student sample has been selected, Team Leaders will check the student roster (or obtain the source application if necessary) to get the names, addresses, and telephone numbers of the parents of each student selected for the survey. Team Leaders will enter this information onto sampling information forms for each school that they will then fax to MPR's central office, where it will be data entered and added to the database that will be used to keep track of the survey. We will then use the information on this database to create interviewing assignments and to generate letters that will be mailed to parents the week before home visits are made.

Some school districts will have policies that do not permit the release of the names and addresses of students without receiving prior signed parental consent. MPR is prepared to work with school districts that have this policy by selecting samples identifying students solely by identification numbers and not by name. The schools would then give selected students consent materials to take home and have their parents sign. Only those parents who return signed consent forms would be included in the survey. On the SNDA-I study, we successfully used this method in New York City schools. Another way to do this is to ask schools to mail consent material to parents asking them to sign and return it through the mail.

b. Contacting Parents

Regardless of the degree to which the schools and SFAs inform the parents about the study, MPR will take an active role in explaining the survey to prospective respondents. After we receive the contact information for sample members from team leaders, we will send advance letters to parents. The advance letters (printed on USDA letterhead) and project brochures will be mailed from MPR the week before in-person contacts are made at sampled households. The advance letters will describe the purpose and nature of the study. They also will explain the household data collection process and the time burden and incentive payments. In addition, they will mention that, as part of trying to understand how schools ascertain eligibility for free or reduced-price lunches, we will ask to see documents that show the amount of income household members receive. The advance letters also will address the issue of confidentiality and the protection of respondents' privacy and note that participation will not affect certification for free or reduced-price meals.

Crucial to obtaining cooperation from parents, both for in-home data collection and verification of income, will be establishing rapport with them and creating an acceptable context

for our request for detailed income information and income verification documents. This requires striking an appropriate balance between full disclosure of the purpose of the survey and encouraging compliance without biasing responses. We believe it is important (and appropriate, in terms of honesty about the study's objectives) for the certification accuracy component to be presented as the primary piece of the survey. In introducing the study to respondents before beginning the interview, we will stress that FNS wants to understand the barriers to application for the NSLP, the difficulties applicants may have in reporting and verifying their incomes, the kinds of documents that are most easily available to applicants, and their experiences with the application process. In addition, we will stress that the study is focusing on school food programs, not individual participants. The field interviewer and respondent will sign a confidentiality agreement specially prepared for the study, and a copy of the agreement will be given to the respondent.

c. Conducting Household Interviews

Interviewing will be heaviest during the first few months of the school year. During September through November 2005, we will visit all 240 schools sampled from the 80 districts once. We will select samples of free- and reduced-price-approved students (completing 10 per study school) and denied applicants (completing 1 - 2 per school on average) for a total of 2,400 free and reduced-price approved students and 320 denied applicants. During the remainder of the school year, we will complete interviews with 2 – 3 newly certified applicants from each study school during a second visit to the district for the free and reduced-price cross-sectional sample, for a total of 480 newly certified students.[7] Members of the free- and reduced-price-

[7]As mentioned, for planning purposes we assume that we will select a similar proportion of new entrants throughout the rest of the school year. However, it is possible that, for various reasons, the pattern of new entry is skewed toward the earlier part of the school year. We plan to ask the schools in the sample for their estimates of

approved student panel sample will be selected and interviewed beginning in November 2005. Between then and the end of the school year (eight months), we will also complete interviews with 100 households per month for the free/reduced-price panel sample, for a total of 800 second interviews.

Household interviews will be conducted by teams of interviewers who will spend about one week in each school area (see Exhibit IV.1 through Exhibit IV.4 for a description of the data collection activities during a typical week at a school for different configurations of visits—visits with household survey and application abstraction only, visits with household survey, application abstraction, and counting and claiming data collection from study schools, etc.) The team leaders will be responsible for coordinating the activities of the team and ensuring that the work of the field interviewers is performed efficiently. Interviewers will have to maintain flexible schedules, because many interviews will be conducted in the evening and on weekends. The interviews will be administered in person using computer-assisted personal interviewing (CAPI). Four-member teams (a team leader and three interviewers) will travel to selected school areas to conduct these interviews. Interviews will be scheduled each month within one week (at most two weeks) of selecting the samples so that accurate data on income and household composition are collected as close as possible to the application month reference period.

(continued)
what the pattern of applications is and to develop sampling plans accordingly. If their prediction proves not to be exactly correct, this is not a serious problem for the analysis, since we can use weighting to correct for minor differences in probabilities of selection across periods.

EXHIBIT IV.1

SUMMARY OF ON-SITE DATA COLLECTION DURING TYPICAL FIRST VISIT
Visit Type: F/RP & Denied Applicant Surveys and Application Data Abstraction

Time of Day	Activity	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	Application Abstraction				Abstract data on 18 - 36 F/RP & Denied applicants for 3 study schools (TL)	Abstract data on 18 - 36 F/RP & Denied applicants for 3 study schools (TL)	
	Conduct household interviews	Conduct 8 household interviews (TL & 3 FIs)	Conduct 8 household interviews (TL & 3 FIs)	Conduct 8 household interviews (TL & 3 FIs)	Conduct 6 household interviews (TL & 3 FIs)	Conduct 6 household interviews (TL & 3 FIs)	Conduct interviews, convert refusals and travel

EXHIBIT IV.2

SUMMARY OF ON-SITE DATA COLLECTION DURING TYPICAL WEEK
Visit Type: F/RP & Denied Applicant Surveys, Abstraction & Meal Counting and Claiming Data Collection

Time of Day	Activity	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		SFA	School #1	School #2	School #3	SFA	
Morning	Observe school breakfast		Observe breakfast transactions (TL)	Observe breakfast transactions (TL)	Observe breakfast transactions (TL)		
	Benefit Issuance List Data Abstraction		Sample students, abstract data (TL)	Sample students, abstract data (TL)	Sample students, abstract data (TL)	Abstract data from applications for the 3 study schools for benefit issuance list (TL)	
	Application Data Abstraction	Abstract data on F/RP & Denied applications for 3 study schools (TL)					
Lunchtime	Observe school lunch		Observe lunch transactions (TL & FI)	Observe lunch transactions (TL & FI)	Observe lunch transactions (TL & FI)		
Afternoon	Collect Meal Count/Claim Data	Collect data on Meal Reimbursement claims for 3 study schools (TL)	Collect information on meal counts (TL)	Collect information on meal counts (TL)	Collect information on meal counts (TL)		
Throughout Day	Conduct 36 household interviews	Conduct 7 household interviews (TL & 3 FIs)	Conduct 7 household interviews (TL & 3 FIs)	Conduct 7 household interviews (TL & 3 FIs)	Conduct 7 household interviews (TL & 3 FIs)	Conduct 8 household interviews (TL & 3 FIs)	Conduct interviews, convert refusals and travel

EXHIBIT IV.3

SUMMARY OF ON-SITE DATA COLLECTION DURING TYPICAL WEEK SECOND VISIT
Visit Type: F/RP Newly Certified & Meal Counting and Claiming Data Collection

Time of Day	Activity	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		SFA	School #1	School #2	School #3	SFA	
Morning	Observe school breakfast		Observe breakfast transactions (TL)	Observe breakfast transactions (TL)	Observe breakfast transactions (TL)		
	Benefit Issuance List Data Abstraction		Sample students, abstract data (TL)	Sample students, abstract data (TL)	Sample students, abstract data (TL)	Abstract data from applications for the 3 study school's benefit issuance lists (TL)	
	Application Abstraction	Abstract data on newly approved F/RP applications for 3 study schools (TL)					
Lunchtime	Observe school lunch		Observe lunch transactions (TL & FI)	Observe lunch transactions (TL & FI)	Observe lunch transactions (TL & FI)		
Afternoon	Collect Meal Count/Claim Data	Collect data on Meal Reimburse-ment claims for 3 study schools (TL)	Collect information on meal counts (TL)	Collect information on meal counts (TL)	Collect information on meal counts (TL)		
Anytime but mostly afternoon and evenings	Conduct 9 household interviews	Conduct 3 household interviews (TL & 1 FIs)	Conduct 3 household interviews (TL & 1 FIs)	Conduct 3 household interviews (TL & 1 FIs)		Conduct interviews, convert refusals and travel	

EXHIBIT IV.4

SUMMARY OF ON-SITE DATA COLLECTION DURING TYPICAL VISIT
Visit Type: Newly Certified F/RP Surveys and Application Data Abstraction Only

Time of Day	Activity	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	Application Abstraction			Abstract data on 9 - 18 F/RP applicants for 3 study schools (TL)			
	Conduct household interviews	Conduct 4 household interviews (TL & 1 FI)	Conduct 4 household interviews (TL & 1 FI)	Conduct 2 household interviews (TL)	Conduct interviews, convert refusals and travel		

d. Collecting Data on Household Income and Other Eligibility-Related Characteristics

Obtaining an accurate measure of the household's usual monthly income and family size is critical for estimating erroneous payments. We will implement a multistep methodology adapted from MPR's evaluation of the NSLP Application/Verification Pilot Projects. First, we will ask for all the different sources of income, by household members. Next, we will ask for the specific amount of income per person and source (allowing respondents to record the income amounts themselves, instead of telling the answers to interviewers). Asking for the sources of income first, without asking for amounts or documentation, will encourage the disclosure of more sources, since respondents may not expect to be asked further questions about each source. We will also request documentation of income sources and enter that information into the laptop computers. The computer will compare information from the self-reports against the information in the documents, and should amounts differ, the interviewer will ask the respondent about the discrepancy to resolve it. At the end of the sequence, income sources across all adults and sources will be summed to come up with a total monthly amount. Next, we will ask respondents whether that total amount differs from the household's regular monthly income. If the answer is yes, we will ask respondents what sources/household members differ, and by how much. Amounts will be adjusted and yield a regular, monthly total for the reference month (month covered by the application). Next, we will ask whether the total income reported for the reference month was a typical or usual amount. If it was not the usual monthly income, we will ask for an estimate of the normal expected amount of household income for the year.

Collecting Data for the Appropriate Income Reference Period. We will use income and other eligibility-related information obtained from the household survey to assess the accuracy of parents' report of eligibility information when applying or verifying their eligibility. Therefore, the reference period covered in the survey must exactly match the one used on the application or

verification documents. In most instances, we are selecting and interviewing households and asking them about income in the month before the interview, which corresponds to the reference period on their application. There will be instances, however, when the reference period will be two or more months before the household survey. Our approach will be to program the CAPI survey to bring up the appropriate reference month for a given household based on its situation. These instances include:

- ***New Applications.*** Most households in our sample of certified free and reduced-price households will complete new applications during SY 2005-2006. Our plans call for sampling and interviewing them in the month they were approved. For these interviews, the reference month is the most recently completed month before conducting the survey. For most cases, the reference month on the survey will correspond exactly to the monthly income information provided on the application; for others, it could be off by one month. In either situation, at the end of the income sequence, we will ask respondents questions to ensure that total monthly income corresponds to the household's usual or regular monthly income.
- ***Carry-Overs.*** We will encounter situations where a students' eligibility may carry over from an earlier period. One such situation is when a student transfers to a new school and does not need to complete a new application. Another is when districts allow households to use the certification status from the prior school year for up to 30 school days at the start of the new school year before a new application must be submitted (see Chapter II, Section B, for further discussion). In these cases, the reference period corresponding to eligibility information provided on the certification application could be a few months to up to a full year before we interview the household. We will ask about the most recently completed month before the survey, then ask questions to determine whether, and by how much, circumstances (income and family size) differ now, compared to the time they submitted their application, to measure eligibility at time of application.

e. Obtaining Parental Consent for Student Records Data

For the study, we must pay special attention to concerns about confidentiality and parental consent. During the district recruiting calls, the evaluation team will discuss with school districts what form of consent is needed. It is likely that most, if not all, of the school districts will require signed parental consent for the release of meal price eligibility application records. We will obtain this consent during the household interviews. Consent forms and procedures for

obtaining them will be designed to be in full compliance with privacy protection laws. Consent forms will contain an explanation of the meal price verification process and how individual observations will be kept confidential and not disclosed to the SFA or other school or district officials. The consent forms will be printed on multi-ply NCR paper. Interviewers will leave a copy of this form, signed by the interviewer and the respondent, with the respondent at the end of the interview.

f. Maximizing Response Rates

MPR will do several things to minimize attrition from the household survey samples and maximize the data available for analysis. To stimulate cooperation, our plans include (1) advance mailings on USDA letterhead, (2) endorsements from EIAC and the school districts, (3) encouragement from school officials (with a number to call to confirm the authenticity of the survey), (4) structured opportunities for establishing rapport, (5) a gradual increase in the degree of specificity on income questions, (6) employment of automated interviewing methods to ensure the privacy and confidentiality of income information, and (7) avoidance of refusals and conversion of refusals that may occur into cooperation. Locating hard-to-find sample members (often the greatest threat to sample maintenance) should not be a significant problem in this survey, because we anticipate that schools will provide reasonably current address information.

Obtaining cooperation on the income verification questions and obtaining income documentation (pay stubs) during the household data collection are critical to the success of the study. Similar to what we did in the evaluation of the NSLP Application/Verification Pilot Projects, we plan to use incentive payments designed to increase cooperation at each stage of the interviewing. Providing documentation increases the interview burden on respondents. We will

offer respondents $25 for the in-home interview, since we expect that they will provide at least some income verification documents.

Another key to minimizing nonresponse is the use of experienced, highly skilled interviewers. Interviewers hired for this study will be selected based on their experience conducting in-person interviews with similar populations. Parent interviewers will be selected based on experience interviewing a variety of people, particularly low-income people, working in school settings, as well as their ability to work independently. Preference will be given to field interviewers who have worked with other studies that involved collecting data on households and in school settings. Bilingual interviewers will be hired where a concentration of non-English speaking parents is likely to exist.

Interviewers will receive extensive training. Team Leaders will receive three days of training on constructing student sample frames and sampling for the household survey and application data abstraction, and sampling for the meal counting and claiming data collection and administering all data collection forms for acquiring these data. Field interviewers and Team Leaders will receive two days training on administering the CAPI household survey, specifically on obtaining household income, family composition, and parent experiences and attitudes toward the meal programs and application and certification procedures. As part of the training, we will ask parent interviewers to complete practice exercises using CAPI before the start of interviewing.

In addition, we will use several other techniques to minimize nonresponse. To ensure privacy, interviews will be conducted in households, and all respondents will be assured of confidentiality. The household survey will be conducted using computer-assisted personal interviewing (CAPI) software. This will ensure that all questions are asked with the appropriate

prompts and that the skip patterns are followed. The computer programs also make the interviews go faster and thus reduce burden.

D. STUDENT-LEVEL DATA ABSTRACTION

Data on students' meal program applications, direct certification documents, and verification documents are required to assess the accuracy with which SFAs determine eligibility, and when compared with information from the household survey, the accuracy of parents' report of eligibility information (see Table IV.1). We also will collect data on students' meal program participation for those students attending schools that record and retain meal program participation at the individual-student level. Finally, we will need to collect data on students' enrollment start and stop dates and on any changes in certification status (and dates of these changes) during the entire school year.

1. Collection of Application Data

We will collect data appearing on the meal program benefit applications for the free and reduced-price student and denied applicant samples. Overall, this involves collecting data on 4,496 applications from 264 sampled schools. The 4,496 applications will be made up of 2,880 approved free/reduced-price and 320 denied applications from the 216 non-Provision 2/3 schools, 864 approved free/reduced-price and 104 denied applications from 24 Provision 2/3 base-year schools, 576 approved free/reduced-price and 72 denied applications from 24 Provision 2/3 nonbase-year schools.[8] Subject to approval by schools, team leaders will make copies of meal price application forms when they revisit schools after obtaining parental consent.

[8]The applications for the nonbase-year schools refer to those from the base year of their current Provision 2/3 cycle.

When schools do not permit us to make copies, the information will be hand-copied onto standardized data abstraction forms specially prepared for the study.

Key data items to be abstracted include:

- ***Identification Information.*** Name of school; school district/SFA; student's full name; date of application; number of people in household; number of students covered by the application; student is foster child
- ***Income Eligibility Information.*** Whether household receives food stamps, FDPIR or TANF; FSP or TANF case number; income data by source for all people in the household
- ***Eligibility Determination.*** Whether student eligible for free meals; whether eligible for reduced-price meals; whether denied; reason for denial—income too high, incomplete application, other

MPR central staff supervisors will provide ongoing oversight and assistance to Team Leaders. The completed abstraction forms and/or copies of applications will sent to MPR's central office. In cases where applications are photocopied, the data will be entered onto application data abstraction forms. Then quality control staff review the abstraction forms. The forms then will be data entered.

2. Collecting Student-Level Records Data on NSLP and SBP Participation

We will collect data on individual-level meal program participation for sampled students in districts and schools that compile individual-level participation data and keep them. We will collect this information for students in the free and reduced-price meal samples, as well as for the denied applicants. Wherever possible, we will get participation information covering the whole school year. We will collect the data in two waves: for the first semester and then for the second semester. We anticipate that at least half of the districts will track participation at the individual level. We believe most districts tracking participation will do so electronically. In those cases, we will request copies of relevant data files. Some schools that track individual-student

participation may not do so electronically, but may keep paper records instead. And even some districts that track data electronically may not be able to provide the data in that format, and will instead provide paper printouts. We will scan hard copy data, convert them into electronic datafiles, and merge the data to our analytic files.

3. Collecting Information on Changes in Students' Certification and Enrollment

Our estimate of erroneous payments due to certification error equals the difference between the reimbursement amount for the type of meal for which students are certified and the reimbursement amount for the type of meal for which they are eligible times the number of program meals they received during the year. A student's certification status may change during the school year and we must know how that status changes throughout the school year and the dates various statuses apply in order to accurately measure erroneous payments for each sampled student. Certification status may change for a number of reasons. A student may be selected for verification and as a result of verification process his status changes. Or a student may reapply and qualify for a larger benefit (e.g., change from reduced-price to free) because their economic circumstances worsened. Similarly, we need to know enrollment end dates for sampled students, so as not to attribute erroneous payments to students for the entire year for those no longer attending sampled schools because they transferred out or dropped out of school. MPR central office staff will contact districts just prior to the end of the school year and request change in certification status and enrollment information for students in the research sample.

E. MEAL COUNTING AND CLAIMING ERROR DATA COLLECTION

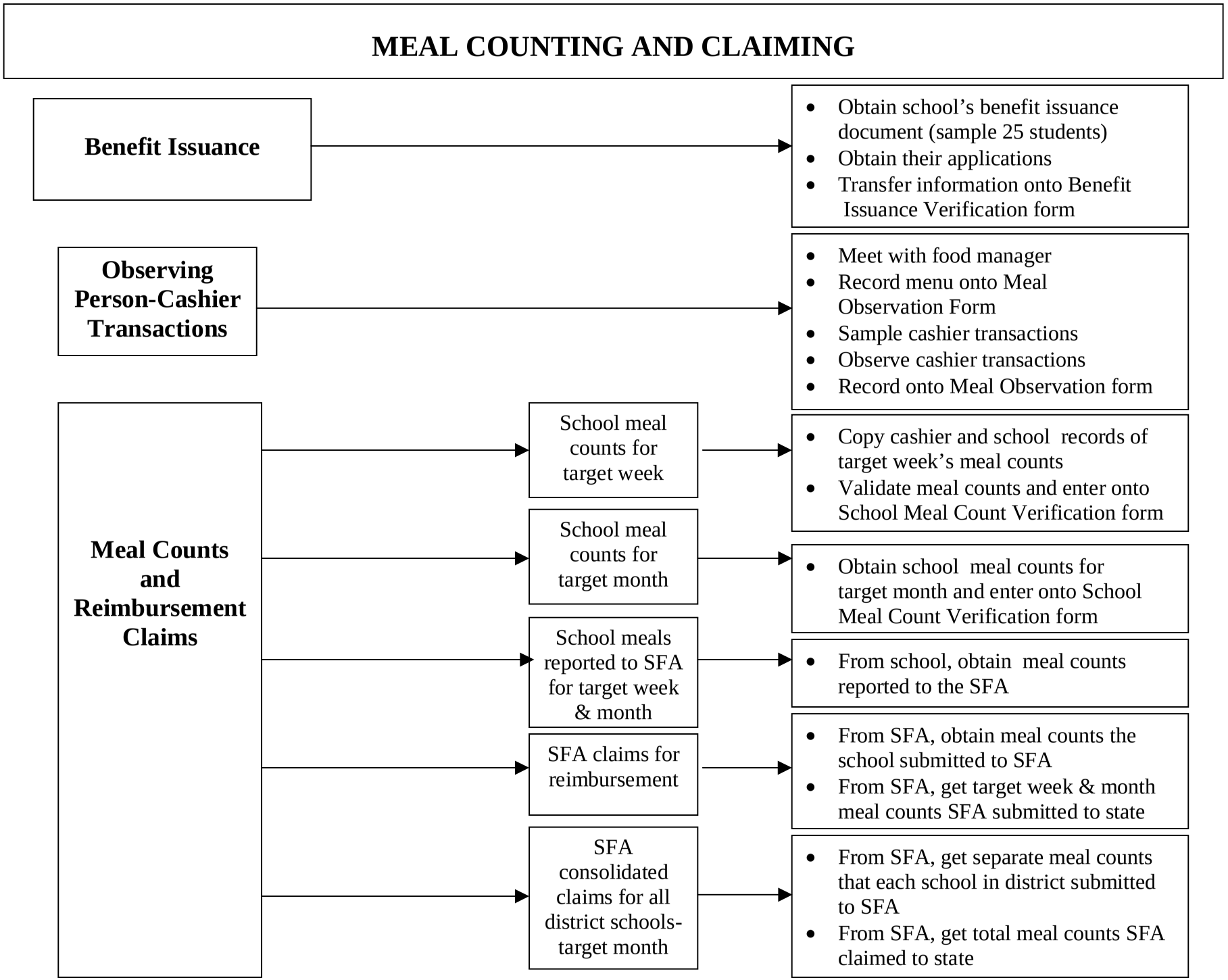
Errors can occur at various points in school and district operations after certification status is determined. The study distinguishes errors that occur at each of three main stages: (1) benefit issuance; (2) cashier transactions; and (3) counting, consolidating, and claiming meal

reimbursements. Data collection will be complicated by the fact that there is great variation across SFAs in their levels of technology and staff training, as well as in the specific procedures used. In addition, even in a specific district, the relevant systems may vary from school to school. Indeed, they can vary over time in a specific school—for example, when a school uses an automated system most of the time but reverts to a manual system when the computerized process breaks down. The plans MPR has developed for collecting data on and measuring counting and claiming error in the project take into account this variation in procedures. Since interview teams visit school districts and schools throughout the school year, data collection for meal counting and claiming activities will be staggered throughout the school year to obtain information representative of meal counting and claiming error across the entire school year (see Figure IV.1).

1. Benefit Issuance Error Data Collection

Schools use benefit issuance documentation to identify the category in which a meal served to a student will be claimed for reimbursement. This documentation is based on information from the office that conducts the certifications. Errors occur when a student is listed on the benefit issuance document for the wrong reimbursement category—that is, is in a status not supported by their application or certification documents. Six types of errors are possible: a student is (1) approved for free meals but is listed as "reduced-price"; (2) approved for free meals but is listed as "paid"; (3) approved for reduced-price meals but is listed as "free"; (4) approved for reduced-price meals but is listed as "paid"; (5) ineligible for free or reduced-price benefits, or no application for direct certification/other eligibility documentation was on file, but was listed as "free"; and (6) ineligible for free or reduced-price benefits, or no application for direct certification/other eligibility documentation was on file, but was listed as "reduced-price."

FIGURE IV.1: DATA COLLECTION ACTIVITIES



These errors might reflect clerical transcription error, or they might occur when the benefit issuance document is not updated properly.

To measure the errors associated with this process, sometimes referred to as "roster" errors, field interviewers will select a random sample of students from a school's benefit issuance documentation. Then, for that sample, the interviewers will compare the certification status shown on the benefit issuance document used in counting students for reimbursements with their certification status as recorded on the application or direct certification document maintained by the SFA or school. We plan to select a random sample of 25 students per sampled school (for 240 schools across the 80 districts). Team Leaders will select the students from the benefit issuance list using their laptop computer using specially designed sampling programs that make random selections. The computer will provide information on which students to select (based on the student's position on the list). We have developed procedures for selecting students from a single, centralized list; when lists are maintained in separate classrooms; and in mixed situations where some students are listed on individual classroom lists and others on a single, centralized list.

2. Cashier Error Data Collection

A key step in the counting and claiming process occurs at the point where a cashier judges whether the food on a student's tray is a reimbursable meal and records that information. Although details of this transaction vary greatly, some version of the process occurs in all NSLP and SBP schools. Furthermore, this point in the process may be especially vulnerable to error because of the variety of foods available to students in most schools and the complexity of the rules that govern what combinations of foods are and are not reimbursable. Errors occur when cashiers record a meal as reimbursable that does not contain the required number of

items/components.[9] Errors also occur when a second meal served to students in any category is claimed for reimbursement or when meals are served to ineligible people (such as teachers or adult visitors). Similarly, an error occurs if a cashier fails to count a meal as reimbursable that is eligible or is received by an eligible student.

In addition, besides determining whether a student's *meal* is reimbursable, at some schools, the cashier must determine and record the reimbursement status of the *student*. Increasingly, this determination is made based on passing a student ID card through electronic point-of-sale equipment (or entering a PIN number) without direct cashier involvement. However, systems are still in use in which cashiers must make this determination based on a code embedded in a ticket, on a list of students and their certification status, or in some other way. Mistakes in this process represent another form of cashier error.

Thus, it is possible for counting and claiming errors to occur in cashiers' assessments of the *meals* and in their determination of the reimbursement status of the *students* passing through the line. It is likely, however, that the mistakes related to *meals* are much more common, since the meal-related determination is made more often and is more difficult.

Our approach to collecting data on cashier error is to station MPR staff near points of sale for a randomly sampled observation day during a target week and meal periods and have the staff record enough details on a specially designed form about a sample of meal "transactions" to make possible an estimate of the prevalence of the following types of cashier error: (1) meals incorrectly recorded as reimbursable, and (2) meals incorrectly recorded as non-reimbursable.[10]

[9]The quantity served may be insufficient to meet meal-pattern requirements; in principle, these meals should not be counted as reimbursable. However, we believe it would be instrusive and too difficult for field interviewers to accurately make this assessment; therefore, we do not include it when measuring cashier error.

[10]The study will not directly measure errors when cashiers inaccurately record a student's meal reimbursement status. To measure this error would require identifying the student involved in each meal transaction and then

We used this approach successfully on the Competitive Foods Data Collection Methodology Study for FNS.

Specifically, for a given school, our approach involves:

- ***Obtain Information on Point-of-Sale Procedures.*** MPR central staff will first obtain enough information from school food service managers on the logistics of the school's point-of-service operations to finalize plans for drawing random samples of point-of-sale/time combinations.
- ***Select Samples of "Transactions" and Record Information.*** Team Leaders will enter information into their laptop computers for each cash register, by meal period and volume of transactions, separately for breakfast and lunch. The computer will randomly select cash registers to observe during periods and interval samples of individuals coming through the lines to observe. Field staff will record (1) what items are on each tray and the amounts of each item;[11] (2) whether the transaction involved a student, nonstudent, or other adult; and (3) whether the cashier records the tray as a reimbursable meal.[12] The sampled meal transactions could include reimbursable meals obtained by free and reduced-price approved students and full price paying students. We will not station field staff at "a la carte" only lines, but if "a la carte" meals can be purchased in the same lines as reimbursable meals then they will be included as a possible transaction that can be selected.
- ***Send Data to MPR's Central Office.*** The recorded information will then be sent to MPR's Princeton office, where coders fully trained in the rules governing whether or not meals are reimbursable will code this information. (The determinations depend on whether the school uses a food-based or a nutrient-based menu-planning approach and whether the school uses offer versus serve. This information will have been obtained earlier at the school.)

(continued)

collecting information on their certification status from administrative records and comparing it to what the cashier recorded. While this would be relatively easy to implement, identifying students either by asking them their names or asking school staff to provide their names is intrusive and would result in greater requirements for informed consent. We are concerned that this could cause districts and schools to be less willing to participate in the study. For similar reasons we are also not measuring the prevalence in which cashiers count as reimbursable second meals served to students. We do plan to obtain information to qualify these types of error. Field interviewers will ask school food service directors whether there is a procedure in place to prevent these types of errors, and if so, to describe the procedures. Then while conducting meal transaction observations, field interviews will assess whether the procedures are being followed.

[11]Food items available will be precoded on the form.

[12]There will be a column on the form for interviewers to make an assessment of whether the meal constitutes a reimbursable meal. This assessment will be confirmed at MPR's central office when the forms are reviewed.

Our earlier experience shows that it is almost always possible to find a spot near the cashier where student trays can be observed. Field staff will need to be flexible, both to accommodate the physical layout of the serving area and to accommodate the staff. If data collectors are flexible, staff will usually be well prepared to cooperate with the data collection and willing to make minor accommodations to facilitate accurate observation.

Critical to measuring these errors is the development of statistically efficient samples of point-of-sale locations and times. We plan to observe meal service operations at each of 264 schools on a randomly selected day when MPR field staff are at a school district for a target week and to collect, overall, data on 100 lunch transactions and (when relevant) 50 breakfast transactions per school. The information on the data collection instruments that are filled out at the schools will be coded and entered onto short coding forms—one per transaction—which will then be data-entered at MPR's central office.

3. Aggregation Error Data Collection

Aggregation error refers to all errors occurring between the time the meal reimbursement status is recorded at the point of sale and the time the district claims reimbursement for its meals from its State Agency. Errors can occur in adding up the meals from individual points of sale to a daily count at the school, adding the daily counts at the school to weekly or monthly levels, or (at the district level) entering the incorrect amount for a school or totaling counts across schools and filling out and submitting the appropriate claims material. Daily totals may not match totals across points of sale (cash registers) because of errors in totaling amounts from the registers. They may also be in error if schools use an inappropriate method for determining the daily counts. For example, a school might use daily attendance or a classroom count as the basis for its claims, count trays; or, instead of counting all meal categories, it might use a category "back-

out" system where one or more categories are calculated by subtracting the number of meals of one or more meal type from the total meal count.

MPR will collect data on each stage of the process. We will collect data for each sampled school for a target week (previous completed full week prior to the visit to the school) and target month (prior month). The reference week/month will be distributed across the school year. Our basic approach is to have field interviewers collect information from both sampled schools and SFAs; with MPR central office staff serving as a backup to collect district-level data when appropriate. We also will collect data on number of students in the meal pricing categories (free; reduced-price), enrollment, daily attendance, and number of serving days, to help us assess the accuracy of the meal counts. All raw data on counting, consolidation, and claiming will be processed by MPR central office staff to determine prevalence and amount-of-aggregation errors.

Our approach for collecting data on each source of aggregation error is as follows:

- ***Daily Counts for Target Week.*** During the visit to each study school to collect counting and claiming data, MPR field staff will meet with the school's food service manager to obtain data on the target week meal counts (most recently completed week prior to the visit). We will obtain the separate meal counts from all the cashiers, as well as the total daily count recorded for the daily report the school compiles each day. Field interviewers will photocopy all relevant documents, if possible; otherwise, they will enter the information onto specially designed forms. All these data will be obtained in formats broken down by meal reimbursement status—free, reduced-price, and paid, so the number of each type erroneously counted can be identified. Field staff must also validate the school's daily meal counts for the target week. They will use the same procedure as the food service worker (for example, counting tickets in a ticket system or counting check marks in a roster check-off system). In automated systems, we will obtain the register totals. We will need a printout or copy of a cash register tape for each register for each meal on each day of the target week. For a few schools, if they do not use a point of sale or cash register tape, we may have to go to the school every day as they clear the registers and write down the amounts. However, we anticipate that few schools will keep track of sales this way.
- ***Monthly Counts.*** Field staff will also request data in the same report formats for the previous full calendar month (called the target month). For example, if the data collection were taking place in the second week of April, school-level data would be obtained covering the full month of March. They will obtain the school recorded

counts that the school reports to the SFA, separately by free, reduced-price, paid, and total. Field staff do not verify these meal counts.

- ***District Reimbursement Claims for Sampled School.*** We will collect data from the district covering the same target week and month to determine whether the SFA accurately claimed meals for reimbursements for the sampled school when it submitted the claim to its State agency.[13,14] Team leaders will request the following information from the SFA: (1) records of the breakfast and lunch counts for the target week and month that the school submitted to the SFA, and (2) documentation showing the number of breakfasts and lunches the SFA claimed for reimbursement for the sampled school when submitting the claim to the State agency. We will obtain the breakdown by free, reduced-price, paid, and total meals. When field staff cannot obtain this information, MPR central office staff will make the request.

- ***District Consolidation and Claims Across All Schools.*** For a sampled month, we will collect data from the district on (1) the separate meal counts by type that each school submitted to the district and (2) the total meal counts reported (claimed) by the district to the State agency for meal reimbursement, to determine aggregation error from this source.

To supplement the data collection, we will also ask, during our telephone interviews with district staff, for respondents to give us their own assessment of whether there are places in the flow of information that are vulnerable to errors. We also will ask for information on any formal audits (either by state auditors or by school district auditors) that have involved the aggregation process and for the results of those audits. We will then use this information to supplement the information obtained from the direct observation of meal counts.

[13]Schools vary in how often they report meal counts to SFAs. Some schools report weekly, some monthly, and others daily. When tracking the school's meal count totals by category through the process of reporting the counts to the SFA, we will base the reporting period on what the school uses.

[14]Part of the initial interviews that will take place with the SFA directors will involve identifying what office in the school district is responsible for submitting reimbursement claims to the state and obtaining contact information. We will then telephone that office from Princeton and obtain detailed information about the flow of reimbursement count data to that office—including what offices or staff the data go through, what is done with the data at each stage, and how the data are transmitted to the next stage. (In some instances, collateral contacts to additional offices may be necessary to obtain comprehensive information.) In particular, in the discussions with the office that submits claims to the state, we will ask whether—in their office—data are available on a school-by-school level to support the overall totals. If so, we will obtain those data and assess whether they correspond to the information we obtained at the school level. If the data do not correspond to the data obtained from the schools, we will use additional telephone interviews to determine the reasons for the differences, thus assessing whether the discrepancies are due to aggregation error or to some other factor.

F. COLLECTION OF ADMINISTRATIVE DATA FOR MODELING

In this section, we describe our plans for collecting administrative data from FNS and State Education Agencies and for acquiring public use data from the CCD, PSS, and 2000 Decennial Census. We will use these data to estimate the model of erroneous payments, described in Chapter V, Section B.

1. Data Items/Sources

To develop and test the study's model for estimating erroneous payments in nonsurvey years, we will collect district-level administrative data from the SFA Verification Summary Reports (Form FNS-742) from FNS central office and obtain other district-level administrative data from State Education Agencies.[15] We also will acquire public use data at the public school district-level from the CCD and Decennial Census, and data at the private school-level from the PSS. Tables IV.4 and IV.5 show the specific data items to be used from each of the administrative and public use data sources.

2. Data Collection Procedures

In general, our main point of contact for obtaining SFA Verification Summary Reports data from FNS will be the FNS project officer for the current project. We will obtain the other district-level data that we need from State Education Agencies. We plan to send each agency an advance letter, then make a follow-up call to acquire the data. We anticipate that State Education Agencies will be able to send us electronic files or printouts of the relevant data by district. We have developed an abstraction form for them to complete if they prefer to provide us data in that format. After we receive the data, they will be routinely checked to see that they are in the

[15]SY 2005-2006 will be the second year of data collection from Form FNS-742. As it will be only the second year that these data would have been collected, data may be less accurate or complete than they will be in future years.

TABLE IV.4

ADMINISTRATIVE DATA ITEMS, BY SOURCE

SFA Verification Summary Reports (Form FNS-742) (SFA Level)

- Type of SFA (public or private)
- Type of application used (individual student, household, or both)
- Number of schools operating the NSLP and/or SBP
  - All
  - Provision 2/3 schools that are not operating in a base year
- Number of enrolled students with access to the NSLP and/or SBP
  - All
  - In Provision 2/3 schools that are not operating in a base year
- Percent of students certified as free eligible
  - Percent certified as free eligible, not subject to verification
  - Percent certified as free eligible based on income/household size information submitted on application
  - Percent certified as free eligible based on categorical eligibility from application
- Percent of students certified as reduced-price eligible
- Verification sampling method (focused or random)
- Verification results, by certification category (number of students)
- Verification results, by certification category (free eligible based on categorical eligibility, free eligible based on income eligibility, reduced-price eligible), number of students
  - No change
  - Responded, changed to free
  - Responded, changed to reduced-price
  - Did not respond
- Verification results, by certification category (free eligible based on categorical eligibility, free eligible based on income eligibility, reduced-price eligible), number of applications
  - No change
  - Responded, changed to free
  - Responded, changed to reduced-price
  - Did not respond

SFA-Level NSLP and SBP Program Data (from State Education Agencies)

- Number of reimbursable meals
  - Number of reimbursable lunches (free, reduced-price, paid, total)
  - Number of reimbursable breakfasts (free, reduced-price, paid, total)
- Number of students by Provision 2/3 status
  - Number of students enrolled in Provision 2/3 schools
  - Number of students enrolled in Provision 2/3 schools with SBP only
  - Number of students enrolled in Provision 2/3 schools with both SBP and NSLP
  - Number of students enrolled in non-Provision schools
- Number of schools, by Provision 2/3 status
  - Number of Provision 2/3 schools
  - Number of Provision 2/3 schools with SBP only
  - Number of Provision 2/3 schools with both SBP and NSLP
  - Number of non-Provision schools
  - Total number of schools

TABLE IV.5

PUBLIC USE DATA ITEMS, BY SOURCE

Common Core of Data (CCD) (District Level)
Total enrollment
Number of schools
Enrollment, by race/ethnicity/gender/grade[a]
Grade span of district
Location of district (large city, mid-size city, etc.)
Percent certified for free and reduced-price lunch[a]
Percent of schools that are Title 1 eligible
Private School Survey (PSS) (School Level)
Religious orientation of school
Grade span of school
Total enrollment
Enrollment, by race/ethnicity/gender
Zip code
2000 Census (District Level)
Median income
Household poverty rate

[a]These data items are only collected and reported at the school level. We will obtain them from the CCD Public Elementary/Secondary School Universe Data Files and aggregate to the district level to obtain the variables for our analysis. All other data items from the CCD will be obtained from the Local Education Agency Universe Survey Data Files.

expected formats, and sufficient edit checks will be done to assess their apparent correctness and internal consistency. Any issues uncovered at that time will be discussed with the appropriate contact providing the data.

We will download the most recently available public use data from the CCD and PSS from the National Center of Education Statistics' website, and we will download data from the 2000 Dicennial Census from the Census Bureau's website. The Census Bureau website will also be the source of district-level information in selected off-Census years through the Small Area Income and Poverty Estimates (SAIPE). All the variables we use from the CCD will need to be at the district level. Most of these items are collected and reported at the district level and are available from the CCD Local Education Agency Universe Survey Data Files. However, information on enrollment by race/ethnicity, gender, and grade and on percent of students certified for free and reduced-price meals is available only at the school level. We will obtain these items from the CCD Public Elementary/Secondary School Universe Data Files and aggregate to the district level to obtain the relevant district-level measures.

V. ANALYSIS PLANS

The study will include a broad set of analyses. We will derive national estimates for overpayments, underpayments, and overall erroneous payments made under NSLP and SBP for SY 2005-2006. We will develop and test models for FNS staff to use available data in their annual updates of erroneous payment estimates for NSLP and SBP. We also will analyze several participation and access issues related to administrative procedures designed to reduce erroneous payments. This chapter describes our plans for addressing these and related analyses.

A. NATIONAL ESTIMATES OF ERRONEOUS PAYMENTS

A key objective of the study will be to measure erroneous payments made to SFAs for NSLP and SBP meals they have claimed for reimbursement. Such payments may have resulted from following one of two major paths. First, they could have arisen because students were certified to receive a level of free or reduced-price meal benefits for which they were not eligible. Estimating this source of erroneous payments is discussed in Section A.1. Second, erroneous payments could have arisen from free, reduced-price, or paid meals that SFAs improperly claimed for reimbursement. Section A.2 describes planned analyses of these meal-counting and -claiming errors.

1. Erroneous Payments Due to Certification Error

In this section, we describe our estimation and analysis of erroneous payments made under the NSLP and SBP as a result of misclassification of students' certification status. We first describe our methodology for generating national estimates of over-, under-, and overall erroneous payments due to certification error. We then discuss our approach for analyzing the two possible sources of these erroneous payments: administrative errors and household

misreporting. We also present our analysis of changes in household circumstances over the school year. Finally, we discuss our analysis of the error rates associated with direct certification and of the accuracy of districts' verification procedures.

The definition of erroneous payments used in this analysis of certification error, specified by FNS, focuses exclusively on incorrect payments made for meals consumed by *students certified to receive free and reduced-price meals*. According to this definition, payments for paid meals consumed by students who are income eligible for free or reduced-price meals are not considered erroneous (even if those students applied for, and were mistakenly denied, free/reduced-price certification).[1, 2] We will base our estimates of erroneous payments on a comparison between the benefits free/reduced-price-certified students receive for meals consumed (based on their actual free/reduced-price certification status) and the benefits for which they are eligible based on their household circumstances (that is, for which they are income eligible). Overpayments arise when students get free or reduced-price meals but are income eligible for a lower level of benefits or perhaps for neither free nor reduced-price meals. Underpayments arise when *certified* students receive a lower level of benefits but are eligible for a higher one.

Overall, our analysis of erroneous payments due to eligibility misclassification will address the following:

[1]As mentioned earlier, we plan to test the sensitivity of the findings by including erroneous payments attributable to those students who applied for meal program benefits but who were mistakenly not approved for free or reduced-price meals.

[2]As discussed in Section V.1.b, the analysis of counting and claiming errors will include erroneous payments associated with meals served to students not certified to receive free or reduced-price meals but claimed at a free or reduced-price rate.

1. Generate national estimates of:

- ***NSLP Overpayments.*** Payments made to SFAs for free or reduced-price NSLP meals served beyond the level of payments that would have been made if no students had been certified for a higher level of free/reduced-price meal benefits than they were eligible for on the basis of their income or receipt of food stamps, TANF, or FDPIR benefits (via direct certification or categorical eligibility)[3]

- ***NSLP Underpayments.*** Amount by which payments made for reduced-price NSLP meals were below those that would have been made if none of the SFA's students had been certified for less than the level to which their income and FS/TANF/FDPIR status entitled them[4]

- ***Total NSLP Erroneous Payments.*** The sum of NSLP overpayments and NSLP underpayments

- ***SBP Overpayments.*** Payments made to SFAs for free or reduced-price SBP meals served beyond the level of payments that would have been made if no students had been certified for more than the level to which their income or receipt of food stamp/TANF/FDPIR benefits entitled them

- ***SBP Underpayments.*** Amount by which payments made for reduced-price SBP meals were below those that would have been made if none of the SFA's students had been certified for less than the level to which their income and food stamp/TANF/FDPIR status entitled them

- ***Total SBP Erroneous Payments.*** Sum of SBP overpayments and SBP underpayments

2. Describe sources of erroneous payments:

- Determine the proportion of overpayments, underpayments, and overall erroneous payments (for the NSLP and SBP) due to administrative errors made by the school district at various points during the certification process (initial application and reapplication).

- Determine the proportion of overpayments, underpayments, and overall erroneous payments (for the NSLP and SBP) due to household misreporting of income, household size, or FS/TANF/FDPIR status at the time of application or reapplication.

[3]Hereafter, we will refer to these three forms of benefits (for direct certification or categorical eligibility) as FS/TANF/FDPIR benefits.

[4]In other words, underpayments capture the difference between the payments that were actually made for reduced-price meals and the payments that would have been made for free meals for those students certified for reduced-price meals but eligible for free meals on the basis of their income or FS/TANF/FDPIR receipt. Underpayments for students who were income eligible for free or reduced-price meals but had their applications improperly denied are not included in this underpayment estimate.

3. **Determine the proportion of households that are certified for free or reduced-price meals and that experience changes in circumstances during the school year:**[5]

- Determine the proportion of those who are income eligible for free meals at the beginning of the school year but whose circumstances change so that they would be eligible only for reduced-price meals if they applied later in the year.
- Determine the proportion of those who are income eligible for free meals at the beginning of the school year whose circumstances change so that they would not be eligible for free or reduced-price meals if they applied later in the year.
- Determine the proportion of those who are income eligible for reduced-price meals at the beginning of the school year whose circumstances change so that they would not be eligible for free or reduced-price meals if they applied later in the year.
- Determine the proportion of those who are income eligible for reduced-price meals at the beginning of the school year whose circumstances change so that they would be eligible for free meals if they applied later in the year.

4. **Determine the error rate associated with direct certification. In other words, determine the proportion of directly certified students who are not eligible for free meals.**[6] Determine the extent to which the certification error rate varies by the SFA's method of direct certification implementation.

5. **Determine the certification-related error rate as detected by current school district verification procedures.**

a. Estimates of Over-, Under-, and Total Erroneous Payments

In this section, we describe the methodology we will use to generate national estimates of erroneous payments under the NSLP and SBP due to eligibility misclassification. We first

[5]As mentioned earlier, under the new law, eligibility determinations are now valid for the entire school year, whether or not household income or other circumstances change in ways that would make the household ineligible or eligible for a lower benefit. These cases no longer count as erroneous payments. Although these are no longer sources of erroneous payments, FNS is interested in understanding the dynamics of households' circumstances during the school year.

[6]Students are assumed to be eligible for free meals either if their household income in the month before certification did not exceed 130 percent of the federal poverty level or if they were receiving FS/TANF/FDPIR benefits in the particular month their district uses to determine direct certification (typically June, July, or August). Thus, students truly receiving FS/TANF/FDPIR benefits in the month their district uses are defined as income eligible for free meals even if their household income exceeded 130 percent of the federal poverty level in the month before certification.

describe our basic approach to generating these estimates. We then explain how we will generate estimates of erroneous payments for Provision 2 and 3 schools not operating in their base year—a group that raises particular methodological challenges. Finally, we discuss how we will determine students' correct eligibility status when information on the students' household circumstances is not directly available for the month in which they applied for the school meal program.

Basic Approach.[7] We will estimate national erroneous payments based on data collected for the full cross-section sample of households that have been certified for free or reduced-price meals. These estimates will be representative of erroneous payments for all free or reduced-price meals consumed by students in SBP/NSLP schools over the full school year. The estimation process will consist of three steps. First, we will classify each sample member into a category indicating both their certification status and their income eligibility status in each month.[8] Second, we will calculate erroneous payments over the sample month based on the students' certification/eligibility category in each month, along with the number of program meals students consumed in each month.[9] Third, we will compute a weighted sum of students' monthly erroneous payments to generate a national estimate of such payments over the full school year.[10]

[7]The basic approach described here generates national estimates of erroneous payments for all schools *except* Provision 2/3 schools operating in a nonbase year, for which we will use a different approach. For simplicity, we abstract from this issue here, and discuss our procedure for estimating erroneous payments for nonbase-year Provision 2/3 schools later in this section. The total national estimates of erroneous payments will sum estimates from our basic approach (for non-Provision 2/3 schools and Provision 2/3 base-year schools) with those for nonbase-year Provision 2/3 schools.

[8]We will classify students as free-eligible if their household income at the time of their application is less than or equal to 130 percent of the federal poverty level or if they receive FS/TANF/FDPIR benefits. They will be classified as reduced-price-eligible if household income at time of application is between 130 and 185 percent of the federal poverty level, and as paid-eligible if their income is 185 percent or more. Below, we discuss how we will estimate eligibility status when information on household circumstances is not directly available for the month in which the household applied for the program.

[9]We will use data from school administrative records to measure the number of school meals consumed by each sample member in each month, where these data are available. We will use regression models to adjust

By classifying students into certification/eligibility categories, we can determine whether the district received erroneous payments, based on the program meals the student consumed. We will place each sample member into one of the following categories for each month of the school year:

- ***CF-FE.*** Students who are certified for free meals and income eligible for them. No erroneous payments are made for meals these students consume.
- ***CF-RPE.*** Students certified for free meals but income eligible for reduced-price meals. Overpayments are made for meals this group consumes.
- ***CF-PE.*** Students certified for free meals but income eligible for paid meals. Overpayments are made for meals these students consume.
- ***CRP-FE.*** Students certified for reduced-price meals but income eligible for free meals. Underpayments are made for meals these students consume.
- ***CRP-RPE.*** Students certified for reduced-price meals and income eligible for such meals. No erroneous payments are made for meals these students consume.
- ***CRP-PE.*** Students certified for reduced-price meals but income eligible for paid meals. Overpayments are made for meals this group consumes.

After we classify each sample member, we will calculate the dollar amount of erroneous payments (as well as total number of payments in error) made to the SFA for the free or

(continued)

parents' reports of their child's NSLP and SBP participation from survey data to estimate monthly meal consumption by students for whom administrative data on meal consumption are not available. We describe our procedure for measuring and estimating monthly school meal consumption in greater detail in Section II.B.3 of this report. Since our sample will include some year-round schools, we will generate estimates of erroneous payments for all months of the year.

[10]Note that our estimates allow both certification and eligibility status to vary by month. Certification status may change during the school year as a result of verification or reapplication. Eligibility status will typically not change during the school year, since true eligibility status is based on household circumstances at time of application. Eligibility status may change, however, in the case of students who are allowed to carry over eligibility status from the previous school year for the first 30 days of the current school year. For such students, correct eligibility status in the first month of the school year is based on household circumstances at the time of application in the previous school year; eligibility status in subsequent months is based on household circumstances at the time of application in the current school year. We discuss this issue in greater detail later in this section.

reduced-price meals consumed by each student.[11] We will base this calculation on (1) the student's certification/eligibility category in each month, (2) the dollar amount of erroneous payments made for each meal consumed by a student in that category, and (3) the number of program meals that student consumes in each month.

The dollar amount of erroneous payments for each meal consumed by a student in a given certification/eligibility category is equal to the difference between the reimbursement amount for the type of meal for which the student is certified and the reimbursement amount for the type of meal for which the student is eligible. Table V.A.1.1 shows these per-meal erroneous payment amounts for SY 2005-2006.

Thus, we can estimate total payments, overpayments, underpayments, and overall (gross) erroneous payments for lunch and breakfast for each student in the sample by using the following formulas:

Total Payments for Free/Reduced-Price Meals

$$TP_L = \sum_m [[(2.10 * CF_m) + (1.70 * CRP_m)] * M_{L,m}]$$

$$TP_B = \sum_m [[(1.04 * CF_m) + (0.74 * CRP_m)] * M_{B,m}] \text{ (for students in non-severe-needs schools)}$$

$$TP_B = \sum_m [[(1.28 * CF_m) + (0.98 * CRP_m)] * M_{B,m}] \text{ (for students in severe-needs schools)}$$

Overpayments

$$OP_L = \sum_m [[(0.40 * CF_m * RPE_m) + (2.10 * CF_m * PE_m) + (1.70 * CRP_m * PE_m)] * M_{L,m}]$$

[11]For total payments, we are tracking only the portion of payments made as part of the free or reduced-price subsidy. For the NSLP, the reimbursement amounts include only payments made under Section 11 of the NSLA. For the SBP, the reimbursement amounts include the total payment of free (or reduced-price) meals, less the amount that would have been made if the meal had been served at the paid rate.

TABLE V.A.1.1

ERRONEOUS PAYMENT AMOUNT FOR FREE OR REDUCED-PRICE MEALS,
BY CERTIFICATION/ELIGIBILITY CATEGORY, 2005-2006

Certification/ Eligibility Category	Actual Per-Meal Reimbursement Based on Certification Status on File[a]	Correct Per-Meal Reimbursement Based on Income Eligibility[a]	Amount of Per-Meal Overpayment	Amount of Per-Meal Underpayment
NSLP Lunches[b]				
CF-FE	2.10	2.10	0.00	0.00
CF-RPE	2.10	1.70	0.40	0.00
CF-PE	2.10	0.00	2.10	0.00
CRP-FE	1.70	2.10	0.00	0.40
CRP-RPE	1.70	1.70	0.00	0.00
CRP-PE	1.70	0.00	1.70	0.00
SBP Breakfasts, Non-Severe Needs Districts				
CF-FE	1.04	1.04	0.00	0.00
CF-RPE	1.04	0.74	0.30	0.00
CF-PE	1.04	0.00	1.04	0.00
CRP-FE	0.74	1.04	0.00	0.30
CRP-RPE	0.74	0.74	0.00	0.00
CRP-PE	0.74	0.00	0.74	0.00
SBP Breakfasts, Severe Needs Districts				
CF-FE	1.28	1.28	0.00	0.00
CF-RPE	1.28	0.98	0.30	0.00
CF-PE	1.28	0.00	1.28	0.00
CRP-FE	0.98	1.28	0.00	0.30
CRP-RPE	0.98	0.98	0.00	0.00
CRP-PE	0.98	0.00	0.98	0.00

[a]For the NSLP, Section 11 of the NSLA establishes reimbursement above the Section 4 paid rate. Erroneous payments under the NSLP refer to the reimbursement amounts in error under Section 11 of the NSLP. For the SBP, erroneous payments refer to the difference between the reimbursement rate for paid meals and the rates for free and reduced-price meals (including the additional payments for "severe-need" free and reduced-price meals, as appropriate.

[b]School districts that claim 60 percent or more of total lunches at the free and reduced-price rate receive an extra two cents for each lunch claimed. Since reimbursement rates are two cents higher for all three meal eligibility categories, erroneous payments per meal across the error types are the same for school districts claiming 60 percent or more and those claiming less than 60 percent of meals claimed free and reduced-price.

$$OP_B = \sum_m [[(0.30 * CF_m * RPE_m) + (1.04 * CF_m * PE_m) + (0.74 * CRP_m * PE_m)] * M_{B,m}]$$ (for

students in non-severe-needs schools)

$$OP_B = \sum_m [[(0.30 * CF_m * RPE_m) + (1.28 * CF_m * PE_m) + (0.98 * CRP_m * PE_m)] * M_{B,m}]$$ (for

students in severe-needs schools)

Underpayments

$$UP_L = \sum_m [(0.40 * CRP_m * FE_m) * M_{L,m}]$$

$$UP_B = \sum_m [(0.30 * CRP_m * FE_m) * M_{B,m}]$$

Overall Erroneous Payments

$EP_L = OP_L + UP_L$

$EP_B = OP_B + UP_B$

where:

- TP_j = total payments for free/reduced-price meals for the student for meal j
- OP_j = overpayments for the student for meal j
- UP_j = underpayments for the student for meal j
- EP_j = total erroneous payments for the student for meal j
- CF_m = binary indicator of whether student is certified for free meals in month m
- CRP_m = binary indicator of whether student is certified for reduced-price meals in month m
- FE_m = binary indicator of whether student is income eligible for free meals in month m
- RPE_m = binary indicator of whether student is income eligible for reduced-price meals in month m
- PE_m = binary indicator of whether student is income eligible for neither free nor reduced-price meals in month m
- $M_{L,m}$ = number of NSLP lunches obtained by student during month m

- $M_{B,m}$ = number of SBP breakfasts obtained by student during month m

We can then estimate total erroneous payments nationally for the NSLP and SBP by calculating a weighted sum of each of the terms shown above across all sample members. The sample weights will ensure that the totals are representative of all students in schools offering the NSLP or SBP during the school year.[12] In addition to estimating the total dollar amount of erroneous payments nationally, we will estimate national erroneous payment rates as the proportion of all payments made for free and reduced-price meals (over and above the payments for paid meals) that are in error. Table V.A.1.2 shows how we will present the basic set of erroneous payment estimates.

Estimating Erroneous Payments in Nonbase-Year Provision 2 and 3 Schools. We must modify our basic approach to estimating erroneous payments due to eligibility misclassification for Provision 2 and 3 schools not operating during their base year. As described in Section II.B.2, reimbursement amounts in these schools are based not on the income eligibility status of the current student body, but instead on meal-claiming percentages determined in the base year. Provision 2 schools in nonbase years take only daily aggregate counts of meals served and claim reimbursements based on the base-year percentages of meals served at the free, reduced-price, and paid rates. Provision 3 schools in nonbase years claim reimbursements based on the total dollar amount of reimbursements received in the base year, adjusted for inflation and changes in enrollment.

[12]We can calibrate these sample weights so that the weighted sum of total payments in each month is equal to the total reimbursements nationally for that month as indicated by FNS administrative data. By using these data on monthly reimbursement totals, we can eliminate month-to-month sampling variability in total reimbursements among the districts in our sample.

TABLE V.A.1.2

ERRONEOUS PAYMENTS DUE TO CERTIFICATION ERROR
IN THE NSLP AND SBP

	Erroneous NSLP Payments	Erroneous SBP Payments
Total Dollar Amount of:		
Overpayments		
Underpayments		
Total erroneous payments		
Erroneous Payments as a Percentage of Free/Reduced-Price Reimbursements		
Overpayments		
Underpayments		
Total erroneous payments		

Erroneous payments due to misclassification error in nonbase-year Provision 2/3 schools therefore occur if there were errors in the certification status of students in the school *in the base year*, they are not directly related to the current income eligibility status of the current student body. Since, as a result of recall error and student turnover, it would be impossible to estimate error rates reliably in the base year for nonbase-year schools based on household survey data, we will use information on the distribution of meal reimbursements across certification/eligibility categories in Provision 2/3 schools *in their base years* to extrapolate to Provision 2/3 schools in nonbase years and generate estimates of erroneous payments for these schools for both the SBP and NSLP.

Our procedure for estimating erroneous payments for schools not in their base years will contain three steps. First, we will compute estimates of the distribution of meal reimbursements across certification/eligibility categories (for example, CF-FE, CF-RPE) based on the data collected from households with students attending Provision 2/3 schools *in their base year* in our sample. Second, we will apply these distributions to the total dollar amount of reimbursements made in the survey year (SY 2005-2006) to each *nonbase-year* Provision 2/3 school in our sample to generate estimates of total reimbursements in each certification/eligibility category for that school and to compute under, over-, and total erroneous payments to that school. Third, we will compute a weighted sum of annual under-, over-, and total erroneous payments in these schools to compute national estimates of erroneous payments in nonbase-year Provision 2/3 schools. We will add these estimates to our national estimates for Provision 2/3 schools in their base years, to generate national estimates of erroneous payments to all Provision 2/3 schools. Similarly, we will add the national estimates for Provision 2/3 nonbase-year schools to the national estimates for all other schools, to generate estimates of erroneous payments for all schools nationally.

Our estimates of erroneous payments in Provision 2 and 3 schools in nonbase years will take into account the fact that schools vary in their meal program status (whether they operate the NSLP or SBP or both programs) and in their Provision 2/3 status (whether they use Provision 2/3 and, if they do, whether they are in their base year or a nonbase year) during SY 2005-2006. Table V.A.1.3 displays the possible combinations of meal programs offered and Provision 2/3 status. In practice, the only sets of nonbase-year Provision 2 and 3 schools for which we will need to extrapolate reimbursement distributions are those that use Provision 2 or 3 for SBP only (Group 14), and those that use Provision 2 or 3 for both SBP and NSLP (Group 16), as the other combinations of meal program status and Provision 2/3 status are unlikely to occur.[13]

The socioeconomic characteristics of districts and schools that use Provision 2/3 for both the NSLP and the SBP may differ from the characteristics of districts and schools with Provision 2/3 in the SBP only. Therefore, we will extrapolate reimbursement distributions for these two types of schools separately, based on reimbursement distributions for the analogous type of Provision 2/3 schools operating in their base year in our sample. Specifically, as Table V.A.1.4 shows, for nonbase-year schools that use Provision 2 or 3 only for the SBP (Group 14 in Table V.A.1.3), we will extrapolate reimbursement distributions for the SBP from base-year schools that use Provision 2 or 3 only for SBP (Group 11). For nonbase-year schools that use Provision 2 or 3 for both the SBP and the NSLP (Group 16), we will extrapolate reimbursement distributions for both the SBP and the NSLP from base-year schools that use Provision 2 or 3 for both the SBP and the NSLP (Group 12).

[13]There are unlikely to be any schools that use Provision 2 or 3 for NSLP and not for SBP (Group 10).

TABLE V.A.1.3

POSSIBLE COMBINATIONS OF MEAL PROGRAM AND PROVISION 2/3 STATUSES

	Meal Program Status		Provision 2/3 Status		
Group	Offers NSLP	Offers SBP	NSLP	SBP	Comment[a,b]
1	NO	NO	N.A.	N.A.	No schools: schools not in study sample
2	NO	YES	N.A.	Non-Provision 2/3	No schools: all schools in study have NSLP
3	NO	YES	N.A.	Provision 2/3 base year	No schools: all schools in study have NSLP
4	NO	YES	N.A.	Provision 2/3 nonbase year	No schools: all schools in study have NSLP
5	YES	NO	Non-Provision 2/3	N.A.	Use basic estimation approach for NSLP
6	YES	NO	Provision 2/3 base year	N.A.	No schools: if school has Provision 2/3 NSLP, it would also have Provision 2/3 SBP
7	YES	NO	Provision 2/3 nonbase year	N.A.	No schools: if school has Provision 2/3 NSLP, it would also have Provision 2/3 SBP
8	YES	YES	Non-Provision 2/3	Non-Provision 2/3	Use basic estimation approach for both NSLP and SBP
9	YES	YES	Provision 2/3 base year	Non-Provision 2/3	No schools: if school has Provision 2/3 NSLP, it would also have Provision 2/3 SBP
10	YES	YES	Provision 2/3 nonbase year	Non-Provision 2/3	No schools: if school has Provision 2/3 NSLP, it would also have Provision 2/3 SBP
11	YES	YES	Non-Provision	Provision 2/3 base year	Use basic estimation approach for both NSLP and SBP
12	YES	YES	Provision 2/3 base year	Provision 2/3 base year	Use basic estimation approach for both NSLP and SBP
13	YES	YES	Provision 2/3 nonbase year	Provision 2/3 base year	No schools: unlikely to have different base years
14	YES	YES	Non-Provision 2/3	Provision 2/3 nonbase year	Use basic estimation approach for NSLP; use extrapolation for SBP
15	YES	YES	Provision 2/3 base year	Provision 2/3 nonbase year	No schools: unlikely to have different base years
16	YES	YES	Provision 2/3 nonbase year	Provision 2/3 nonbase year	Use extrapolation for NSLP and SBP

[a]Our basic estimation approach uses information from a sampled school to estimate erroneous payments made to its students. Erroneous payments are the difference between the reimbursement amount for the type of meal for which students are certified and the reimbursement amount for the type of meal for which they are eligible times the number of meals they received during the year.

[b]Extrapolation approach uses information from the study's sample of base year Provision 2/3 schools to impute certification errors in nonbase-year Provision 2/3 schools.

N.A. = not applicable.

TABLE V.A.1.4

STUDY SAMPLE GROUPS FOR EXTRAPOLATING ERROR RATES FOR PROVISION 2/3 NONBASE-YEAR SCHOOLS

Provision 2/3 Status	Nonbase-Year Schools	Base-Year Schools Used for Extrapolation
SBP		
SBP only	Group 14	Group 11
SBP and NSLP	Group 16	Group 12
NSLP		
SBP only	--	--
SBP and NSLP	Group 16	Group 12

Note: See Table V.A.1.3 for a definition of study sample groups.

Estimating Reimbursement Distributions for Provision 2/3 Schools Operating in a Base Year. As described in our basic approach, for each student in our sample, we will have estimated total SBP and NSLP reimbursements, as well as certification/eligibility category. For each Provision 2/3 base-year school in our sample, we can compute weighted sums of these estimates across sampled students to generate estimates of total reimbursements amounts made for breakfasts and lunches consumed in each certification/eligibility category in each Provision 2/3 base-year school. Dividing these estimates by the sum of all estimated reimbursements in the school, we can compute the *distribution* of meal reimbursements across certification/eligibility category for each Provision 2/3 base-year school. Finally, for both the SBP and the NSLP, we will average the proportion of reimbursements in each certification/eligibility category across all the Provision 2/3 base-year schools in our sample to generate an average distribution of meal reimbursements for Provision 2/3 base-year schools. We will generate these averages separately for schools that use Provision 2/3 for SBP only and for schools that use Provision 2/3 for both the SBP and the NSLP.

Generating Estimates of Erroneous Payments for Provision 2/3 Nonbase-Year Schools in Our Sample. After we have computed the distributions of meal reimbursements for base-year schools, we will apply them to the nonbase-year schools in our sample. For each nonbase-year school in the sample, we will have obtained information on total meal reimbursements in the survey year.[14] Multiplying total reimbursements in each school by the estimated proportion of reimbursements in each certification/eligibility category will generate estimates of total

[14]For Provision 3 nonbase-year schools in our sample, we will obtain information on total reimbursements for both the SBP and the NSLP. For Provision 2 nonbase-year schools in our sample, we will collect information on total meals served and their base-year claiming percentages, as well as meal reimbursements claimed by meal category (free, reduced-price, and paid). (By base-year claiming percentages, we mean the percentage of free, reduced-price, and paid meals served by nonbase-year schools during their base year. These percentages, commonly referred to as "claiming percentages," are applied to the number of meals served to derive their meal reimbursements in the nonbase years.)

reimbursements in each certification/eligibility category. For each Provision 2/3 nonbase-year school in the sample, we can then compute total underpayments, total overpayments, and total erroneous payments, as follows:

$$TOTUP_B = REIMB_{B,CRP\text{-}FE}$$

$$TOTUP_L = REIMB_{L,CRP\text{-}FE}$$

$$TOTOP_B = REIMB_{B,CF\text{-}RPE} + REIMB_{B,CF\text{-}PE} + REIMB_{B,CRP\text{-}PE}$$

$$TOTOP_L = REIMB_{L,CF\text{-}RPE} + REIMB_{L,CF\text{-}PE} + REIMB_{L,CRP\text{-}PE}$$

where:

$TOTUP_m$ = total underpayments for meal program m

$TOTOP_m$ = total overpayments for meal program m

$REIMB_{m,j}$ = estimated total reimbursement amount for meal program m in certification/eligibility status j

Generating National Estimates of Under-, Over-, and Total Erroneous Payments for Provision 2/3 Schools Not in Their Base Year. To generate national estimates of under- and overpayments to Provision 2/3 schools not in their base year, we will compute a weighted sum of estimates of under- over-, and total erroneous payments across all the nonbase-year Provision 2/3 schools in our sample. We will then add these national estimates of erroneous payments to Provision 2/3 schools not in their base year to the national erroneous payment estimates for all other schools, to compute an estimate of under-, over- and total erroneous payments to all schools nationally. In addition, we will sum estimates of erroneous payments to Provision 2/3 base-year and nonbase-year schools to generate estimates of erroneous payments to all Provision 2/3 schools nationally.

Estimating Eligibility Status When Certification Is Carried Over. In the previous discussion, we have assumed that the eligibility status of each student in the sample can be determined directly from information collected from the household survey on usual monthly income, household size, and FS/TANF/FDPIR receipt at the time of the application. (Chapter IV discusses our approach for determining usual monthly income and household size.) In some districts, however, students who transfer during the school year are allowed to carry over their eligibility status as determined in their previous district and are not required to complete a new application. In addition, some districts allow households to carry over their eligibility status from the prior school year for up to 30 days at the start of the new school year before a new application must be submitted and processed. In both cases, the household survey may be conducted several months after the time of application, and information on household circumstances at the time of application will not be directly available from the survey data.

To determine eligibility status at the time of application in case of such carry-overs, we will ask households in the survey about the most recently completed month before the survey, as well as additional questions to determine whether and by how much income and family size have changed since the time of application. From this information, we will generate estimates of usual monthly income, household size, and FS/TANF/FDPIR receipt at the time of application, which we will use to estimate correct eligibility status.

For transfer students who carry over eligibility status from another district, we will test the sensitivity of our results by using the eligibility misclassification of F/RP students who transfer out of schools during the year as a proxy for the eligibility misclassification of F/RP students who transfer in.[15] For example, if we find that, on average, 20 percent of certified free

[15]We will obtain from school records information on whether a sample student transfers out of his or her district after the survey month (see Chapter IV).

households in our sample that transfer out of their initial district were erroneously classified and should have had reduced-price status, then we will assume that 20 percent of the free-certified students in our sample who carry over eligibility status when they transfer into the sample district should instead be reduced-price. Using this alternative estimate of eligibility for the movers-in with carryover status in our sample, we can then recompute our national estimates of erroneous payments, following the basic approach outlined earlier, to test sensitivity of results.

An important consideration in the case of students who carry over eligibility status from the previous school year is that some of them may not reapply for benefits when their carryover status expires, or they may reapply and be certified for a different level of benefits. It is therefore possible that such students may be erroneously classified in the first month of the school year (if eligibility status had been erroneously determined in the previous school year) and correctly classified in the following months after reapplication, or vice versa (or they may not reapply). Since our estimates of total payments, underpayments, and overpayments for each student allow eligibility status to vary across months, they will reflect possible changes in eligibility status for students who have carried over their status from the previous school year.

For the first month of the school year, we will estimate these students' correct eligibility status at the time of application (in the previous school year), as described above. For the subsequent months of the school year, we will obtain information from school records on whether the student reapplied and, if so, the student's new certification status. We will compare this new status to data collected on household circumstances in the survey month (which will be approximately the same month the household submitted its new application, since eligibility can be carried over only for the first 30 days of the school year), to determine whether the student has been erroneously certified for the remaining months of the school year.

b. Determining Sources of Erroneous Payments

After estimating total erroneous payments, we will estimate the proportion of erroneous payments due to two alternative sources: (1) administrative error by the SFA in processing applications, and (2) household misreporting of income or other family circumstances on the application. We will decompose erroneous payments into these alternative sources based on data from the full cross-sectional sample of free and reduced-price households. We describe and summarize the approach below and in Table V.A.1.5.

To estimate the sources of erroneous payments, we will first focus on SFA administrative errors. We will examine the application for free/reduced-price meals of each student/household in the free and reduced-price cross-sectional sample. Based on the information in the application (along with any subsequent information SFA acquires for that student, such as the information obtained from students selected for verification), along with the certification status on file for the student, we will determine whether or not any erroneous payments made for meals the student consumed were due to administrative error by the SFA. Suppose, for example, a student is certified for free meals, but the information on the student's application indicates that, in the previous month, the household income of the student was above 130 percent of the federal poverty level, and no one in the household received FS/TANF/FDPIR benefits. We will consider this an administrative error and define any erroneous payments the SFA received for meals this student consumed as erroneous payments due to such error. We will create an additional set of variables indicating, for each sample member, the number of erroneous payments (of various types) arising from administrative error. In any given month, as well as across the full school

TABLE V.A.1.5

DETERMINING SOURCES OF ERRONEOUS PAYMENTS

	Cross-Sectional Sample Approach
Population Represented	All students certified for free or reduced-price meals during year
Sample	Full cross-sectional sample: 2,880 individuals
Method for Estimating Erroneous Payments Source:	
Administrative Error	Compare information on application form with certification decision made by SFA
Household Misreporting	Compare information reported in survey with information on application form

year, we can calculate the total number of erroneous payments due to such error. We can also divide this number by the total number of erroneous payments to determine the proportion of all erroneous payments due to administrative errors.

To estimate the proportion of erroneous payments due to certification error attributable to household misreporting of income on the application, we propose to take advantage of the fact that in the month in which students apply and are certified for free or reduced-price meals, any erroneous payments not due to administrative error must be due to misreporting of household circumstances on the application (or reapplication). We will estimate the dollar amount of erroneous payments due to misreporting of income by examining the household's reported income, household size, and FS/TANF/FDPIR status on the survey versus on their application. In effect, this dollar amount will be equal to the total dollar amount of erroneous payments minus the total dollar amount of erroneous payments due to administrative error. In addition, we can calculate the proportion of erroneous payments due to household misreporting by dividing the total dollar amount of erroneous payments due to this source by the total dollar amount of erroneous payments.

c. Estimating the Proportion of Households Experiencing Changes in Circumstances That Would Affect School Meal Eligibility if They Were to Reapply

Under current regulations, households approved for free or reduced-price meals remain eligible for the entire school year, even if they experience changes in income that would make them ineligible (or eligible for a lower amount of benefits) if they were to reapply.[16] In the past, households were required to report changes in circumstances, and eligibility status would be

[16]Households that experience a change in circumstances that would make them eligible for a higher level of benefits than they currently receive may reapply, however.

adjusted accordingly. FNS is interested in knowing the extent of such changes in household circumstances. We will estimate the proportion of students whose eligibility status would change during the school year as a result of changing household circumstances if eligibility *were* adjusted to reflect changing household circumstances, as under the former regulations.

We will estimate this proportion by examining the longitudinal sample of students certified for free or reduced-price meals at the time of their initial application. Specifically, we will classify students as income eligible for free or reduced-price meals based on their income, household size, and FS/TANF/FDPIR status at the time of application. (Income eligibility status will not reflect actual eligibility status for students who were erroneously certified at the time of their application. This allows us to abstract from the issue of misclassification error to focus solely on how changes in household circumstances would affect students' income eligibility status.) For both groups, we will use data on household circumstances at the end of the school year to determine their hypothetical income eligibility status if it were updated to reflect changes in household circumstances. This will allow us to estimate the proportion whose eligibility status would have changed by the end of the school year if the actual status were updated to reflect changes in circumstances. Of particular interest will be the proportion experiencing changes that cause them to be eligible for a lower level of benefits later in the school year than they were at the time of application. Finally, even though households are no longer required to report changes in circumstances during the school year, some households (particularly those that become eligible for a higher level of benefits) may reapply, so that actual status at the end of the school year does reflect their changed circumstances. We will estimate the percentage of households in each initial income eligibility category (free and reduced-price) whose actual eligibility status at the end of the school year correctly reflects changes in household circumstances. Table V.A.1.6 shows how we will present these estimates.

TABLE V.A.1.6

ESTIMATES OF CHANGES IN INCOME ELIGIBILITY STATUS OVER SCHOOL YEAR
DUE TO CHANGING HOUSEHOLD CIRCUMSTANCES

Income Eligibility Status	Number	Percentage	Percentage Whose Actual Status Changed to Correctly Reflect Changed Circumstances
1 to 2 Months After Approval			
Income Eligible for Free at Time of Application			
Income eligible for free 1 to 2 months after approval			
Income eligible for reduced-price 1 to 2 months after approval			
Income eligible for paid 1 to 2 months after approval			
Income Eligible for Reduced-Price at Time of Application			
Income eligible for free 1 to 2 months after approval			
Income eligible for reduced-price 1 to 2 months after approval			
Income eligible for paid 1 to 2 months after approval			
3 to 4 Months After Approval			
Income Eligible for Free at Time of Application			
Income eligible for free 3 to 4 months after approval			
Income eligible for reduced-price 3 to 4 months after approval			
Income eligible for paid 3 to 4 months after approval			
Income Eligible for Reduced-Price at Time of Application			
Income eligible for free 3 to 4 months after approval			
Income eligible for reduced-price 3 to 4 months after approval			
Income eligible for paid 3 to 4 months after approval			
5 to 6 Months After Approval			
Income Eligible for Free at Time of Application			
Income eligible for free 5 to 6 months after approval			
Income eligible for reduced-price 5 to 6 months after approval			
Income eligible for paid 5 to 6 months after approval			
Income Eligible for Reduced-Price at Time of Application			
Income eligible for free 5 to 6 months after approval			
Income eligible for reduced-price 5 to 6 months after approval			
Income eligible for paid 5 to 6 months after approval			
7 to 8 Months After Approval			
Income Eligible for Free at Time of Application			
Income eligible for free 7 to 8 months after approval			
Income eligible for reduced-price 7 to 8 months after approval			
Income eligible for paid 7 to 8 months after approval			
Income Eligible for Reduced-Price at Time of Application			
Income eligible for free 7 to 8 months after approval			
Income eligible for reduced-price 7 to 8 months after approval			
Income eligible for paid 7 to 8 months after approval			

d. Determining the Direct Certification-Related Error Rate

Students from households that receive FS/TANF/FDPIR benefits can be directly certified for free meals through a process by which state FS/TANF/FDPIR agencies share eligibility information with state child nutrition agencies. Among students selected for the sample, some will have been directly certified for free meals. Gleason et al. (2003) estimated that 17.9 percent of all students certified for free meals nationally are directly certified, which translates into about 15 percent of all students certified for either free or reduced-price meals. Thus, we expect that in our sample of 2,880 certified students, about 432 will have been directly certified.

We propose to define directly certified students' income eligibility for free meals in the same way as we measure the eligibility of other students certified for free meals—they are defined as income eligible if their household income in the previous month was no more than 130 percent of the federal poverty level or if they received FS/TANF/FDPIR benefits in the month in which direct certification eligibility was determined. Thus, we can measure overpayment error rates for this subgroup of directly certified students using the same methods as for the overall sample of certified students.[17, 18]

To examine whether this error rate varies by the method of direct certification implementation, we will use data from the SFA survey on whether direct certification is used and, if so, how it is implemented. We will then examine whether the error rates differ among directly certified students attending districts that use different implementation methods. The key characteristic of implementation we will examine is whether the district uses active or passive

[17]Since all directly certified students that participate in the NSLP or SBP are eligible to do so at the free rate, there will be no underpayments among this group, and total erroneous payments will equal total overpayments.

[18]Note that underpayments could occur if a child that is directly certified is required to pay for a meal at a reduced price or paid rate. These errors will be included in the calculations of counting and claiming errors.

consent for direct certification. Under active consent, households identified as being eligible for direct certification must notify the school district that they consent to their children being certified for free meals. Under passive consent, all children the food stamp or welfare office identifies as eligible are automatically directly certified for free meals (with parents only being given an opportunity to explicitly "turn down" this benefit for their child). In the latter case, one might expect a larger proportion of errors, since directly certified households would not be as likely to be aware of the benefit and thus would be less likely to notify the school district if the food stamp/welfare office had made a mistake or if the household had experienced a change in circumstances. Table V.A.1.7 shows how we will present our estimates of the error rates associated with direct certification.

e. Estimating the Certification-Related Error Rate as Detected by Current School District Verification Procedures

Currently, all SFAs must, by November 15 of the school year, conduct verification procedures in which they select a small sample of households approved for free or reduced-price meals by application and collect documentation of their eligibility. On the basis of documentation received, the district verifies the household's current level of benefits, increases those benefits (from reduced-price to free), reduces them (from free to reduced-price), or terminates them. If the district does not receive any documentation from a sampled household, it must terminate that household's benefits.

As part of the SFA survey, we will collect information from districts on the process they use to conduct verification and on the results they obtained. Based on the information reported, we will calculate the following statistics for each district's verification sample:

TABLE V.A.1.7

CERTIFICATION-ERROR RATES ASSOCIATED WITH DIRECT CERTIFICATION

	Number	Percentage
Directly Certified Students, All Districts		
Correctly certified according to income eligibility		
Erroneously certified according to income eligibility		
Directly Certified Students in Districts That Use Active Consent		
Correctly certified according to income eligibility		
Erroneously certified according to income eligibility		
Directly Certified Students in Districts That Use Passive Consent		
Correctly certified according to income eligibility		
Erroneously certified according to income eligibility		

- Percentage of students certified for free meals, according to SFA determination, whose verification indicated that a change to reduced-price was required on the basis of documentation they provided
- Percentage of students certified for free meals, according to SFA determination, whose verification indicated that benefits were to be terminated (that is, to be changed to paid status) on the basis of documentation they provided
- Percentage of students certified for free meals, according to SFA determination, whose verification indicated that benefits were to be terminated as a result of nonresponse
- Percentage of students certified for reduced-price meals, according to SFA determination, whose verification indicated that a change to free price was required on the basis of documentation they provided
- Percentage of students certified for reduced-price meals, according to SFA determination, whose verification indicated that benefits were to be terminated on the basis of documentation they provided
- Percentage of students certified for reduced-price meals, according to SFA determination, whose benefits were to be terminated as a result of nonresponse

There are several different ways of defining a certification-related error rate as detected by verification procedures. These alternative approaches differ according to how cases in which benefits were terminated as a result of nonresponse are handled. If all these cases are considered errors, then the *benefit reduction/termination rate*—the percentage of verified applications that had benefits reduced or terminated as a result of verification—would be used as the certification-related error rate for overpayments, while the percentage of verified applications with benefits increased would be the error rate for underpayments. However, alternative assumptions about the true status of nonresponding households would lead to different estimates of the certification-related error rate. Studies such as Food and Nutrition Service (1990) and Burghardt et al. (2004) provide estimates of the true percentage of nonresponding households that are not income eligible for the level of benefits they were receiving before verification. We will use the estimates from these studies to generate alternative estimates of the certification-related error rate as detected by the verification process.

We must take two other factors into account in reporting on the results of districts' verification procedures: (1) the type and size of sample selected, and (2) districts' use of direct certification. In districts that have selected a random verification sample (assuming they have used procedures that yield a true random sample), results of the verification process are representative of all approved applications in the district. If an individual district that selected a random sample ended up with a very small verification sample size, however, the verification results are not likely to reflect what is happening in the district as a whole. With a small sample, it is more likely that the sample would be unusual in some respect than if the sample were larger. In districts that have selected a focused verification sample, however, the results are not representative of all approved applications in the district. Instead, they are representative of selected groups of approved applications—those approved on the basis of categorical eligibility and those approved on the basis of income and with reported incomes close to the income eligibility threshold for the level of benefits they are receiving. Verification results in these focused sampling districts cannot be used directly to estimate certification-related error rates among all students approved by application.

Similarly, districts' use of direct certification also influences the interpretation of verification results, since directly certified students are not subject to verification. Thus, in districts that do not use direct certification and that select random verification samples (and they have used procedures that yield a true random sample), verification results are representative of all certified students. In contrast, in random sampling districts in which a large proportion of certified students are directly certified, the verification results do not reflect error rates among directly certified students.

One way to deal with the type of sampling and the use of direct certification will be to present certification-related error rates as detected by current school district verification

procedures separately for districts using random versus focused sampling and for districts using direct certification versus those not using it. We also will examine the relationship between reported verification results and the number and percentage of approved applications verified by the district. Finally, in the estimation model described in Section V.B, we will examine the relationship between verification results and error rates as determined by our survey results.

2. Erroneous Payments Due to Counting and Claiming Errors

After eligibility is determined, errors that affect NSLP and SBP reimbursement claims can occur through other means. These "counting and claiming errors" errors can arise at various points in school and district operations. They include benefit issuance errors, cashier errors, and aggregation errors (counting, consolidation, and claiming errors). The study will provide national estimates of counting and claiming errors separately for the NSLP and SBP. Below, we first describe the specific research questions the study will address. Then we provide an overview of MPR's proposed approach. The final section describes details of the planned analysis. (We described data collection plans in Chapter IV, Section E.)

a. Research Objectives

The overall research question (part of Objective 1) related to assessing errors in meal counting and claiming is, What amounts of payment error associated with meal counting and claiming occur for the NSLP and SBP? To put it in simple terms—how accurate is meal counting and claiming?

We propose to break this question into three parts:

1. How accurate are the benefit issuance lists (or the corresponding information in automated cash registers) the schools use to determine the category in which a meal served to a student will be claimed for reimbursement?
2. How accurately do cashiers determine whether meals are reimbursable?

3. How accurately are meal counts totaled in each school and across schools in a district to derive the claims that are filed?

b. Overview of Approach

To provide a context for discussing our analytic approach to studying errors in the counting and claiming process, it is useful to begin with an overview of the sources of error that will be measured. We plan to measure the errors that occur at each of the three main stages of the claiming process:

- ***Roster error*** is defined as error that occurs as the certification statuses of students are transmitted from the office that conducts the certifications to the place where meal reimbursable levels are determined. These errors occur when the incorrect reimbursement category is listed for the student on the benefit issuance document. This might reflect simple clerical error, or it could occur when the benefit issuance document is not updated properly.
- ***Cashier error*** is mainly error that cafeteria staff make in assessing and recording whether a specific meal selection (the "tray") meets the criteria for a reimbursable meal under the NSLP or SBP. Examples of this type of error include counting as reimbursable (1) meals that do not contain the required number of items/components, (2) second meals served to students, and (3) meals served to ineligible people (such as teachers or adult visitors). Errors also occur if the cashier fails to count as reimbursable those meals that are eligible or are received by eligible students. In some schools, cashier error could also arise when the cashier makes a mistake in recording the reimbursement status of the *student* as the student goes through the line.
- ***Aggregation error,*** the third type that we will study in this part of the research, occurs between the time the meal reimbursement status is recorded at the point of sale and the time the district claims reimbursement for its meals from the state. Aggregation error (sometimes referred to as counting, consolidation, and claiming error) can occur in adding up the meals from individual points of sale to a daily count at the school, adding the daily counts at the school to weekly or monthly levels, or, at the district level, totaling counts across schools and filling out the appropriate claims material.

MPR's basic approach to estimating these three types of error will begin by collecting data on each type of error separately for the NSLP and SBP at each of the 264 schools (see Section IV.E for detailed discussion of data collection and measurement plans). We will then "normalize" the data to make them comparable, usually by converting them into (1) error counts

as a percentage of reimbursable meals, and (2) dollar errors as a percentage of total dollars of reimbursements. This will then allow us to aggregate the data to make national estimates of these different types of errors, both separately and in the aggregate, for the NSLP and SBP.

c. Analysis

The planned data collection will provide information on the numbers of errors observed at each of the 264 schools from 80 public school districts. This information will be available separately for each of the three types of error we have discussed (roster, cashier, and aggregation) for both the NSLP and the SBP. Here we describe how we will use this school-level information on the incidence and types of error to derive national estimates of the associated incidence and monetary amounts. We begin by describing the analysis of each type of error separately; then we describe how the estimates can be summed across the three types of error.

Estimating Roster Error. At each of 240 sampled schools, we are taking a random sample of students on the roster list and comparing their status with that on the master certification list.[19] To derive an estimate of the incidence of various types of roster error, we will divide the number of students found to be in error on the benefit issuance list by the number of relevant cases (students) sampled. We will estimate the prevalence of six types of error: (1) a student is approved for free meals but is listed as "reduced-price"; (2) a student is approved for free meals but is listed as "paid"; (3) a student is approved for reduced-price meals but is listed as "free"; (4) a student is approved for reduced-price meals but is listed as "paid"; (5) a student is ineligible for free or reduced-price benefits, or no application was on file, but the student is listed as "free";

[19]Roster error does not occur in Provision 2/3 schools in nonbase years, since meal reimbursements in nonbase years are based on claiming percentages. Therefore, we will not measure roster error in the study's 24 nonbase-year Provision 2/3 schools.

and (6) a student is ineligible for free or reduced-price benefits, or no application was on file, but the student is listed as "reduced-price." For example, we might find during our comparison that 1 percent of *reduced-price* cases are incorrectly listed at the point-of-sale level as *free-meal* students; we will perform similar calculations for other types of list error.

Once we estimate the *incidence* of listing error by reimbursement category, we will multiply these error incidence rates by the total number of meals recorded as served in each of these categories to estimate the total number of meals involving list errors in the school during the time of the observation.[20] Multiplying these totals by the *monetary amount per error associated with each reimbursement category* then yields an estimate of the total amount of dollar error by reimbursement category. Summing these estimates yields an estimate of total dollar error. Dividing by the total reimbursements for the school produces a dollar-based error rate.[21]

Table V.A.2.1 illustrates the estimation of roster error for a hypothetical school participating in the NSLP. Suppose we randomly sample 25 students from the school's benefit issuance list and, based on that sample, estimate the prevalence of listing errors for this school to be as shown in Column 4 of Table V.A.2.1. Suppose the school claimed 107,000 meals during SY 2005-2006, of which 36,000 were free, 21,000 were reduced-price, and 50,000 were paid. Using information on the prevalence of listing error and meals claimed, both within meal type, we estimate the number of meals in error (see Column 6) to be 16,746. Multiplying the number of meals in each error category times the erroneous payment associated with it (Column 7) yields an estimate of total erroneous payments, in this case $25,352 (Column 8). The total Section 11 reimbursement

[20]This assumes that participation is not correlated with roster error. We will test sensitivity of results to this assumption during analysis.

[21]In estimation of erroneous payments for NSLP, the relevant reimbursement is the Section 11 amount, which is the amount above the paid reimbursement rate. Similarly, when expressing erroneous payments over total reimbursements, total reimbursements in this case are the Section 11 reimbursements—that is, reimbursements for free and reduced-price meals above the paid amount.

TABLE V.A.2.1

HYPOTHETICAL EXAMPLE OF NSLP ERRONEOUS PAYMENTS DUE TO ROSTER ERROR

Roster	Certification	Percentage Distribution	Meals by Status	Total Meals in Error	Error Per Meal (in Dollars)	Erroneous Payments (in Dollars)
Free	Free	0.3	30,857	0	0	0.00
Free	Reduced-price	0.025	2,571	2,571	0.4	1,029.00
Free	Paid	0.025	2,571	2,571	2.10	5,339.10
Reduced-price	Free	0.025	1,500	1,500	0.4	600.00
Reduced-price	Reduced-price	0.3	18,000	0	0	0.00
Reduced-price	Paid	0.025	1,500	1,500	1.70	2,550.00
Paid	Free	0.025	4,167	4,167	2.10	8,750.70
Paid	Reduced-price	0.025	4,167	4,167	1.70	7,083.90
Paid	Paid	0.25	41,667	0	0	0.00
Total		**1**	**107,000**	**16,476**		**25,352.70**

for this school in SY 2005-2006 equals $111,300.[22] The percentage of total reimbursements in error due to roster error ($25,352 ÷ $111,300) equals 22.8 percent in this hypothetical example.[23]

Finally, to derive an estimate of national roster error rates, we will take the weighted averages of these school-level estimates, based on the statistical analysis weights that make the schools nationally representative of the population of reimbursable meals. The above calculations can be done separately for under- and overpayments using *absolute* (gross) values.

Cashier Error. We can use a similar approach to derive national estimates of cashier error, except that somewhat less detail will be available. The observational data MPR's field staff will collect at 264 schools will provide the basis for estimating two variables: (1) the fraction of meals that the cashier incorrectly recorded as reimbursable but that did not meet reimbursement criteria, and (2) the fraction of reimbursable meals the cashier incorrectly recorded as not reimbursable. (We expect the latter of these two quantities to be low, since students are likely to object to paying more than they expected.)

However, for cashier error, unlike for roster error, we will not generally be able to observe directly the reimbursement category of the students whose meals are incorrectly recorded as reimbursable (or not reimbursable). Therefore, in estimating the monetary costs associated with the observed cashier errors, we will assume that the errors are distributed proportionately among the categories of student-level reimbursement eligibility. For example, if, at a given school, 30 percent of reimbursable meals are free, 10 percent are reduced-price, and 60 percent are full-

[22] (36,000 × $2.10) + (21,000 × $1.70) = $111,300.

[23] The prevalence of roster error in this hypothetical example is unrealistically high and is being used solely to illustrate the process for identifying and estimating such error.

price, we will estimate the average monetary cost of errors by assuming that the mistakenly recorded meals have this proportionate distribution.[24]

After we have estimates of error incidence for a school, we can derive an estimate of total dollar error attributable to cashier error, as well as the proportion of reimbursement amounts in error. The approach for aggregating the school-level estimates to national estimates is analogous to the one described above with regard to roster error. We will take the weighted averages of these school-level estimates, based on the statistical analysis weights that make the schools nationally representative of the population of reimbursable meals.

Aggregation Error. We will derive the estimates of aggregation error at each of the study's 264 schools by tracing the paper (or electronic) trail from the cashier's daily counts to school-level totals to the final claiming process and assessing whether errors have occurred. For each sampled school, we will first compare the cashier totals with the school's reported totals for each day for the target week by reimbursement category and use that information to derive an estimate of counting errors for the week. We will convert this to a monthly estimate, if necessary. We will ask the staff in charge of the final claiming process to provide disaggregations of the districtwide reimbursement counts by school, if possible. We will then compare these central-office counts with the relevant numbers observed at the school level for a representative week or month, depending on the level disaggregation available at the district.

The result of this data collection will be an assessment of whether the claims made to the appropriate state agency (usually the State Education Agency) are consistent with daily totals

[24]We believe that the assumption in the text represents a reasonable approximation. However, systematic factors could lead to some error at this point. For example, if free-meal students were more likely than other students to take meals that were *clearly* reimbursable (and hence less subject to cashier error), then the method described in the text might ascribe somewhat too much of this kind of error to the free-meal students. Overall, however, we believe that the error in the estimates from this source is likely to be quite small.

compiled at the schools. If they are not, we will calculate percentage errors for each of the three levels of reimbursement. When these school-level estimates of aggregation error are available, we can derive national estimates, as described with the other error types.

One difference should be noted, however: the analysis of aggregation error will focus largely on *net* error rather than *absolute* error. For example, if some factor led a school to overestimate its claims by 5 percent, but a different factor led to an *underestimate* of 3 percent, it is unlikely that we would observe the two underlying components. Rather, we would estimate an overall net positive error of 2 percent.

Summing Across Error Types to Derive an Estimate of Total Counting and Claiming Errors. To develop national estimates of the overall magnitude of counting and claiming errors, separately for the NSLP and SBP, including all three error types discussed above, we propose essentially to sum the rates (both rates of the incidence of error and rates of monetary error) for the three types of error discussed above (see Table V.A.2.2). One slight complication to this, however, is that, in some instances, the first two types of error (roster and cashier error) may occur for the same case on the same day, and this should be counted as only one error, not two, as discussed below.

We will adjust for overlapping error by assuming that the incidences of roster error and cashier error are independently distributed among the relevant populations. This will then allow us to adjust the rates downward by the expected value of the rate of overlap, given the two rates independently. For example, suppose that, in a given school, roster error is 5 percent and cashier error is 4 percent. Then, in 1,000 cases, the expected number of overlaps of the two types of

TABLE V.A.2.2

ERRONEOUS PAYMENTS DUE TO MEAL COUNTING AND CLAIMING

Source of Error	Erroneous Payments (in Dollars)	Percentage of Reimbursement in Error
Roster Error		
Overpayment		
Underpayment		
Total		
Cashier Error		
Overpayment		
Underpayment		
Total		
Aggregation Error		
Total		
Total Counting and Claiming Error		
Total		

error would be two students with both types.[25] In summing over types of error rates, we would adjust the individual types of error rates to take this into account.

This overlap issue does not arise for the third type of error—aggregation error—which, by definition, cannot be associated with specific students. Therefore, aggregation error can be entered into the sum of error types directly, without adjustment.

B. MODELS FOR ANNUAL ESTIMATES OF ERRONEOUS PAYMENTS

This section describes our plan for developing, testing, and using models for producing annual estimates of erroneous payments. We first describe the research objectives for estimating these erroneous payments models. We then summarize the data requirements for the model, along with potential sources of this information. Finally, we discuss our analysis plan for addressing the research questions.

1. Research Objectives

The purpose of this part of the study is to develop estimation models that FNS staff can use for updating annual estimates of overpayments, underpayments, and overall erroneous payments in the NSLP and SBP. The model is to be estimated during the study year using data collected as part of the study to measure erroneous payments, as well as existing data easily available on an annual basis to measure factors that may predict erroneous payments. We will then develop procedures to use the estimated parameters of this model, in combination with the existing data as they become available in future years, to predict erroneous payments in future years. This approach is similar to that used in forecasting models, including models FNS uses to forecast

[25]Given the illustrative assumptions in the text, in a sample of 1,000 students, 5 percent will have the first kind of error, and, given the independence assumption, among those 50 students with the first type of error, the expected number of those 50 cases having the second type of error is 4 percent, or two cases. Thus, the expected value of overlap is .2 of 1 percent. This estimated overlap, which is likely to be very small in most cases, will be the basis for the adjustment factor to be used.

food stamp participation (see Dynarski et al. 1991 and Schochet and Needels 2000). In contrast to typical forecasting models, however, the variables we use to predict the outcome of interest will be based on actual rather than forecasted data.

Our model is designed to reflect underlying theoretical relationships between district characteristics and misclassification error rates. There are two possible sources of such error: (1) administrative error, and (2) misreporting of income or household size by applicants. Administrative error is likely to be most heavily influenced by administrative features of the school meal program in the district and other administrative characteristics of the district. Misreporting of family circumstances may be influenced both by administrative features of the programs (such as the type of verification procedures used) and by demographic characteristics of students and families in the district. Therefore, explanatory variables we will consider include indicators of the administrative features of the NSLP and SBP in the district, other characteristics of the district, and demographic characteristics of students and families in the districts. We will also include verification rates (and procedures) as an explanatory variable, since they may also be highly predictive of error rates in the district.

In describing the development and estimation of this model, we will address:

- Whether and how FNS might improve the estimates by collecting and incorporating additional administrative data
- How we could use the model to generate estimates specifically for direct certification
- How we will assess the reliability of the model
- What potential problems and issues surround the use of existing data sources on the proposed methodology
- How the basic model might be adapted to simulate the effects of changes in verification policies on erroneous payments

2. Data Requirements and Sources

The basic model to be estimated in the study year will be a district-level one. In other words, its unit of analysis will be the district, with the dependent variable being a district-level measure of erroneous payments and the independent variables a set of district characteristics. Thus, the variables to be used must rely on data that can be measured at the district level.

The estimation model will rely on data collected on erroneous payments that MPR is collecting for SY 2005-2006 (to estimate the model parameters in the survey year), along with district-level administrative data from the SFA Verification Summary Reports (Form FNS-742), other district-level administrative data from state child education or nutrition agencies that administer the meal programs, public school district-level data from the CCD and Decennial Census, and private school-level data from the Private School Survey (PSS). We also will explore the benefits of using county-level data on unemployment rates from the U.S. Department of Labor's LAUS. In this section, we describe each of these data sources and the relevant data items from each. (See Section IV.F for a discussion of MPR's plans for collecting data from these sources for the current study.) We also suggest additional data items that FNS might collect in future years to enhance the model. Our summary of the proposed data sources includes a discussion of the timing and availability of the existing data.

a. SY 2005 – 2006 Primary Data on Erroneous Payments

In the study year (SY 2005-2006), using data collected for our national sample of students we will estimate a set of models that use as their dependent variables district-level rates of four possible categories of misclassification error. To create these district-level measures, we will aggregate meal-level estimates of misclassification error across all meals served to sample members in each of the 80 districts in the sample. In particular, we will create four such district-level measures for both the NSLP and the SBP:

1. Percentage of meals classified as free that should have been reduced-price
2. Percentage of meals classified as free that should have been paid
3. Percentage of meals classified as reduced-price that should have been paid
4. Percentage of meals classified as reduced-price that should have been free

Note that the first three of these measures reflect overpayments, while the fourth reflects underpayments. Note also that none of the erroneous-payment measures will capture underpayments for paid meals served to eligible students who applied for free or reduced-price meal certification but were erroneously denied, since this is not included in USDA's definition of erroneous payments.

These data on misclassification error will be available only in the study year. Thus, they can be used only in estimating the original model of erroneous payments and cannot be used to predict erroneous payments in future years. In fact, it is this outcome (rates of misclassification error) that will be the key measure being predicted by the model in future years. All remaining data sources described in this section will be available (or potentially available) in the future and may be used in predicting future rates of misclassification error.

b. Administrative Data on Number of Meals Reimbursed

While the SY 2005 – 2006 primary data collected on students, when properly weighted, will provide estimates of the rate at which meals are served to students erroneously classified for free or reduced-price meals, we need additional information, first to determine the total number of meals served erroneously and then to determine the total amount (and rate) of erroneous payments. One key piece of information needed for this calculation will be the total number of meals served in each meal status category—free, reduced-price, and paid—for both the NSLP and the SBP. For the districts participating in the study, we will collect the data on the total number of each meal type served directly from the district.

For all districts nationally, in both the study year and future years, we will obtain administrative data on numbers of meals served from the state agencies that administer the school meal programs, following the procedures described in Chapter 4, Section F. In districts for which we cannot obtain the relevant SFA-level data, however, we will use state-level estimates of the numbers of meals reimbursed in the different categories, along with information on the distribution of the number of certified students (in each category) across each district in the state, to estimate the number of meals served in each category at each district.

c. Administrative Data from SFA Verification Summary Reports (Form FNS-742)

Beginning in SY 2004-2005, SFAs must report verification activity, results, and other information about their school meal program to state agencies, which in turn will be required to provide these SFA-level data to FNS (*Federal Register,* vol. 68, no. 176, September 11, 2003). These data are collected on Form FNS-742, "School Food Authority Verification Summary Report." MPR's estimation model will incorporate the following data items, derived from information collected on the form:

- Type of SFA (public or private)
- Type of application used (individual student, household, or both)
- Number of schools operating the NSLP and/or SBP
- Number of enrolled students with access to the NSLP and/or SBP
- Percentage of students certified as free eligible
  - Percentage certified as free eligible, not subject to verification
  - Percentage certified as free eligible based on income/household size information submitted on application
  - Percentage certified as free eligible based on categorical eligibility from application
- Percentage of students certified as reduced-price eligible
- Verification sampling method (focused or random)

- Verification results for each certification category

Except for the number of students and the number of schools, these measures will exclude students who attend Provision 2/3 schools not operating in a base year, since these schools do not determine and track free or reduced-price eligibility in nonbase years.

Form FNS-742 does not specifically collect information on the number of students directly certified, a group of specific interest to FNS. It does, however, collect information on the number of students not subject to verification (NSV), a group that includes directly certified students as well as income-eligible Head Start students, pre-Kindergarten Even Start students, and other groups of students not subject to verification requirements.[26] We will therefore use information on the number NSV to estimate the number directly certified for each district. Specifically, for all districts in the survey sample, we will compare the number NSV from Form FNS-742 to survey information on the number directly certified, to determine the percentage of total students in each district who are NSV but who are *not* directly certified (NSV_NDC). We can then compute the average percentage of NSV_NDC across all districts in the sample. For all districts in the country, we can then estimate the percentage directly certified by subtracting the average percentage NSV_NDC from total percentage NSV in the district. We can assess the reliability of this approximation by comparing the approximation and the actual survey-measured values for the survey districts. Depending on the adequacy of this approximation, FNS may wish to consider collecting information specifically on direct certification in future years.

[26]Specifically, Form FNS-742 defines the free eligible who are not subject to verification as including students who are directly certified, students from the homeless liaison list, income-eligible Head Start and pre-K Even Start students, residential students in Residential Child Care Institutions, and nonapplicants approved by local officials.

d. Common Core of Data

The CCD is the U.S. Department of Education's primary statistical database of public elementary and secondary schools and districts. The data set, updated annually through surveys sent to state education agencies, contains demographic and administrative information on all public schools and districts in the United States. The model will incorporate information from the CCD on district enrollment, demographic composition, and other district characteristics, including the following data items:

- Total enrollment
- Number of schools
- Enrollment, by race/ethnicity/gender/grade
- Grade span of district
- Location of district (for example, large city, mid-size city, large town, small town)
- Percentage certified for free and reduced-price lunch
- Percentage of schools that are Title 1-eligible

Enrollment by race, ethnicity, gender, and grade; percentage certified for free and reduced-price lunch; and Title 1 status are reported at the school level and will have to be aggregated to the district level. We will compare information on percentage certified for free and reduced-price lunch against administrative data from FNS and can use as a check of the FNS data.

e. Private School Survey

The PSS is a national data set of private schools collected by the National Center for Education Statistics. It includes information on religious orientation, level of school, total enrollment, and enrollment by gender. We will use the PSS as a source of information about private schools that participate in the NSLP or SBP. We will also link each participating private

school to the public school district in which it is located, to obtain relevant public school district-level information (such as location of district from the CCD or district-level income and poverty data from the census, discussed below).[27]

An alternative source of data on private schools is the National Education Database collected by Quality Education Data (QED). We will explore the relative strengths and weaknesses of the QED and PSS data. If QED's coverage of private schools is more comprehensive or current than that of the PSS, we may consider using it as an alternative or supplementary data source for information on private schools.

f. The Decennial Census and Small Area Income and Poverty Estimates

A district's median income and poverty rate may both be important predictors of erroneous payments. Poorer districts may have fewer resources to devote to certification procedures. In additional, poorer families may be more or less likely to report erroneous information on their applications than wealthier families. The most reliable source of income and poverty data at the district level is the Decennial Census. In addition, having income and poverty variables will allow us to test model specifications in which other variables (that are collected every year) are interacted with income or poverty rates.

As an alternative to census data on income and poverty rates, we will explore the feasibility of using annual estimates of county-level income and poverty rates from the Census Bureau's Small Area Income and Poverty Estimates (SAIPE). The SAIPE estimates use both CPS and Decennial Census data to estimate district-level income and poverty rates in non-Census years. Currently, the most recent SAIPE estimates are for the year 2000, and estimates for 2001 were

[27]We will develop a crosswalk between zip codes and public school districts by overlaying zip code and school district cartographic boundary files from the U.S. Census Bureau, following the procedure outlined in Clark (2003).

released in October 2004. While these SAIPE estimates may provide a more current estimate of county income levels and poverty rates in non-census years, they are not updated in a timely manner. They may also be less reliable than census data, because they are based on projections rather than on direct estimates from the very large census samples.

g. Local Area Unemployment Statistics

Erroneous payment rates in a district may also be correlated with its unemployment rate, which, like poverty rate and income, reflects the resources available to the district to determine certification status as well as the financial circumstances of applicants. LAUS data provide monthly estimates of unemployment rates at the county level, which can be linked to public school districts. The estimates are produced by the Bureau of Labor Statistics in conjunction with state employment security agencies. The estimates for counties are based on a variety of data sources, including the CPS, Current Employment Statistics, the Decennial Census, and state unemployment insurance systems, and are updated each month.

h. Additional Data Items FNS Might Collect

In addition to the data items discussed above, there are other administrative data, not currently collected by FNS, that could enhance estimates of erroneous payments in future years. In particular, information on the number of students directly certified, as well as additional information reflecting the districts' administration of school meal programs, may be predictive of certification error.

As discussed above, FNS does not currently collect information on the number of students directly certified. However, Form FNS-742 does collect information on the number of students certified as free eligible but not subject to verification requirements, and we will use that information to approximate the number directly certified, as described above. The study's SFA

survey will collect information on the number of students directly certified; we will compare this information with the approximated values for the survey districts to determine the adequacy of the approximation. Depending on how close the approximated and survey-measured values are, FNS may wish to consider collecting specific information on direct certification on Form FSN-742 in the future. Particularly since FNS is interested in determining erroneous payments associated with direct certification, better-targeted information on this population may be useful for estimating erroneous payments specifically for the directly certified in future years.

Additional data items that may be predictive of erroneous payments are those that reflect aspects of the districts' administration of school meal programs, such as their methods for tracking student participation (whether they use point-of-sale methods), their methods for storing student records on certification (electronically or as hard copies), and whether they use verification for cause (selecting a particular application for verification outside the normal verification sample if there is reason to suspect it may contain errors). We will collect information on these items as part of the study's SFA survey, and we will examine the importance of these variables as predictors of district error rates. If any of these variables are highly predictive of error rates, FNS may wish to consider collecting this information from districts in future years.

i. Timing and Availability of Existing Data

In each year, it will be possible to estimate the proposed model of national erroneous payments as soon as administrative data from Form FNS-742 and information on number of meals reimbursed are available to FNS. Data from Form FNS-742 for SY 2004-2005 are due to FNS by April 15, 2005, and are expected to be ready for release later in the calendar year. Particularly in the first few years of data collection, data from Form FNS-742 may contain many

errors. Therefore, we will implement data quality checks and cleaning before incorporating the data into the model of erroneous payments.

Other than the administrative data, the main data source for the model is the CCD, which is generally updated about a year after the end of each school year. So, for example, by the end of SY 2005-2006, CCD data will be available through SY 2004-2005. However, because there is unlikely to be large variation in any of the relevant variables from the CCD from year to year, we believe data from the previous school year will serve as an adequate proxy for data from the current one. Similarly, even though the census data on income and poverty will be updated only every 10 years, we believe that the available data will serve as an adequate proxy for income and poverty rates throughout the decade. Data from the PSS are typically available about four years after the end of the school year, but, again, the most recently available data should serve as an adequate proxy for the current year's data.

3. Analysis Plans

In this section, we first describe our approach for generating annual estimates of overpayments, underpayments, and overall erroneous payments in the NSLP and SBP. Generating these estimates will entail two steps. First, we will estimate and test the reliability of a set of econometric models of SBP and NSLP certification error rates using household survey data collected as part of the study (in the 2005-2006 school year). These models will determine the relationship between observable districts' characteristics and their certification error rates. Second, we will use these estimated relationships to predict certification error rates in future years in districts that participate in the SBP and/or NSLP. These predicted error rates, when combined with information on the number of free and reduced-price meals served in each district and the dollar cost of each category of certification error, will be the basis of the total erroneous payments estimates nationally.

In the rest of this section, we first provide details of the estimation of the econometric model, along with our plans for assessing model fit. We then describe how the estimates from this econometric model will be used, along with supplemental data to predict erroneous payments in future years. Next, we note some of the limitations of this approach. Finally, we describe how we plan to use the estimation model we have developed to address specific policy questions regarding erroneous payments.

a. Estimation of the Erroneous Payments Model in the Survey Year

As the first step in generating national estimates of erroneous payments, we will estimate an econometric model of district-level error rates for both the NSLP and the SBP in each of four possible categories of error: (1) free meals served to students eligible for reduced-price meals, (2) free meals served to students eligible for paid meals, (3) reduced-price meals served to students eligible for paid meals, and (4) reduced-price meals served to students eligible for free meals. The first three of these error categories lead to overpayments; the fourth leads to underpayments. Estimating the model in the survey year will involve creating the dependent variables, determining the values of the independent variables used in the model, estimating the error rate models, and assessing the fit of the model specifications being estimated.

Dependent Variables. We will use eight dependent variables to estimate the model—four NSLP error rate variables and four SBP error rate variables. The four dependent variables for both the NSLP and the SBP models are defined as follows:

1. ***%CF-RPE.*** Percentage of all meals that were reimbursed as free in the district but that should have been classified as reduced-price (certified free, reduced-price eligible)
2. ***%CF-PE.*** Percentage of all meals that were reimbursed as free in the district but that should have been classified as paid (certified free, paid eligible)

3. ***%CRP-PE.*** Percentage of all meals that were reimbursed as reduced-price in the district but that should have been classified as paid (certified reduced-price, paid eligible)

4. ***%CRP-FE.*** Percentage of all meals that were reimbursed as reduced-price in the district but that should have been classified as free (certified reduced-price, free eligible)

As noted, each of these dependent variables is defined at the district level. To estimate these district-level variables, we will use data collected from sample members enrolled in the district. For example, we will base the first dependent variable (***%CF-RPE***) on sample members certified for free meals. To calculate the value of this variable in the district, we will divide the weighted sum of free meals served to students in a district eligible for reduced-price benefits only by the weighted sum of all free meals served to students in the district. The sample weights will take into account the number of free meals served in each of the schools sampled in the district.

Independent Variables. In selecting the independent variables for the model, we considered factors that are likely to be highly correlated with misclassification error rates. As discussed above, there are two possible sources of misclassification error: (1) administrative error, and (2) misreporting of income or household size by applicants. Administrative error is likely to be most heavily influenced by administrative features of the school meal program in the district and other administrative characteristics of the district. Misreporting of family circumstances may be influenced both by administrative features of the programs (such as the type of verification procedures used) and by demographic characteristics of students and families in the district. Therefore, the explanatory variables we will consider include indicators of the administrative features of the NSLP and SBP in the district, other characteristics of the district, and demographic characteristics of students and families in the districts.

Verification results will also be included as explanatory variables, since they may also be highly predictive of error rates in the district. Results from districts that conduct random

sampling are likely to be considerably more predictive of error rates than results from districts that conduct focused sampling, so it is important to distinguish between the two. Our model will include interactions between verification results and type of verification used (focused or random), which will allow the estimated relationship between verification results and error rates to vary according to the type of verification used. This is particularly important since it is likely that focused sampling will increase in its share of overall verifications during the initial several years for which the model will be used to predict erroneous payments. Our models will also take into account the fact that a high proportion of income-eligible households selected for verification may fail to respond to a verification request (Burghardt et al. 2004). In particular, the model will include separate measures of the proportion of verified households who fail to respond to the verification request and the outcome of verification among those households that do respond to the verification request. Including separate measures of nonresponse to verification and verification results among responders is particularly important for predicting erroneous payments in future years, since the prevalence of nonresponse may decrease due to changes to verification procedures initiated by the reauthorization process.

The proposed model of error rates will therefore include five groups of independent variables, as specified below:

$$(1)\ error_{jk} = \beta_0 + ADMIN*\beta_{k1} + DISTRICT*\beta_{k2} + DEMOG*\beta_{k3} + VERIF*\beta_{k4} + REGION*\beta_{k5} + u_{jk}$$

In these models, $error_{jk}$ represents the error rate in SFA *j* and error category *k* (%CF-RPE, %CF-PE, %CRP-FE, and %CPR-PE), for either the NSLP or the SBP. Error rates are assumed to be a function of administrative characteristics of the NSLP and SBP in the SFA (*ADMIN*), district characteristics (*DISTRICT*), demographic characteristics of students and families in the district

(*DEMOG*), verification rates and verification procedures used in the SFA (*VERIF*), and the region in which the SFA is located (*REGION*).

We will consider different possible explanatory variables for the model. The specific set of variables we ultimately include will be selected in consultation with FNS, and this selection process will take into account the trade-off between cost of obtaining each data item in future years and importance of each item in predicting error rates. The variables that we will consider including are listed below:

Administrative Characteristics of NSLP/SBP (ADMIN):

- Type of application used (individual student, household, or both)
- Percentage of students certified as free eligible
  - Percentage certified as free eligible based on direct certification[28]
  - Percentage certified as free eligible based on income/household size information submitted on application
  - Percentage certified as free eligible based on categorical eligibility from application
- Percentage of students certified as reduced-price eligible
- Percentage of all reimbursed meals that are from the SBP

District Characteristics (DISTRICT):

- Type of SFA (public or private)
- Number of schools operating the NSLP and/or SBP
- Number of enrolled students with access to the NSLP and/or SBP
- Number of students attending schools that use Provision 2 or 3
- Grade span of district
- Location (for example, large city, mid-size city, large town, small town)

[28]This measure is not currently collected by FNS but will be approximated from currently available data, as described above.

Demographic Characteristics of Students and Families in District (DEMOG):

- Racial/ethnic composition of students in district
- Gender composition of students in district
- Enrollment, by grade level
- Median income
- Poverty rate
- Unemployment rate in county

Verification Results and Procedures (VERIF):

- Verification results (for certified free eligible based on categorical eligibility, certified free eligible based on income eligibility, and certified reduced-price eligible)
  - Percentage with no change in status
  - Percentage responded, changed to free
  - Percentage responded, changed to reduced-price
  - Percentage responded, changed to paid
  - Percentage did not respond
- Verification procedures—sampling method (random or focused) and sampling rate
- Interaction of type of verification used and verification results

All the data items discussed above (except the census data) are available in both survey and nonsurvey years. The survey will collect several additional data items that we will consider including in the model. These include the actual percentage of certified students who are directly certified (as opposed to the approximated value described above), the SFA's methods for tracking student participation, methods for storing student records on certification (electronically or as hard copies), and whether the district uses verification for cause (verifying a particular application if there is reason to suspect it may contain errors).

Model Estimation. We will estimate the four NSLP and four SBP models described above using ordinary least squares (OLS) techniques.[29] Since the sample will include only 100 district observations, we will have a limited number of degrees of freedom in the model, so we will need to be economical in including independent variables. We will test various specifications of equation (1) that include subsets of the independent variables listed above. We will test specifications of this model that, like equation (1), are linear, as well as specifications that are nonlinear. In particular, we may include interactions of the independent variables or nonlinear functions of individual variables, such as quadratic functions, a series of dummy variables, or a spline function. The goal of testing these alternative specifications will be to find the specification that best explains variation in district-level error rates.

To select the independent variables that are to be included in the model, we will follow a stepwise regression procedure. Under this procedure, we will evaluate each explanatory variable, in turn, on the basis of its significance level and accumulate the model by adding variables sequentially. At each step of this procedure, we will consider the cost of the additional variable, since the optimal specification will depend not only on how predictive the model is, but also on the ease of obtaining and using the data needed to estimate this specification. For each specification, as a supplement to the stepwise procedure, we will compute the Akaike information criterion, a statistic that reflects how well the model fits the data, while taking into account the loss of degrees of freedom due to the addition of variables. In addition to

[29]We will weight the model appropriately to estimate standard errors that take into account the heteroskedasticity that arises from the fact that the dependent variables are district-level averages. If a large fraction of districts in the sample have error rates that are equal to zero, OLS estimates may be biased, since the dependent variables are left-censored. We will examine the fraction of districts in our sample with error rates equal to zero in each error category. If this fraction exceeds a minimum threshold of 10 to 20 percent, we will check the model's robustness to different functional forms appropriate for left-censored dependent variables, such as a Tobit specification. If the Tobit model appears to be a more appropriate specification, we will follow the procedure discussed by McDonald and Moffitt (1980) for using Tobit models for prediction.

independent variables based on data available from existing data sources, we will consider the added predictive value of variables that are not currently available but that the survey will collect. If any of these variables are highly predictive of error rates, FNS may consider collecting them in future years.

After all this model specification testing, we will determine an optimal estimation model for predicting the four categories of certification error rates for both the SBP and the NSLP, based on the Akaike information criterion as well as our own judgment and input from FNS regarding the costs and benefits of including each variable. The primary output of these models will be eight sets of parameter estimates—β_{k1} through β_{k5}, where k = 1 through 8. We will combine these parameter estimates with existing data to generate predictions of SBP and NSLP erroneous payments nationally in both the survey year and in future years, using procedures described below.

b. Using the Model to Predict National Erroneous Payments in Survey and Future Years

After we have estimated the econometric model of error rates using survey data, FNS can use the estimated parameters of the model to generate national estimates of overpayments, underpayments, and overall erroneous payments in future years using a six-step procedure (described below). To aid in understanding, we have simplified equation (1) as follows:

(2) $E_{jk} = X_j\beta_k + u_{jk}$, $k=1, \ldots, 8$

The steps are:

1. Collect the existing data necessary to measure the independent variables included in the final specification of the model for all SBP/NSLP-participating districts in a given year. In other words, collect data on X_j.

2. Use the parameters estimated by the econometric model (β_1 through β_8) along with these independent variables to predict the eight error rates for each participating district. $\hat{E}_{j1} = X_j \hat{\beta}_1$, ... , $\hat{E}_{j8} = X_j \hat{\beta}_8$

3. For each district, multiply the predicted error rate in each category by the total number of meals reimbursed as free or reduced-price, as appropriate, using FNS administrative data on meal reimbursements. This procedure will generate estimates of total meals erroneously reimbursed by the district in each error category. For example:

    a. *Number of free meals erroneously served to reduced-price eligible students in district j =*

        i. *#CF-RPE$_j$ = (total # free meals served in district j) ** $\hat{E}_{j1}$

4. Multiply the estimated number of total meals erroneously reimbursed in each error category by the dollar value of the erroneous payment per meal in each error category. The result of this computation will be an estimate of the total erroneous payments in each category for each district. For example:

    a. *Total $ of erroneous payments for free meals served to reduced-price eligible students in district j = $CF-RPE$_j$ = #CF-RPE$_j$ * (0.40)*

5. Sum across the relevant error categories to compute total overpayments, underpayments, and overall erroneous payments in the NSLP and SBP for each district. To calculate overpayments in district *j*, for example:

    a. *OP$_j$ = $CF-RPE$_j$ + $CF-PE$_j$ + $CRP-PE$_j$*

6. Sum across all participating districts to compute national estimates of overpayments, underpayments, and overall erroneous payments in the NSLP and SBP. To calculate total overpayments nationally, for example:

    a. $OP = \sum_{j=1}^{J} OP_j$

We now present an example with specific numbers to illustrate how these calculations might work. To do so, we use the following notation. Total erroneous payments in each error category in each district are estimated as shown:

*$EP_{CF\text{-}RPE}$: Erroneous payments for CF-RPE = ($F-$RP) * M_F * %CF-RPE*

*$EP_{CF\text{-}PE}$: Erroneous payments for CF-PE = ($F-$P) * M_F * %CF-PE*

*$EP_{CRP\text{-}PE}$: Erroneous payments for CRP-PE = ($RP-$P) * M_{RP} * %CRP-PE*

$EP_{CRP\text{-}FE}$: *Erroneous payments for CRP-FE* $= (\$F - \$RP) * M_{RP} * \%CRP\text{-}FE$

where *$F* represents the marginal reimbursement payment for free meals ($2.10 for NSLP and $1.04 for SBP), *$RP* represents the marginal reimbursement rate for reduced-price meals ($1.70 for NSLP and $0.74 for SBP), and *$P* is set to $0.00 for both the NSLP and SBP. M_F represents the total number of meals reimbursed in the SFA at the reduced-price rate, M_{RP} represents the total number of meals reimbursed in the SFA at the reduced-price rate, and *%CF-RPE, %CF-PE, %CRP-PE,* and *%CRP-FE* are the predicted error rates in the district in each of the four respective categories of error.[30]

As an example, suppose that, in a particular district, the model predicts the following error rates for the NSLP:

%CF-RPE = 15 percent

%CF-PE = 12 percent

%CRP-PE: = 10 percent

%CRP-FE: = 8 percent

Suppose that, during the school year, the district is reimbursed for 100,000 free lunches and 30,000 reduced-price lunches. The total estimated NSLP erroneous payments in each of the four error categories would be as follows:

$EP_{CF\text{-}RPE}$ *= ($2.10-$1.70) * 100,000 * 0.15 = $6,000*

$EP_{CF\text{-}PE}$ *= ($2.10-$0.00) * 100,000 * 0.12 = $25,200*

[30]The reimbursement rates listed for the NSLP represent Section 11 payments in SY 2005 - 2006. The rates shown for the SBP are for non-severe-need schools and are higher for severe-need schools. Finally, reimbursement rates differ in Alaska and Hawaii. We will take these differential reimbursement rates into account to the extent possible when predicting individual districts' erroneous payment amounts.

$EP_{CRP\text{-}PE}$ = *($1.70-$0.00) * 30,000 * 0.10 = $5,100*

$EP_{CRP\text{-}FE}$ = *($2.10-$1.70) * 30,000 * 0.08 = $960*

To compute NSLP overpayments, underpayments, and total erroneous payments for each district, we simply sum the estimated error rates for the relevant categories of error for each district:

Total overpayment = $EP_{CF\text{-}RPE} + EP_{CF\text{-}PE} + EP_{CRP\text{-}PE}$

Total underpayment = $EP_{CRP\text{-}FE}$

Overall erroneous payments = $EP_{CF\text{-}RPE} + EP_{CF\text{-}PE} + EP_{CRP\text{-}PE} + EP_{CRP\text{-}FE}$

Thus, in the example given above, NSLP overpayments, underpayments, and overall erroneous payments would be:

Total overpayment = *$6,000 + $25,200 + $5,100 = $36,300*

Total underpayment = *$960*

Overall erroneous payments = *$6,000 + $25,200 + $5,100 + $960 = $37,260*

To compute national estimates of total overpayments, underpayments, and overall erroneous payments, FNS would simply aggregate these estimates across all participating districts. At the national level, we can also compute erroneous payments as a percentage of total Section 11 payments for the NSLP and as a percentage of the total marginal amount reimbursed for free or reduced-price meals for the SBP.

Assessing Model Reliability. In order to assess the reliability of the prediction model, we will use the model to estimate national erroneous payments *in the survey year*. We will then compare the model-generated estimates for the survey year with estimates based on the on-site data on erroneous payments collected in the survey year. The two estimates will differ, since the survey estimate will be derived solely from the survey sample, appropriately weighted to be

nationally representative, while the model-generated estimates will be based on predicted error rates and actual data on meal reimbursements for all districts. A reliable estimation model will generate national estimates of erroneous payments similar to those based on the on-site data collection. If the two estimates differ by more than some minimum threshold, such as 10 percent, this may call into question the usefulness of the model for predicting erroneous payments in future years.

Limitations of Proposed Methodology. The proposed methodology for predicting erroneous payments through the estimation model described above has some limitations. One is that the dependent variable of the econometric model (district-level error rates) will include sampling error, since its value will be based on data from only a sample of students within the district. And, because the model will be based on 80 district-level observations, the model estimates—and, thus, the model predictions—will also be subject to sampling error. A second limitation of the proposed approach involves the independent variables included in the model. The estimation model will be successful only if these independent variables are strong predictors of district-level error rates, and there are some potential drawbacks of the explanatory variables. For example, because district verification results are typically based on only a small sample of approved applications in the district, because many students fail to respond to the verification request, and because many districts use focused rather than random sampling, verification results may be poor predictors of true error rates in each district. In addition, the values of some, or all, explanatory variables may be missing for some districts. Next, we describe each of these potential limitations and their implications in greater detail.

Error rates in each district will be estimated from the survey sample, which will include approximately 30 students in each district. Furthermore, since the error rates are to be calculated separately for students certified for free meals and those certified for reduced-price meals, the

sample sizes in a given district will be even smaller. Given the small sample sizes in each district, error rates, which are the dependent variables in the model, are likely to be measured with considerable error. While measurement error in the dependent variable will not bias the estimates of the model, it will lead to less precise estimation of the model's coefficients. Similarly, the precision of the model's coefficients will also be influenced by the number of district-level observations on which the model is based. In the current sample design, there will be 80 district-level observations, which suggests that the model's precision will be lower than it would be if there were more observations.

District verification results may be an important component of the model of district error rates, in that these results provide a direct estimate of erroneous certification rates in each district. However, verification results may prove to be weak predictors of true error rates, for two reasons. First, in many districts, verification results are based on small samples (typically around 3 percent) of approved applications. Particularly in smaller districts, the verification samples will tend to be small. Gleason et al. (2003) found that 60 percent of districts had verification samples of 10 or fewer students. However, the districts in the survey sample in our case—which will be selected with probability proportionate to size—will tend to be larger, and will therefore tend to have somewhat larger verification samples. Gleason et al. (2003) also found that, among all students, 90 percent attended districts with verification samples of more than 10. To address the issue of imprecisely measured verification rates, we will assess model fit carefully and examine the extent to which prediction error varies with the size of the district.

A second reason that verification rates may prove to be weak predictors of error rates is that, in many districts, a large proportion of the verification sample fails to respond to the verification request. The benefits of these students are terminated, but it is not clear whether they are truly income ineligible for free or reduced-price meals. A case study of 21 large metropolitan school

districts found that 50 percent failed to respond to the verification request, and over half of these nonrespondents were eligible for at least the amount of benefits they were initially approved to receive (Burghardt et al. 2004). From data collected on Form FNS-742, we will be able to distinguish between the percentage of verified applications identified as erroneous and the percentage that simply fail to respond to the verification request—the former may prove an adequate predictor of error rates. If a high proportion of students do not respond to the verification request, however, this may lead the verification results to be a poor predictor of districts' actual error rates.[31]

Another potential limitation of the proposed model is that, to predict error rates for each district, we will need measures of all explanatory variables for all districts; but some or all of the data items from the CCD, PSS, census, or Form FNS-742 may be missing for some districts. Particularly since SY 2005-2006 will be the second year Form FNS-742 data are collected, districts may not complete these forms correctly. For districts that are missing data, we will, where possible, rely on an alternate data source. For example, we will explore the feasibility of using certification data from the CCD for districts that are missing certification data from Form FNS-742. When there are no alternate sources for the missing data item, we will impute values for the missing data via the hot-deck procedure, whereby a response from another district with similar observable characteristics is used to impute the missing data. The hot-deck procedure—as opposed to merely imputing the mean value among nonmissing observations—will preserve the variability of the explanatory variable across the districts in the data set with missing values.

[31]Another reason verification results may be weak indicators of error rates is that they may be determined with error. Burghardt et al. (2004) found that approximately 20 percent of those whose benefits were unchanged in verification were ineligible for the benefit they were receiving at the time of verification.

b. Using the Estimation Model to Address Specific Policy Questions

The basic framework of the model described above can be used or altered to address specific policy questions of interest to FNS or others regarding erroneous payments for subgroups of students/districts or regarding the relationships between district characteristics and erroneous payments. Below, we provide examples of the type of analysis that could be conducted to address each of these two types of policy questions. First, we describe how the estimation model could be use to estimate/predict erroneous payments specifically for directly certified students. Second, we show how the model could be altered to examine the relationship between a district's verification procedures and its level of erroneous payments.

Erroneous Payments Specifically for Directly Certified Students. Since direct certification is a key feature of most districts' current certification procedures and is being gradually expanded to be used in all districts, policymakers may want to see estimates of erroneous payments specifically for directly certified students. The estimation model described above can be extended to generate these estimates for the directly certified students with two modifications to the basic framework. First, we will need to estimate an econometric model of error rates *specifically among the directly certified students*. Second, we will need to estimate the number of free meals reimbursed in each district that are for directly certified students. Next, we discuss both of these modifications to the estimation model in greater detail.

The first step for producing estimates for directly certified students will be to use the econometric model discussed above to estimate the relationship between error rates and the explanatory variables specifically for those students. Since students are directly certified only for free meals, not for reduced-price meals, there are only two relevant error categories in this case: CF-RPE and CF-PE. Since the MPR survey will collect information about whether students were directly certified, we can use it to compute error rates in the two relevant error

categories specifically for directly certified students, for all districts in the survey sample for which our student sample includes directly certified students. These two error rates (%CF-RPE_{dc} and %CF-PE_{dc}) will be the dependent variables in the direct certification model.

As with the general estimation model described above, we can then use the estimated parameters of the direct certification econometric model to predict error rates among directly certified students for all districts in the country, in both survey and nonsurvey years. To use these predicted error rates to compute total erroneous payments for the directly certified students, we will need to multiply the predicted error rates by the total number of meals that are reimbursed as free and that are served to directly certified students, and the dollar value of the erroneous payment per meal:

$$EP_{CF\text{-}RPE,dc} = (\$F\text{-}\$RP) \times M_{dc} \times \%CF\text{-}RPE_{dc}$$

$$EP_{CF\text{-}PE\,dc} = (\$F\text{-}\$P) \times M_{dc} \times \%CF\text{-}PE_{\,dc}$$

where, as before, \$F represents the marginal reimbursement rate for free meals, \$RP represents the marginal reimbursement rate for reduced-price meals, \$P is set to \$0.00, and M_{dc} represents the total number of meals reimbursed in the SFA at the free rate *that were served to directly certified students*.

While we will have information on the total number of free meals reimbursed in each district nationally, we will not have information on how many of these meals were served to directly certified students. To estimate how many of the total number of free meals reimbursed were served to the directly certified students, we will need to assume that participation rates are the

same between students who are directly certified as free-eligible and those who are certified as free-eligible and *not* directly certified. This is an assumption we can test with the survey data.[32]

We will therefore estimate total free meal reimbursements for directly certified students as follows:

$$M_{dc} = M_F * \%DC$$

where M_F, as before, represents total free meal reimbursements, and *%DC* represents the proportion of all students certified for free meals who were directly certified.

After we have estimates of number of free meals reimbursed for the directly certified and predicted error rates among the directly certified for each district, we can estimate erroneous payments in the district as before:

$$\textit{Overall erroneous payments for directly certified} = EP_{CF\text{-}RPE\ dc} + EP_{CF\text{-}PE,\ dc}$$ [33]

We can then aggregate the district-level estimates of erroneous payments across all districts to compute a national estimate of erroneous payments among the directly certified.

Despite the ability of the model to generate estimates of erroneous payments among directly certified students, in theory, there are several serious limitations to the planned methodology for doing so. As was the case with the full estimation model, limitations on sample size will lead to sampling error in the estimates. The sample-size problem is of particular concern in the case of

[32]As discussed above, since FNS does not currently collect information on the number directly certified, we will follow the procedure described in Section V.B.2c and approximate this value for each district. We will assume that the district does not use direct certification (and that its predicted direct certification error rates are not defined) if its approximated value for percentage directly certified is less than or equal to zero.

[33]Since students can be directly certified only for free meals, and since any error in their certification would lead to an overpayment rather than an underpayment, there will be no underpayments made for the directly certified, and total erroneous payments will be equal to total overpayments for this group.

erroneous payments for direct certification, since some districts currently do not use direct certification and others may have relatively few directly certified students. As of SY 2001-2002, for example, Gleason (2003) found that 61 percent of all districts used direct certification, and in these direct certification districts, about one in four students certified for free meals was directly certified. If these percentages hold during SY 2005-2006, we would expect that 49 of the 80 sample districts would use direct certification, and on average, these districts would have 7 to 8 directly certified students in the sample.

Another methodological limitation is that, while students may be directly certified on the basis of their receipt of food stamps or TANF as of a month during the summer, we will be asking about their income and receipt of public assistance in the reference month, which for applicants at the beginning of the year will be in August through October. Thus, it is possible that households that were appropriately directly certified because they received food stamps in July may have had an increase in income and thus be classified as income ineligible on the basis of their October income. Since these students were accurately directly certified initially, free meal reimbursements made for meals that they consume are not in error, but our process for defining erroneous payments will treat them as being in error. Thus, the estimated erroneous payments for directly certified students will likely be overstated.

Estimating the Relationship Between Verification Procedures and Erroneous Payments. The estimation model shown in equation (1) will generate estimates of parameters that describe the relationships between district characteristics (as well as various other factors) and erroneous payments in a district. Although the primary interest in these parameter estimates will be to predict erroneous payments nationally in future years, they may also be of interest in themselves. For example, in the statement of work for this study, FNS expressed an interest in using the model to examine the effects of various changes in verification policies on erroneous

payments. For example, how would erroneous payments be affected if the size of the required verification sample was altered or if there was a shift in the proportion of districts using focused versus random sampling? To estimate the effects of these changes, we will extend the general framework described above to simulate the specific verification policy reforms of interest, and will compare the simulated levels of erroneous payments to the baseline levels.

For these policy simulations, we will use the general framework of the estimation model described above. The estimated coefficients on variables relating to a district's verification procedures from the econometric model of error rates will be used to simulate the effects of the verification policy changes. These variables are encompassed in the vector *VERIF* in the econometric model described above.[34] Key variables of interest included in *VERIF* will be *random*, an indicator variable equal to one if the district uses random sampling for verification and zero otherwise; *pct_random*, a variable representing the percentage of approved applications that are randomly sampled for verification (equal to zero in districts that use focused sampling); *pct_ver_inc*, a variable representing the percentage of applications approved on the basis of income that were selected for verification in a focused sampling district; and *pct_ver_cat*, a variable representing the percentage of applications approved on the basis of categorical eligibility that were selected for verification in a focused sampling district.[35]

[34]The econometric model used for policy simulations such as those described above will be similar to that shown in equation (1) for the estimation model. However, since the simulations will be conducted only in the survey year, the econometric model for the simulations may include additional survey variables that are excluded from the estimation model because they are not available in nonsurvey years.

[35]Although districts that use random sampling are currently required to randomly sample 3 percent of their approved applications, there is some variation in the percentage of applications that actually are verified. Gleason et al. (2003) found that, among all districts, 53 percent verified no more than 3 percent of their approved applications, 28 percent of districts verified 4 to 5 percent, 14 percent of districts verified 6 to 10 percent, and 4 percent verified more than 10 percent.

For each verification policy change of interest to FNS, we will use the estimated coefficients of these key variables from the econometric model to simulate the effects of changing the policy in a particular way. We will begin by determining how the policy of interest would affect the values of the explanatory variables in the model. Next, we will modify the relevant explanatory variables appropriately and recalculate the value of the dependent variable (the predicted error rate in the specific error category) for each district. We will then multiply the simulated error rates in each error category by the number of meals reimbursed in the relevant certification category (free or reduced-price) and the dollar value of the erroneous payment per meal in that category. Finally, we will calculate the weighted sum of erroneous payments across all districts in the sample to generate a nationally representative estimate of total erroneous payments across all districts under the simulated policy. The simulated level of erroneous payments can be compared with the baseline level to determine the estimated *change* in error rates due to the simulated policy change.

For example, suppose that we wanted to simulate the verification policy changes of changing the percentage of randomly sampled applications that are verified. To examine the effects of a change in the percentage of approved applications required to be randomly sampled, we will need to make assumptions about how the proposed policy change would affect actual sampling rates in the districts. For example, to simulate the effects of increasing the required random sampling rate from 3 to 4 percent, we will assume that districts currently randomly sampling less than 3 percent of applications would increase their sampling rates by 1 percentage point, districts currently sampling between 3 and 4 percent of approved applications would increase their sampling rates to the required 4 percentage points, and districts currently sampling more than 4 percent of applications would not increase their sampling rate. We will assume that districts currently conducting focused sampling will not change their sampling method or

sampling rate. For all districts in the survey sample, we will modify the value of the variable *pct_random* accordingly and recompute the value of the dependent variable to generate national estimates of erroneous payments under the simulated policy change.

Like the estimation model, this simulation model has some limitations. First, although there is some variation in the percentage of applications selected for verification across districts and in the type of verification procedure used, these policies may be correlated with other unobservable characteristics of the district. For example, districts that choose to randomly verify more than the required 3 percent of applications may be districts that have particularly high error rates due solely to characteristics of the population they serve. This would lead us to understate the effect of increasing the percentage of applications verified. Similarly, districts that choose to conduct focused sampling may differ systematically from those that choose to conduct random sampling. We attempt to address this problem by controlling for as many observable characteristics of the district as possible. We will include such variables as the percentage directly certified and other administrative features of the school meal program that are available in the survey data but are not included in the estimation model since they are not available in nonsurvey years. Nonetheless, it is possible that important unobservable characteristics will remain and will lead us to estimate biased effects of a particular change in verification policy.

Another potential limitation is that the simulation model will be effective only for identifying the effects of policies currently in widespread use among districts in the survey sample. For example, since districts that use focused sampling must select some applications approved on the basis of categorical eligibility for their verification sample, we will have no direct basis for estimating the effects of changing *pct_ver_cat* to 0; thus the sum will be based on an indirect inference.

A third potential limitation of the simulation model is that the effects of the policy changes being considered are likely to fairly be small and thus hard to detect with this or any model. Currently, only about 3 percent of all approved applicants in a district are directly affected by verification policies; therefore, unless the percentage of applications required to be verified was increased substantially, proposed policy changes would not directly affect most certified students (well over 90 percent). Given the small expected magnitude of the policy changes of interest, the simulation model may not be able to statistically distinguish their effects.

C. ANALYSES OF PROGRAM ACCESS AND PARTICIPATION ISSUES

Under Objective 3, we will conduct analyses of a limited set of issues related to access to, and participation in, the school meal programs. The remainder of this section presents analysis plans for Objective 3.

1. Research Questions

We will examine research questions related to: (1) the extent to which application procedures are barriers (for eligible but erroneously denied students' families), and (2) NSLP and SBP participation.

Application issues include:

- Why do denied applicant households not reapply for certification? What is the relative frequency and importance of their reasons?
- Do applicants understand that they can apply for benefits at any time during the year? Does knowledge of these program features differ by income levels and demographic characteristics?
- Why do households decide not to reapply if their applications are denied because of administrative error? Does this differ by income-eligibility level or demographic characteristics?
- How frequent are incomplete applications? Why do households submit incomplete applications? Does this differ by income-eligibility level or demographic characteristics?

Participation issues are:

- How frequently do students certified to receive free or reduced-price meals actually participate in the NSLP or SBP?
- Why do some certified students not participate or participate infrequently in the NSLP or SBP?
- What is the relationship between the perceived quality of school meals and families' application and participation decisions?

Questions related to families' behavior if they become eligible for increased benefits after the start of the school year include:

- What proportion of households becomes eligible for increased meal benefits after the beginning of the school year, as a result of changes in household circumstances? How many of these households apply for these increased benefits?
- If they do not apply for increased benefits, why don't they? Does this differ by income-eligibility level or demographic characteristics?

Questions about the SFSP that the study will address are:

- Among students, what proportion participated in the SFSP during the previous summer? What is the prevalence of participation by certification status?
- What are the locations and types of programs students participate in? How far are the programs from students' homes?
- For nonparticipating students, are parents aware of a free-meal program in their area? If yes, why didn't they use it?
- If students did not participate in the SFSP, what other strategies did parents use to feed these children during the summer?

2. Data Requirements and Sources

We will need data to address issues related to the application process, participation decisions, the experiences of families who change from ineligible to eligible for school meal benefits during the school year, participation in the SFSP, and family background characteristics. Addressing these access and participation issues requires data on the full universe of schoolchildren, not just those certified for free or reduced-price meals. In particular, we need a

national sample of students whose applications were denied in addition to the samples of certified students used to address Objective 1.

There will be three data sources for these analyses: (1) in-person interviews with a parent or guardian of the sampled student, (2) application forms on file at the school or district office, and (3) administrative records data on meals served. The parent interviews will be the source of most of the data for Objective 3. Table V.C.1 summarizes the data needed for Objective 3 and the planned sources (see Chapter IV for details on plans for collecting these data).

3. Analytic Definitions of Denied Applicants

Denied applicants will consist of applications submitted but not approved, either complete applications that were denied or incomplete applications. We will define denied applications in a way most relevant to the particular research question under consideration. For some research questions, we will analyze denied applicants based on the definition of "only denied applications that are complete." For others, we will use a broader definition in which denied applicants include both complete and incomplete applications (sometimes referred to as not approved applications).

Denied Applications. Our initial measure of whether an application was not approved will come from the information the SFA provides when the sample of denied or pending applications is selected. This information can be confirmed later, when we collect and analyze data from the applications of these households. We will consider applications that SFA staff have marked "denied" or "paid" to be denied completes for sampling purposes. We will compare applications not marked as having been approved or disapproved with the SFA's lists of certified students; we will consider those submitted by households whose children are not certified to be incomplete (either denied due to incomplete information or pending). For analysis, applications that were not approved can be further categorized into one of four subcategories, based on the reason they

TABLE V.C.1

DATA REQUIREMENTS FOR OBJECTIVE 3, BY SOURCE

	Administrative Data on Meals Served	Application Files	Household Survey[a]
Application Issues			
Ever Applied		X	X[b]
Certified/Denied/Incomplete		X	X[b]
Reason Denied or Incomplete		X	X[b]
Ever Reapplied		X	X[b]
Knowledge of Application Process			X
Reasons for Not Applying or Reapplying			X
Any Contact from School About Incomplete Information			X
Participation			
Participation Rates	X		X[b]
Reasons for Not Participating or Not Participating Regularly			X
Child's Perceptions of School Meal Quality			X
Parent's Perceptions of School Meal Quality			X
Changes in Eligibility Since Start of School Year			
Changes in Income			X
Changes in Household Size			X
Applied or Reapplied for Certification After Eligibility Changed		X	X
Background Characteristics			
Student/Household Demographics			X
Household Income			X
Participation in TANF, Food Stamps			X
SFSP Participation			X
Other Strategies for Feeding Children During Summer			X

[a]See Chapter IV, Table IV.3 for a comprehensive list of items appearing on the household survey.

[b]Parent's perception, which may not match records exactly.

were not approved: (1) complete application—denied due to administrative error, (2) complete application—correctly denied due to ineligibility; (3) incomplete—correctly judged incomplete; and (4) erroneously determined incomplete.[36] Addressing some of our research questions requires considering "complete applications" (that is, subgroups 1, 2, and 4); other issues examine the prevalence of incomplete applications (which would be based on all four subgroups), or the reasons applications are incomplete (subgroup 3 only).

Completed Applications Denied Due to Administrative Error. To determine whether a completed application was denied due to administrative error, we will use the information households provide on their applications (specifically, information about categorical eligibility, number of household members, and income) and the FNS eligibility guidelines to compute our own determination of eligibility. We will then compare this measure of eligibility to the SFA's eligibility decision. If the SFA denied the application but our computation indicates that the application should have been approved, we will consider the application to have been denied due to administrative error. MPR successfully implemented this approach in the NSLP Application/ Verification Pilot Projects Study.

Incomplete Applications. We also will use data from the application to determine whether an application was incomplete. We will first examine the portion of the application form completed by SFA staff. In districts where the application form does not provide a space for SFA staff to clearly indicate the reason for denial, or in cases where SFA staff did not complete this section of the form, we will examine the part of the application completed by the household to determine whether it provided the key pieces of information required for the application to be considered complete. We will consider an application correctly determined incomplete if the

[36]During analysis we will review incomplete applications and determine whether SFA staff made the correct determination.

student was not certified to receive free or reduced-price meals and (1) SFA staff noted on the application form that the application was incomplete, or (2) the application is missing a key piece of information required to determine eligibility for free or reduced-price meals. If an application designated as "incomplete" has all the necessary items entered but was processed incorrectly and determined incomplete, we will treat the application as erroneously determined incomplete.

4. Analysis Plans

This section presents analysis plans for Objective 3, separately by major sub-objectives.

Characteristics of Students and Their Households. The first stage in the analysis will be to describe the characteristics of students and their families by application status: all applicants, F/RP certified, and denied applicants (see Table V.C.2). Characteristics examined will include demographic characteristics of the child and the household, socioeconomic characteristics such as education and employment of the parents, income levels relative to poverty, and participation in other means-tested benefit programs. These comparisons will provide descriptive background for the analysis of factors affecting application and participation decisions. We will perform bivariate as well as multivariate analyses of characteristics of applicants and certified students. We plan to construct similar tables so that we can compare certified students who are daily participants with those who participate less often.

Application Process. To address the research questions about the application process, we will first examine the results of the application process according to administrative records and as reported by parents, separately for certified and denied applicant households (see Table V.C.3). For denied applicants, we will use application data to determine whether the denial was due to administrative error, the application was incomplete, or the application was erroneously determined incomplete. We will compare different groups of applicants as to their knowledge of the application process (see Table V.C.4) Table V.C.5 shows how we would examine the

TABLE V.C.2

CHARACTERISTICS BY APPLICATION AND ELIGIBILITY STATUS

	Applicants		
	All	Certified	Denied
Child's Grade			
PreK to K			
1 to 3			
4 to 5			
6 to 8			
9 to 12			
Gender			
Boy			
Girl			
Race/Ethnicity			
White, non-Hispanic			
Black, non-Hispanic			
Hispanic			
Other			
Location			
Urban			
Suburban			
Rural			
Household Headed by			
Two parents			
Single parent			
Other relative			
Nonrelative			
Parent's Education			
Less than high school			
High school or GED			
Some college			
College graduate			
Some graduate school			
Parent's Employment			
Works full-time			
Works part-time			
Not working			
Program Participation			
TANF			
Food stamps			
Medicaid			
For child(ren)			
For adult(s)			
SFSP			

TABLE V.C.2 (*continued*)

	Applicants		
	All	Certified	Denied
Number of Children < 18 Years			
1			
2			
3			
4			
5+			
Age of Youngest Child			
Less than 5			
5 to 8			
9 to 13			
14 to 18			
Household Size			
1 to 3			
4 to 6			
7 to 9			
10+			
Income Relative to Poverty			
< 50 percent			
50 to < 100 percent			
100 to < 130 percent			
130 to < 185 percent			
185 to < 250 percent			
250 to < 400 percent			
400+ percent			

TABLE V.C.2

CHARACTERISTICS BY APPLICATION AND ELIGIBILITY STATUS

	Applicants		
	All	Certified	Denied
Child's Grade			
PreK to K			
1 to 3			
4 to 5			
6 to 8			
9 to 12			
Gender			
Boy			
Girl			
Race/Ethnicity			
White, non-Hispanic			
Black, non-Hispanic			
Hispanic			
Other			
Location			
Urban			
Suburban			
Rural			
Household Headed by			
Two parents			
Single parent			
Other relative			
Nonrelative			
Parent's Education			
Less than high school			
High school or GED			
Some college			
College graduate			
Some graduate school			
Parent's Employment			
Works full-time			
Works part-time			
Not working			
Program Participation			
TANF			
Food stamps			
Medicaid			
For child(ren)			
For adult(s)			
SFSP			

TABLE V.C.2 (*continued*)

	Applicants		
	All	Certified	Denied
Number of Children < 18 Years			
1			
2			
3			
4			
5+			
Age of Youngest Child			
Less than 5			
5 to 8			
9 to 13			
14 to 18			
Household Size			
1 to 3			
4 to 6			
7 to 9			
10+			
Income Relative to Poverty			
< 50 percent			
50 to < 100 percent			
100 to < 130 percent			
130 to < 185 percent			
185 to < 250 percent			
250 to < 400 percent			
400+ percent			

TABLE V.C.3

APPLICATION STATUS AND RESULTS

	Percentage of Households	
	Households with Income Below 185% FPL	Households with Income Above 185% FPL
Status Based on Administrative Data		
Submitted incomplete application for free or reduced-price meals		
Submitted complete application for free or reduced-price meals		
Applied and was approved		
Applied and was denied		
Denied because reported income exceeded 185% FPL		
Denied due to administrative error		
Status Based on Self-Reported Data		
Submitted incomplete application for free or reduced-price meals		
Submitted complete application for free or reduced-price meals		
Applied and was approved		
Applied and was denied		
Denied because reported income exceeded 185% FPL		
Denied due to administrative error		
Sample Size		

FPL = federal poverty level.

TABLE V.C.4

HOUSEHOLDS' KNOWLEDGE OF PROCEDURES FOR APPLYING FOR FREE/REDUCED-PRICE MEALS

	Percentage of Households	
	Households That Submitted a Complete Application	Households That Submitted an Incomplete Application
Knowledge of Application Procedures:		
Aware of availability of free/reduced-price benefits		
Received letter and/or application form from school		
Found application materials clear and easy to understand[a]		
Was contacted by school and encouraged to apply		
Knows where to get an application		
Familiar with eligibility criteria		
Understands can apply for benefits at any time during the year		
Sample Size		

Note: Other similar tables would show knowledge of application procedures by other household characteristics.

[a]For those who received them.

FPL = federal poverty level.

TABLE V.C.5

PREVALENCE OF AND REASONS FOR INCOMPLETE APPLICATIONS FOR FREE/REDUCED-PRICE MEAL BENEFITS, AMONG ELIGIBLE AND INELIGIBLE APPLICANTS

	Percentage of Households	
	Households with Income Below 185% FPL	Households with Income Above 185% FPL
Application Incomplete (Based on Review of Administrative Data)		
Type of Information Missing from Incomplete Applications (Based on Review of Administrative Data)		
Food stamp, TANF, or FDPIR case number		
Names of all household members		
Income received in the prior month for each household member (amount and source)		
Signature of adult household member		
Social security number of adult who signed application		
Other		
Sample Size		

Note: Column percents may sum to greater than 100, because respondents could give more than one reason. This sample table shell shows reasons by income eligibility level. Other similar tables would show reasons by other household characteristics.

FPL = federal poverty level.

prevalence of, and reasons for, incomplete applications, using data from the application forms. Table V.C.6 explores the reasons why households whose initial application for free or reduced-price meal benefits is denied due to administrative error do not reapply for benefits.

Meal Program Participation. Our analysis of participation issues will start with a school-level analysis. For example, it will be possible to tabulate the average daily participation rate for free, reduced-price, and paid students in schools of different types (see Table V.C.7). The participation rate for free lunches, for example, could be computed as (Number of free lunches served in previous month) / (Number of serving days * number of students certified free). These rates would not be subject to the reporting error that would likely occur in parent reports on their child's participation; but could be subject to bias due to counting and claiming errors. Such an analysis could be used to assess, for example, whether participation rates among certified students were lower at the high school level than at the elementary level, and whether they were lower in schools with a small percentage of certified students than in schools with a large percentage. Another line of analysis will involve assessing participation as reported by parents. Using carefully structured questions, participation will be measured for the previous day, and as the number of days participating in the previous week (see Table V.C.8). Separate measures will be constructed for breakfast and lunch.

Those who do not meet a threshold level of participation (say, 60 percent of the days in which school meals were available) will be asked their reasons for not participating or for not participating more often (see Table V.C.9). In addition, out of the reasons offered, they will be asked to designate the most important reason. We also will ask parents for their views and their child's views on the quality of school meals along several dimensions: for children—taste, amount of food, and overall satisfaction; for parents—healthfulness and overall satisfaction (see Table V.C.10). These variables will support an analysis of how the perceived quality of school

TABLE V.C.6

REPORTED REASONS FOR NOT REAPPLYING FOR FREE/REDUCED-PRICE MEAL BENEFITS AFTER INITIAL APPLICATION DENIED OR INCOMPLETE, BY REASON FOR DENIAL

	Percentage of Households Citing Reason		
	Applications Denied Because Reported Income Exceeded 185% FPL	Applications Denied Due to Administrative Error	Applications Incomplete
Reasons for Not Reapplying Among Households Whose Applications Were Denied			
Costs of Reapplying for Benefits			
Wanted to avoid hassle of appeal or reapplication process			
Changed Mind About Wanting to Receive Benefits			
Did not want to receive government assistance			
Wanted to avoid stigma associated with receiving free/ reduced-price meals			
Child no longer wishes to eat school meals			
No Longer Eligible Due to Change in Household Circumstances			
Income increased			
Household size decreased			
No longer receiving food stamps or TANF			
Unaware of Eligibility/Reapplication Process			
Did not think they were eligible			
Did not know they could reapply after being denied free/reduced-price benefits			
Not familiar with process for reapplying			
Other Reasons for Not Applying			
Other			
Sample Size			

Note: Column percents may sum to greater than 100, because respondents could give more than one reason. Other similar tables would show reasons by income eligibility level and other household characteristics. We will also present a version of the table showing the most important reason cited by respondent for not applying.

FPL = federal poverty level.

TABLE V.C.7

AVERAGE SCHOOL-LEVEL NSLP PARTICIPATION,
BY CERTIFICATION STATUS

	Certification Status		
	Free	Reduced-Price	Paid
Participation Rates for			
All Schools			
Elementary Schools			
Middle Schools			
High Schools			
Urban Schools			
Suburban Schools			
Rural Schools			
Number of Schools			

Note: Aggregate participation rates will be computed for each school for the calendar month prior to the target week. These rates will be computed, for each category, as follows:

$$Rate(i) = \frac{Total\ Meals\ to\ Group(i)}{(Number\ of\ Serving\ Days)\ x\ (Number\ of\ Children\ in\ Group(i)}$$

where i = free, reduced-price, or paid status.

A similar table would be prepared for SBP participation rates.

TABLE V.C.8

PARTICIPATION AS REPORTED BY PARENTS,
BY CERTIFICATION STATUS

	Certification Status		
	Free	Reduced-Price	Paid[a]
Lunch			
Participation on day prior to interview			
Number of Days in Past Week That Child Participated			
None			
1			
2			
3			
4			
5 (every day)			
(Mean)			
Sample Size			
Breakfast			
Participation on Interview Day			
Number of Days in Past Week That Child Participated			
None			
1			
2			
3			
4			
5 (every day)			
(Mean)			
Sample Size			

Note: Similar tables would examine participation by eligibility status or other subgroups.

[a]These are denied applicants only

TABLE V.C.9

REASONS FOR NOT PARTICIPATING IN NSLP,
BY CERTIFICATION STATUS

	Certification Status			
	Total	Free	Reduced-Price	Paid[a]
Reasons				
(All)				
Child Does Not Eat Lunch				
Child Does Not Like the Food Served				
Child Prefers to Bring Lunch From Home				
Child Does Not Have Enough Time to Get and Eat School Lunch				
Child Does Not Like Waiting in Line				
Child Thinks Only Needy Kids Eat School Lunch and He/She Does Not Want to be Thought of That Way				
Parent Prefers That Child Bring Lunch				
Child Does Not Want to Eat Lunch Because Friends Don't				
Most Important Reason				
Child Does Not Eat Lunch				
Child Does Not Like the Food Served				
Child Prefers to Bring Lunch From Home				
Child Does Not Have Enough Time to Get and Eat School Lunch				
Child Does Not Like Waiting in Line				
Child Thinks Only Needy Kids Eat School Lunch and He/She Does Not Want to be Thought of That Way				
Parent Prefers That Child Bring Lunch				
Child Does Not Want to Eat Lunch Because Friends Don't				
Sample Size				

Note: A similar table will cover reasons for not eating school breakfast.

[a]These are denied applicants only

TABLE V.C.10

SATISFACTION WITH SCHOOL MEALS

	Certification Status			
	Total	Free	Reduced-Price	Paid[a]
Child's Satisfaction with Taste[b]				
Very satisfied				
Somewhat satisfied				
Somewhat dissatisfied				
Very dissatisfied				
Child Satisfaction with Amounts[a]				
Very satisfied				
Somewhat satisfied				
Somewhat dissatisfied				
Very dissatisfied				
Child's Overall Satisfaction[a]				
Very satisfied				
Somewhat satisfied				
Somewhat dissatisfied				
Very dissatisfied				
Parent's Satisfaction with Healthfulness				
Very satisfied				
Somewhat satisfied				
Somewhat dissatisfied				
Very dissatisfied				
Parent's Overall Satisfaction				
Very satisfied				
Somewhat satisfied				
Somewhat dissatisfied				
Very dissatisfied				
Sample Size				

[a]These are denied applicants only.

[b]Parents are being asked to report child's satisfaction.

meals is related to participation among students whose certification status is free, reduced-price, or paid. Multivariate analysis of participation will be used to examine the effects of certification status, income, and other student and school characteristics on participation, while holding other factors constant. For these analyses, participation may be defined as participation any time in the past week or participation for four or more days out of five.

Changes in Eligibility and Certification Status. One type of barrier in the application process is that most enrollment in the program occurs at the start of the school year, so that families may not be aware of benefits, or may not be motivated to apply for them, if they become eligible after the start of the year. The magnitude of this barrier depends in part on how common it is for families to become eligible for increased meal benefits after the start of the year—if such a change is rare, concern about barriers will be less. Table V.C.11 shows the format we plan to use to examine changes in eligibility over time. Ideally, we would measure changes in eligibility between the start of the school year and the end of the school year, but our sample design will not allow that. Instead, for the panel sample of those certified at the beginning of the year, changes over time will be measured from the time of the first interview to the time of the second.

SFSP Participation. SFSP participation is relevant to the main objectives of the study as a background characteristic of the students sampled. Perhaps more important, this study provides an opportunity to gather information on this issue, which is of independent policy interest, at a low marginal cost. Among all school meal applicant households, we will examine what proportion participated in and received free meals from academic programs versus non-academic recreation programs during the previous summer. Table V.C.12 shows how we plan to examine SFSP participation patterns. We will ascertain the prevalence of students' participation in programs in which they receive free meals and how frequently they participate and types of meals received. We also will determine the types and locations of programs that students attend.

TABLE V.C.11

CHANGES IN ELIGIBILITY OVER TIME

Percentage of Students' Households
Always Eligible
Always free-eligible
Always reduced-eligible
Changed from free to reduced
Changed from reduced to free
Changed from Eligible to Not Eligible
Sample Size

Note: Eligibility will be defined as income below 185 percent of poverty. Data will be from parent interviews for certified and denied applicants—weighted to be representative of all applicants. For the panel sample of those certified at the beginning of the year, changes will be measured from the time of the first interview to the time of the second interview. For the sample of those who were denied at the beginning of the year, changes will be measured from their retrospective reporting on the previous year to the time of their interview.

TABLE V.C.12

SUMMER FOOD SERVICE PROGRAM PARTICIPATION

	Certification Status		
	Free	Reduced-Price	Total
Participated in a Program That Offered Free Meals to Children in Your Community in the Previous Summer			
Yes			
No			
Attended Summer School and Received Free Meals There in the Previous Summer			
Yes			
No			
Participated in the SFSP in Previous Summer			
Yes			
No			
Frequency of SFSP Participation			
Average number of days per week			
Average total number of days			
Types of Meals Typically Received While Attending Program			
Breakfast			
Lunch			
Supper			
Other			
Location Received Meals			
School			
Park			
Housing project			
Church			
Other			
Distance from Program			
Average number of blocks (or miles)			
Other Activity Associated with Program			
None			
Summer school			
Day camp			
Recreation program			
Other			

TABLE V.C.12 (*continued*)

	Certification Status		
	Free	Reduced-Price	Total
Whether Child Liked the Food			
Yes			
No			
If Not Participating in SFSP,			
Aware of a free food for kids program nearby in the area?			
If yes, how far away (in blocks or miles)?			
Among Those Who Did Not Participate, Reasons for Not Participating			
Not aware of program nearby			
Transportation problem			
Child doesn't like food			
Child doesn't like other aspects of the program			
Wanted to avoid stigma			
Wanted child to stay home over the summer			
Concerned about safety of the child			
Child had different summer activities			
Other			
If Program Opened Up Close to Home, Would They Send Their Children to It?			
Yes			
No			
Don't know			
Among Those Who Did Not Participate, Other Strategies Parents Used			
Asked relatives for help			
Used a food pantry			
Spent food dollars more carefully			
Bought less expensive types of food			
Sample Size			

Note: We will prepare similar table for denied applicants.

For nonparticipating students, we will determine whether parents are aware of programs that provide free meals during the summer, and if they are aware, their reasons for not participating. In addition, we will examine what other strategies parents of children who do not participate in the SFSP may use to feed their children during the summer. These strategies may include, for example, asking relatives for help, using a food pantry, spending food dollars more carefully, or buying less expensive types of food.

VI. PROJECT SCHEDULE

The project has three phases. In the first phase, we will finalize the study design, draft and finalize data collection instruments and the OMB clearance package, and select the sample of districts. We will then recruit sampled districts and schools. The study's second phase entails planning for, and conducting, on-site data collection during SY 2005-2006. In the final phase, we will process and analyze data and prepare reports on findings. We will also develop and test models for estimating erroneous payments on an annual basis. Figure VI.1 shows the project schedule, and Table VI.1 provides a list of deliverables and due dates.

FIGURE VI.1

Task No.	Task Name	2004 Oct (1)	Nov (2)	Dec (3)	2005 Jan (4)	Feb (5)	Mar (6)	Apr (7)	May (8)	Jun (9)	Jul (10)	Aug (11)	Sep (12)	Oct (13)	Nov (14)	Dec (15)
1.	**Orientation Meeting**	**AMS**														
2.	**Develop Study Design and Sampling Plan**															
	-Prepare design and plans		**D**	**F**												
	-Select sample of school districts				**S**											
3.	**Prepare Data Collection and Analysis Plan**					**F**										
4.	**Develop Instruments and OMB Package**															
	-Develop data collection instruments			**D**		**R**	**F**									
	-Develop OMB clearance package			**D**		**R**	**F**									
	-Consultation with EIAC						**M**									
	-Pretest instruments and plans					**S**										
5.	**Project Orientation Meetings with Districts**															
	-Conference calls with school districts			**A**					**S**							
	-Develop MOUs with districts															
6.	**Prepare Data Collection Training Package/Manuals**								**D**	**F**						
7.	**Select and Train Data Collectors**												**T S**			
8.	**Select the Student/Household Sample**															
9.	**Collect On-Site Data from Districts and Households**[a]															
	-Collect data from school districts and households															
	-Process and quality review data															
	-Produce data file															
10.	**Create Study Database and Analyze Data**															
	-Create study database and analyze data															
	-Submit unrestricted-use data files															
11.	**Present Preliminary Findings from On-Site Data Collection**															
12.	**Create and Validate Estimation Models**															
	-Collect data from external sources															
	-Prepare estimation models and documentation															
	-Convene expert panel meeting															
	-Conduct on-site training of FNS staff															
13.	**Prepare Final Report**															
14.	**Prepare and Submit Data Files**															
15.	**Dissemination of Study Findings**[b]															
16.	**Administrative Reporting**		**S**	**S**	**SM**	**S**	**S**	**SM**	**S**	**S**	**SM**	**S**	**S**	**SM**	**S**	**S**

[a]Data collection status reports will be submitted weekly under Task 9.

[b]The draft and final deliverables shown under Task 15 refer to drafts and final versions of two journal articles requested under this task but not shown in the schedule of deliverables.

A = Agenda
B = Briefing
D = Draft report or deliverable
M = Meeting or conference call
R = Revised report or deliverable
F = Final report or deliverable
S = Summary memorandum or progress report
T = Training

PROJECT SCHEDULE 2004-2007

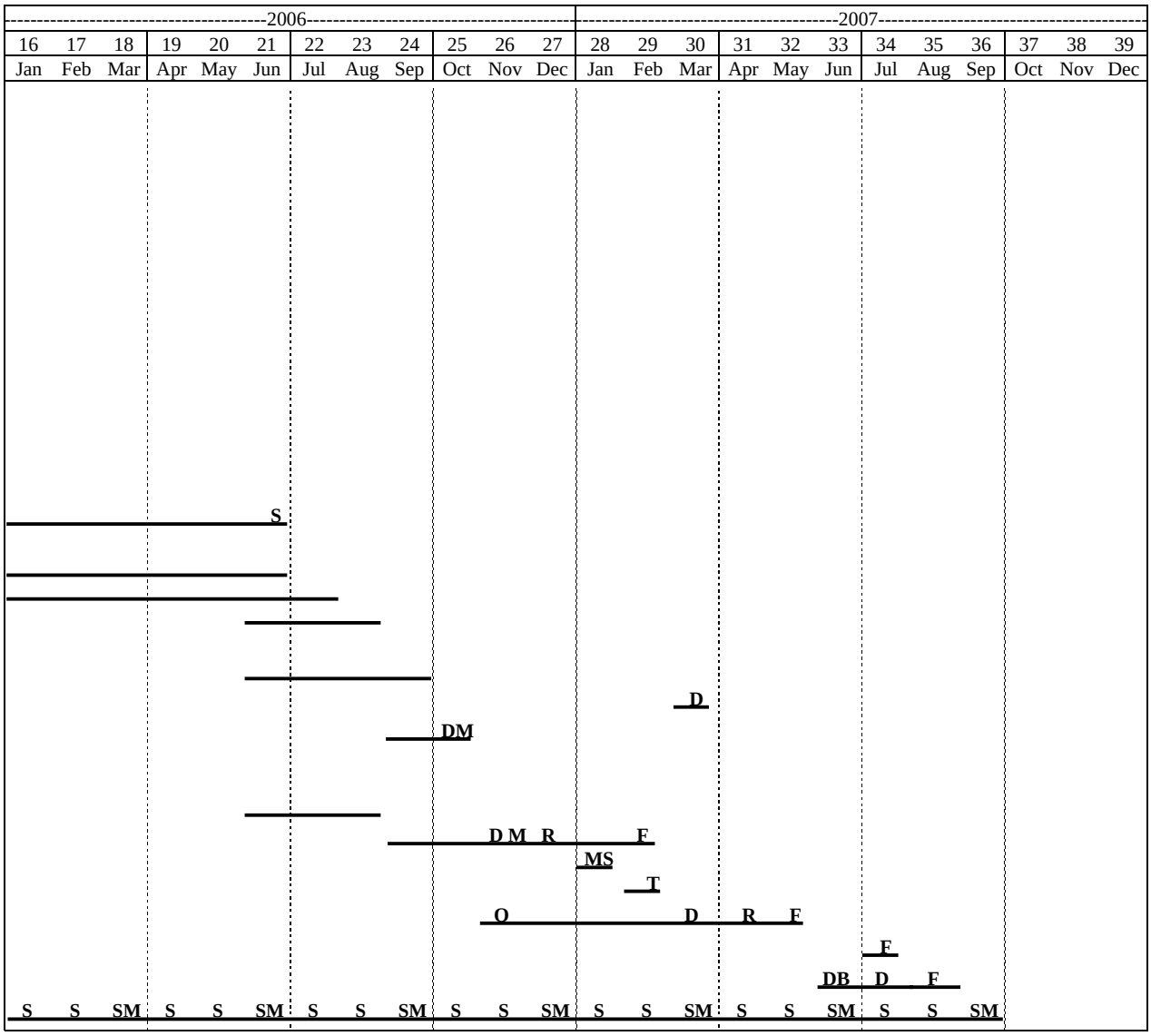


TABLE VI.1

NSLP/SBP ACCESS, PARTICIPATION, ELIGIBILITY, CERTIFICATION (APEC) STUDY
DETAILED SCHEDULE AND DELIVERABLES

Task/Deliverable	Number of Copies	Due Date
Task 1: Orientation Meeting		
Meeting Agenda	1(e)	10/04/04
Meeting at FNS		10/06/04
Meeting Summary	1(e)	10/13/04
Task 2: Develop Study Design and Sampling Plan		
Draft Study Design and Sampling Plan	1(e)	11/17/04
Final Revised Study Design and Sampling Plan	5#	12/17/04
Final Study Design and Sampling Plan	5#	05/19/06
District Selection Memorandum[a]	1(e)	03/14/05
Task 3: Prepare Data Collection and Analysis Plan		
Revised Data Collection/Analysis Plan	5#	05/31/06
Task 4: Develop Data Collection Instruments and OMB Package		
Draft OMB Package and Instruments	5#	12/15/04
Revised OMB Package and Instruments	5#	02/16/05
Final Revised OMB Package and Instruments	5#	05/18/05
Final OMB Package and Instruments	5#	08/02/05
Pretest Summary[a]	1(e)	03/19/05
Task 5: Project Orientation Meetings with School Districts		
Agenda	1(e)	03/14/05
District Recruiting		03/05 – 02/06
Summary Memorandum	1(e)	02/17/06
Task 6: Prepare Data Collection Training Package and Manuals		
Draft Data Collection Training Manuals	5	05/02/05
Final Data Collection Training Manuals	5#	08/10/05
Task 7: Select and Train Data Collectors		
Training Summary Memorandum	5	11/05/05
Task 8: Select the Student/Household Sample		
Student/Household Selection Memorandum	5	6/15/06
Task 9: Collect On-Site Data from School Districts and Households		
Data Collection Status Reports	1(e)	Weekly 09/05–06/06
Task 10: Create Study Database and Analyze Data		
Memorandum of Intent (if needed)	1(e)	06/30/06
Unrestricted data files and documentation		04/30/07
Task 11: Present Preliminary Findings from On-Site Data Collection		
Draft Tables and Graphics	5	10/7/06
Briefing		10/15/06

TABLE VI.1 (*continued*)

Task/Deliverable	Number of Copies	Due Date
Task 12: Create and Validate Estimation Models		
Draft Estimation Models and Documentation	5	11/08/06
Meeting with FNS		11/15/06
Revised Estimation Models and Documentation	5	12/15/06
Expert Panel Meeting		01/17/07
Summary Memorandum from Expert Panel Meeting	5	01/24/07
Final Estimation Models and Documentation	2+1^	02/15/07
On-Site Training at FNS		02/22/07
Task 13: Prepare Final Report		
Detailed Outline	5	11/15/06
Draft Report	5	03/15/07
Final Report	15#	05/25/07
Task 15: Disseminate Study Findings		
Presentation Materials	1##	06/07/07
FNS Briefing		06/14/07
Task 16: Administrative Reporting Requirements		
Monthly Progress Reports	1(e)	Monthly, 9/04–08/07
Conference Call Summary Memoranda	1(e)	Quarterly, 9/04–08/07

Note:

[a]Similar to Task 8 selection of students/households, MPR submitted a memorandum summarizing the actual selection of districts under this task.

#One of the copies shall be an unbound camera-ready copy; in addition to the paper copies, one copy shall be submitted in electronic form using Microsoft Word 2000 and another in PDF format.

##Presentation material shall be in Microsoft PowerPoint format.

^The software/program for running the final estimation models will be installed on two computers at FNS. An electronic copy of the program/software and the documentation for running the program will be provided on CD. Two paper copies of the documentation will also be provided.

@Data files and documentation, including SAS code, shall be prepared on a set of CDs. A separate set of Public Use data files shall also be prepared on CDs. A copy of the restricted use data files used for generating the analyses presented in the first draft of the final report shall be submitted, along with the documentation that the contractor used when running these data files.

(e) Electronic submission: via e-mail only.

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