United States Department of Agriculture

Child and Adult Care Food Program (CACFP): Assessment of Sponsor Tiering Determinations

2014 Final Report

Nutrition Assistance Program Report **October 2015**

Food and Nutrition Service
Office of Policy Support

CHILD AND ADULT CARE FOOD PROGRAM (CACFP): ASSESSMENT OF SPONSORS' TIERING DETERMINATIONS

Contract number AG-3198-S-11-0001

2014 FINAL REPORT

October 14, 2015

Authors:
Andrey Vinokurov
Shauna Sweet
Eric Kimbuende
Mark Turner
Laura Leete

Submitted by:
Optimal Solutions Group, LLC.
5825 University Research Court
Suite 2800
College Park, MD 20740

Project Director:
Mark Turner

Co-Project Director:
Andrey Vinokurov

Submitted to:
Office of Policy Support
Food and Nutrition Service
3101 Park Center Drive
Alexandria, VA 22302-1500

Project Officer:
Chan Chanhatasilpa

Table of Contents

EXECUTIVE SUMMARY

The Improper Payments Information Act of 2002 (IPIA, P.L. 107-300) in conjunction with the Improper Payments Elimination and Recovery Act of 2010 (IPERA, P.L. 111-204) require all federal agencies to identify programs and activities that may be susceptible to erroneous payments and to estimate and report annually to the U.S. Congress the value of such erroneous payments.[1] As a part of meeting IPIA and IPERA reporting responsibilities, the United States Department of Agriculture's (USDA's) Food and Nutrition Service (FNS) engaged Optimal Solutions Group, LLC (Optimal) to examines the accuracy of the classification of Family Day Care Homes (FDCHs) participating in the U.S. Department of Agriculture's Child and Adult Care Food Program (CACFP).

This assessment of CACFP for the program year (PY) 2014 replicates the methodology of the previous studies and provides an estimate of the number of FDCHs misclassified by sponsoring agencies into the wrong reimbursement tier and an estimate of the resulting erroneous payments for meals and snacks reimbursed at the wrong rate. This assessment does not attempt to measure other types of erroneous payments in the CACFP, such as meal-claiming errors by FDCHs or erroneous payments to childcare centers or adult day care programs.

CACFP Background

Meals served in CACFP FDCHs are reimbursed according to a two-tiered system, with each tier having a different reimbursement rate, as described below. Sponsoring organizations are responsible for determining the appropriate tier for each of their participating FDCHs. FDCHs are eligible for reimbursement at higher tier I rates for all eligible meals if they satisfy either geographic eligibility or provider income eligibility:

- *Geographic eligibility* is established when the FDCH is located in a low-income area that meets one of the following criteria:
  a) It is located within the attendance area of a school in which at least 50 percent of the enrolled children are certified eligible for free or reduced-price (F/RP) meals.
  b) It is located within a Census Block Group[2] (CBG) or Tract in which at least 50 percent of the children live in households with incomes at or below 185 percent of the federal poverty guidelines (FPG), which is the income standard for F/RP meals, or if a weighted average of the percentage of eligible children in up to three adjacent CBGs is at least 50 percent.
- *Provider income eligibility* is established when:
  a) the FDCH provider's household income is at or below 185 percent of the FPG; or
  c) the FDCH provider is eligible for the Supplemental Nutrition Assistance Program (SNAP), Temporary Assistance for Needy Families (TANF), and/or Food Distribution Program on Indian Reservations (FDPIR) with income limits of no more than 185 percent of the FPG.

Although FDCHs are classified as tier II by default, those meeting the above eligibility criteria are classified as tier I. In tier II FDCHs, meals served to children who individually qualify as residing in low-income households are reimbursed at the tier I rates; all other meals are reimbursed at the lower tier II rates. Within each reimbursement tier, there are different rates for breakfast, lunch and supper, and snacks. FDCHs may claim up to two snacks and one meal (breakfast, lunch, or supper) or two meals and one snack each day for each participating child. The rates in effect in PY 2014, which include rates for fiscal year (FY) 2013 and FY 2014,[3] are shown in Table ES-1.

[1] Office of Management and Budget (OMB) guidance defines significant erroneous payments as annual erroneous payments in the program exceeding both 2.5 percent of program payments and $10 million (OMB Circular A-123, Appendix C. August 10, 2006).
[2] Census Block Group is the smallest geographical unit for which the bureau publishes sample data.
[3] The CACFP rates are revised effective July 1 of each year. Thus, the rates in effect during the program assessment year (August 2013 through July 2014) included the 2013-2014 rates and the 2014-2015 rates.

Table ES-1. CACFP reimbursement rates for meals served in FDCHs

	BREAKFAST		LUNCH AND SUPPER		SNACK	
	Tier I	Tier II	Tier I	Tier II	Tier I	Tier II
July 1, 2013–June 30, 2014	$1.28	$0.47	$2.40	$1.45	$0.71	$0.19
July 1, 2014–June 30, 2015	$1.31	$0.48	$2.47	$1.49	$0.73	$0.20

NOTE: Rates are for all States except Alaska and Hawaii.
SOURCE: http://www.fns.usda.gov/cacfp/reimbursement-rates

During FY 2013, there were 121,791 FDCHs participating in the CACFP in the contiguous United States (the sampling universe for this assessment), including 102,443 tier I FDCHs and 19,348 tier II FDCHs (Table ES-2). The CACFP provided reimbursements to FDCHs for 549 million meals at a total cost of $775 million. Thus, even a relatively modest percentage of misclassified FDCHs would lead to millions of dollars in erroneous payments.

Table ES-2. Contiguous United States FDCHs totals for FY 2013

	TIER I	TIER II	TOTAL
Number of FDCHs	102,443	19,348	**121,791**
Number of meals	468,936,500	79,686,604	**548,623,104**
Reimbursements	$709,450,108	$65,623,357	**$775,073,466**

SOURCE: FNS National Data Bank totals for contiguous US (sample universe for the assessment).

Assessment Methods and Sample Results

For this assessment, a sample of 758 FDCHs—all of which were reimbursed by CACFP for meals at some time between August 1, 2013 and July 31, 2014—were selected from a list of 53 sampled sponsors located in 14 States. The tiering status of each FDCH (as determined by their sponsor) was verified through a four-step process:

1) An FDCH's tier status was first evaluated using Census data. A FDCH's Tier I status was verified if the FDCH was located in a CBG or Tract that was area-eligible or if a weighted average of the percentage of eligible children in up to three adjacent CBGs was at least 50 percent[4].
2) If an FDCH could not be verified using Census data, it was verified using school data. An FDCH was verified as tier I if all of the nearest schools (all three of the nearest elementary schools for the old rule for SY 2009-2010 ; or either all three elementary schools or both of the nearest middle/ secondary schools for SYs 2010-2014) were area-eligible (i.e., at least 50 percent of students were approved for F/RP meals).
3) If some but not all of the nearest elementary or middle/secondary schools were area-eligible, then the FDCH status was verified by contacting school districts to determine the correct school attendance area for the FDCH and to identify whether any of these schools were area-eligible.[5]
4) If the tiering status could not be validated in steps one, two, or three, Optimal contacted sponsors to obtain and review their documentation of tiering determinations. A total of 61 tier I FDCHs that could not be verified through data matching were reviewed. In addition, 10 tier II FDCHs that were found through data matching as being possibly eligible for tier I were reviewed.

Based on these four steps, the assessment identified 11 misclassified tier I FDCHs and 3 misclassified tier II FDCHs.

[4] Only 10 out of 301 homes (3.3%) verified by Census data were found to be eligible based on the new geographic eligibility rule of Census tracts or adjacent CBGs.
[5] Using these three methods, 589 FDCHs' Tier I status was verified and 98 FDCHs' Tier II status was verified, which together constitutes 90.6 percent of the sample.

National Estimates of Misclassification Errors and Costs

Using the weighted sample data, it was estimated that, nationwide, 1.42 percent of tier I FDCHs and 2.85 percent of tier II FDCHs were misclassified in PY 2014 (Table ES-3). These percent are lower than in previous years for tier I homes (2.98% in 2013, 2.39% in 2012; and 2.17% in 2011) and mostly higher for tier II homes (1.22% in 2013, 0% in 2012, and 3.88% in 2011). In total, there were an estimated 2,013 misclassified FDCHs, which represents 1.65 percent of all FDCHs.

Table ES-3. Estimated misclassification rates, by tiering status: PY 2014

Tier determined by sponsor	% of FDCHs misclassified	90% confidence interval		# of FDCHs misclassified	90% confidence interval	
		Lower	Upper		Lower	Upper
TIER I	1.42%	0.86%	2.34%	1,458	730	2,186
TIER II	2.85%	1.10%	7.23%	556	29	1,082
TOTAL	1.65%	1.06%	2.57%	2,013	1,118	2,909

SOURCE: Weighted estimates from 2014 sample data.

For misclassified FDCHs, the number of meals reimbursed in error is the difference between the number actually reimbursed at each tiering rate and the number that would have been reimbursed at those rates if they had been correctly classified. Meals reimbursed at tier I rates that should have been reimbursed at tier II rates result in overpayments; meals reimbursed at tier II rates that should have been reimbursed at tier I rates result in underpayments. The erroneous payment for a meal reimbursed at the wrong rate is the differences between the tier I and tier II rates, which were $0.52 for snacks, $0.81 for breakfast, and $0.95 for lunches and suppers (under rates effective from July 1, 2013–June 30, 2014).

As a result of misclassifications, an estimated 1.52 percent of meals served at FDCHs classified as tier I were reimbursed at a higher tier I rate when they should have been reimbursed at the lower tier II rate (Table ES-4). In addition, 2.06 percent of meals served by FDCHs classified as tier II were reimbursed at the tier II rate instead of the higher tier I rate for which they were eligible. It was also estimated that 7.15 million tier I meals and 1.64 million tier II meals were reimbursed at an incorrect rate. Overall, 1.55 percent of FDCH meals—a total of 8.52 million meals in FY 2013—were reimbursed at an incorrect rate.

Table ES-4. National estimates of meals claimed in error due to misclassification of FDCHs FY 2013

Tier determined by sponsor	% of meals claimed in error	90% confidence interval		# of meals claimed in error	90% confidence interval	
		Lower	Upper		Lower	Upper
TIER I	1.52%	0.64%	2.41%	7,150,863	3,007,533	11,294,194
TIER II	2.06%	0%	4.70%	1,639,874	0	3,745,502
TOTAL	1.55%	0.73%	2.37%	8,515,516	4,021,278	13,009,755

SOURCE: Weighted estimates from 2014 sample data.

The estimated cost of misclassification errors included overpayments to 0.76 percent to tier I FDCHs and underpayments to 2.18 percent tier II FDCHs (Table ES-5). Overall, the erroneous payment rate was 0.84 percent, with a 90 percent confidence interval from 0.40 percent to 1.29 percent. These erroneous payments correspond to an estimated $5.41 million in overpayments, an estimated $1.43 million in underpayments, and total erroneous payments of $6.54 million.

Table ES-5. National estimates of the costs due to misclassification of FDCHs: FY 2013

Tier determined by sponsor	% of reimbursements paid in error	90% confidence interval		Reimbursements paid in error due	90% confidence interval	
		Lower	Upper		Lower	Upper
TIER I	0.76%	0.32%	1.21%	$5,406,378.04	$2,262,602.60	$8,550,153.47
TIER II	2.18%	0%	4.99%	$1,432,052.43	$0	$3,273,346.47
TOTAL	0.84%	0.40%	1.29%	$6,536,265.72	$3,075,524.61	$9,997,006.84

SOURCE: Weighted estimates from 2014 sample data.

Overall, the PY 2014 assessment met FNS requirements to provide estimates of misclassification rates for FDCHs in the CACFP and to determine the resulting erroneous payments within the standards of precision set by OMB. The assessment confirmed that the overall error rate for tiering determinations was below the threshold of 2.5 percent of program payments and $10 million.

Comparison of Results with Previous Assessments

The 2014 assessment produced results comparable to those of previous assessments. The estimates of misclassification rates, the cost of misclassification, and the meals reimbursed in error for the PY 2014 assessment are the lowest in 10 years, but they are consistent with estimates observed over previous years (Figures ES-1, ES-2, and ES-3). The fluctuations in estimates of misclassification errors for the ten years of assessments are consistent with what is expected due to sampling differences in the selection of States, sponsors, and homes. Also, beginning in 2011, there has been a slight downward trend for the misclassification rates, costs of misclassifications, and the number of meals reimbursed in error.

Figure ES-1. Estimated misclassification as a percentage of reimbursements: 2005–2014

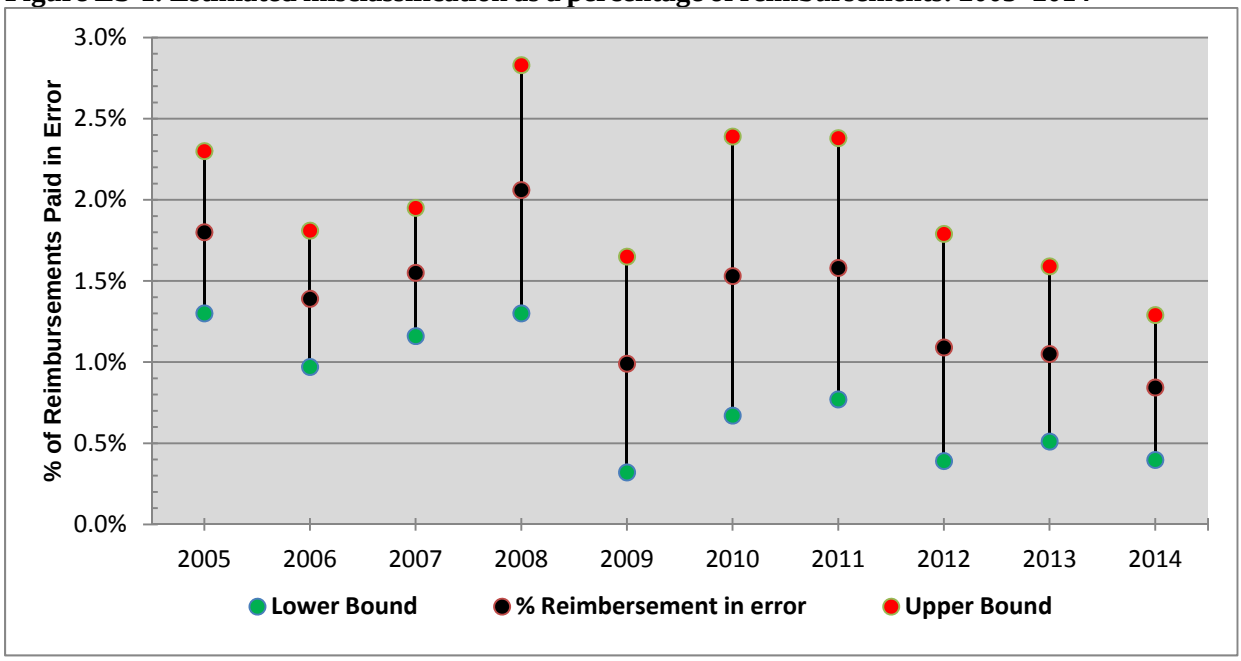


Figure ES-2. Estimated cost of misclassification: 2005–2014 (in millions of dollars)

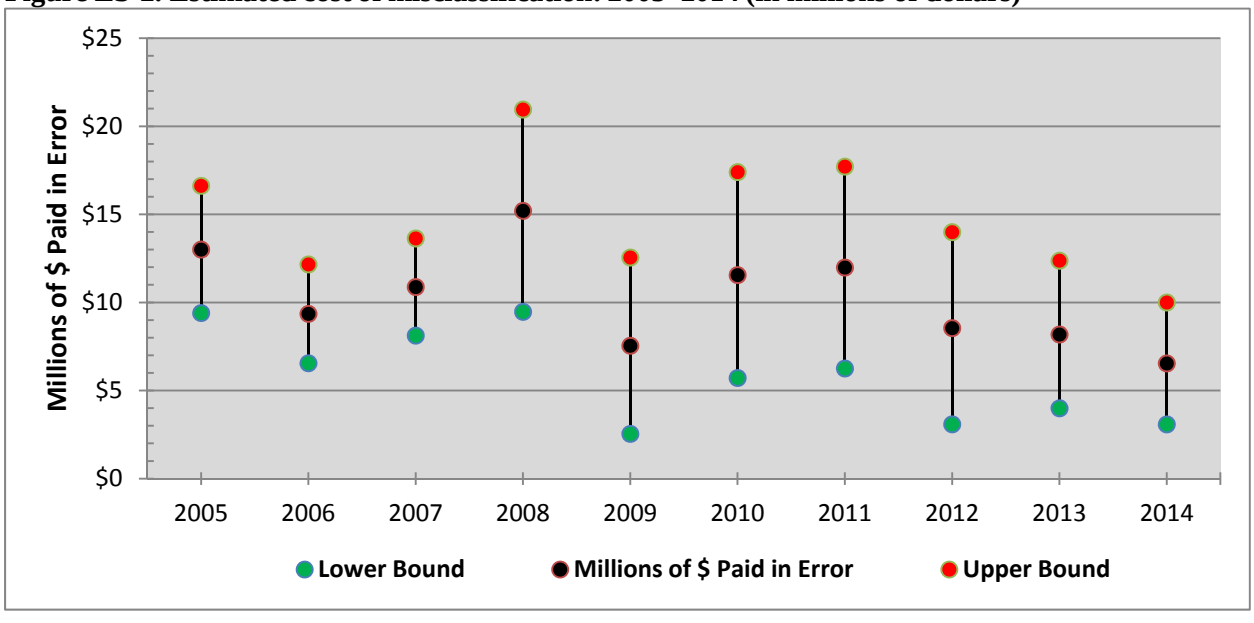
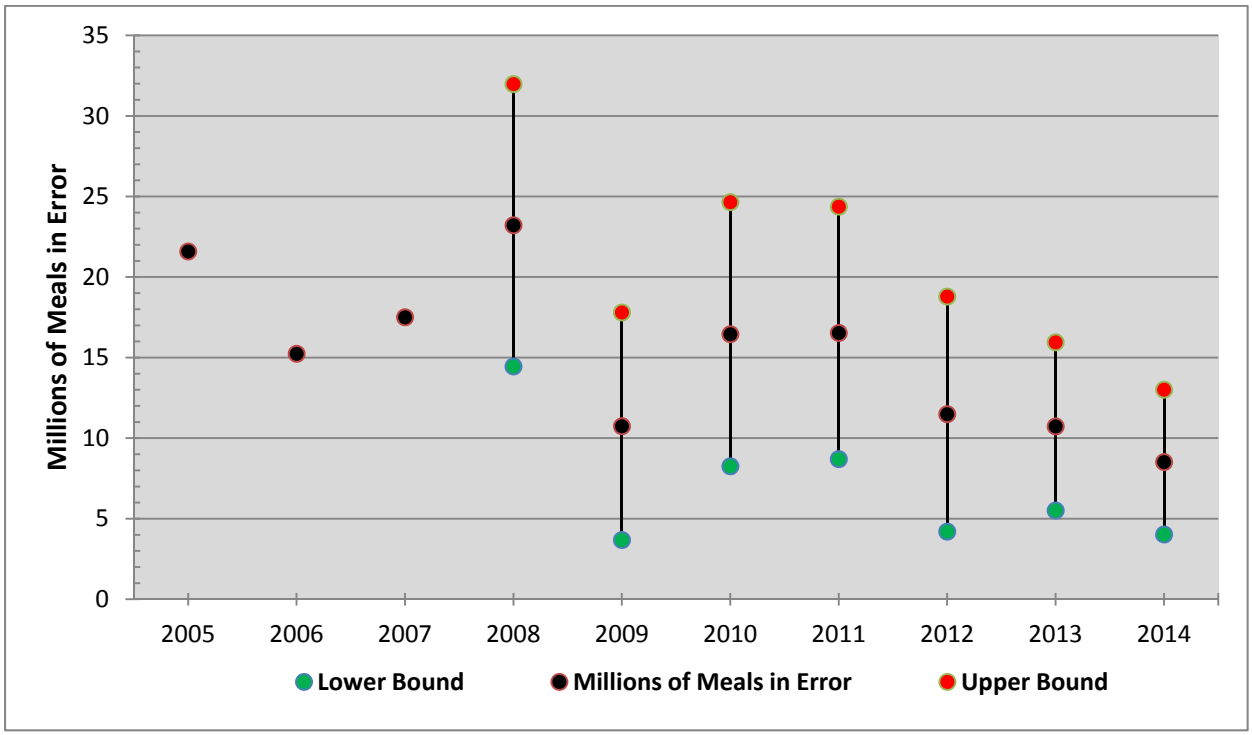


Figure ES-3. Estimated number of meals reimbursed in error: 2005–2014



Recommendations and Implications of the Assessment

There are two major recommendations based on the assessment process and the results. First, the sponsors' use of verifications based on the geographic eligibility, especially Census, should be increased to reduce the burden and errors. Second, the verification based on the geographic eligibility needs a user-friendly, web-based interface that uses both Census and school data, which will allow sponsors to quickly and accurately verify their FDCHs, prior to conducting burdensome and error-prone income and categorical eligibility verifications.

Given that verification of FDCHs using Census data is less time consuming and burdensome for sponsors than determinations based on school data or a provider's household income or program participation, the time and resources that sponsors spend determining eligibility could be substantially reduced if they first verify tiering status using Census eligibility. The sponsors' burden would be further reduced because unlike determinations that are based on income or program eligibility, which have to be validated each year, determinations based on geography remain valid for five years. However, the independent review of tiering verifications found that sponsors verified only a small percentage of homes (about 7%) using Census data, while the majority (89%) were verified by school data. During the independent verification it was observed that most of the sponsors were contacting school districts or departments of education to get boundaries of attendance areas and F/RP data for each FDCH. This could be a time consuming and error-prone process, especially if a school district does not have the web search tool to display school boundaries for a given address. Furthermore, almost half of tier I FDCHs tiered by sponsors based on school, income, or program participation were also eligible based on Census data. Thus, almost half of all FDCHs could be much easier and quicker verified using Census data tools.

The importance of developing web verification tools is further highlighted by the findings that: 1) some of the tier II homes were erroneously assigned to tier II because sponsors verified these homes using school data only and failed to use Census data; 2) some of the tier I homes were in error because sponsors did not

accurately use existing Census eligibility databases; and 3) some sponsors experienced difficulties in using the new eligibility criteria by making mistakes calculating the weighted average of adjacent CBGs. Additionally, the review of sponsors' documents revealed that a few sponsors used Food Research and Action Center (FRAC) fair data website[6] and none used FNS eligibility tool[7] to determine eligibility based on Census. However, the existing FNS web tool for Census eligibility currently does not have built-in determinations for adjacent CBGs and requires a manual approach, which could be exhaustive in some CBGs with a large number of adjacent CBGs. Similarly, FRAC website does not seem to have a user-friendly interface.

Therefore, it is important to promote and refine web-based tools that use Census and also develop web tools that use school data to establish eligibility. Optimal suggests that the tiering determination tools and algorithms developed for this study should be adapted as a web-based interface that the sponsors could easily use to verify their FDCHs, either individually or in batches, using Census and school data. For instance, the study's algorithm for establishing eligibility based on adjacent CBGs could be integrated into FNS Census tool to automate this calculation. It's also important to develop a web-based verification tool that uses school data, which will greatly reduce burden and errors for the school verifications. In developing and refining the web-based Census and school interfaces, it is also important to conduct future qualitative and quantitative surveys of sponsors to examine which census and school verification systems and databases they use and their views of and experiences with these systems. This will help to determine sponsors' specific needs for the Census and school verification systems and to develop the most useful interface.

Finally, in considering the implications of this assessment, it is essential to acknowledge that tiering determinations are only one of the potential causes of improper payments in the CACFP. If tiering determinations were the sole source of improper payments, the CACFP would fall below the IPIA's reporting threshold, which mandates reports for programs with improper payments that both exceed $10 million per year and constitute 2.5 percent of total program payments. However, the CACFP has other potential sources of erroneous payments to FDCHs, including errors in determining eligibility of children in Tier II FDCHs for tier I meals, meal-claiming errors by providers, and meal claims processing errors by sponsors. Furthermore, this assessment does not address erroneous payments to childcare centers or adult day care programs. Thus, the estimates of this assessment do not reflect the full extent of possible improper payments in the overall CACFP.

[6] http://frac.org; http://www.fairdata2000.com/CACFP/
[7] http://www.fns.usda.gov/areaeligibility; http://www.fns.usda.gov/capacitybuilder; https://www.youtube.com/watch?v=JbPDT_7xpSo&feature=youtu.be

1. INTRODUCTION

In recent years the Executive Branch has increased efforts to improve children's nutrition while providing support to low-income families. As budget concerns increase, it is especially important that food programs are structured as efficiently as possible to achieve their intended effects. The Improper Payments Information Act of 2002 (IPIA, P.L. 107-300) in conjunction with the Improper Payments Elimination and Recovery Act of 2010 (IPERA, P.L. 111-204) requires federal agencies to annually review all of the programs and contracts they administer and identify those that may be susceptible to significant improper/erroneous payments. By identifying vulnerable programs and activities and reporting to Congress on the steps being taken to reduce erroneous payments, the goal of improving the integrity of government spending and the efficiency of its programs and activities can be achieved.

As a part of meeting IPIA and IPERA reporting responsibilities, the United States Department of Agriculture's (USDA's) Food and Nutrition Service (FNS) engaged Optimal Solutions Group, LLC (Optimal) to conduct the following: 1) assess and report on the percentage of erroneous payments made as part of the Child and Adult Care Food Program (CACFP) that are due to assigning Family Day Care Homes (FDCHs) to incorrect meal compensation tiers, and 2) estimate the dollar value of those errors. FNS is required by the IPIA and IPERA to report these estimates annually to Congress.

This Assessment presents the tenth CACFP study of Sponsor Tiering Determinations and therefore replicates the sampling approach, data collection strategies, analytical methodology, and reporting conducted by the previous assessments. Similarly, this assessment does not attempt to measure other types of erroneous payments in the CACFP, such as meal-claiming errors by FDCHs or erroneous payments to childcare centers or adult day care programs.

The Child and Adult Care Food Program

USDA FNS serves as a critical safety net to insure that all children and adults have access to nutritious food to promote and maintain a healthy lifestyle. As part of this safety net, CACFP plays a vital role in helping providers serve nutritious and safely prepared meals to children and adults in day care settings. Through reimbursing for meals and snacks, CACFP helps low-income families improve the quality of day care available while making it more affordable.

FNS administers CACFP through grants to States. The program is administered within most States by the State educational agency. In a few States, it is administered by an alternate agency, such as the State health or agriculture department. The CACFP program provides reimbursement for nutritious meals and snacks each day to 3.3 million children who are enrolled for care at participating childcare centers and day care homes and to 120,000 adults who receive care in nonresidential adult day care centers. CACFP also provides reimbursements for meals and snacks to children and youth who participate in afterschool care programs or reside in emergency shelters. In FY 2013, CACFP provided 551 million meals to FDCHs, 1.34 billion meals to childcare centers, and 70 million meals to adult day care centers for a total cost of $2.99 billion.[8]

The current evaluation is focused only on FDCHs. A FDCH[9] is a private residence where day care services are provided to children and some resident children may receive meals. To participate in the CACFP, a FDCH must be licensed by the licensing agency and also must meet the program requirements. FDCH providers are required to log meals served to each child on a daily basis. Each month, FDCHs submit meal claims to sponsors to obtain reimbursement for meals served. Sponsors act as fiscal intermediaries, receiving claims from FDCHs and disbursing USDA funds for meal reimbursements.

[8] FNS administrative data: http://www.fns.usda.gov/sites/default/files/pd/ccsummar.pdf
[9] An FDCH is defined as a licensed, private home at which day care services are provided. 7 CFR Part 226.

CACFP Reimbursement for Meals Served in FDCHs

Meals served in participating FDCHs are reimbursed according to a two-tiered rate structure:

1) Tier I rates are higher and apply to all meals served in FDCHs that are located in low-income areas (geographic eligibility), or operated by providers whose own household income is at or below 185 percent of the federal poverty guidelines (FPG) (income eligibility) or providers who already participate in means-tested programs with eligibility at or below 185 percent of FPG, such as SNAP, TANF, or FDPIR (categorical eligibility).
2) Tier II rates are lower and apply to meals served to children in tier II FDCHs who do not qualify for tier I rates.

FDCHs that meet the geographic or provider income criteria for tier I rates are classified as tier I FDCHs. Those that do not meet tier I criteria are classified as tier II FDCHs. However, tier II homes may receive reimbursement at tier I rates for meals served to children who have been individually determined by the sponsor to be categorically eligible or reside in a household with income at or below 185 percent of the FPG. A child's eligibility for tier I rates in a tier II day care home may be documented by submitting an income eligibility statement that details family size and income and/or participation in means-tested State or federal programs as described above.

Within each reimbursement tier, there are different rates for breakfast, lunch and supper, and snacks. FDCHs may claim up to two snacks and one meal (breakfast, lunch, or supper) or two meals and one snack each day for each participating child. The rates in effect in PY 2014[10] are shown in Table 1-1.

Table 1-1. CACFP reimbursement rates for meals served in FDCHs: PY 2014

	BREAKFAST		LUNCH AND SUPPER		SNACK	
	Tier I	**Tier II**	**Tier I**	**Tier II**	**Tier I**	**Tier II**
July 1, 2013 - June 30, 2014	$1.28	$0.47	$2.40	$1.45	$0.71	$0.19
July 1, 2014–June 30, 2015	$1.31	$0.48	$2.47	$1.49	$0.73	$0.20

NOTE: Rates are for all States except Alaska and Hawaii.
SOURCE: http://www.fns.usda.gov/cacfp/reimbursement-rates

Criteria for Tier I Eligibility

Sponsors are responsible for determining the appropriate tiering levels (tier I or tier II) of each of their participating FDCHs. FDCHs that meet the criteria for tier I reimbursement are designated tier I FDCHs, while all others are designated tier II. Tier I status can be established using one of the following:

1) *Census Area*: The provider must be located in:
   a) A CBG in which at least 50 percent of the total number of children residing in the area live in a household that meets the income standards for free or reduced-price (F/RP) meals.
   b) An area where the weighted averaged percentage of eligible children in up to three adjacent CBGs[11], including the FDCH's own CBG, is 50 percent or more, provided that at least 40 percent of children in each of the combined CBGs are eligible, as described above.
   c) A Census Tract in which 50 percent or more of the children are eligible for F/RP meals.
2) *School Boundary Area*: the FDCH must be located in the attendance area of a school in which at least 50 percent of the enrolled children are certified eligible to receive F/RP meals.
3) *Provider's Income*: the provider's household income is at or below 185 percent of the federal poverty guidelines (FPG).

[10] The CACFP rates are revised effective July 1 of each year. Thus, the rates in effect during the program assessment year (August 2013 through July 2014) included the 2013-2014 rates and the 2014-2015 rates.
[11] Adjacent Census Block Group and Census tract criteria were added in April 21, 2014 based on FNS memo SP 38-2014, CACFP 10-2014, SFSP 15-2014. http://www.fns.usda.gov/sites/default/files/SP49_CACFP13_SFSP19-2014os.pdf

4) *Provider's categorical eligibility*: the provider is categorically eligible based upon participation in SNAP, Temporary Assistance for Needy Families (TANF), Food Distribution Programs on Indian Reservations (FDPIR), or SSI and Medicaid certification.

FDCHs are tiered II by default and those that meet the above criteria, are designated as tier I. In FY 2013, 84 percent of CACFP FDCHs in the U.S.[12] were designated as tier I (Table .1-2).

Table 1-2. Number and distribution of FDCHs by reimbursement tier: FY 2013

TIER	Number	Percent
Tier I	102,443	84.1%
Tier II	19,348	15.9%
Total FDCHs	**121,791**	**100%**
Total Sponsors	**840**	

NOTE: Numbers may not add to totals due to rounding.
SOURCE: FY 2013 FNS National Data Bank totals for contiguous US (48 States and D.C.—the sample universe for the assessment); Alaska, American Samoa, Guam, Hawaii, Puerto Rico, and Virgin Islands are excluded.

Tier I determinations are valid for a specified time period, depending on the basis of determination:

- Geographic eligibility determined by Census or school data is valid for 5 years;
- Income and categorical eligibility must be reviewed annually.

Tier I Documentation Requirements

Each tier I classification must be in accordance with FNS guidance, which provided the basis for Optimal's independent verification of FDCHs' classifications and the review of sponsors' tiering documents. Sponsors' documentation of geographic eligibility must verify the FDCH location within the specified school or CBG/Tract boundary area and confirm the eligibility of the area. Income and categorical eligibility must be verified through supporting documentation from the provider, such as wage stubs and income tax forms, or from contacts such as benefits letters. Sponsors are required to keep documentation on file for as long as the classification is in effect plus three fiscal years.

Organization of the Report

The purpose of this assessment is to identify FDCHs that were misclassified as tier I or tier II and to estimate the dollar value of erroneous payments associated with those misclassifications. This report first provides an overview of the methodology used for identifying misclassifications and then presents the sampling design and data collection procedures used for the assessment. This information is followed by a detailed description of the methodology used for assessing the sponsors' tiering determinations and identifying misclassifications. Then the results of the verifications are described for the study sample. Finally, nationally representative (weighted) estimates of FDCH misclassifications and erroneous payments are presented. Appendix A provides detailed information on the verification methodology and estimation analyses. Appendix B contains the forms used for recruiting sponsors and conducting data collection. Appendix C provides detailed information on the sampling and weighting procedures.

2. OVERVIEW OF THE ASSESSMENT METHODOLOGY

The assessment used three methods to validate sponsors' tiering determinations:

1. Independent verification of geographic eligibility for tier I by matching the FDCHs with school and Census data;
2. School districts contacts to determine the correct school attendance areas for each grade for the FDCHs based on their addresses and then using the appropriate schools' eligibility data;

[12] FNS National Data Bank totals for contiguous US FY 2013 exclude Alaska, American Samoa, Guam, Hawaii, Puerto Rico, and Virgin Islands (48 States and D.C. make up the sample universe for the assessment).

3. A review of documents used by sponsors to make tiering determinations for all tier I FDCHs not independently verified as geographically eligible for tier I and for all tier II FDCHs that appeared to be area-eligible for tier I based on school or Census data.

Although, tier II FDCHs could be eligible for tier I based on the provider's household income, the current assessment does not verify sponsors' documentation of providers' income for all tier II FDCHs. This was specifically designed to minimize the burden on sponsors and the cost to FNS of doing the assessment. To this end, the set of rules for verifying tiering eligibility developed for previous CACFP tiering assessments[13] was used by this assessment. The main steps in the tiering determination process are described below and presented in Figure 2-1:

Step 1:

a) Geocode the FDCH addresses of the sampled FDCHs to assign latitude, longitude, the CBG, and the Census tract identifier by matching FDCHs' addresses with Census.gov API's Census 2010 benchmark and Census 2010 vintage. FDCHs that could not be geocoded were verified by contacting sponsors for tiering determination documents (Step 3).

b) Establish Census eligibility using the CACFP Special Tabulations of CBGs, Census tracts, and adjacent Block Groups data. These data are based on the American Community Survey Census 2007-2011 file provided by FNS, which contains estimates for the five-year period.[14] Sampled FDCHs were matched with the CACFP Special Tabulations of CBGs to identify FDCHs located in CBGs with at least 50 percent of children age 12 or under in households at or below 185 percent of the FPG. For FDCHs with tiering dates after April 21, 2014, the Census tracts and the average of up to three adjacent CBGs (with at least 50 percent of children age 12 or under, or 18 or under in households at or below 185 percent of the FPG) were also used to establish area eligibility. If one of these requirements was met, then tier I status for an FDCH was verified and the evaluation of the FDCH was completed.

c) For the FDCHs that were not verified by Census, the following procedures were conducted:

   i) School district boundary data were overlaid using the latitude and longitude coordinates of the FDCH and a spatial file of school district boundaries to identify the school district in which the FDCH is located. The coordinates were used to identify each FDCH's school district, calculate distances to schools in the district, and identify the nearest schools to each FDCH.

   ii) FDCHs were matched with F/RP meal eligibility data for the nearest schools using the National Center for Education Statistics' (NCES') Common Core of Data or using States' school data[15]. It was then determined if each of the nearest schools has 50 percent or more students eligible for F/RP meals.

   Then:

   - If <u>all</u> of the nearest schools (all three of the nearest elementary schools for the old rule for SY 2009-2010; or either all three elementary schools or both of the nearest middle/secondary schools for SYs 2010-2014) meet F/RP meal requirements in the tiering year, tier I FDCH status was verified and the evaluation of the FDCH was completed.
   - If some but not all of the nearest schools met F/RP meal requirements in the tiering year, the school district was contacted to determine the actual school attendance area for the FDCH (See Step 2).

[13] Most recently: Marker, D. et al. (2014 September). *Child and Adult Care Food Program (CACFP): Assessment of Sponsor Tiering Determinations - 2013*, U.S. Department of Agriculture, Food and Nutrition Service, Office of Policy Support.

[14] These data approximate information available to sponsors for the tiering determinations: http://www.fairdata2000.com/CACFP and http://www.fns.usda.gov/areaeligibility

[15] NCES data were obtained from nces.ed.gov/ccd/pubschuniv.asp. States school data were obtained from the States during the data collection, as described below.

- If none of the nearest schools meet F/RP meal requirements in the tiering year or a FDCH could not be geocoded, the sponsoring organization was asked to provide tiering determination documents (See Step 3).

Step 2:
For each FDCH where some but not all of the nearest schools met F/RP meal requirements, school districts were contacted to determine the correct school attendance areas for each grade for the FDCH based on its address:

- If one of the nearest schools (elementary school for SY 2009-2010 or either elementary or middle/ secondary school for SYs 2010-2014) met F/RP meal requirements then the FDCH was verified as tier I.
- If none of the nearest schools for any grade met F/RP meal requirements or the school district was unable to identify the correct school attendance areas, then sponsors were contacted for their tiering documentation (See Step 3).

Step 3:
Specific documentation was requested from CACFP sponsoring organizations in each of the following situations:

- Tier I and tier II FDCHs that could not be geocoded in Step 1a.
- Tier I FDCHs that could not be verified through matching to school or Census data in Step 1b.
- Tier I FDCHs that had none of the nearest schools meeting F/RP meal requirements in the tiering year in Step 1c.
- Tier I FDCHs that could not be verified through school district contact in Step 2.
- Tier II FDCHs that appeared to be area-eligible for tier I based on school or Census data in Steps 1 and 2.

Step 4:
Documents obtained from sponsors in Step 3 were reviewed to verify the tiering status of FDCHs. Following the document review, FDCHs were categorized as follows:

- Certified as tier I based on the categorical eligibility of the provider
- Certified as tier I based on the income eligibility of the provider
- Certified as tier I based on school boundaries that could not be determined in Steps 1 and 2
- Certified as tier I based on Census that could not be determined in Steps 1 and 2
- Certified as tier I in error (misclassified)
- Correctly certified as tier II
- Certified as tier II in error (misclassified)

Based on these four steps, all tier I FDCHs fell into one of five groups:

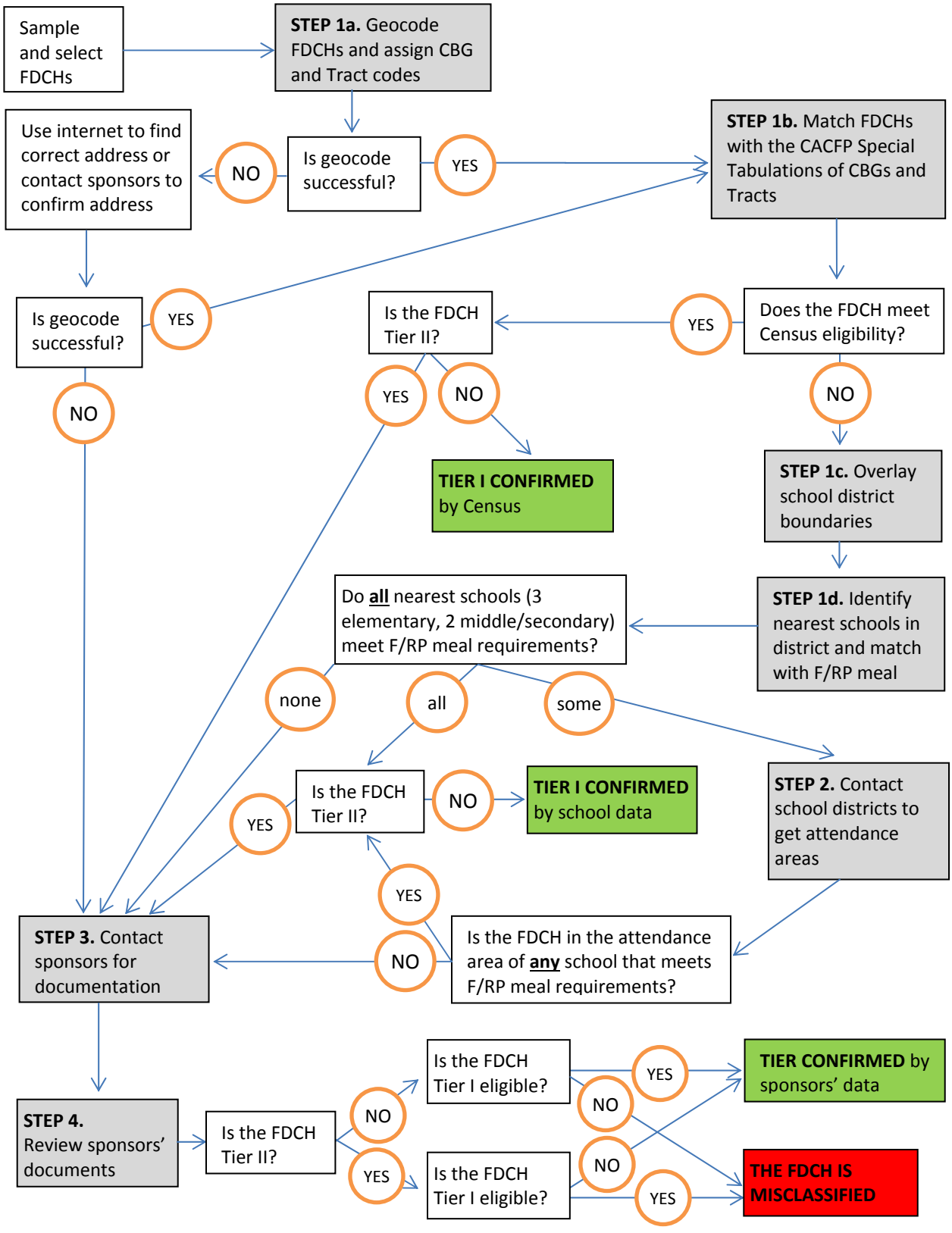
1. Verified by Census data matching
2. Verified by school data matching if all of the nearest schools met the F/RP requirement
3. Verified by contacting school districts, if some (but not all) of the nearest schools met the F/RP requirement, which required that the correct school for the FDCH was identified by the school district and that this school meet the F/RP requirement
4. Verified by contacting sponsors and determining that their tiering documents for Census, school, program, or income verifications were consistent with tier I eligibility
5. None of these methods confirmed sponsor determinations of tier I eligibility, and the FDCH was considered misclassified.

In addition, all tier II FDCHs fell into one of the following groups:

1. Correctly certified as tier II because they were not confirmed as tier I by the school and Census match or by the school district contacts;
2. Correctly certified as tier II because they were confirmed as tier I by the school data, but the sponsors' documents established that they were not area-eligible for tier I[16];
3. Certified as tier II in error because the FDCH was confirmed as tier I by the school and Census match or by the school district contacts, but sponsors incorrectly established tier II eligibility.

[16] School data match used all of the nearest schools to establish eligibility. However, sponsors' documentation superseded these results if it established that the FDCH was located in the boundary area of an ineligible school.

Figure 2-1 – Flowchart of the tiering verification process



Comparison of 2014 Assessment with Previous Assessments

Nine annual assessments of sponsors' tiering determinations were previously conducted for the years 2005 through 2013. The 2014 assessment follows the simplified methodology utilized in the 2008 through 2013 assessments as closely as possible. The primary differences between these assessments and the 2014 assessment include the following:

- For the assessments prior to 2011, FDCH school eligibility was based on the old rule (elementary schools only), while subsequent assessments used the new rule (elementary or secondary schools).[17] For this assessment, the rule applicable to the tiering determination year was used: the old rule for determinations done during School Year (SY) 2009-10 and the new rule for determinations done during SYs 2010-14.
- For the 2014 assessment, the Census tract or up to three adjacent CBGs were also used to determine an FDCH's eligibility.[18]

Sampling Design

The sampling design of the study closely followed the methodology used in the previous assessments of the CACFP sponsors' tiering determinations. A three-stage design, involved successive use of probability proportional to size (PPS) sampling of States and sponsors, followed by a random sampling of FDCHs with the measure of size (MOS) being the number of FDCHs. This approach ensured that every FDCH participating in the CACFP had an equal chance of being selected for the tiering determination study. While sampling FDCHs directly would be more efficient, a complete sample frame of FDCHs is unavailable without prior selection of and communication with State agencies and sponsoring organizations. The sample sizes at each stage of sampling were set at the same size as the previous studies (Table 2-1). States and sponsors with large numbers of FDCHs were given a chance to be selected more than once.

Table 2-1. Sample sizes for the three sampling stages

Sampling stage	Sampling unit	Sample size		Comments
		Per unit	Total	
1	State	--	15	14 unique States, with one large State (CA) selected twice and given a sample size of 8 sponsors.
2	Sponsor	4 or 8	60	53 unique sponsors, four large sponsors selected twice. One State (WY) had only two sponsors that were merged into one.
3	FDCH	11, 22, 33, or 44	758	Some large sponsors were given a sample size of 22, 33, or 44. One replacement sponsor had a total of 21 FDCHs.

Sampling States

The first-stage sampling frame included the 48 contiguous States plus the District of Columbia (D.C.). FDCH counts for the 48 States and D.C. were obtained from the FNS National Databank available for FY 2013. Based on the FNS National Databank, in FY 2013, 84 percent of CACFP FDCHs in the United States were approved as tier I and 16 percent as tier II (Table 2-2). There were 840 sponsors in the contiguous U.S. and 121,791 FDCHs. The number of sponsors and FDCHs per State varied greatly.

[17] The Healthy Hunger Free Kids Act of 2010 expanded the eligibility criteria for FDCHs to qualify as Tier I. Effective retroactive to October 1, 2010, family and group day care homes may be classified as Tier I for purposes of reimbursement under CACFP if the home is located in an area served by any public school (covering any of grades 1-12) in which at least 50 percent of the enrolled children are certified eligible for free and reduced-price school meals. This allows a FDCH to qualify based on secondary school as well as elementary school catchment areas.

[18] USDA "Area Eligibility Using Census Data" Memorandum (Code: SP 38-2014, CACFP 10-2014, SFSP 15-2014) http://www.ped.State.nm.us/nutrition/2014/USDA_%20Area%20Eligibility%20Using%20Census%20Data%20Memo_April%202014.pdf

Table 2-2. The number of FDCHs and sponsors, based on the FNS National Databank

	Number	Percent	Minimum per State	Maximum per State
Tier 1 FDCHs	102,443	84.1%	52	13,586
Tier 2 FDCHs	19,348	15.9%	0	4,998
TOTAL FDCHs	**121,791**	**100.0%**	**67**	**15,303**
SPONSORS	**840**		**2**	**82**

NOTE: Numbers may not add to totals due to rounding.
SOURCE: FNS FY 2013 National Data Bank totals for the contiguous US (48 States and D.C.—the sample universe for the assessment); Alaska, American Samoa, Guam, Hawaii, Puerto Rico, and Virgin Islands were excluded

States were selected for each of the three study years on the basis of PPS. The MOS at the first stage was the number of FDCHs per State in FY 2013, as reported in the FNS National Databank. The largest State was selected six times, twice for each year (Table 2-3). Four large States were selected once for each year. Another large State was selected once for the years 2014 and 2016 but twice for survey year 2015. Two other large States were selected once for years 2015 and 2016. Thus, twenty-six unique States were selected for the three years. For the 2014 study, 15 States were sampled (one State was sampled twice).

Table 2-3. Sampled States: 2014–2016

STATE	2014	2015	2016
Arizona		1	
California	2	2	2
Delaware			1
Florida	1		
Illinois	1	1	1
Indiana			1
Iowa		1	
Kansas	1		
Louisiana	1	1	1
Maryland	1		
Massachusetts		1	1
Michigan		1	1
Minnesota	1	1	1
Mississippi	1		
Nebraska			1
New Mexico	1		
New York	1	2	1
North Carolina		1	
Ohio			1
Oklahoma	1		
Oregon		1	
South Carolina			1
Texas	1	1	1
Virginia	1		
Washington		1	
Wisconsin			1
Wyoming	1		

Selecting States for three future study years on the basis of fiscal year 2013 data introduces the potential for sampling error since State-level FDCH counts may change from year to year. This drawback is balanced by the advantage of spreading the three-year reporting burden more evenly across States and sponsors by minimizing the probability that (all but the largest) States will be selected repeatedly across

the three study years. In subsequent years, this issue can be examined by comparing the actual PPS probabilities to FDCH counts from future FNS National Data Bank data. Any discrepancies can be partially addressed by post-hoc adjustment of the final sampling weights that will be applied to individual FDCHs.

The sampled States were asked to provide:

- A list of CACFP sponsors in their State to serve as the frame for sampling sponsors. The requested elements of the sponsor list included: sponsor name, address, telephone number, and number of tier I and tier II FDCHs.
- The "State list of schools," which is provided to CACFP sponsors for the purpose of determining FDCH eligibility for tier I, for each school year (SY) from 2009-10 through 2013-14 (5 years).

The data sources of the 2013 FNS National Databank and 2014 States' lists had slightly different numbers of sponsors and FDCHs per State (Table 2-4). The number of FDCHs tend to be larger in States' lists and the number of sponsors tend to be lower than in 2013 FNS Databank. This was reported by the previous studies as well. Therefore, following the methodology of the previous studies, base sampling weights were adjusted by post-stratification to account for these slight variations, the weighting approach is described below.

Based on the States' lists of sponsors, the total number of sponsors for the sampled States was 338. The number of sponsors per State ranged from 2 to 80. Three States had 8 or fewer sponsors, seven States had 12 to 25, and 4 States had 28 or more sponsors.

Table 2-4. Number of FDCHs and sponsors for sampled States

STATE	2013 FNS Databank		2014 States' lists	
	FDCHS	SPONSORS	FDCHS	SPONSORS
California	15303	76	15059	49
Florida	2203	41	2187	21
Illinois	7375	14	8825	12
Kansas	3290	20	3762	21
Louisiana	7620	28	8695	28
Maryland	3178	7	3446	7
Minnesota	8273	8	8610	8
Mississippi	574	16	796	15
New Mexico	3293	16	2689	15
New York	9636	82	10687	80
Oklahoma	1802	21	1775	21
Texas	5795	64	6140	46
Virginia	2347	20	2493	13
Wyoming	338	2	301	2
TOTAL	**71,027**	**415**	**75,465**	**338**

To explore the possible reasons for the differences between FNS and States' data sources in the number of sites and sponsors, four States (CA, FL, TX, and VA) were contacted to gain their feedback and explanation. The States verified the accuracy of the provided lists, noted the fluidity of the lists, and provided several reasons for the discrepancies:

- The Databank referenced FY 2013 and the State's lists referenced program year 2014.
- The Databank calculates the number of sponsors and sites and then these numbers are rounded up.
- The Databank included only active sponsors that submitted claims, whereas the State lists could include sponsors that had not submitted claims.

- Sponsors sometimes provide multiple claims (original and adjusted) which could results in duplicate records for sponsors.
- The State lists could include some inactive FDCHs that had no meal reimbursements during the study year.
- Sites could be updated monthly by the sponsors and could be terminated after 3 months of inactivity.

Sampling Sponsors

Following the first-stage sampling, the selected States submitted a complete list of sponsors and the number of FDCHs that they service. This information formed the basis for the second stage of sampling, in which four sponsors from each State were selected with a probability proportional to the fraction of their State's total number of FDCHs. In addition, two replacement sponsors were selected for each State using the replacement sample. The sponsors were selected with PPS where size is defined as the number of FDCHs of each sponsor. Based on this approach, the sampled sponsors are representative of all sponsors in the sampled States. Some of the sponsors in four States with a large number of FDCHs — MD, MN, MS, and VA—were sampled twice due to their size. In addition, one State, WY, had only two sponsors, which merged into one organization at the time of the data collection. Therefore, this yielded a sample of 60 total sponsors and 53 unique sponsors across States.

Sponsor Recruitment

Recruitment of sampled sponsors for the assessment began in October 2014. Optimal contacted selected sponsors via email, mail, and follow-up phone calls. In addition, FNS sent an email to selected sponsors encouraging their participation in the assessment. The sponsor recruitment package (provided in Appendix B) included:

- A letter describing the assessment and the accompanying materials
- A brochure describing the requirements for participation
- Letters of support from the CACFP Sponsors Association and CACFP National Forum
- A memorandum of understanding
- Instructions for accessing the Dropbox site to upload the requested files.

To increase participation and minimize refusals, sponsors were reimbursed $110 to offset the costs of providing information for the assessment and an additional $150 if they met all of the specified deadlines. If a sponsor in the main sample was unable to participate, a replacement sponsor was selected at random from the replacement sample and added to the main sample. Two sponsors in MS and one in VA were unreachable after numerous attempts to contact them by email, mail, and telephone; and therefore, they were replaced using sponsors selected from the replacement sample. Even though the same approach was used by previous studies, based on FNS's suggestion, the future studies should employ more rigorous attempts to recruit unreachable sponsors by involving State agencies in recruitment of unreachable sponsors. In addition, the reasons why sponsors are unreachable should be explored.

Sponsors selected in the second sampling stage were asked to submit a complete list of the FDCHs that were active as of August 2014; sponsors were asked to include the provider's name, street address, city, state, zip code, tier I/tier II status, method used for tiering determination, and most recent tiering determination date. Sponsors selected in the second sampling stage had a total of 29,059 FDCHs, 83 percent of which were tier I, 16 percent tier II, and 2 percent mixed tier (Table 2-5). Tier I homes were mostly certified by sponsors using the school verification method (86.7 percent), followed by provider's income (15.5 percent), Census (7.4 percent), and categorical eligibility (3.1 percent).

Table 2-5. The number of FDCHs in the sample frame based on sponsors' lists

	# of FDCHs	Percent
Tier I	23,996	82.6%
Tier II and Mixed	5,063	17.4%
Tier II	4,499	15.5%
Tier Mixed	564	1.9%
Certification Method of Tier 1:		
Census	1778	7.4%
Income	3721	15.5%
Categorical Eligibility	735	3.1%
School	20805	86.7%
TOTAL	**29,059**	**100.0%**

Note: a FDCH could have more than one certification method.

The sampled sponsors, on average, had about 550 FDCHs and only about 100 tier II homes (Table 2-6). The large standard deviations demonstrate the wide range of sponsor sizes. Furthermore, States' and sponsors' data sources were slightly different in terms of the average number and distribution of FDCHs.

Table 2-6. The number of FDCHs for the sampled sponsors

		Mean	Std. Deviation	Minimum	Maximum
Tier I	States list	460.39	493.68	26	2,235
	Sponsors list	452.75	485.77	21	2,256
Tier II	States list	114.30	354.93	0	2,526
	Sponsors list	95.53	270.80	0	1,900
Total	States list	574.69	746.79	26	4,454
	Sponsors list	548.28	689.50	21	4,156

Sampling FDCHs

The third sampling stage involved selecting FDCHs and replacements from each of selected sponsors. On the basis of the lists of FDCHs that the sampled sponsors provided, a simple random sample of 11 FDCHs was selected for each sponsor plus 8 backups for a total of 19 FDCHs per sponsor. Some large sponsors[19] were given a sample size of 22, 33, or 44 FDCHs for a total sample size of 758 FDCHs.[20]

The number of FDCHs selected from each sponsor was allocated between tier I and tier II in proportion to the sponsor's number of FDCHs in the two tiers. For sampling purposes, a small number of mixed tier homes were combined into the same group with tier II homes. Although not a stratified sample, through sorting and randomization within tiers, the representation of tier I and tier II FDCHs in the sample approximated the distribution in the FDCH list received from the sponsors. Therefore, for each sponsor, a systematic sample was selected to have the number of FDCHs selected from each tier approximately proportional to the total number of homes by tier for the sponsor, and the overall sample distribution approximately represented tier distribution in the population. For some sponsors, the fraction of FDCHs in tier II was so small that no tier stratification was used, and no tier II FDCHs were selected for them through sampling[21].

Among the sampled 758 FDCHs, 86 percent were tier I, 11 percent were tier II, and 3 percent were mixed tier homes (Table 2-7). The homes were most frequently certified by sponsors into tier I using the school verification method (88.8 percent), followed by the provider's income (14.0 percent), Census (6.2 percent), and categorical eligibility (2.8 percent).

[19] In WY, MD, VA. CA, MN, and MS.
[20] One replacement sponsor had a total of 21 FDCHs.
[21] Tier II homes did not get sampled in MS, FL, LA, and NM.

Table 2-7. The number of FDCHs in the sample

	# of FDCHs	Percent
Tier I	650	85.8%
Tier II and Mixed	108	14.2%
Tier II	86	11.3%
Tier Mixed	22	2.9%
Certification Method of Tier I:		
Census	40	6.2%
Income	91	14.0%
Categorical Eligibility	18	2.8%
School	577	88.8%
TOTAL	**758**	**100%**

Note: a FDCH could have more than one certification method.

Second Sponsor Contact

After sampling FDCHs, sponsors were contacted again and asked to provide information about the FDCHs that were sampled for the assessment. Specifically, they were asked for monthly meal counts for each FDCH and whether or not a redetermination had been done during the assessment period (if so, previous tiering information was requested). Monthly meal counts were requested for the reference period of August 2013 through July 2014, and sponsors were asked for separate counts of breakfasts, lunches and suppers, and snacks, broken down between tier I-eligible and tier II-eligible meals.

During the first contact, the sponsors were asked to list all FDCHs that they sponsored in 2014; however, 28 FDCHs (3.6%) were found to be inactive (had no meal reimbursements) during the study year and therefore were replaced with FDCHs from a replacement sample. The sponsors were then asked for monthly meal counts and whether or not a redetermination had been done during the assessment period for the 28 replacement FDCHs. The 2014 replacement rate of 3.6 percent is lower than the replacement rate of 6.5 and 6.8 percent reported in 2012 and 2011, respectively, but similar to the 2010 and 2013 rates of 4.2 percent and 3.9 percent.

In calculating the sampling weights, inactive FDCHs were considered part of the sample. The identified inactive FDCHs, however, were not used in the analyses. This approach is a standard way of handling ineligible sample units and allows the inactive FDCHs in the sample to represent the inactive FDCHs in the universe of FDCHs, whereas the active FDCHs in the sample represent the universe of active FDCHs.

Tier II FDCHs could be reimbursed for meals at tier I, tier II, or both rates (concurrent tier I and tier II reimbursements), depending on whether some or all meals were served to tier I-eligible children. In addition, tier I FDCHs could have both tier I and tier II meal reimbursements during the data collection period if they had changed tiering status during the period (not concurrent tier I and tier II reimbursements). Among the sampled tier II FDCHs, 18.5 percent were reimbursed for meals concurrently at tier I and tier II rates, and 3.7 percent had changed tiering status during the study period (Table 2-8). Thus, for misclassified tier I homes, it cannot be assumed that all meals were reimbursed in error because some children might individually qualify for the higher tier I reimbursement or the tiering status could have changed during the study period.

Table 2-8. Number of sampled FDCHs by type of meal reimbursements reported by sponsors

Type of meal claims	TIER					
	I		II		TOTAL	
	Count	%	Count	%	Count	%
Tier I claims only	635	97.7%	1	.9%	636	83.9%
Tier II claims only	1	.2%	83	76.9%	84	11.1%
Tier I and Tier II concurrent	2	.3%	20	18.5%	22	2.9%
Tier I and Tier II not concurrent	12	1.8%	4	3.7%	16	2.1%

NOTE 1: "Concurrent" tier I and II claims occur when both tier I and tier II children are served in the same month.
NOTE 2: Data are unweighted.
NOTE 3: Claims were reported by sponsors for August 2013 through July 2014.

Data Collection

Data collection for the assessment began in September 2014 and continued through February 2015. Data were collected from FNS, State Child Nutrition Agencies, and CACFP sponsoring organizations. FDCHs were not contacted for the assessment.

Data Collected from FNS

FNS provided administrative data on FDCHs, sponsors, and meals for FY 2013 from its National Data Bank. As noted previously, the FY 2013 counts of FDCHs by State were used as the measure of size for selecting States. FY 2013 meal reimbursements were calculated using the meals data from the National Databank and the reimbursement rates. The calculated meal reimbursements were used to determine State-level percentages of meals in tier II homes that were reimbursed at tier I rates, described below. As noted above, tier II homes may claim tier I meals for children who have been certified as income-eligible. Thus, for misclassified tier I homes, it cannot be assumed that all meals were reimbursed in error because some children might individually qualify for the higher tier I reimbursement if given the opportunity to apply. Lacking information about individual children in misclassified tier I homes, the State-level percentages of tier I meals in tier II FDCHs were applied when estimating the number of meals reimbursed in error in homes misclassified as tier I. The rationale for this methodology is further explained below. In addition, FY 2013 total meal counts were used to estimate the total meals reimbursed in error.

Data Collected from State Agencies

A data request was mailed to State agencies in the 14 selected States asking them to provide the following:

- *Lists of Sponsors*—to serve as the frame for sampling sponsors. The requested elements of the list included sponsor name, address, telephone number, and number of tier I and tier II homes. After data were received from State agencies, the second stage of sampling was conducted to select 60 sponsors for the assessment.
- *State List of Schools*—that State CACFP agencies are required to provide to sponsors, by February 15 of each year, including the percentage of students approved for F/RP meals in each school. Optimal requested this list for each school year from 2009-10 through 2013-14 (5 years).

Data Collected from CACFP Sponsoring Organizations

The 53 unique selected sponsors were contacted via email, mail, and phone follow-up contacts and recruited to participate in the assessment. In addition, directors of State agencies were asked to send an e-mail to selected sponsors encouraging participation. After agreeing to participate, sponsors were asked to provide the following information (also see Appendix B):

- A list of the homes that they sponsored, including, name, street address, city, State, zip code, tier I or tier II status, method used for tiering determination, and the most recent tiering determination date.

- Monthly meal counts for the sampled FDCHs, whether a redetermination had been done during the assessment period and, if so, the previous tiering information.
- After the independent verification, sponsors were also asked to provide copies of tiering determination documents for FDCHs that were either: 1) not verified as geographically eligible for tier I through a match with school and Census data; or 2) tier II FDCHs that appeared area-eligible for tier I based on school or Census data.

3. INDEPENDENT VERIFICATION OF GEOGRAPHIC ELIGIBILITY

This section describes the steps taken to establish independent verification of geographic eligibility using Census and school data, followed by the results of the school and Census data matches.

Geocoding FDCH Addresses

The first step in assessing geographic eligibility was to geocode FDCH addresses to obtain latitude and longitude coordinates and CBG code. Sixty-five FDCH addresses could not be geocoded to street addresses because the address contained a post office box, which did not have a specific street number, or there was a possible data entry error in recording the address. After verifying and revising addresses using Google searches; web services such as CDYNE, Melissa Data, and Experian services; or contacts with sponsors, fifty of these addresses were geocoded. FDCHs with geocoded addresses were then matched with Census and school data. The fifteen homes that could not be geocoded were verified using school districts contacts, as described below.

Census Match Process

Census eligibility was based on the CACFP Special Tabulations of CBGs, Census tracts, and adjacent Block Groups data provided by FNS. For an FDCH with a tiering date before May 21, 2014, tier I eligibility was based on its location in a CBG that met the poverty criteria of at least 50 percent of children age 12 or under in households at or below 185 percent of the FPG. [22] For a FDCH with a tiering date on or after May 21, 2014, eligibility was based on either the above criteria or meeting the poverty criterion of at least 50 percent of children age 12 or under, or 18 or under in households at or below 185 percent of the FPG[23] for the Census tract or for up to three adjacent CBGs.[24]

School Match Process

The FDCHs that could not be verified by Census data were matched to school data. The FNS rules for school-based geographic eligibility require the FDCH to be located within the attendance area of a school at which at least half of the students are approved for F/RP school meals. However, there are no national databases that can be used to identify the exact school attendance area for FDCHs. Therefore, the school match involved:

1. Identifying the school district where the FDCH was located
2. Within the school district, identifying the schools nearest to the FDCH (within 5 miles radius)
3. Determining if all, some, or none of the nearest schools were area-eligible for tier I (i.e., they had at least 50 percent of children eligible for F/RP meals)

[22] USDA Child and Adult Care Food Program (CACFP): Assessment of Sponsor Tiering Determinations (2012 Final Report) http://www.fns.usda.gov/sites/default/files/CACFPTiering12.pdf

[23] Instructions for Determining Eligibility Based on Census Data http://www.fns.usda.gov/sites/default/files/Census%20Instructions%202014_0.pdf

[24] USDA "Area Eligibility Using Census Data" Memorandum (Code: SP 38-2014, CACFP 10-2014, SFSP 15-2014) http://www.ped.State.nm.us/nutrition/2014/USDA_%20Area%20Eligibility%20Using%20Census%20Data%20Memo_April%202014.pdf

If all of the nearest schools (all three of the nearest elementary schools for SY 2009-2010 or either all three elementary schools or both of the nearest middle/secondary schools for SYs 2010-2014) were area-eligible for tier I, then the FDCH was verified as tier I by the school data matching process.[25] It was assumed that if all of the nearest schools for any grade satisfied the F/RP requirement, it would be sufficient to confirm that the sponsor's determination of tier I eligibility was correct.

The school match first required identifying the school district in which each FDCH is located and determining schools in the same school district based on the Census school district boundary (using 2014 TIGER Shape file). This involved obtaining and processing school district boundary files from the Bureau of Census. There are up to three files of school district boundaries for each State depending on the types of districts in the State: elementary districts—high grade is 8 or less; secondary districts—low grade is 5 or higher; and unified districts—low grade is prekindergarten or kindergarten and high grade is 12. If an area does not have a unified district, then it has one or more elementary districts within the boundary of a secondary district. Thus, for each FDCH address, the relevant unified, secondary, and elementary district was identified based on the FDCH's latitude and longitude coordinates.

After identifying the school districts containing FDCHs in the assessment sample, Optimal assembled a list of public schools in those districts. Two sources of information were used to construct the list of schools:

- US Department of Education, Common Core of Data (CCD) Public Elementary/Secondary School Universe Survey with F/RP percentage, for each school year from SY 2009-10 to SY 2012-13.
- The lists of schools provided by States with F/RP percentages for SY 2013-2014.

Because tier I area eligibility based on school data is effective for 5 years, CCD data were obtained for the past 5 school years. The CCD file provided a master list of all schools in the nation with information on grade level, whether the school is a charter or magnet school, and latitude and longitude coordinates. Only schools with a grade in the 1-12 range were included (PK-K-only schools were dropped because they are not included in the basis for eligibility). Magnet and charter schools do not have defined boundary areas and thus were not included in this assessment.

For each State, the NCES data for SYs 2009-10 through 2012-13 and State data for SY 2013-14 were merged into a single list of schools active at any time over the past five years, with an indication of whether or not the school met F/RP requirements for each year.

- For the verification algorithm matching FDCHs with school data, the NCES CCD master list of schools is considered the universe of schools in the U.S. and NCES F/RP percentages were used[26] (except for SY 2013-2014). NCES data were also used to obtain latitude-longitude for the schools.
- The State list of schools with F/RP meal percentages obtained from State CACFP agencies for SY 2013-14 was merged with the CCD data because the CCD data do not contain F/RP meal information for SY 2013-14.

[25] This process is based on the assumption that the correct school attendance area for the FDCH belongs to one of the nearest schools. If this assumption is not correct, it is likely that the correct school attendance area is nearby and has approximately the same percentage of F/RP students as those of the nearest elementary schools. Nearest schools are determined by straight-line distances. Less than the desired number of schools might be used if there are fewer schools of this grade level in the given school district.

[26] The use of CCD data for the F/RP meal percentages is due to some States not providing this data for all years and/or not having IDs or school addresses for the merge, and/or only including schools that meet the F/RP percentage requirement. Thus, CCD was used because it is clean data from the universe, which is also available to sponsors for tiering determinations (http://www.fairdata2000.com/CACFP).

The school match identified up to three of the nearest elementary schools and up to two additional middle and/or secondary schools for each FDCH within the school district(s) where the FDCH was located for each school year. This was accomplished by calculating the distance from each FDCH to every school in the district(s) and then assigning the nearest schools (within a 5-mile radius) until the required number of schools were assigned or there were no more schools at that grade level in the school district. To avoid including distant schools in the set of nearest schools, if a school was more than 5 miles from the FDCH and more than twice the distance to the closest school, it was not included. Eligibility for tier I (as of the tiering date provided by the sponsor) was determined based on a school's percentage of children eligible for F/RP meals for that school year.

Outcomes of the School and Census Matches

For this assessment, as was done for the previous assessments, tier I eligibility was confirmed using Census, school data, school district contacts, followed by a review of sponsors' documents, as described below (Table 3-1):

1) Fifteen homes that could not be geocoded were verified using school district contacts; four of them could not be verified; therefore, a review of the sponsors' documentation was required.
2) Census match was conducted for FDCHs that were geocoded. Out of 303 tier I FDCHs verified by Census data, only 10 were verified by using the new rule of adjacent CBGs or Census tracts.
3) School data were used to determine tier I eligibility. The school match was conclusive if the school data indicated that all of the nearest schools were area-eligible. Overall, 155 tier I FDCHs were verified using school data.
4) If the school match indicated that "some" of the nearest schools were area-eligible or there were no schools nearby (163 cases) (See Table 3-1), Optimal conducted school district website searches or contacted school districts to identify the school attendance area for the FDCHs. The same was done for homes that could not be geocoded. Overall, 183 FDCHs required school district contact: 163 with "some" of the nearest schools being area-eligible, 5 with no schools nearby, and 15 that could not be geocoded. Among these FDCHs, 133 were verified as tier I: 121 with "some" of the nearest schools being area-eligible, 3 with no schools nearby, and 9 that could not be geocoded.
5) Finally, for the 61 tier I FDCHs not verified as tier I using Census and school data or school districts contacts, Optimal requested tiering determination documentation from the sponsors. The sponsor documentation was also requested for 10 tier II homes that appeared to be tier I eligible based on Census, school data, or school district contacts.

The school and Census matches streamlined the process of verifying sponsor tiering determinations and greatly reduced the burden on the sponsors. Overall, 589 tier I, 76 tier II, and 22 mixed tier FDCHs were independently verified, thus sponsor documentation was not needed for 91 percent of the sample (Table 3-1, below).

Table 3-1. Verification results by source of determination and tier

	TIER			
	TOTAL	**1**	**2**	**Mixed**
Geocoded	**743**	**637**	**84**	**22**
Geocoding Errors	**15**	**13**	**2**	**-**
Verified tier I by school district contact	9	9	-	-
Verified NOT tier I by school district contact	2	-	2	-
Not verified by school district contact	4	4	-	-
Census Passed	**311**	**303**	**8**	**-**
CBG CACFP	299	293	6	-
Tract CACFP	7	6	1	-
Adjacent CBGs CACFP	5	4	1	-
Census Failed, verified using school data	**432**	**334**	**76**	**22**
All of the nearest schools were area-eligible	155	155	-	-
Some of the nearest schools were area-eligible	163	140	19	4
Verified tier I by school district contact	121	119	2	
Verified NOT tier I by school district contact	42	21	17	4
None of the nearest schools were area-eligible	109	35	56	18
No schools within 5 miles	5	4	1	-
Verified tier I by school district contact	3	3	-	
Verified NOT tier I by school district contact	2	1	1	
Total verified by Census, school, and district contact	**687**	**589**	**76**	**22**
Census, school, and districts failed; sponsors documents required	**71**	**61**	**10**	**-**
TOTAL	**758**	**650**	**86**	**22**

NOTE: Data are unweighted.

Request for Tiering Determination Documents

For 71 FDCHs that could not be not independently verified, Optimal requested from sponsors copies of the documentation on file for the most recent tiering determination prior to August 31, 2014. This documentation included one or more of the following:

- School data—boundary information and school F/RP percentage or other available school eligibility documentation included in the file for the FDCHs
- Census data—block group or tract code and the percentage of children in households with income at or below 185 percent of FPG
- Household income—copies of documents used to verify tier I income eligibility, such as wage stubs, income tax forms, bank statements, etc.
- Categorical eligibility information—Income Eligibility statements (IES) listing household members and their income, and/or information about participation in programs that confer categorical eligibility; and/or benefits letters.

For the assessment, sponsors were asked to review an Excel sheet that was preprinted with the names of FDCHs that required documentation. For tier I FDCHs, sponsors were instructed to review the method of tiering used most recently before August 2014 to indicate whether a redetermination had been done between August 1, 2013 and July 31, 2014 and to attach copies of tiering documents from their files. If a redetermination had been done during that period, sponsors were asked to provide documentation for both the redetermination and the previous determination. For tier II FDCHs, sponsors were instructed to indicate whether a redetermination had been done between September 2008 and June 2014 and to provide copies of all documents associated with tiering determinations.

Document Review Process

Documentation was obtained for all 71 FDCHs from which it was requested. All documentation was reviewed by senior project staff to determine whether the provided information confirmed the sponsors'

tiering determinations. In those instances when there were questions or concerns, the project team conducted follow-up telephone calls with sponsors to clarify questionable data elements. In some cases, when the tiering status was determined by a provider's income, the final determination of whether the documentation confirmed that the FDCHs were correctly classified involved a second layer of review by Optimal's certified accountant.

Algorithms for Assessing Tiering Determinations Using Sponsor Documents

The tiering assessment algorithms developed by the previous studies were also used by this study to confirm that the sponsor's tiering determination was correct and consistent with the FNS rules applicable to determinations made on that basis (geographic, program, or income). The following general rules were used to confirm tiering determinations:

- Documentation required for the type of eligibility (geographic, program, or income) must be present.
- Documentation must meet FNS standards for the information provided (e.g., signature provided when required and the appropriate tiering date).
- Documentation must be consistent with the eligibility determination by the sponsor (e.g., documented income is 185 percent of the FPG or less).

Separate algorithms were used for each type of determination: school, Census, program certification, and provider income. Appendix A presents a detailed description of the algorithms.

The algorithm for assessing determinations based on **school documents** required all of the following conditions to confirm tier I eligibility:

1. Valid documentation that the FDCH was located in the attendance area of the identified school:
    - A document was provided identifying the school attendance area (school boundary map, page from school directory, Web site printout, letter from school official, or memorandum to file from contact with school official).
    - The document was dated after June 1, 2009.
    - The FDCH address was identified on the document (not needed if the document was a memorandum to the file).
    - The document was signed (only needed if the document was a letter from a school official or a memorandum to the file).
2. Valid documentation of area-eligibility for the school identified:
    - A document establishing the school's F/RP percentage (copy of State school list, printout from a State Web site, or letter from a school official) was provided.
    - The document was dated after June 1, 2009.
    - If the document was a letter from a school official, it was signed.

This algorithm identified procedural errors, i.e., instances when the sponsor did not provide sufficient valid documentation to verify the tier I eligibility of the FDCH. The existence of a procedural error was not sufficient to find that the FDCH was actually misclassified. A sponsor could have made a correct determination but failed to provide adequate documentation. Therefore, Optimal used the information provided by the sponsor and other resources to attempt to independently verify the tier I eligibility of FDCHs with procedural errors in determinations *based on school data*.

- If the school attendance documentation provided by the sponsor lacked sufficient detail to locate the FDCH in the attendance area of the identified school, online resources such as Google Maps and school district web sites, as well as results from any previous school district contact were used to verify the location of the FDCH and to determine the correct school attendance area.
- If the sponsor did not provide documentation of area-eligibility for the identified school, Optimal independently verified eligibility using the date of the determination and the States' school lists.

The algorithm for assessing determinations based on **Census documents** required all of the following conditions to confirm tier I eligibility:

- The CBG or tract code was provided.
- A document was provided indicating that the FDCH address was in the CBG or tract.
- The address on the document corresponded to the FDCH address provided by the sponsor.
- A document was provided showing the percentage of children in households with incomes less than or equal to 185 percent of the FPG for the CBG, tract, or adjacent CBGs.

The algorithm for assessing determinations based on means-tested **program certification documents** required all of the following, conditions to confirm tier I eligibility:

1. Provider submitted a valid IES:
    - The provider name and address on the IES matched the files provided by the sponsors.
    - The IES was signed by the provider.
    - The IES was signed between July 31, 2013 and July 31, 2014.
    - A Social Security Number (SSN) was provided, or the provider indicated that he or she did not have a SSN.
    - A case number.
    - The program indicated on the IES was SNAP, TANF, FDPIR, or another program accepted for provider eligibility for tier I in the State (Supplemental Security Income and Medicaid).
2. Provider submitted valid documentation of eligibility for the program indicated on the IES:
    - The document was a certification letter or other document acceptable under FNS guidance.
    - The date of the document indicated current eligibility as of the date of the IES.

There were two algorithms for assessing determinations based on **provider income**, depending on whether a tax return (i.e., an Internal Revenue Service Form 1040) or other documents were provided. Both algorithms required the following conditions to confirm tier I eligibility:

- Provider submitted an IES
- Provider name and address on the IES matched the files provided by the sponsors.
- The IES was signed by the provider.
- The IES was signed between July 31, 2013 and July 31, 2014.
- SSN was provided or provider indicated that he or she did not have a SSN.
- Total income on the IES was greater than zero and equal to or less than 185 percent of the FPG for the household size indicated on the IES.

For determinations based on a Form 1040, the algorithm also required the following:

- Gross income on the Form 1040 was equal to or less than 185 percent of the FPG for the household size indicated on the IES.
- All adults listed on the IES were listed on the Form 1040 or had other acceptable income documentation.

For determinations based on other income documentation, the algorithm required determining that valid documentation was provided for each item of income reported on the IES. The standard IES format requires separate reporting of each type of income (earnings, Social Security/pension, child support, other) for each household member. The algorithm required the following conditions to confirm tier I eligibility (in addition to the IES criteria):

- There was acceptable documentation for each item of income reported on the IES (dated, third-party source or supported by receipts or sworn statements).
- Total income on all documents was equal to or less than 185 percent of the FPG for the household size indicated on the IES.

For determinations based on income documentation other than IRS Form 1040, the algorithm had two specific requirements regarding income from family day care, following FNS policy:

1) The provider had to report income from family day care or indicate that this self-employment resulted in a loss or no net income. Under FNS policy, receipt of payment for day care services is not a requirement for CACFP participation, but even zero income from day care must be declared on the IES. If a provider reports zero income from day care, other household income must be reported and documented.
2) A statement of provider income and expenses other than an IRS Schedule C was accepted only if the statement was prepared by a third party, if receipts were provided, or if the documentation indicated that the sponsor had verified the statement. The provider's ledger of payments for day care was considered acceptable, but a statement affirming that receipts for expenses were available upon request was not accepted in lieu of copies of the receipts (unless there was indication that the sponsor had reviewed the receipts). If receipts for expenses were not provided, tier I eligibility was evaluated on the basis of the provider's gross revenues from day care and other income.

To make the final income determination, the project team used the following procedures:

- Identified all persons in the household with reported income
- Determined the items of income reported for each person
- Determined if an acceptable document was provided for each reported item of income
- Reviewed the amount of income and how frequently it was received for each item of documentation
- Ensured that the total income from all documents was equal to or less than 185 percent of the FPG for the household size indicated on the IES

Results of the Review of Sponsor Tiering Documentation

The following presents the results of the documentation review for FDCHs, a summary of the sources of misclassification, and the overall verification results for the study sample.

Documentation Review Results for Tier I FDCHs

A total of 50 tier I FDCHs were verified using sponsor documents (Table 3-2). Among the cases that were verified using sponsors' documents, School and Census documentation errors were the most common (6.6 percent each), followed by income errors (4.9 percent), and program errors (1.6 percent).

Table 3-2. Tier I verification results by source of determination

Source of tier I errors	Number of FDCHs	Percent of FDCHs
Error in school-area-eligibility documents	4	6.6%
Error in Census-area-eligibility documents	4	6.6%
Error in income-eligibility documents	3	4.9%
Error in categorical-eligibility documents	1	1.6%
Total misclassified tier I that could not be verified	**11**	**18.0%**
Total tier I verified by sponsor documents	**50**	**82.0%**
Total tier I requiring verification using sponsors' documents	**61**	**100.0%**

SOURCE: 2014 CACFP Assessment of Sponsor Tiering Determinations, unweighted data.
NOTE: Two providers were verified by sponsors using multiple sources (income and school; income and Census).

Among the verification sources, the largest proportion of misclassified tier I FDCHs involved Census verification (10%) and categorical eligibility (16.7%). School and income verifications involved a small proportion of errors (0.7% and 3.3%, respectively) (Table 3-3). The Census errors involved sponsors making mistakes in manual calculations of adjacent CBGs or misinterpreting eligibility results provided by FRAC website. School errors involved sponsors using PDF maps of school boundaries and choosing

the wrong schools or providing the department of education's website printout for the wrong schools. Income and categorical eligibility errors involved not providing SSN or other information required by verification algorithms.

Table 3-3. Sources of tier I misclassification

Certification Method of Tier I:	# of FDCHs	Percent	Misclassified FDCHs	Percent misclassified
Census	40	6.2%	4	10.0%
Income	91	14.0%	3	3.3%
Categorical Eligibility	18	2.8%	3	16.7%
School	577	88.8%	4	0.7%
TOTAL	**758**	**100%**	**14**	1.8%

SOURCE: 2014 CACFP Assessment of Sponsor Tiering Determinations. Data are unweighted.

Documentation Review Results for Tier II FDCHs

There were 10 tier II FDCHs that after the independent verification procedures appeared to be eligible for tier I Upon the review of the documentation submitted by the sponsors, Optimal discovered that three FDCHs had been verified by sponsors using school data only. However, the review also revealed that these homes were eligible for tier I based on Census data. The remaining seven FDCHs were confirmed as tier II based on the review of sponsors documents.

Final Overall Results for the Sample

Combining the results for tier I and tier II, Table 3-4 shows that the assessment confirmed sponsor tiering determinations for 744 FDCHs (98.2 percent). There were 11 misclassified tier I FDCHs (1.5 percent) and 3 (0.4 percent) misclassified tier II FDCHs. These are unweighted estimates. Weighted estimates of national misclassification rates are presented below, along with estimates of the impact of the number and percentage of meals reimbursed at the wrong tier and the resulting erroneous payments.

Based on the results of the verification analyses, tier I FDCHs were categorized into four groups (Table 3-4):

1) Group 1 was comprised of 303 FDCHs (40%) that were verified as tier I by Census.
2) Group 2 included 155 FDCHs (20.4%) that were verified using school match, with all of the nearest schools being area-eligible.
3) Group 3 had 131 FDCHs (17.3%) that were verified using school district look ups and contacts, because some but not all of the nearest schools were area-eligible.
4) Group 4 included 50 FDCHs (6.6%) verified using sponsors' documentation because their tiering determination could not be independently verified using the above procedures.

In addition, based on the results of the verification analyses, 105 tier II FDCHs were verified as tier II (74 by Census or school, 24 by school districts, and 7 by sponsors documents) and 3 (0.4%) tier II FDCHs were found to be misclassified (Table 3-4).

Table 3-4. Final results of tiering verification

	Number	Percent
Group 1: Verified as tier I by Census	303	40.0%
Group 2: Verified as tier I by schools	155	20.4%
Group 3: Verified as tier I by school district contact	131	17.3%
Group 4: Verified as tier I by sponsors' documentation	50	6.6%
TOTAL VERIFIED TIER I FDCHS	**639**	**84.3%**
Tier I FDCHs Errors	11	1.5%
Verified as tier II by Census or schools data	74	9.8%
Verified as tier II by school district contact	24	3.2%
Verified as tier II by sponsors' documentation	7	0.9%
TOTAL VERIFIED TIER II FDCHS	105	13.9%
Tier II FDCHs Errors	3	0.4%
TOTAL FDCHs WITH ERRORS	**14**	**1.8%**
TOTAL VERIFIED FDCHs	**744**	**98.2%**
TOTAL FDCHs	**758**	**100.0%**

SOURCE: 2014 CACFP Assessment of Sponsor Tiering Determinations. Data are unweighted.

4. NATIONAL ERROR ESTIMATES FOR CACFP FDCHs

To provide context for the estimates, Table 4-1 presents the total number of homes, the number of meals, and reimbursements for the contiguous U.S. in FY 2013, by tier and overall. All data in Table 4-1 are the national totals obtained from the FNS National Data Bank. In FY 2013, within the continental U.S., a total of 102,443 tier I FDCHs served 469 million meals, and an additional 19,348 tier II FDCHs served almost 80 million meals. Total reimbursements were $709.5 million for tier I FDCHs and $65.6 million for tier II FDCHs. Thus, even a relatively modest percentage of FDCHs misclassified would lead to millions of dollars in erroneous payments.

Table 4-1. Contiguous United States FDCHs totals: FY 2013

	TIER I	TIER II	TOTAL
Number of FDCHs	102,443	19,348	**121,791**
Number of meals	468,936,500	79,686,604	**548,623,104**
Reimbursements	$709,450,108	$65,623,357	**$775,073,466**

SOURCE: FNS National Data Bank totals for contiguous US FY 2013 (sample universe for the assessment).

Sampling Weights

Each FDCH in the sample received a base sampling weight equal to the inverse of its probability of selection (See Appendix C for the details). Thus, the weight reflected the probability of selecting the State, the probability of selecting the sponsor (given that the State had been selected), and the probability of selecting the FDCH (from the sponsor's list of FDCHs in the particular tier, given that the sponsor had been selected). The selection probabilities for FDCHs took into account the presence of FDCHs that were found to be inactive for the reference period, so that the weights would allow projection from the sample to the universe of active FDCHs.

The total number of FDCHs reported across all sponsors by the States as of August 2014 was slightly different than the corresponding totals in the FNS National Databank for FY 2013. Similarly, the numbers of FDCHs on the sponsors' lists (as of August 2014) differed from the corresponding numbers reported by the States. Because this assessment aims to provide estimates for FY 2013, the base sampling weights were adjusted by post-stratification to two control totals: the FY 2013 total number of tier I homes and the total number of tier II homes (as reported in the FNS National Databank FY 2013, after eliminating the States and territories that had been excluded from the sampling frame for this assessment).

The final weights assigned to the responding FDCHs were used to obtain estimates of various population parameters and standard errors of these estimates. The weighted survey data analyses were computed using a SPSS complex sampling module, which takes into account the sampling weight as well as multistage sampling design used for the selection of FDCHs in the sample (including stratification and clustering of sampling units at various stages of sampling). Appendix A provides more details about the estimation procedures.

National Estimates of Misclassified FDCHs

The data were weighted to make the results representative of the overall population of tier I and tier II FDCHs in the U.S., as described above The weighted estimates of national misclassification rates due to sponsor tiering determination errors for FDCHs in 2014 were: 1.42 percent for tier I, 2.85 percent for tier II, and 1.65 percent for all FDCHs. These misclassification rates and their 90 percent confidence intervals are shown in Table 4-2, which also presents estimates of the number of misclassified FDCHs by tier and the total overall number of misclassified FDCHs. Given the total number of FDCHs in the sample universe, this misclassification rate implies that 2,013 FDCHs were misclassified, including 1,458 tier I FDCHs and 556 tier II FDCHs.

Table 4-2. Estimated misclassification rates of FDCHs by tiering status

Tier as determined by sponsor	Percentage of FDCHs misclassified	90% confidence interval		Number of FDCHs misclassified	90% Confidence interval	
		Lower	Upper		Lower	Upper
TIER I	1.42%	0.86%	2.34%	1,458	730	2,186
TIER II	2.85%	1.10%	7.23%	556	29	1,082
TOTAL	1.65%	1.06%	2.57%	2,013	1,118	2,909

SOURCE: Weighted estimates from 2014 sample data.

National Estimates of Meals Reimbursed in Error Due to Misclassification of FDCHs

For misclassified FDCHs, the number of meals reimbursed in error is the difference between the number actually reimbursed at tier I rates and the number that would have been reimbursed at tier I rates if they had been correctly classified. Meals reimbursed at tier I rates that should have been reimbursed at tier II rates resulted in overpayments; meals reimbursed at tier II rates that should have been reimbursed at tier I rates resulted in underpayments.

Estimated Percentage of Meals Reimbursed at Incorrect Rate

Tier II FDCHs may claim meals for eligible children at the tier I rates. If a FDCH is classified as tier II, parents can apply for free meals for their participating children, and the sponsor determines whether they are eligible.[27] It follows that when a FDCH is misclassified, not all of the meals served were reimbursed in error. For a FDCH misclassified as tier I, meals served to children who would have been individually eligible were not errors, but any meals served to children who would not have been individually eligible were errors because they were reimbursed at the incorrect (tier I) rate. Conversely, for a FDCH misclassified as tier II, any meals served to children deemed individually eligible for free meals were reimbursed at the correct rate, but, since all meals should have been reimbursed at tier I rates, the meals for children not individually deemed eligible for free meals were reimbursed at the incorrect (tier II) rate.

For individual FDCHs misclassified as tier I, the exact number of meals for which each FDCH was reimbursed in error cannot be determined. Because if the FDCH was misclassified as tier I, no applications for free meals were submitted by parents. Therefore, the number of eligible children served by the FDCH is unknown and thus the number of meals that would have been correctly reimbursed at tier I rates cannot be determined. Therefore, to estimate the expected number of tier I and tier II meals for which FDCHs

[27] In the sample, 2.9 percent of FDCHs were classified as tier II mixed, because they served a mix of tier I and tier II children.

misclassified as tier I would have been reimbursed if those FDCHs had been correctly classified, the average percent of tier I meals served at tier II FDCHs in each of the States in the sample was used. It was assumed that for each meal type (breakfast, lunch or supper, and snack) the average across 12 months in the State for tier II FDCHs provided the best predictor of the expected percentage of meals by tier for the FDCHs misclassified as tier I. This approach takes into account the variation across States, while using data with no sampling errors.

The Statewide proportion of meals for a specified type of meal in tier II FDCHs that were reimbursed at the higher tier I rate were calculated based on data from FY 2013 meal counts in the FNS National Data Bank. The percentages varied substantially across the States, thus highlighting the need to use separate State percentages in the computation (Table 4-3). The national averages were 15.7 percent for breakfasts, 18.4 percent for lunches and suppers, and 17.4 percent for snacks.

Table 4-3. Tier I share of meals by meal type at tier II FDCHs by State: FY 2013

STATE	Tier I breakfasts	Tier I lunches/suppers	Tier I snacks
CA	8.1%	8.2%	8.2%
FL	7.3%	14.1%	12.1%
IL	9.2%	11.2%	10.1%
KS	6.6%	6.6%	6.9%
LA	49.0%	68.0%	63.9%
MD	5.1%	5.8%	5.8%
MN	28.9%	29.3%	29.6%
MS	0.0%	0.0%	0.0%
NM	39.1%	52.0%	45.1%
NY	12.0%	15.0%	13.6%
OK	10.5%	16.2%	14.8%
TX	3.2%	4.8%	4.4%
VA	7.4%	7.7%	8.3%
WY	12.1%	14.1%	12.9%
TOTAL U.S.	**15.7%**	**18.4%**	**17.4%**

SOURCE: FNS National Data Bank, FY 2013
NOTE: Total computed for the continental U.S. (sample universe for the assessment); Alaska, American Samoa, Guam, Hawaii, Puerto Rico, and Virgin Islands were excluded.

To estimate the meal counts by tier and type that would be expected if the misclassified tier I FDCHs had been correctly classified as tier II, the statewide proportion (above) for each meal type were multiplied by each misclassified FDCH's sum of the actual tier I and tier II total meals of that type. Then, the number of meal types claimed in error at tier I was calculated by subtracting the actual counts of tier I meal types from the expected counts of tier I meal types. The number of meals claimed in error by type was computed separately for the two program years (August 2013-June 2014 and July 2014) to apply the correct reimbursement rates later. Finally, the total tier I meals claimed in error were computed by summing the number of meals claimed in error for each type by program year.

For FDCHs misclassified as tier II, the computation of meals claimed in error was less complex. It was assumed that all meals claimed at tier II rates would have been claimed at tier I rates. Thus, the number of meals claimed in error equals the number of meals claimed at tier II rates, which is the number of meals that should have been paid at tier I rates but were not.

The national estimates of the percentage of meals claimed in error were computed from the sample data. First, weighted totals of meals claimed in error by FDCHs in the sample and total of all meals claimed were computed, by tier and overall. The percentage for each tier and overall was computed using the ratio

of the estimated meals claimed in error to the total meals. As discussed below, the percentage of meals claimed in error was used in a ratio estimation procedure to produce the final national estimates of total meals claimed in error.

Estimated Total Meals Reimbursed in Error

A ratio estimation procedure was used to estimate the total meals reimbursed in error. For each tier, the percentage of meals paid at the incorrect tier rate (from weighted sample data, as described above) were multiplied by the actual national total count of meals (from FNS data) to estimate the total number of meals paid at the incorrect rate. The tier I and tier II estimates were then summed to estimate the overall total. To estimate the lower and upper limits for the confidence interval of the total meals paid at the incorrect rate, the lower and upper limits of the percentages by tier were multiplied by the national totals. The confidence intervals for the totals for all FDCHs were computed using the estimated variances of tier I and tier II totals. Further details of these computations are provided in Appendix A.[28]

An estimated 1.55 percent of meals were claimed at the incorrect reimbursement rate (Table 4-4). This corresponded to 8.52 million meals; 7.15 million meals with overpayments and 1.64 million meals with underpayments. These estimates have substantial confidence intervals, e.g., from 3.01 million to 11.29 million meals for tier I.

Table 4-4. National estimates of the meals claimed in error due to misclassification of FDCHs

Tier as determined by sponsor	Percentage of meals claimed in error	90% confidence interval		Meals claimed in error	90% confidence interval	
		Lower	Upper		Lower	Upper
TIER I	1.52%	0.64%	2.41%	7,150,863	3,007,533	11,294,194
TIER II	2.06%	0%	4.70%	1,639,874	0	3,745,502
TOTAL	1.55%	0.73%	2.37%	8,515,516	4,021,278	13,009,755

SOURCE: Weighted estimates from 2014 sample data.

Costs of Misclassification Errors

The costs of misclassification errors (i.e., the erroneous payments) include overpayments to FDCHs misclassified as tier I and underpayments to FDCHs misclassified as tier II. For each meal reimbursed at the wrong rate due to misclassification, the cost equals the difference between the tier I and tier II rate. Overpayments represent costs to taxpayers, while underpayments represent costs to FDCH providers. For this assessment, both overpayments and underpayments were treated as costs when computing the total cost of misclassification errors. As with the counts of meals reimbursed at the incorrect rate, the percentages of reimbursements paid in error due to misclassification of FDCHs were estimated and then the national total costs of misclassification errors were estimated by applying that percentage to total costs based on the FNS National Databank.

Estimated Percentage of Reimbursements Paid in Error

The amount of reimbursements paid in error was computed for each misclassified home in the sample, and then the weighted total of these amounts was computed. As previously discussed, the number of meals paid at the incorrect rate was computed separately for breakfasts, lunches and suppers, and snacks. The costs of misclassification were calculated separately for meals claimed in August 2013 through June 2014 and in July 2014 when new reimbursement rates took effect. These costs were then combined to produce the totals for the assessment period. The weighted total cost of misclassification errors was divided by the estimated total reimbursements to estimate the percentage of reimbursements paid in error, both by tier and overall.

[28] These ratio estimates are superior to direct estimates of the totals from the sample data. Previous studies determined that using sample data alone would result in underestimates of the totals, but the sample-based percentages of meals reimbursed at the incorrect rate were valid and unbiased estimates.

The estimated national cost of misclassification errors was 0.76 percent of total reimbursements for tier I FDCHs and 2.18 percent for tier II FDCHs, resulting in an overall 0.84 percent of reimbursements made in error to all FDCHs (Table 4-5). The 90 percent confidence intervals for these estimates, as shown in Table 4-5, were less than plus or minus 1 percentage points for tier I, 5 percentage points for tier II, and the overall 90 percent confidence interval was plus or minus 1 percentage points. Thus, overall estimates meet the OMB standard, which requires 90 percent confidence intervals plus or minus 2.5 percentage points or less.[29]

Table 4-5. National estimates of the reimbursements paid in error due to misclassification of FDCHs

Tier as determined by sponsor	Percentage of reimbursements paid in error	90% confidence interval		Reimbursements paid in error	90% confidence interval	
		Lower	Upper		Lower	Upper
TIER I	0.76%	0.32%	1.21%	$5,406,378.04	$2,262,602.60	$8,550,153.47
TIER II	2.18%	0%	4.99%	$1,432,052.43	$0	$3,273,346.47
TOTAL	0.84%	0.40%	1.29%	$6,536,265.72	$3,075,524.61	$9,997,006.84

SOURCE: Weighted estimates from 2014 sample data.

For tier I FDCHs, the percentage of reimbursement dollars paid in error (Table 4-5) was one half of the percent of meals reimbursed in error reported in Table 4-4. This difference is due to the fact that the overpayment is a fraction of the reimbursement for each meal. For example, the tier I rate for lunch or supper was $2.40 and the tier II rate was $1.45 (using July 1, 2013 - June 30, 2014 rates, as shown in Table 1-1); thus, the cost of a lunch or supper reimbursed at the wrong rate was $0.95, or 40 percent of the tier I rate. The ratio of the overpayment to the tier I reimbursement varies by type of meal. Conversely, for tier II FDCHs, the percentage of reimbursement dollars paid in error is slightly greater than the percent of meals reimbursed in error. This is due to the underpayment amounts for breakfasts and snacks being greater than the actual reimbursement for these meals. For example, the tier II rate for breakfast was $0.47, while the underpayment is $0.81 ($1.28 minus $0.47).

Estimated Total Costs of Misclassification of FDCHs

To calculate the total cost of misclassification, as for the total meals reimbursed in error, a ratio estimation procedure was used. For each tier, the percentage of reimbursements paid in error (from sample data, as described above) was multiplied by the national total reimbursements (from the National Databank) to estimate the total cost of misclassification errors. These totals were then combined to estimate the overall total. To estimate the lower and upper limits of the total costs of misclassification, the lower and upper limits of the percentages by tier were multiplied by the national totals by tier. Further details of these computations are provided in Appendix A.

The estimated national FY 2013 cost of misclassification errors was $5.41 million for tier I FDCHs and $1.43 million for tier II FDCHs, resulting in a total cost (overpayments plus underpayments) of $6.54 million for all FDCHs (Table 4-5). The 90 percent confidence intervals for these estimates were from $2.26 million to $8.55 million for tier I, from $0 million to $3.27 million for tier II FDCHs, and from $3.08 million to $10.00 million for all FDCHs.

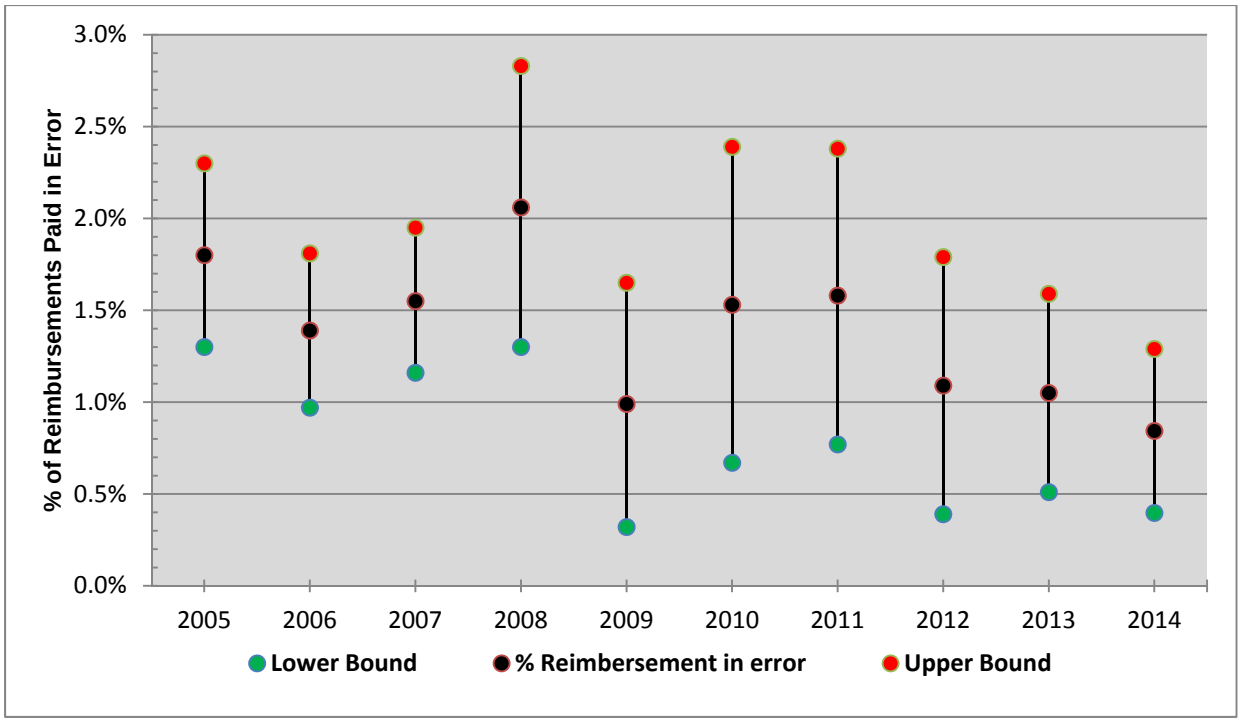
5. COMPARISON OF RESULTS WITH PREVIOUS ASSESSMENTS

The 2014 assessment is the tenth annual assessment of sponsors' tiering determinations for CACFP FDCHs. Because of the interest in trends over time, this section compares the 2014 results with the results of previous assessments.

[29] Office of Management and Budget Circular A-123. Appendix C, August 10, 2006. https://www.whitehouse.gov/sites/default/files/omb/assets/omb/circulars/a123/a123_appx-c.pdf

Figure 5-1 compares the estimated misclassification as a percentage of total reimbursements to all FDCHs (i.e., the improper payment rate) for 2005 through 2014. The estimate for 2014 (0.84%) is lower than estimates for 2013 (1.05%) and 2012 (1.09%), but close to the 2009 estimate (0.99%). The fluctuations in estimates of misclassification errors for the years of assessments are consistent with what is expected due to sampling differences. Also, beginning in 2011, there has been a downward trend in estimates.

Figure 5-1. Estimated national misclassification as a percentage of reimbursements: 2005–2014

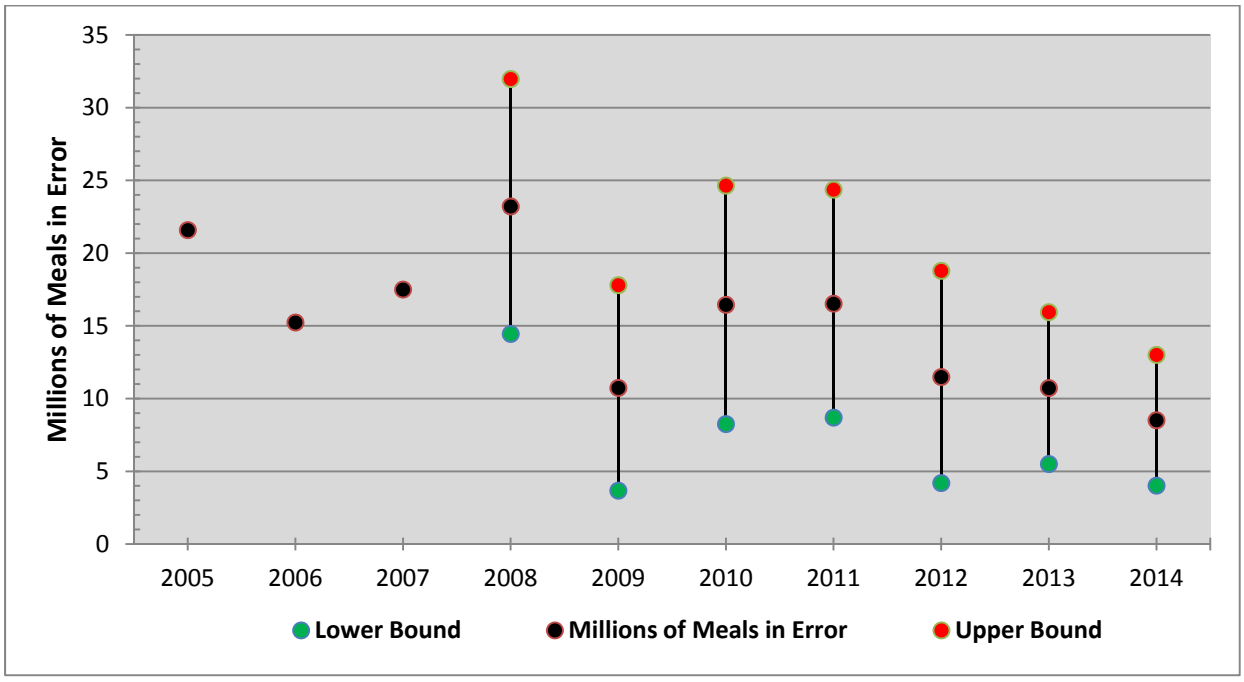


Similarly, the 2014 costs of misclassification shown in Figure 5-2 are consistent with those found in the previous assessments. The total cost of $6.54 million in 2014 is lower than estimated costs in 2013 ($8.18 million) and 2012 ($8.54 million), but relatively close to the lowest cost of $7.54 million found in the 2009 assessment. There is also a trend of declining misclassification costs beginning in 2011.

Figure 5-2. Estimated national cost of misclassification: 2005–2014 (in millions of dollars)

In addition, the 2014 estimate for the number of meals reimbursed in error was compared with the estimates provided by previous assessments (Figure 5-3). The assessment reports for 2005-2007 did not provide the results for the confidence intervals. Overall, the results are similar to the trends in percent of reimbursements in error and cost of misclassifications. In 2014, the number of meals reimbursed in error of $8.52 million is lower than estimates for 2013 ($10.73 million) and 2012 ($11.49 million). Beginning in 2011, there is also a trend of declining numbers of meals reimbursed in error.

Figure 5-3. Estimated national number of meals reimbursed in error: 2005–2014



6. CONCLUSIONS

The 2014 assessment is intended to provide FNS with national estimates of the percentage of CACFP FDCHs that were misclassified as tier I or tier II in PY 2014 and the associated erroneous payments. Using the weighted survey data, it was estimated that—nationwide—1.42 percent of tier I FDCHs and 2.85 percent of tier II FDCHs were misclassified in FY 2013. As a result of these misclassifications, 1.52 percent of meals served by tier I FDCHs were reimbursed at the higher tier I rate instead of the lower tier II rate. It was also estimated that 2.06 percent of meals served by tier II FDCHs were reimbursed at the lower tier II rate instead of the higher tier I rate. An estimated 0.76 percent of reimbursements were paid in error for tier I and an estimated 2.18 percent of reimbursements were paid in error for tier II FDCHs. In total, an estimated 2,013 FDCHs were misclassified and 8.52 million meals were reimbursed at an incorrect higher rate. The estimated costs of misclassification errors included overpayments of $5.41 million to tier I FDCHs, underpayments of $1.43 million to tier II FDCHs, and a total cost (overpayments plus underpayments) of $6.54 million for all FDCHs.

The estimates of misclassification costs for 2014 are somewhat lower than the estimates for 2013 but are still within the range of the estimates from prior assessments. The fluctuations in estimates of misclassification errors for the years of assessments are consistent with sampling differences. Somewhat large confidence intervals for tier II estimates and the potentially large sampling variability by year for tier II homes are due to the sample size and the total population being small for tier II homes. To improve stability of tier II estimates for the future studies, tier II FDCHs need to be either oversampled or the sample needs to be explicitly stratified by tier.

Recommendations and Implications of the Assessment Process and Results

There are three major recommendations based on the assessment process and the results. First, sponsors' use of verification based on the geographic eligibility, especially Census, should be increased to reduce the burden and errors. Second, the verification based on the geographic eligibility needs a user-friendly, web-based interface that will allow sponsors to quickly and accurately verify their FDCHs, prior to conducting burdensome and error-prone income and categorical eligibility verifications. Third, the future studies should adjust the sampling design to provide more stable estimates for tier II homes.

It was surprising that a very small percentage of FDCHs (7.4 percent of the sampling frame and 6.2 percent of the sampled homes) were verified by sponsors using Census data. Given the ease with which FDCH addresses could be verified using Census data, it was unexpected that sponsors verified such a small proportion of their homes using this method. It was also found that some sponsors failed to match some of the tier II FDCHs to Census data, which resulted in underpayment errors. From an independent review of tiering certifications, it was found that almost half of FDCHs currently tiered by sponsors based on school, income, or categorical eligibility were independently verified using Census data (Table 6-1). Unlike determinations that are based on income or program eligibility, which have to be validated each year, determinations based on geography remain valid for five years. Therefore, if sponsors were to check for geographic eligibility before reviewing income or program documentation, they would likely approve the majority of FDCHs for a five-year period, eliminating the requirement to conduct annual reviews. This would greatly reduce the burden on sponsors and improve the accuracy of tiering determinations.

Table 6-1. The number of tier I FDCHs in the sample certified and verified by different sources

	Certification Method of Tier I		Tier I Verified by Census	
	# of FDCHs	Percent	# of FDCHs	Percent
Census	40	6.2%	29	74.4%
Income	91	14.0%	42	46.7%
Categorical Eligibility	18	2.8%	8	44.4%
School	577	88.8%	271	48.0%
TOTAL	**650**	**100%**		

Note: a FDCH could have more than one certification method.

However, in order to minimize errors, the geographic verification requires a user friendly, interactive, web-based system that sponsors could easily use to verify homes. This is especially relevant for the new rules that allow eligibility based on the weighted average of adjacent CBGs, which were difficult for some sponsors to verify and thus resulted in errors. The existing FNS web tool for Census eligibility currently does not have built-in determinations for adjacent CBGs and requires a manual approach, which could be exhaustive in some CBGs with a large number of adjacent CBGs[30]. During the independent verification process, it was reported that one sponsor made a mistake calculating adjacent CBGs by hand. Therefore, the study's algorithm for establishing eligibility based on adjacent CBGs could be integrated into FNS Census tool to automate this calculation. Furthermore, it was also found that some sponsors made errors by misinterpreting the eligibility flags provided by the existing Census verification tool[31], which suggests that it might not be user friendly.

In addition, there are no existing tools that use school data for verifications. During independent verification, it was observed that most of the sponsors were contacting school districts, departments of education, departments of transportation, or Google and local websites to get school boundaries of attendance areas. Similarly, most of the sponsors used departments of education F/RP data to verify their FDCHs. This could be a time consuming and error-prone process, especially if a school district does not have the web search tool to display school boundaries for a given address. In such a case, PDF maps with school boundaries are used by sponsors to locate school attendance area for an address, which is a burdensome process. These highlight the importance of developing a web-based school tool to assist sponsors with verifications using school data.

Census and school verification tools and algorithms developed for this study could be modified and implemented as a user-friendly, web-based interface that would allow sponsors to quickly check tier I verifications using an FDCH's address or a batch of addresses. In addition, it is important to conduct future qualitative and quantitative surveys of sponsors to examine which census and school verification systems and databases they use and their views of and experiences with these systems. These future studies could focus on describing the current verification methods used by sponsors, the time and effort required by each method, and potential errors associated with each method. This will help to determine sponsors' specific needs for the Census and school verification systems and to develop the most useful interface.

In addition, the future studies should increase the sample of tier II FDCHs. The sampling design of the study closely followed the methodology used in the previous assessments of the CACFP sponsors' tiering determinations (Appendix C). Therefore, the estimates of tier II FDCHs' error rates and cost of misclassifications for this and the previous studies have large confidence intervals and fluctuate greatly from year to year. The future studies should increase the sample size for the tier II FDCHs by

[30] http://www.fns.usda.gov/areaeligibility; http://www.fns.usda.gov/capacitybuilder; https://www.youtube.com/watch?v=JbPDT_7xpSo&feature=youtu.be

[31] http://frac.org; http://www.fairdata2000.com/CACFP/

oversampling. This would ensure that the sampling design and comparability to previous studies are maintained, while estimates for tier II FDCHs' are reliable, stable, and valid. This will also allow for future ad hoc analyses with respect to tier II FDCHs. Another strategy for obtaining more reliable estimates of Tier II FDCH error rates would be to combine data from all ten assessments and then analytically model tier II error rates over time. Unfortunately, due to the number and nature of legislative and policy changes to tiering classifications over time, the units sampled in each assessment are not necessarily comparable. In addition, the low sample sizes of Tier II FDCHs each year would still make it difficult to pursue a model-based strategy and get reliable estimates of model parameters.

Finally, in considering the implications of this assessment, it is important to acknowledge that tiering determinations are only one of several potential causes of improper payments in the CACFP. If tiering determinations were the sole source of improper payments, the CACFP would fall below the IPIA's reporting threshold, which mandates reports for programs with improper payments that both exceed $10 million per year and constitute 2.5 percent of total payments. The CACFP has several other potential sources of erroneous payments to FDCHs, including errors in determining eligibility of children in tier II FDCHs for tier I meals, meal-claiming errors by providers, and meal claim processing errors by sponsors. Unfortunately, none of the previous studies attempted to measure these potential sources of error, likely due to the difficulties in operationalizing, measuring, and collecting data for these potential error sources. Furthermore, this assessment does not address erroneous payments to childcare centers or adult day care programs. Thus, the estimates of this assessment do not represent the full extent of improper payments in the CACFP.