



Clearance Report

Direct Certification with Medicaid for Free and Reduced-Price Meals (DCM-F/RP) Demonstration, Year 2

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CONTENTS

EXECUTIVE SUMMARY	xi
A. The school meals programs and direct certification	xi
B. Demonstrations using Medicaid data for direct certification	xii
C. Evaluation of the DCM-F/RP demonstration	xiii
D. Summary of key findings	xiii
E. Limitations	xvii
F. Summary and next steps	xviii
I. INTRODUCTION	1
A. The school meal programs and direct certification	1
B. Demonstrations using Medicaid data for direct certification	2
C. Evaluations of the demonstrations	6
D. Overview of report	7
II. METHODS	9
A. Sample	9
B. Data collection	10
C. Key outcome measures	11
1. Certification outcomes	11
2. Participation outcomes	12
3. Federal reimbursement outcomes	13
4. State administrative cost outcomes	14
D. Analysis methods	14
E. Limitations	15
III. EFFECTS ON CERTIFICATION OUTCOMES	19
A. Effects on SY 2017–2018 certification outcomes	20
1. Effects on certification for free meals	21
2. Effects on certification for reduced-price meals	23
3. Effects on CEP participation	26
B. Effects on certification outcomes across demonstration years	28
1. Effects on certification for free meals across demonstration years	29
2. Effects on certification for reduced-price meals across demonstration years	31

C.	Direct certification match results	31
1.	Free-eligible Medicaid matches	32
2.	Reduced-price-eligible Medicaid matches	33
IV.	EFFECTS ON PARTICIPATION OUTCOMES.....	37
A.	Effects on SY 2017–2018 participation outcomes	37
1.	Effects on NSLP outcomes.....	38
2.	Effects on SBP participation outcomes	41
B.	Effects on participation outcomes across demonstration years	43
1.	Effects on NSLP outcomes across demonstration years	44
2.	Effects on SBP outcomes across demonstration years	46
C.	Comparisons with certification findings	48
V.	EFFECTS ON FEDERAL REIMBURSEMENT OUTCOMES.....	49
A.	Effects on SY 2017–2018 Federal reimbursement outcomes.....	50
1.	Effects on NSLP outcomes.....	50
B.	Effects on Federal reimbursement outcomes across demonstration years	53
1.	Effects on NSLP outcomes across demonstration years	53
2.	Effects on SBP outcomes across demonstration years	55
C.	Comparisons with participation findings	56
VI.	EFFECTS ON STATE ADMINISTRATIVE COST OUTCOMES.....	57
A.	Total State administrative costs in SY 2017–2018.....	58
B.	Start-up and ongoing costs	59
C.	Direct labor costs, direct costs other than labor, and indirect costs	62
D.	Costs per student enrolled or directly certified	63
E.	State administrative costs across demonstration years	65
VII.	IMPLEMENTATION PROCESSES AND CHALLENGES.....	69
A.	DCM-F/RP processes.....	69
1.	Planning and preparation	71
2.	Identifying eligible children	73
3.	Matching Medicaid and student enrollment records.....	74
4.	Testing and monitoring	77
5.	Dissemination of match results to districts	78
6.	Certification of DCM-F/RP matches	78
7.	Extension of certification to other students in the household	79

8.	Maintaining the certification hierarchy	80
9.	Timing of DCM-F/RP processes	81
B.	Burden	83
1.	State level	84
2.	District level	85
C.	Challenges and resolutions	86
D.	Best practices and reported factors affecting matching success	89
1.	Student and household characteristics.....	89
2.	District-level factors	90
3.	State-level factors	90
VIII.	CONCLUSIONS AND LIMITATIONS.....	93
A.	Summary of key findings	93
1.	Certification, participation, and Federal reimbursements	93
2.	State administrative costs.....	96
3.	Implementation processes and challenges	96
B.	Analyses planned for Year 3 of the evaluation.....	97
	REFERENCES.....	99
APPENDIX A	METHODS	
APPENDIX B	SUPPLEMENTAL TABLES RELATED TO CERTIFICATION OUTCOMES	
APPENDIX C	SUPPLEMENTAL TABLES RELATED TO PARTICIPATION OUTCOMES	
APPENDIX D	SUPPLEMENTAL TABLES RELATED TO FEDERAL REIMBURSEMENT COST OUTCOMES	
APPENDIX E	SUPPLEMENTAL TABLES AND FIGURES RELATED TO STATE ADMINISTRATIVE COST OUTCOMES	
APPENDIX F	SUPPLEMENTAL TABLES AND FIGURES RELATED TO IMPLEMENTATION PROCESSES AND CHALLENGES	

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TABLES

I.1. Study objectives	7
II.1. Year 2 analysis sample	10
III.1. Research questions and objectives related to certification and data-matching outcomes	19
III.2. Effects of DCM-F/RP on certification for free meals in SY 2017–2018	22
III.3. Effects of DCM-F/RP on certification for reduced-price meals in SY 2017–2018	24
III.4. Effects of DCM-F/RP on participation in the CEP in SY 2017–2018	27
III.5. Effects of DCM-F/RP on certification for free meals across two years for Cohort 1 States	29
III.6. Effects of DCM-F/RP on certification for reduced-price meals across two years for Cohort 1 States	31
III.7. Full direct certification match results for students matched to DCM-eligible Medicaid records in SY 2017–2018, excluding students attending special provision schools.....	33
III.8. Full direct certification match results for students matched to DCM-eligible Medicaid records in SY 2017–2018, including students attending special provision schools.....	35
IV.1. Research questions and objectives related to participation, Federal reimbursement, and State administrative costs	38
IV.2. Effects of DCM-F/RP on NSLP participation in SY 2017–2018	39
IV.3. Effects of DCM-F/RP on SBP participation in SY 2017–2018	42
IV.4. Effects of DCM-F/RP on NSLP participation across two years for Cohort 1 States	45
IV.5. Effects of DCM-F/RP on SBP participation across two years for Cohort 1 States.....	47
V.1. Effects of DCM-F/RP on NSLP Federal reimbursement costs in SY 2017–2018	51
V.2. Effects of DCM-F/RP on SBP Federal reimbursement costs in SY 2017–2018	52
V.3. Effects of DCM-F/RP on NSLP Federal reimbursement costs across two years for Cohort 1 States	54
V.4. Effects of DCM-F/RP on SBP Federal reimbursement costs across two years for Cohort 1 States	55
VI.1. State administrative costs of DCM-F/RP in SY 2017–2018, by agency type	60
VI.2. Percentage of State DCM-F/RP administrative costs in SY 2017–2018 by cost and agency type.....	63
VI.3. State administrative costs of DCM-F/RP per student enrolled or directly certified in SY 2017–2018	65
VI.4. Total State administrative costs of DCM-F/RP across two years for Cohort 1 States	66
VII.1. Research questions and objectives related to DCM-F/RP processes	70
VII.2. Data elements used in DCM-F/RP matching	76

VII.3. DCM-F/RP match and data update frequency	82
VII.4. Staff hours spent on DCM-F/RP in SY 2017–2018, by State and agency type	84
A.1. Numbers of students and meals served in sample, by State and school year.....	A-4
A.2. State agencies included in data collection, by State and agency type.....	A-5
A.3. NSLP and SBP Federal reimbursement rates, SY 2015–2016, SY 2016–2017, and SY 2017–2018	A-8
A.4. Interview topics	A-11
A.5. Regression covariates (weighted by enrollment)	A-17
B.1. Certification for free meals (unadjusted).....	B-3
B.2. Certification for reduced-price meals (unadjusted).....	B-4
B.3. Participation in the CEP (unadjusted).....	B-5
B.4a. Distribution of students by meal certification category in California (unadjusted).....	B-6
B.4b. Distribution of students by meal certification category in Connecticut (unadjusted)	B-7
B.4c. Distribution of students by meal certification category in Florida (unadjusted)	B-7
B.4d. Distribution of students by meal certification category in Indiana (unadjusted)	B-8
B.4e. Distribution of students by meal certification category in Iowa (unadjusted).....	B-9
B.4f. Distribution of students by meal certification category in Massachusetts (unadjusted)	B-9
B.4g. Distribution of students by meal certification category in Michigan (unadjusted).....	B-10
B.4h. Distribution of students by meal certification category in Nebraska (unadjusted).....	B-11
B.4i. Distribution of students by meal certification category in Texas (unadjusted).....	B-12
B.4j. Distribution of students by meal certification category in Utah (unadjusted).....	B-13
B.4k. Distribution of students by meal certification category in Virginia (unadjusted)	B-14
B.4l. Distribution of students by meal certification category in Washington (unadjusted)	B-15
B.4m. Distribution of students by meal certification category in West Virginia (unadjusted).....	B-16
B.4n. Distribution of students by meal certification category in Wisconsin (unadjusted).....	B-17
B.5. Medicaid match rates in SY 2017–2018.....	B-18
C.1. NSLP participation outcomes (unadjusted)	C-3
C.2. SBP participation outcomes (unadjusted)	C-4
D.1. NSLP Federal reimbursement outcomes (unadjusted)	D-3
D.2. SBP Federal reimbursement outcomes (unadjusted)	D-4
E.1. State administrative costs of DCM-F/RP in SY 2017–2018, by agency type.....	E-3

E.3. Average monthly ongoing State administrative costs of DCM-F/RP across two years for Cohort 1 States	E-7
E.4. State administrative costs of DCM-F/RP across two years for Cohort 1 States, by State and agency type	E-8
F.1. Methods used by States and districts to extend DCM-F/RP certification status to other students in the household	F-3
F.2. Methods designed to maintain the certification hierarchy.....	F-4
F.3. Reported effects of DCM-F/RP on staff time burdens	F-21
F.4. DCM-F/RP challenges and resolutions for demonstration States and districts.....	F-23
F.5. Factors affecting matching success in DCM-F/RP demonstration States and districts	F-24
F.6. Strategies for improving DCM-F/RP matching success	F-26

FIGURES

Figure ES.1. Percentage of enrolled students directly certified in SY 2017–2018, for States that did not participate in previous DCM demonstration	xvi
Figure I.1. Timing of initial DCM-F/RP match in each State	4
Figure I.2. State Medicaid income eligibility limits.....	5
Figure III.1. State Medicaid income eligibility limits and rates of direct certification for reduced-price meals	25
Figure III.2. Effects of DCM-F/RP on certification and CEP percentages in SY 2017–2018 for Cohort 1 States new to DCM in SY 2016–2017	28
Figure III.3. Effects of DCM-F/RP on certification for free and reduced-price meals across two years for Cohort 1 States	30
Figure IV.1. Meals served per student per day in Cohort 1 States	46
Figure V.1. Reimbursements per student per day in Cohort 1 States	54
Figure VI.1. Average State administrative costs of DCM-F/RP across two years	58
Figure VI.2. Cohort 2 start-up and ongoing State administrative costs of DCM-F/RP	61
Figure VI.3. Average monthly ongoing State administrative costs of DCM-F/RP across two years for Cohort 1 States	67
Figure VII.1. DCM-F/RP certification hierarchy.....	80
Figure VIII.1. Percentage of enrolled students directly certified in SY 2017–2018, for States that did not participate in previous DCM demonstration	95
Figure E.1. Cohort 2 start-up State administrative costs of DCM-F/RP, by agency type	E.6
Figure F.1. California profile.....	F.6

Figure F.2. Connecticut profile	F.7
Figure F.3. Florida profile	F.8
Figure F.4. Indiana profile	F.9
Figure F.5. Iowa profile	F.10
Figure F.6. Massachusetts profile	F.11
Figure F.7. Michigan profile.....	F.12
Figure F.8. Nebraska profile.....	F.13
Figure F.9. Nevada profile.....	F.14
Figure F.10. Texas profile	F.15
Figure F.11. Utah profile	F.16
Figure F.12. Virginia profile	F.17
Figure F.13. Washington profile	F.18
Figure F.14. West Virginia profile.....	F.19
Figure F.15. Wisconsin profile.....	F.20

EXECUTIVE SUMMARY

The demonstration of Direct Certification with Medicaid for Free and Reduced-Price Meals (DCM-F/RP) allows authorized States and school districts to use information from Medicaid data files to identify students eligible to receive meals under the National School Lunch Program (NSLP) and School Breakfast Program (SBP) for free or at a reduced price. DCM-F/RP expanded the number of students certified to receive free school lunches and breakfasts without needing to complete an application and, for the first time, made it possible to certify students for reduced-price school meals without an application. DCM-F/RP could also increase the total numbers of students certified to receive free or reduced-price meals, the numbers of reimbursable school meals served, Federal reimbursement costs, and the costs that States incur for administering the NSLP and SBP. The U.S. Department of Agriculture (USDA) Food and Nutrition Service (FNS) contracted with Mathematica to examine the effects of DCM-F/RP on these and other outcomes, and to describe the implementation experiences of States and districts.

A. The school meals programs and direct certification

The NSLP is the largest child nutrition program in the United States, providing lunches to almost 30 million students each school day in Federal fiscal year (FY) 2018. Along with the SBP, the NSLP is a cornerstone of the government's efforts to provide nutritious meals to schoolchildren and an essential resource for many families. All students enrolled in schools participating in the NSLP or SBP are eligible to receive subsidized school meals, but the meal reimbursements that the USDA provides are much larger for meals served to students who are certified to receive meals for free or at reduced prices. Districts use two methods to certify students for free or reduced-price meals:

- 1. Certification through application.** For students to be certified based on an application, households must either provide detailed information on household size and income or demonstrate that they are “categorically eligible” because they participate in one of several public assistance programs, such as the Supplemental Nutrition Assistance Program (SNAP), Temporary Assistance for Needy Families (TANF), or the Food Distribution Program on Indian Reservations (FDPIR). School district staff assess the application information to determine whether the household meets eligibility requirements.
- 2. Direct certification.** In the direct certification process, State agency or school district staff match administrative records from programs that confer categorical eligibility with student enrollment records to identify and automatically certify eligible students for free school meals. All districts that certify students for free or reduced-price meals are required to

conduct direct certification with SNAP and encouraged to also directly certify students in TANF and FDPIR households.¹

Some schools and districts use alternative procedures that do not involve certifying individual students each year, and instead serve meals at no cost to all students. Districts participating in Provision 2 or Provision 3 conduct certification in a base year and are reimbursed in later years based on claims from that base year. Under the Community Eligibility Provision (CEP), authorized school districts and schools in high-poverty areas receive the Federal free reimbursement rate for between 64 and 100 percent of meals served—depending on the percentage of “identified students,” those certified for free meals through means other than applications—and receive the lower, paid reimbursement rate for the remaining meals.

B. Demonstrations using Medicaid data for direct certification

Using Medicaid data for direct certification presents an opportunity to reach additional students. However, because Medicaid participation does not confer categorical eligibility, States and districts must use income information from Medicaid eligibility or enrollment files to determine whether a student is eligible for free or reduced-price meals under the DCM demonstrations.

The Healthy, Hunger-Free Kids Act of 2010 (HHFKA; P.L. 111-296) required FNS to conduct a demonstration that added Medicaid to the list of programs used to directly certify students for free school meals in selected States and districts. Under this demonstration, students were eligible for free meals if they were enrolled in Medicaid and in a household with Medicaid gross income not exceeding 133 percent of the Federal Poverty Level (FPL) for the family size used for determining Medicaid eligibility. Five States began conducting DCM in school year (SY) 2012–2013, and two others joined the demonstration over the subsequent two years.

Beginning in SY 2016–2017, FNS initiated a new demonstration that differs from the previous DCM demonstration in several ways. First, the income threshold for free meal certification based on Medicaid data was set at 130 percent of the FPL, aligning with the standards for establishing NSLP/SBP eligibility based on income reported on an application. Second, the DCM-F/RP States also use the Medicaid data to identify students in households eligible to receive reduced-price meals and directly certify them at that level. Students can be certified for reduced-price meals under DCM-F/RP if their household income is between 130 and 185 percent of the FPL. Finally, guidelines for assessing eligibility were revised to reflect changes in Medicaid income and household definitions under the Patient Protection and Affordable Care Act of 2010.

Fifteen States participated in the DCM-F/RP demonstrations in SY 2017–2018. Cohort 1 comprises the 6 States that began conducting DCM-F/RP statewide in SY 2016–2017: Florida, Massachusetts, Nebraska, Utah, Virginia, and West Virginia. Cohort 2 includes the 8 new States

¹ Students documented as foster children, homeless, migrant, runaway, or participating in Head Start can also be directly certified for free school meals.

joining in SY 2017–2018: Connecticut, Indiana, Iowa, Michigan, Nevada, Texas, Washington, and Wisconsin. California expanded its implementation of DCM-F/RP from 14 districts in the first year to statewide in the second year and is treated as a Cohort 2 State for most analyses.

C. Evaluation of the DCM-F/RP demonstration

FNS contracted with Mathematica to conduct a study of the DCM-F/RP demonstration. Findings from the first year of the evaluation, which covered experiences during SY 2016–2017, are presented in an earlier report (Hulseley et al. 2019). The current report describes the experiences of States and districts during SY 2017–2018 and examines outcomes related to certification, participation, and costs through descriptive and comparative analyses. A subsequent report will examine outcomes two years later.

The effects of the demonstration on percentages of students certified, participation (numbers of meals served), and Federal reimbursements are measured by comparing the outcomes in the year before the demonstration to those same outcomes in SY 2017–2018. In this pre-post design, although the statistical model used to estimate changes accounts for the influence of included time-varying characteristics (such as local economic conditions) and any time-invariant characteristics (such as whether a district is public or private) on the outcomes of interest, time-varying factors not included in the model and unrelated to the demonstration (such as changes in student preferences for school meals) could still be driving some of the observed changes in outcomes.

Because Florida and Massachusetts had conducted DCM for free meals statewide during the baseline year under the previous DCM demonstration, analyses of effects related to free meals are not presented for those two States. Iowa was excluded from the analysis of one certification outcome because the necessary data were unavailable for that State. In addition, Nevada was excluded from analyses of certification, participation, and Federal reimbursements because it did not certify any students through DCM-F/RP in SY 2017–2018.

D. Summary of key findings

Implementation processes and challenges. States and districts integrated DCM-F/RP into their usual direct certification processes, and Cohort 1 States generally continued to use the same procedures they put into place during their first year of the demonstration. Key differences for Cohort 2 States to incorporate DCM-F/RP included the need to assess eligibility based on income and household size information in the Medicaid files and the need to add new program codes to their systems to indicate DCM-free and DCM-reduced-price. The expansion of the demonstration into additional States saw somewhat more variation in approaches across States, including which agency conducted each key step. For example, in three Cohort 2 States, staff of child nutritional agencies, rather than Medicaid eligibility agencies, assess eligibility for DCM-F/RP.

While preparing for the demonstration, Cohort 2 State agencies encountered challenges similar to those reported by Cohort 1 States in their first year, including difficulties identifying which Medicaid aid categories contained the information needed to assess students' eligibility for DCM-F/RP. The process of revising interagency agreements to include DCM-F/RP and creating a Medicaid data extract containing eligible children could be time-consuming, resulting in delays in implementation in some States. At the district level, a key challenge was local systems that track school meal certification information not recognizing Medicaid as a program option or that direct certification could confer reduced-price status, requiring staff to manually certify DCM-F/RP matches. Cohort 1 States reported resolving some of the challenges that had persisted during their first year of implementation.

Certification. Substantial numbers of students were directly certified through DCM-F/RP in SY 2017–2018. Almost 1 million students were directly certified for free meals based on Medicaid data across the 12 States that participated in the DCM-F/RP demonstration but not in the previous DCM demonstration. An additional 259,000 students were directly certified for reduced-price meals based on DCM-F/RP in the 14 States across cohorts that conducted DCM-F/RP in SY 2017–2018.

All 12 States that did not participate in the previous DCM demonstration directly certified students for free meals based on DCM-F/RP, ranging from 0.6 to 10.5 percent of students (Figure ES.1). For comparison, between 10.1 and 27.5 percent of students were directly certified for free meals based on any program in these States. All 14 demonstration States directly certified students for reduced-price meals based on DCM-F/RP in SY 2017–2018; the percentages ranged from less than 0.1 percent to 5.4 percent of enrolled students. For these two outcomes, because no students were certified through DCM-F/RP in these States in the baseline year, the full change between baseline and SY 2017–2018 is attributable to the demonstration, although experiences in other years or other States could differ.

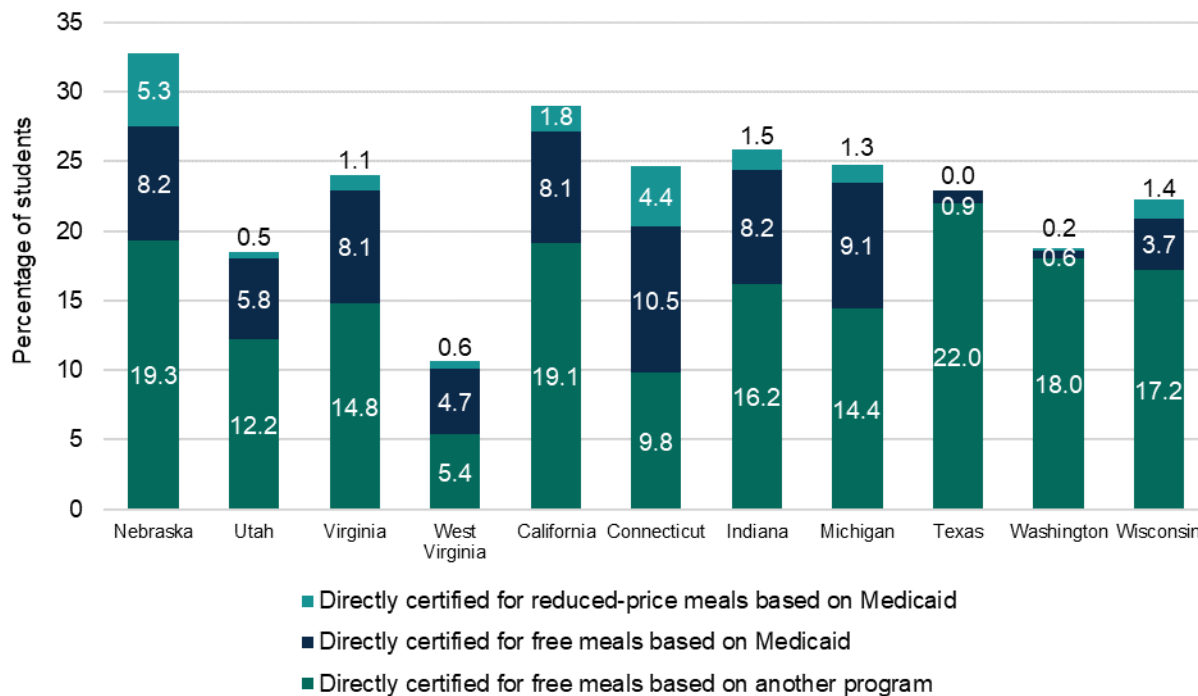
Although some of these students would have been certified for free or reduced-price meals by application in the absence of the demonstration, overall certification rates improved during DCM-F/RP implementation in some States. Seven of the 12 States that did not participate in the previous DCM demonstration experienced statistically significant increases (of between 2.5 and 9.0 percentage points) in the total percentage of students certified for free meals. Although 1 State saw a statistically significant decrease in this outcome, it was due to even larger increases in the percentage of students attending CEP schools, which are not included in certification counts. The total percentage of students certified for reduced-price meals also increased significantly in 5 of the 14 States but decreased significantly in 5 others. Mixed results on this outcome are expected as DCM-F/RP can move students from reduced-price to free status as well as from paid to reduced-price status.

Participation. The increases in certification rates translated into increases, relative to the baseline year, in the percentage of lunches served for free in most States but had more mixed

effects on other participation outcomes. For the NSLP, the percentage of lunches served for free increased (by between 0.9 and 8.0 percentage points) in all but 3 of the 12 States for which the outcome was measured, but decreased (by 1.4 percentage points) in 1 State and did not change significantly in the remaining 2. For the SBP, the percentage of breakfasts served for free increased in 5 States (by between 1.3 and 6.2 percentage points) but decreased in 1 (Virginia, by 3.2 percentage points) and did not change significantly in the other 6 States for which the outcome was measured. However, the percentage of lunches served at a reduced price decreased in 7 States (by between 0.7 and 1.9 percentage points) and only increased in 1 State (Massachusetts, by 2.6 percentage points). Similarly, the percentage of breakfasts served at a reduced price decreased in 7 States (by between 0.6 and 2.1 percentage points) and only increased in 1 (Indiana, by 1.0 percentage points); the other 6 States experienced no statistically significant change in this outcome between the baseline year and SY 2017–2018. For both breakfasts and lunches, in each State where the percentage of meals served for free increased, this increase was larger than any decrease in the percentage served at a reduced price, indicating an increase in the overall percentage of meals served for free or at a reduced price.

DCM-F/RP was associated with mixed effects on school meal participation rates (the number of meals served per student per school day). Three States experienced statistically significant increases in the NSLP participation rate between the baseline and SY 2017–2018, ranging from 0.02 to 0.07 lunches served per student per day, which translate to between 1.8 and 6.6 percentage point increases. Five States (the same 3 plus 2 others) had significant increases in the SBP participation rate, ranging from 0.01 to 0.04 breakfasts per student per day. However, 3 other States experienced statistically significant decreases in the NSLP participation rate (of between 0.01 and 0.03 lunches per student per day), and 1 other saw a significant decrease in the SBP participation rate (of 0.01 breakfasts per student per day). The decreases between the baseline year and SY 2017–2018 were inconsistent with the anticipated direction of the effect of the demonstration and might reflect changes in factors unrelated to DCM-F/RP. Although the statistical model used to estimate changes accounts for the influence of included time-varying characteristics (such as local economic conditions) and any time-invariant district characteristics (such as type of district) that might affect outcomes, the model cannot control for unmeasured time-variant factors, such as other changes to school or meal procedures or changes in student preferences for school meals. In addition, the small magnitude of some of the changes in meals served per student per day limits the practical importance of some findings for this outcome. For example, 0.01 breakfasts per student per day translates into less than two additional meals per student across a full school year.

Figure ES.1. Percentage of enrolled students directly certified in SY 2017–2018, for States that did not participate in previous DCM demonstration



Source: Administrative records provided by State administrators.

Notes: Each outcome in this figure reflects the percentage of students who attend schools that certify individual students and are directly certified based on the specified program, among all students enrolled in the district. Iowa is excluded from this figure because data for one outcome are unavailable. Values in this figure are regression adjusted.

Federal reimbursement costs. The findings on Federal reimbursements were similarly mixed, but more States saw increases than decreases. For the NSLP, 10 States experienced statistically significant increases in the blended reimbursement rate (BRR), defined as average reimbursement per meal served, ranging from 2 cents to 18 cents, and 7 States had increases in reimbursements per student per day, from 2 cents to 13 cents. However, the BRR decreased by a statistically significant 4 cents in 1 State, and reimbursements per student per day decreased by a statistically significant 6 cents in another. Fewer States saw significant changes in SBP reimbursements. The SBP BRR and reimbursements per student per day each increased significantly, by between 1 cent and 10 cents, in 6 States, but decreased—by somewhat larger amounts—in 1 (for reimbursements per student per day) or 2 (for the BRR) States, and saw no significant changes in other States. Similar to the participation findings, these decreases between the baseline year and SY 2017–2018 were inconsistent with the anticipated effect of the demonstration and might reflect changes in factors unrelated to DCM-F/RP.

State administrative costs. The administrative costs incurred by State agencies in SY 2017–2018 to implement DCM-F/RP (over and above other certification costs) varied widely and were

considerably lower in Cohort 1 States, which were in their second year of implementation. Costs ranged from \$0 to approximately \$16,000 in Cohort 1 States and from around \$30,000 to \$373,000 in Cohort 2 States. This cohort difference was due in part to the fact that Cohort 1 States did not incur any start-up costs in SY 2017–2018, because they had completed start-up activities in the prior year. Over 90 percent of the total administrative costs incurred by Cohort 2 States were start-up costs, a pattern similar to that of Cohort 1 States during their first year of DCM-F/RP implementation. In addition, costs for ongoing activities after the first DCM-F/RP match were lower on average in Cohort 1 States than Cohort 2 States.

The division of costs between child nutrition and Medicaid eligibility agencies varied by State, but on average Medicaid eligibility agencies incurred higher costs. This was driven in part by the relatively large Medicaid eligibility agency costs in the four States with the largest total State administrative costs in SY 2017–2018: Texas, Wisconsin, Nevada, and Connecticut. In the two States with the highest costs (Texas and Wisconsin), the largest expenditure—comprising the majority of their total costs—was for developing the queries for producing the Medicaid data extracts needed for DCM-F/RP.

E. Limitations

Limitations of the DCM-F/RP demonstration design and available data necessitate caution in interpreting the findings. An experimental design, like that used for the first DCM demonstration, was not possible for the new demonstration, so the effects of DCM-F/RP are estimated using less rigorous methods, as discussed in Section C.

The timing of implementation in Cohort 2 States also affected both the potential of the demonstration to affect outcomes in SY 2017–2018 and the data available for the analysis. Only 1 of the 8 States in their first year of the demonstration conducted their first DCM-F/RP match by the beginning of the school year. Nevada was excluded from some analyses because it did not certify students through DCM-F/RP until the next school year. For other States that conducted their first DCM-F/RP match after October 2017, limited availability of data meant that the baseline certification outcomes are measured as of a different month than the DCM-F/RP year data. If certification rates increased over the school year, those changes could be confounded with the effects of DCM-F/RP on some outcome measures.

Other limitations relate to the data available. Specific certification data elements were unavailable for 3 States, leading to (1) Iowa's exclusion from analyses of one key outcome and (2) the estimation of two key outcome measures for Nebraska and one for Indiana by combining data sources. In addition, some districts were excluded from the analysis sample due to incomplete or inconsistent administrative data (notably in Washington and Texas), and other undetected errors could remain in the data. Finally, findings related to State administrative costs and to State and district processes and challenges are based on staff reports, which reflect the perspectives of respondents and could be subject to recall error.

F. Summary and next steps

In summary, the evaluation found that DCM-F/RP resulted in substantial numbers of students directly certified to receive free or reduced-price meals based on Medicaid data, comprising almost one-third of all students directly certified for free or reduced-price meals. Because Medicaid is lowest in priority among programs used for direct certification, these students would not have been directly certified in the absence of the demonstration. Although some of these students would have been certified by application in the absence of DCM-F/RP, the total percentage of students certified for free meals grew between the baseline year and SY 2017–2018 in most demonstration States, and the total percentage of students certified for reduced-price meals grew in some States. These increases in certification rates did not translate into consistent increases in participation (meals served) or Federal reimbursements, however. State administrative costs for implementing DCM-F/RP varied widely, but the large majority of the costs were for start-up activities (which only Cohort 2 States incurred in SY 2017–2018) rather than ongoing activities. Cohort 2 States and districts experienced some challenges during their first year of the DCM-F/RP demonstration, and several conducted their first DCM-F/RP late in the school year. The next report of the evaluation will focus on SY 2019–2020, at which time all 15 demonstration States will have completed at least one year of DCM-F/RP.

I. INTRODUCTION

The demonstration of Direct Certification with Medicaid for Free and Reduced-Price Meals (DCM-F/RP) allows authorized States and school districts to use information from Medicaid data files to identify students eligible to receive meals under the National School Lunch Program (NSLP) and School Breakfast Program (SBP) for free or at a reduced price. The Food and Nutrition Service (FNS) contracted with Mathematica to conduct a study of the first years of this demonstration to describe the implementation process and explore the effects on certification, participation, Federal reimbursements, and State administrative costs. This report presents the findings from the second year of the demonstration evaluation, school year (SY) 2017–2018.

A. The school meal programs and direct certification

The NSLP is the largest child nutrition program in the United States, providing lunches to almost 30 million students each school day in Federal fiscal year (FY) 2018 (FNS 2019). Along with the SBP, the NSLP is a cornerstone of the government’s efforts to provide nutritious meals to schoolchildren and an essential resource for many families. All students enrolled in schools participating in the NSLP or SBP are eligible to receive subsidized school meals, but the meal reimbursements that the U.S. Department of Agriculture (USDA) provides are much larger for meals served to students who are certified to receive meals for free or at reduced prices. Students in families with incomes at or below 130 percent of the Federal poverty level (FPL)—\$31,980 for a family of four during SY 2017–2018—are eligible for free meals, as are students who participate in one of several public assistance programs. Reduced-price meals are provided to students whose families have incomes between 130 and 185 percent of the FPL (between \$31,980 and \$45,510 for a family of four during SY 2017–2018). Districts use two methods to certify students for free or reduced-price meals:

1. **Certification through application.** For students to be certified based on an application, households must either provide detailed information on household size and income or demonstrate that they are categorically eligible because they participate in one of several public assistance programs, such as the Supplemental Nutrition Assistance Program (SNAP), Temporary Assistance for Needy Families (TANF), or the Food Distribution Program on Indian Reservations (FDPIR). School district staff assess the application information to determine whether the household meets eligibility requirements.
2. **Direct certification.** In the direct certification process, State agency or school district staff match administrative records from programs that confer categorical eligibility with student enrollment records to identify and automatically certify eligible students for free school meals. All districts and private schools that certify students are required to conduct direct certification with SNAP at least three times each year. FNS encourages more frequent direct certification as well as direct certification of students in TANF and FDPIR households.²

² Students documented as foster children, homeless, migrant, runaway, or participating in Head Start can also be directly certified for free school meals.

Direct certification is intended to ensure that students receive the meal benefits for which they are eligible and improve program integrity by reducing program error. It also relieves some of the burden that applying for school meals programs places upon parents, and in turn reduces the burden that reviewing and approving or denying those applications places upon school district staff.

Some schools and districts use alternative procedures that do not involve certifying individual students each year and instead serve meals at no cost to all students. Districts participating in Provision 2 or Provision 3 conduct certification in a base year and are reimbursed in later years based on claims from that base year.³ Under the Community Eligibility Provision (CEP), authorized school districts and schools in high-poverty areas receive the Federal free reimbursement rate for up to 100 percent of meals served, depending on the percentage of identified students, those eligible to be certified for free meals through means other than applications.⁴

B. Demonstrations using Medicaid data for direct certification

More than 10.1 million students were directly certified for free school meals in SY 2015–2016 based on SNAP and all other programs used for direct certification (Conway et al. 2017). Using Medicaid data to directly certify students presents an opportunity to reach additional eligible students. However, because Medicaid participation itself does not confer categorical eligibility, States and districts authorized to conduct direct certification with Medicaid (DCM) must use income information from Medicaid eligibility or enrollment files to determine whether a student is income-eligible for free or reduced-price meals.

The Healthy, Hunger-Free Kids Act of 2010 (HHFKA; P.L. 111-296) required FNS to conduct a demonstration that added Medicaid to the list of programs used to directly certify students for free school meals in selected States and districts. Under this demonstration, which began in SY 2012–2013, students were eligible for free meals if they were enrolled in Medicaid and in a household with Medicaid gross income not exceeding 133 percent of the FPL. (This first DCM demonstration certified students only for free meals, not for reduced-price meals.) The legislation specified the use of gross income “before the application of any expense, block, or other income disregard” rather than net income for determining eligibility under DCM. However, the eligibility determination relied on the definition of household used by the Medicaid agency,

³ Under Provisions 2 and 3, schools operate a base year in which they serve all meals at no charge but use standard program procedures to certify free and reduced-price-eligible students and count meals by eligibility category. In subsequent (non-base) years, the schools continue to serve all meals at no charge but do not certify students and take only a daily aggregate count of meals served.

⁴ Schools, groups of schools, or entire districts are eligible for the CEP if at least 40 percent of their students in a previous year were identified as eligible for free meals through means other than submitting an application—such as through direct certification. Per-meal reimbursement rates under the CEP are based on the percentage of identified students. The reimbursement rate is computed by multiplying the percentage identified by 1.6, reimbursing the resulting percentage of meals at the free rate, and reimbursing the remaining meals at the paid rate. When 62.5 percent of students are identified, all meals are reimbursed at the free rate.

which can differ from that used in the school meal programs. Under this first demonstration, Florida, Illinois, Kentucky, New York City, and Pennsylvania began conducting DCM in SY 2012–2013, followed by Massachusetts and the rest of New York State in SY 2013–2014, and by California in SY 2014–2015.

Beginning in SY 2016–2017, FNS initiated a new demonstration that authorized selected States and districts to directly certify students for free *and* reduced-price meals using Medicaid data. This DCM-F/RP demonstration differs from the previous DCM demonstration in several ways. First, the income threshold for free meal certification based on Medicaid data was set at 130 percent of the FPL (rather than 133 percent), aligning with the standards for establishing NSLP/SBP eligibility based on income reported on an application.⁵ Second, the DCM-F/RP States also use the Medicaid data to identify students in households eligible to receive reduced-price meals and directly certify them at that level. Students can be certified for reduced-price meals under DCM-F/RP if their household income is between 130 and 185 percent of the FPL. Finally, to reflect changes in Medicaid income and household definitions under the Patient Protection and Affordable Care Act (ACA) of 2010, guidelines for assessing DCM-F/RP eligibility were revised as follows:

- For students receiving Medicaid in categories where income is defined as the sum of the Modified Adjusted Gross Income (MAGI) for each individual included in the household, eligibility is assessed based on MAGI before application of the 5 percent of FPL disregard that is used in assessing eligibility for Medicaid benefits.⁶ This definition covers most Medicaid cases.
- For students receiving Medicaid in aid categories for which MAGI is not used, DCM-F/RP eligibility is assessed based on the family’s gross income before “any expense, block, or disregard”—that is, without applying any State-specific income exclusions or modifications States might use when determining Medicaid eligibility.

Under both definitions, the same income guidelines used for determining eligibility for free or reduced-price meals based on an application are applied to the income information from the Medicaid data file for the household as defined by Medicaid. Specifically, students can be certified for free meals under DCM-F/RP if their household income as determined by Medicaid is at or below 130 percent of the FPL for the family size used for determining Medicaid eligibility and for reduced-price meals if their household income is between 130 and 185 percent of the FPL.

Fifteen States participated second year of the DCM-F/RP demonstration:

⁵ California operates a variation on DCM-F/RP that differs in that the income threshold for free meal eligibility is 133 percent of the FPL.

⁶ When determining Medicaid eligibility based on MAGI, States disregard a portion of the applicant’s income equal to 5 percent of the FPL. Applying this disregard is the equivalent of raising the income eligibility thresholds for Medicaid by 5 percent of FPL.

- Cohort 1 comprises the 6 States that began conducting DCM-F/RP statewide in SY 2016–2017: Florida, Massachusetts, Nebraska, Utah, Virginia, and West Virginia.
- Cohort 2 includes the 8 new States joining in SY 2017–2018: Connecticut, Indiana, Iowa, Michigan, Nevada, Texas, Washington, and Wisconsin.⁷
- California expanded its implementation of DCM-F/RP from 14 districts in the first year to statewide in the second year. California is therefore considered a hybrid State for State-level analyses but a Cohort 2 State for district-level analyses, because the majority of the districts in the state began DCM-F/RP in the second year.

Within each cohort, the point during the school year when students were first certified through DCM-F/RP varied considerably across States (Figure I.1). SY 2017–2018 was the first full year of implementation for most Cohort 1 States, and most Cohort 2 States had not conducted DCM-F/RP by the beginning of that school year.

Figure I.1. Timing of initial DCM-F/RP match in each State



*Participated in the previous DCM demonstration.

†Fourteen districts in California piloted the demonstration beginning in May 2017.

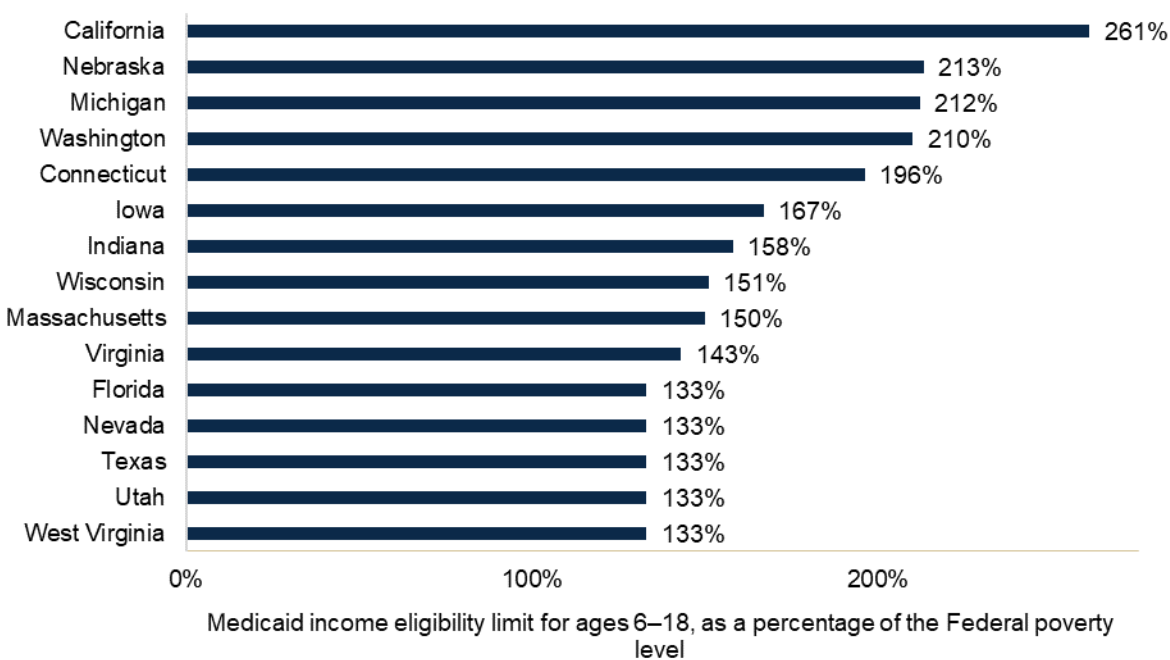
The success of DCM-F/RP depends on the ability of State agencies and school districts to access information on household size and gross income in Medicaid eligibility files, assess children's eligibility based on this information, and match them to student enrollment files. Within the implementation States and districts, two technical factors limit the pool of students that could be reached by the demonstration. First, the potential effect of DCM-F/RP on students' access to free school meals is limited because a large proportion of Medicaid enrollees also receive SNAP benefits or assistance from other programs used to directly certify students for free meals.⁸ If

⁷ Due to delays, Nevada did not certify students through DCM-F/RP until SY 2018–2019. However, the evaluation includes the State's SY 2017–2018 experiences, as discussed in later chapters.

⁸ Medicaid beneficiaries and participants in these other programs do not overlap completely due to differences in eligibility rules and in participation patterns among eligible households. For example, households are generally eligible for SNAP, subject to asset limits, if their gross incomes are at or below 130 percent of the FPL and their

these children are already directly certified, they will not receive any additional benefit from DCM-F/RP. Second, the potential of the demonstration to certify students for reduced-price meals (185 percent of the FPL) depends on the Medicaid eligibility thresholds, which vary by State and Medicaid aid category.⁹ Figure I.2 shows the maximum household income limit for the principal MAGI group—the most common eligibility category—in each demonstration State. In States with Medicaid income limits below 185 percent of the FPL, DCM-F/RP will not be able to reach students with incomes between the Medicaid income limit and 185 of the FPL because they are not eligible for Medicaid. In some States, the Medicaid income limit is only a few percentage points above the threshold for free meals (130 percent of the FPL), resulting in an extremely narrow band of income that could result in certification for reduced-price meals through DCM-F/RP. The limits shown in Figure I.2 are not adjusted to reflect the 5 percent disregard typically applied to MAGI before assessing eligibility for Medicaid, and other Medicaid aid categories have different income limits.

Figure I.2. State Medicaid income eligibility limits



Source: Centers for Medicare & Medicaid Services (2019).

Note: The limits reflected here include Medicaid expansions that are funded by the Children's Health Insurance Program and are not adjusted to reflect the 5 percent disregard typically used to assess eligibility for Medicaid. Eligibility limits are for the primary MAGI group; States have other Medicaid aid categories with different Medicaid income limits.

net incomes (after deductions) are at or below 100 percent of the FPL. In contrast, Medicaid income thresholds differ by State (Figure I.2) and other factors. Households or individuals can also be categorically eligible for SNAP and/or Medicaid benefits—regardless of income—based on other criteria, which differ by program and by State.

⁹ Medicaid aid categories, established by each State, are designations indicating the criteria by which an individual qualifies for Medicaid assistance, including income limits and other eligibility criteria, such as age, disability, or receipt of Supplemental Security Income.

C. Evaluations of the demonstrations

FNS has sponsored evaluations of the two demonstrations that use Medicaid data for direct certification: (1) DCM, which enables students to be directly certified for free meals, and (2) DCM-F/RP, which enables students to be certified for free or reduced-price meals.

Evaluation of the DCM demonstration. FNS contracted with Mathematica and its subcontractor Insight Policy Research to conduct a study of the first two years of the DCM demonstration (SY 2012–2013 and SY 2013–2014).¹⁰ In five States, districts were randomly assigned to either a treatment group that implemented DCM or a control group that did not.¹¹ Using this experimental design, the study examined whether DCM led to changes in the percentage of students certified, participation rates (the numbers of meals served per student per day), Federal reimbursements, and certification costs incurred by districts. It also assessed State-level administrative costs and identified the challenges that States and districts faced when implementing DCM in seven demonstration States.

The evaluation found that DCM positively affected certification and NSLP and SBP participation outcomes in some demonstration States but not others. These increases resulted in additional Federal reimbursements in some States, but there was no impact on district costs for certifying students. State DCM administrative costs varied widely, but the majority of the costs were for start-up rather than ongoing activities. Because the study used an experimental design, it was able to produce internally valid estimates of the impact of DCM for the participating evaluation districts in the participating States—that is, impacts can be attributed to DCM rather than to other factors. However, the study was not intended to be nationally representative, and the findings cannot be generalized to a broader (or otherwise different) set of States and districts.

Evaluation of the DCM-F/RP demonstration. FNS contracted with the same team to conduct a study of the DCM-F/RP demonstration. Findings from the first year of the evaluation, which covered experiences during SY 2016–2017, are presented in an earlier report (Hulsey et al. 2019). The current report focuses on the second year of the DCM-F/RP evaluation, which addresses the five key objectives listed in Table I.1 and associated research questions listed in the following chapters. Answering research questions associated with Objective 1 requires in-depth examination of States' and districts' processes for implementing DCM-F/RP, including synthesizing information on implementation processes and resources, analyzing respondents' perceptions of factors related to matching success, and identifying challenges and best practices. Objectives 2 and 3 focus on the potential of DCM-F/RP to reach students who would not be directly certified through another program. Addressing the research questions under these objectives involves analysis of certification and DCM-F/RP matching outcomes. Objective 4 addresses the possible effects of DCM-F/RP on school meal participation, Federal reimbursement costs, and State administrative costs. Objective 5 explores differences over the two years of the demonstration for Cohort 1 States.

¹⁰ Two reports present findings on the effects of the DCM demonstration (Hulsey et al. 2015; Hulsey et al. 2016).

¹¹ Random assignment was not possible in Kentucky and Pennsylvania, which implemented DCM statewide. California, which did not join the demonstration until the third year, was not included in the evaluation.

Table I.1. Study objectives

Objective number	Objective	Related research questions ^a	Relevant chapter(s)
1	Describe the processes and resources used by States and/or districts to match Medicaid data with school enrollment data and communicate the direct certification results to households, the challenges faced, and best practices implemented to attain high matching rates.	A.1–A.8	VII
2	Explore the potential of direct certification with Medicaid to reach children who are eligible for free or reduced-price school meals but are not certified to receive the meals.	B.1–B.5	III
3	Explore the potential of direct certification with Medicaid to directly certify eligible children who are enrolled for free or reduced-price school meals based on a household application.	B.1–B.4	III
4	Examine the effect of DCM-F/RP on school meal participation, Federal reimbursement costs, and State administrative costs.	C.1–C.3	IV, V, and VI
5	For Cohort 1, examine continuing effects of Medicaid data matching on eligibility and costs over a second, full school year under the demonstration.	A.9, B.6, C.4	III, IV, V, and VII

^aResearch questions are listed in the chapters that contain the related analyses.

To address these objectives, the study team collected three key types of data: (1) district-level administrative records on certification and participation, (2) workbooks detailing costs incurred by State agencies in implementing DCM-F/RP, and (3) qualitative information on implementation processes and challenges State agency staff encountered during implementation. The sample for the second year of the DCM-F/RP demonstration evaluation includes all 15 demonstration States. Some analyses include all districts in each State, whereas others focus on a subsample of districts or on State-level activities. Some analyses are limited to States that provided specific types of data or for which a particular outcome was applicable in SY 2017–2018, and analyses for the Objective 5 include only Cohort 1 States.

An experimental design, like that used for the first DCM demonstration, was not possible for the new demonstration, so the effects of DCM-F/RP are estimated using less rigorous methods. Effects on certification, participation, and Federal reimbursements are measured by comparing the outcomes of districts in the year before the State began the demonstration to those same outcomes in SY 2017–2018. In this pre-post design, differences between the two years could reflect year-to-year trends in outcomes in addition to the effects of the demonstration. Although we use a regression model to control for the influence of some time-varying characteristics, factors not included in the model (such as unrelated improvements in certification processes or changes in student preferences) could be driving some of the observed changes. Other outcomes, including State administrative costs, are explored through descriptive analyses.

D. Overview of report

This report presents the findings from SY 2017–2018, which was the first year of DCM-F/RP implementation in Cohort 2 States and the second year of implementation in Cohort 1 States. Chapter II summarizes the methods used to collect data and conduct analyses. Chapters III through V contain key findings on the effects of DCM-F/RP on certification, participation, and

Federal reimbursement outcomes, respectively. Chapter VI describes key findings related to State administrative costs, and Chapter VII discusses DCM-F/RP processes and the experiences of States and districts during implementation. Chapter VIII summarizes our conclusions and the limitations of the findings. Appendices provide additional detail on methodology and supplemental tables.

II. METHODS

This evaluation measures the effects of DCM-F/RP on certification, participation, and Federal reimbursement costs, based on a comparison of outcome measures in the year before the demonstration to those in the first or second year of the demonstration. It also assesses State-level administrative costs and explores the processes and experiences of States and districts implementing DCM-F/RP. This chapter summarizes the data collection and analysis methods used, and Appendix A provides additional details.

A. Sample

The Year 2 analysis included all 15 demonstration States. Two or more State agencies participated in the data collection in each State (Table A.2).

The qualitative analysis sample included 34 districts across all 15 demonstration States, and the quantitative analysis sample included 6,112 districts across 14 States (Table II.1). Quantitative analyses included all school districts with complete certification and participation data for both the baseline year and SY 2017–2018, with some exceptions, described in Appendix A. However, some outcomes are relevant for only a subset of demonstration States, as discussed in Section C. The qualitative data collection included two districts in most States and four districts in California (two Cohort 1 districts and two Cohort 1 districts) and Virginia (the one State where local staff have primary responsibility for direct certification matching).

In presenting findings in the subsequent chapters, we group the demonstration States in four sets:

1. The two States that participated statewide in the earlier demonstration of DCM for free meals: Florida and Massachusetts. The findings in this report for these two States reflect a second year of the new elements of DCM-F/RP, beyond the earlier DCM systems in those States.
2. The four States that were new to DCM in SY 2016–2017 and implemented DCM-F/RP statewide that year: Nebraska, Utah, Virginia, and West Virginia. The findings in this report for these four States reflect the experiences of States in their second year of using Medicaid data to conduct direct certification.
3. The nine States authorized to begin implementing DCM-F/RP in SY 2017–2018. The findings for eight of these States (Connecticut, Indiana, Iowa, Michigan, Nevada, Texas, Washington, and Wisconsin) reflect the experiences of States using Medicaid data to conduct direct certification for the first time in SY 2017–2018. The findings for Nevada reflect the experiences of a State preparing to certify students through DCM-F/RP in the next school year, and Nevada is excluded from analyses of outcomes that would not be affected during a planning year.
4. California, which implemented DCM-F/RP in 14 districts in SY 2016–2017 and in all districts in SY 2017–2018. The findings for California reflect the experiences of a State expanding from implementing the demonstration in a subset of districts to statewide.

Analyses based on administrative records exclude the 14 districts that began DCM before SY 2017–2018 and group California with the Cohort 2 States.

Table II.1. Year 2 analysis sample

State	Number of State agencies in qualitative analysis	Number of districts in qualitative analysis	Number of districts in quantitative analysis ^a
Cohort 1 States that participated in the first DCM demonstration			
Florida	2	2	249
Massachusetts	2	2	410
Subtotal	4	4	659
Cohort 1 States that did not participate in the first DCM demonstration			
Nebraska	2	2	344
Utah	3	2	102
Virginia	2	4	132
West Virginia	2	2	66
Subtotal	9	10	644
Cohort 2 States			
California ^b	3	4	1,094
Connecticut	2	2	165
Indiana	2	2	487
Iowa	2	2	430
Michigan	4	2	784
Nevada ^c	3	2	n.a.
Texas	3	2	1,067
Washington	3	2	145
Wisconsin	3	2	637
Subtotal	25	20	4,809
Total	38	34	6,112

^a This column presents the sample size for most quantitative analyses. However, some analyses focus on smaller samples of districts, as noted the relevant tables.

^b California implemented DCM-F/RP in 14 districts in SY 2016–2017 and statewide in SY 2017–2018. The district-level quantitative analysis includes only the Cohort 2 districts.

^c Nevada is excluded from the quantitative analysis of effects because the State did not certify any students through DCM-F/RP in SY 2017–2018. The qualitative analysis includes data from State agencies and two districts that participated in testing of demonstration procedures in SY 2017–2018.

n.a. = not applicable.

B. Data collection

The evaluation included the following primary data collection activities:

- **Administrative records data.** District-level administrative records data collected for each period fall into two broad categories: (1) enrolled students by certification status and basis for certification and (2) information on monthly participation (that is, meals served) for the NSLP and SBP. To enable pre-post comparisons, we collected these data for both, SY 2017–2018, and a baseline year. The baseline year is the year before the statewide implementation of the demonstration: SY 2015–2016 for Cohort 1 States and SY 2016–2017 SY for Cohort 2

States (including California). (Because Nevada did not certify any students through DCM-F/RP in SY 2017–2018, that State is not included in the analyses of administrative records data.) Depending on data availability, we also collected data on SY 2017–2018 direct certification match results for some States. In addition, we collected public information on characteristics of districts and their communities, such as poverty and unemployment rates.

- **State administrative cost data.** We collected monthly data on the administrative costs of setting up (for Cohort 2 States) and operating DCM-F/RP in SY 2017–2018 at the State level through Excel logs completed by staff for the State child nutrition and Medicaid eligibility agencies. We conducted follow-up telephone conversations as needed to ensure accurate interpretation of the data provided.
- **Qualitative data.** We conducted site visits to all 15 demonstration States to learn about their DCM-F/RP processes and experiences in SY 2017–2018. Each visit included both interviews and observations of key activities. Respondents included staff of State child nutrition agencies, State Medicaid eligibility agencies, and school districts. Later in the school year, we conducted follow-up telephone interviews with each Cohort 2 State and district to learn how the demonstration progressed since the site visit.

C. Key outcome measures

The evaluation examines outcomes measured at the district level in four domains: certification, participation (that is, receipt of school meals), Federal reimbursement costs, and State-level administrative costs.

1. Certification outcomes

The most direct potential benefits DCM-F/RP offers to students and their families are (1) certification for free or reduced-price meals when they might otherwise pay a higher price for school meals and (2) certification without having to complete an application. In addition, an increase in the number of students directly certified could affect a district's qualification for, and reimbursement rates under, the CEP, which are based on the percentage of students identified as eligible to be certified for free meals through means other than applications. Aligned with these benefits, our primary certification measures for each district are as follows:

- Percentage of students certified for free meals based on DCM
- Percentage of students certified for reduced-price meals based on DCM
- Percentage of students directly certified for free meals
- Percentage of students certified for free meals
- Percentage of students certified for reduced-price meals

- Percentage of district students attending schools participating in the CEP
- Whether all schools in the district participated in the CEP¹²

Each of these outcomes is measured for the baseline year and for a point in SY 2017–2018 after the State conducted its first DCM-F/RP match (the end of October for Cohort 1 States). For States participating in the previous DCM demonstration, districts were already using Medicaid data to certify students for free meals in the baseline year, so those States are excluded from analyses of outcomes related to free meals. Students attending CEP schools or other special provision schools in a non-base year receive free meals but are not certified individually for free or reduced-price meals and therefore are not counted in the numerators of the first five outcome measures, although the denominators include all students enrolled in the districts.

Most States provided the data elements needed to compute these seven core measures directly, by dividing the number of students in the certification category by the total number of students enrolled in schools in the district. However, Indiana and Nebraska did not provide all data required to compute the percentage of students directly certified for free meals based on DCM-F/RP but provided partial data that we combined with data on match results to estimate those key certification outcomes for those States, as described in Appendix A. Also, Nebraska provided data required to compute the percentage of students directly certified for reduced-price meals based on DCM-F/RP for only a subset of districts, and we used the values for that subset to estimate the missing values for other districts. Iowa did not provide data needed to compute one key certification outcome and therefore is not included in analyses of that outcome. In addition, data issues in Texas and Washington required substantial proportions of districts to be excluded from the quantitative analyses in those States.

In addition to the core certification measures, we computed the following measures related to match results for four States: Michigan, Nebraska, Iowa, and Wisconsin (the only States that were able to provide the necessary data):

- Number of students matched to free-eligible Medicaid records
- Number of students matched to reduced-price-eligible Medicaid records
- Percentage of each of these groups that were
 - Matched to another program used for direct certification, by program conferring eligibility (SNAP, TANF, foster care)
 - Not matched to another program through the State match

2. Participation outcomes

Because the number of school meals served to students depends on the size of the district, as well as the certification status and participation behavior of students, we focus on outcome measures that account for size rather than comparing raw numbers of meals served. Our primary

¹² The last two measures are only computed for Cohort 1 States, because CEP eligibility and reimbursements are based on direct certification rates in a previous year. Therefore, DCM-F/RP could not affect these outcomes in the first year a State participated in the demonstration.

participation measures, each defined separately for the lunch and breakfast programs, are as follows:

- **The participation rate** (that is, the average number of reimbursable meals served per student per school day), defined as the total number of reimbursable meals served divided by the product of the total number of students enrolled in the district and the number of operating days during the relevant time period.
- **The percentage of meals served for free**, defined as the number of meals reimbursed at the free rate divided by the total number of reimbursable meals served.¹³
- **The percentage of meals served at a reduced price**, defined as the number of meals reimbursed at the reduced-price rate divided by the total number of reimbursable meals served.

Because participation data do not reflect DCM-F/RP until after the first match is conducted, each participation outcome is based on the month in which the first match occurs (which varied by State) and all subsequent months. We aggregated numbers of meals across all months in SY 2017–2018, beginning with the first month of the school year for Cohort 1 States, California, and Indiana; September for Michigan; October for Texas; December for Wisconsin; March for Connecticut and Iowa; and April for Washington). The baseline measures cover the same set of months for the baseline school year.

3. Federal reimbursement outcomes

Our primary measures of the impact of DCM-F/RP on Federal reimbursements are also defined to control for the size of districts and computed separately for the lunch and breakfast programs, using the same set of months as used for the participation outcomes:

- **Reimbursements per student per school day**, defined as total Federal reimbursements for meals served to students divided by the product of the total number of students enrolled in the district and the number of operating days in the relevant set of months.
- **The blended reimbursement rate (BRR)**, defined as total Federal reimbursements divided by the number of meals served. The BRR measures the average reimbursement per meal served.

The BRR reflects the distribution of meals served across the free, reduced-price, and paid categories and thus is influenced by changes in the certification status of students who participate in the school meals programs. The reimbursement cost per student per day equals the BRR multiplied by the average number of meals served per student per day and thus also reflects any

¹³ In schools that certify students individually, the percentage of meals served for free (or at a reduced price) and the percentage of meals reimbursed for free (or at a reduced price) are identical. However, the concepts differ in special provision schools, where all meals are served for free but some are reimbursed at lower rates. This measure therefore understates the percentage of meals served for free in special provision schools. Because no meals are reimbursed at the reduced-price rate in CEP schools, the measure for reduced-price meals overstates the percentage of meals actually served at a reduced price in special provision schools.

change in the total number of meals per student resulting from DCM-F/RP. Both measures also depend on the FNS reimbursement rates, which vary by meal type (Appendix Table A.3). Reimbursement rates increase each year, so to control for this aspect of variation that is unrelated to the demonstration in the pre-post analyses, we use SY 2015–2016 reimbursement rates for each meal type in computing these measures, for all years.

4. State administrative cost outcomes

Unlike the certification, participation, and Federal reimbursement measures, which do not reflect the effects of the demonstration until the first DCM-F/RP match is conducted, the State cost measures cover the entire school year—including months before the first DCM-F/RP match in Cohort 2 States, to capture the costs of planning, preparation, and testing. The primary State administrative costs outcome measure is the total administrative cost, in dollars, of conducting DCM-F/RP (over and above time spent on other direct certification activities) across all relevant State agencies, months, activities, and cost categories. We also examine these costs separately by the following:

- Agency type (child nutrition agencies and Medicaid eligibility agencies)
- Start-up costs (those that occurred up to and including the month of the first DCM-F/RP match) and ongoing costs (those that occurred after the month of the first DCM-F/RP match)
- Direct labor costs, other direct costs, and indirect costs

In addition, we measure the cost of DCM-F/RP per student enrolled, directly certified for free meals, and directly certified for free or reduced-price meals based on Medicaid.

D. Analysis methods

The evaluation uses both quantitative and qualitative analyses. Quantitative analyses include estimation of effects on certification, participation, and Federal reimbursement outcomes and an analysis of State administrative costs. We conducted descriptive analyses for Medicaid data matching and State administrative cost outcomes, and qualitative analyses of DCM-F/RP processes and the challenges States and districts encountered in their first or second year of implementation.

- **Estimation of Year 2 effects: comparisons between baseline year and SY 2017–2018.** We estimated the effects of DCM-F/RP on certification, participation, and Federal reimbursement outcomes by comparing the measure in the baseline year—the year prior to the demonstration—to the same measure in SY 2017–2018.¹⁴ We used regression models to control for changes in observed characteristics, such as economic conditions, between baseline and the first DCM-F/RP year and to improve the precision of the estimates. However, the estimates do not control for characteristics not included in the model, such as changes in preferences. For example, if there was an unmeasured change unrelated to the

¹⁴ The baseline year is SY 2015–2016 for Cohort 1 States and SY 2016–2017 SY for Cohort 2 States (including California). Because Florida and Massachusetts conducted DCM for free meals statewide during the DCM-F/RP baseline year, analyses of outcomes related to free meals exclude those two States.

demonstration that affected key outcomes—such as an improvement in school meal quality that increased participation among students, or greater availability of competitive foods that decreased interest in reimbursable school meals—the resulting change in participation could be misconstrued as an impact of the demonstration. Appendix A includes details of the regression models. Appendixes B through D contain unadjusted versions of the tables presented in Chapters III through V, respectively.

- **Comparisons between Year 1 and Year 2 effects.** For Cohort 1 States, we compared the effects in the first year of the DCM-F/RP demonstration (SY 2016–2017) with those in the second year (SY 2017–2018), using the same model.
- **Descriptive analyses of match results and State administrative costs.** In addition to the comparative analyses focusing on the key certification outcomes, we conducted descriptive analyses of measures collected only in DCM-F/RP years. These included tabulations of State DCM-F/RP match results for the four States that provided the data necessary to partially address research questions B.3 and B.4. We also tabulated the various measures of State administrative costs, including overall costs and breakdowns by agency and type of cost.
- **Qualitative analyses.** To reduce and synthesize the qualitative data for analysis, the study team developed analytic memo templates—one for States and one for districts—and an analytic framework in Excel based on the research questions under Objective 1 of the study. Shortly after each site visit and follow-up telephone interview, the site teams summarized the raw data into the analytic memo templates. Senior qualitative researchers synthesized the data into the Excel analytic framework, including summaries of each step in the State or district’s DCM-F/RP process, as well as State and district characteristics, to use in identifying patterns. Key themes were translated into research findings.

E. Limitations

Several limitations of the DCM-F/RP Year 2 demonstration, the evaluation design, sample, data, and methods should be noted. Appendix A provides a more detailed discussion of these and other limitations. The findings in this report should be interpreted cautiously in light of these limitations.

Design. Because States implemented DCM-F/RP statewide, the evaluation used a pre-post design, in which the estimated effect of the demonstration is the change in a given outcome not explained by changes in measurable characteristics that occurred at the same time. Although the regression model accounts for the influence of included time-varying characteristics (such as local economic conditions) and any time-invariant characteristics (such as type of district) on the outcomes of interest, time-varying factors not included in the model and unrelated to the demonstration (such as other improvements to direct certification procedures, changes to school meal operations, or changes in student preferences for school meals) could still be driving some of the observed changes. Therefore, the estimates of effects might reflect factors other than DCM-FRP. Notably, two States made substantial changes to their direct certification procedures at the same time that they implemented the DCM-F/RP demonstration: (1) California introduced central direct certification matching statewide in SY 2017–2018, and (2) Texas began allowing districts to upload current student enrollment data for direct certification matching. Both changes

could affect outcomes included in this study, and there is no way to disentangle the effect of these policy changes from the effect of DCM-F/RP.

Sample. The DCM-F/RP evaluation is based on a sample of States that is not representative of all States nationally. The estimated effects presented in this report for the States should not be interpreted as indicative of the likely effects of nationwide adoption of DCM-F/RP. In addition, data issues required the exclusion of some districts from the analysis (most notably in Washington and Texas), and the remaining samples of districts are not necessarily representative of all districts in their respective States.

Implementation timing. This report focuses on data from SY 2017–2018, which was the first year of implementation for Cohort 2 States, but only one of those eight States conducted its first DCM-F/RP match by the beginning of the school year (see Figure I.1 for the timing in each State). In States that conducted the first DCM-F/RP match later in the year, start-up challenges and delays might have affected implementation and outcomes. For example, participation effects might be limited if students do not adjust quickly to changes in certification status. The substantial differences in the sets of months used for the participation and Federal reimbursements analyses in different States also make comparisons across States potentially misleading, due to seasonality in participation. In addition, how quickly matched students become certified depends on district actions in most States, and some districts might not take action on those matched very late in the school year.

In addition, implementation later than October had implications for the certification data available for the demonstration. Most notably, because Nevada did not certify any students through DCM-F/RP during SY 2017–2018, it did not provide any administrative data and is excluded from those analyses. In the four States that conducted their first certification match after October in SY 2017–2018, there were less extreme issues. First, because the available baseline certification data were as of the end of October, they covered a different time of year than the DCM-F/RP year data in most States. If certification rates increase over the school year, those changes could be confounded with the effects of DCM-F/RP on some outcome measures (such as the total percentages of students certified or directly certified for free or reduced-price meals). Second, although States implementing the demonstration before the end of October could use data collected for the FNS-742 as a source for most of the information needed for the certification analysis, the FNS-742 would not reflect the results of the demonstration in States conducting the first DCM-F/RP match after October. Instead, they had to develop other processes to collect the certification data needed for the DCM-F/RP evaluation, such as a survey of districts. The different sources for the baseline and DCM-F/RP year could result in systematic differences in data quality. Some States were unable to obtain the data needed for the evaluation for all districts. Most notably, almost half of districts in Washington had to be excluded from the quantitative analysis due to lack of data.

Data. There are several additional limitations related to the data available for the evaluation. Specific certification data elements were unavailable for some States, leading one (Iowa) to be excluded from one core certification analysis and one or two key measures for two other States (Indiana and Nebraska) to be estimated by combining data sources, as noted in Section C and

discussed further in Appendix A. In addition, some districts were excluded from the analysis sample due to incomplete or erroneous administrative data, and those omitted districts might differ systematically from districts for which data were available. There could be other errors remaining in the data that we were not able to detect.

Findings related to State administrative costs and State and district processes and challenges are based on staff reports. Recall error is possible, particularly for costs incurred during the early part of the school year, due to the lag between the beginning of the demonstration and the beginning of data collection. In addition, differences between States should be interpreted with caution due to possible differences in respondents' judgments of whether a cost would have been necessary in the absence of DCM-F/RP.

Qualitative analyses reflect the perspectives of respondents, including staff from a fairly small number of school districts. Although the 34 districts in the qualitative analysis sample were purposively selected to reflect diversity of the demonstration districts along several dimensions, the sample is relatively small and not statistically representative of all districts in the demonstration. In addition, although we attempted to interview the staff with the most complete knowledge about DCM-F/RP processes in each location at both State and district levels, staff could not always provide information on every topic included in the interview protocols. For example, State and district staff were often unable to provide information on their matching rates and instead discussed anecdotally the factors that can impact matching success. Findings reflect the perspectives of the respondents, and qualitative assessments of timing and matching success are not as rigorous as quantitative analyses could be if data were available.

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III. EFFECTS ON CERTIFICATION OUTCOMES

The most direct measure of the effects of DCM-F/RP are changes in certification outcomes, including the proportions of students directly certified through DCM-F/RP, directly certified based on any program, and certified for free or reduced-price meals through any method. The analyses presented in this chapter address the research questions under Objectives 2, 3, and 5 of the study (Table III.1), which relate to certification outcomes and the results of matching Medicaid and other program data to student enrollment data, a key intermediate step in the direct certification process. In Section A, we describe the effects of DCM-F/RP on certification outcomes in SY 2017–2018, including certification for free and reduced-price meals (to address research questions B.1 and B.2) and participation in the CEP (research question B.5). In Section B, we describe how findings evolved in the second year of DCM-F/RP for States that began the demonstration in SY 2016–2017 (research question B.6). Finally, in Section C, we discuss findings related to the results of DCM-F/RP matching (research questions B.3 and B.4).

Table III.1. Research questions and objectives related to certification and data-matching outcomes

Question number	Research questions
Objectives 2 and 3. Explore the potential of direct certification with Medicaid to (1) reach children who are eligible for free and reduced-price school meals but are not certified to receive the meals and (2) directly certify eligible children who are enrolled for free and reduced-price school meals based on a household application.	
B.1	<ul style="list-style-type: none"> • For each demonstration State, in the school year prior to the demonstration, what is the number and percentage of students certified for: • Free meals based on direct certification by source (SNAP, TANF, FDPIR, other)? • Free meals based on application by type (categorical, income-based)? • Reduced-price meals based on application? • Paid meals?
B.2	<ul style="list-style-type: none"> • For each demonstration State, in each demonstration school year, what is the number and percentage of students certified for: • Free meals based on direct certification by source (SNAP, TANF, FDPIR, Medicaid, other)? • Free meals based on application by type (categorical, income-based)? • Reduced-price meals based on application? • Reduced price meals based on DCM-F/RP? • Paid meals?

Question number	Research questions
B.3	<ul style="list-style-type: none"> For each demonstration State with the database capability to address these questions, in each demonstration school year, what is the total number of students directly certified for free meals using Medicaid data? What is the: Total number of free DCM-F/RP matches that were already directly certified for free meals based on direct certification by source (SNAP, TANF, FDPIR, other)? Total number of free DCM-F/RP matches that were already certified for free meals based on application by type (categorical, income-based)? Total number of free DCM-F/RP matches that were already certified for reduced-price meals based on application? Total number of free DCM-F/RP matches that were not certified for either free or reduced-price meals? Total number of free DCM-F/RP matches that resulted in extended eligibility through the “living with” policy to other members of the household?
B.4	<ul style="list-style-type: none"> For each demonstration State with the database capability to address these questions, in each demonstration school year, what is the total number of students directly certified for reduced-price meals using Medicaid data? What is the: Total number of reduced-price DCM-F/RP matches that were already directly certified for free meals based on direct certification by source (SNAP, TANF, FDPIR, other)? Total number of reduced-price DCM-F/RP matches that were already certified for free meals based on application by type (categorical, income-based)? Total number of reduced-price DCM-F/RP matches that were already certified for reduced-price meals based on application? Total number of reduced-price DCM-F/RP matches that were not certified for either free or reduced-price meals? Total number of free DCM-F/RP matches that resulted in extended eligibility through the “living with” policy to other members of the household?
B.5	<ul style="list-style-type: none"> How would DCM-F/RP change the distribution of districts that would be eligible to participate in the Community Eligibility Provision? How many more districts would have an identified student percentage of greater than 40 percent? How many more districts would have an identified student percentage of greater than 62.5 percent?
Objective 5. For Cohort I demonstrations, examine continuing effects of Medicaid data matching on eligibility and costs over a second, full school year under the demonstration.	
B.6	<ul style="list-style-type: none"> For Cohort I demonstration States that were evaluated under the Year 1 Task Order, how have the outcomes of Medicaid data matching described in research questions B.1 through B.5 changed from Year 1 (SY 2016–2017) of the demonstration?

FDPIR = Food Distribution Program on Indian Reservations; SNAP = Supplemental Nutrition Assistance Program; TANF = Temporary Assistance for Needy Families.

A. Effects on SY 2017–2018 certification outcomes

SY 2017–2018 was the second year of the demonstration for Cohort 1 States and the first full year of implementation for most of those States; it was the first year of the demonstration for Cohort 2, although few Cohort 2 States had conducted DCM-F/RP by the beginning of the school year (see Figure I.1 for the timing of the initial DCM-F/RP match in each State). The effects of DCM-F/RP are measured as changes from the baseline year before DCM-F/RP began, which is SY 2015–2016 for Cohort 1 and SY 2016–2017 for Cohort 2.

1. Effects on certification for free meals

In SY 2017–2018, students in 14 demonstration States were directly certified for free meals based on Medicaid. The percentage of students certified for free meals through DCM-F/RP ranged from 0.6 percent in Washington to 10.5 percent in Connecticut (Table III.2).¹⁵ These students would not have been directly certified in the absence of the DCM-F/RP demonstration,

DCM-F/RP can affect free certifications through two mechanisms

1. Free direct certifications of students who would otherwise not have been approved for free meals. This includes students who are not directly certified based on another program and did not submit an application. It might also include some students who would not be eligible by application, due to differences in household definitions or changes in circumstances between Medicaid and school meal eligibility determinations. *This mechanism increases free meal certifications, direct certifications, and direct certifications based on Medicaid and affects all States in this analysis.*
2. In Cohort 1 States, higher CEP participation in SY 2017–2018 due to directly certifying students for free meals based on Medicaid the previous year relative to what would have otherwise occurred. *This decreases certifications of all types because students attending CEP schools are not certified and affects Nebraska, Utah, Virginia, and West Virginia.*

although they could have been approved for free meals by application.¹⁶ The percentage of students directly certified for free meals based on Medicaid was statistically significantly different from zero in 11 States.

The free direct certifications based on Medicaid contributed to statistically significant increases in the total percentage of students directly certified for free meals in 9 of the 11 States for which this outcome was measured (Table III.2). These increases ranged from 3.6 percentage points in Texas to 11.6 percentage points in Connecticut. There was no statistically significant change in the percentage of students directly certified for free meals in Washington.

In West Virginia, the percentage of students directly certified for free meals fell by 7.9 percentage points, driven by the large expansion in CEP in that State in SY 2017–2018 compared to the baseline year. Students attending schools participating in CEP are not certified individually for meal benefits. Increases in CEP therefore reduce numbers of certified students. DCM-F/RP contributed to this CEP expansion, as discussed in Section A.3.

DCM-F/RP was associated with statistically significant increases in the percentages of students directly certified for free meals based on Medicaid, directly certified based on any program, and certified for free meals overall.

¹⁵ The methodology for estimating the percentage of students directly certified for free meals based on DCM-F/RP in Indiana and Nebraska differed from that used in the other States. See Appendix A for details.

¹⁶ The change in total percentage of students certified for free meals, discussed below, estimates the percentage of students certified for free meals who would not have been in the absence of the demonstration.

Table III.2. Effects of DCM-F/RP on certification for free meals in SY 2017–2018

State	Percentage of students directly certified for free meals based on Medicaid			Percentage of students directly certified for free meals based on any program			Percentage of students certified for free meals		
	SY 2015–2016 (Baseline year)	SY 2017–2018	Change	SY 2015–2016 (Baseline year)	SY 2017–2018	Change	SY 2015–2016 (Baseline year)	SY 2017–2018	Change
Cohort 1 States									
Nebraska	0.0	8.2	8.2*	19.6	27.5	7.9*	32.9	35.4	2.5*
Utah	0.0	5.8	5.8*	11.9	18.0	6.1*	25.3	26.8	1.5
Virginia	0.0	8.1	8.1*	14.3	22.9	8.6*	25.6	31.7	6.1*
West Virginia	0.0	4.7	4.7*	18.0	10.1	-7.9*	21.9	11.1	-10.8*
Pooled sample	0.0	7.5	7.5*	14.9	21.2	6.3*	26.4	28.7	2.3*
State	Percentage of students directly certified for free meals based on Medicaid			Percentage of students directly certified for free meals based on any program			Percentage of students certified for free meals		
	SY 2016–2017 (Baseline year)	SY 2017–2018	Change	SY 2016–2017 (Baseline year)	SY 2017–2018	Change	SY 2016–2017 (Baseline year)	SY 2017–2018	Change
Cohort 2 States									
California	0.0	8.1	8.1*	17.4	27.2	9.8*	36.0	39.1	3.0*
Connecticut	0.0	10.5	10.5*	8.7	20.3	11.6*	14.6	23.6	9.0*
Indiana	0.0	8.2	8.2*	17.1	24.4	7.4*	30.8	33.6	2.8*
Iowa	0.0	3.7	3.7*	NA	NA	NA	27.4	27.9	0.5
Michigan	0.0	9.1	9.1*	14.4	23.5	9.1*	25.1	30.3	5.2*
Texas	0.0	0.9	0.9*	19.3	22.9	3.6*	36.5	36.9	0.5
Washington	0.0	0.6	0.6	18.6	18.6	0.0	26.1	23.4	-2.7
Wisconsin	0.0	3.7	3.7*	14.8	20.9	6.1*	19.8	26.2	6.4*
Pooled sample	0.0	4.1	4.1*	18.1	23.6	5.5*	32.4	34.8	2.4*

Source: Administrative records provided by State administrators.

Notes: Percentages are calculated based on all students enrolled in districts included in the analysis. Each outcome in this table reflects the percentage of students who are certified for free meals based on the specified method; students attending schools that do not certify individual students, such as special provision schools in non-base years, are not counted as certified. Florida and Massachusetts are excluded from this table because those States participated in a prior demonstration of DCM for free meals during the baseline year, so the DCM-F/RP demonstration only affects reduced-price meals. Values in this table are regression adjusted. Appendix A lists the variables included in the regression adjustments. Changes shown in the table may differ slightly from calculated differences due to rounding.

*Change between the baseline year and SY 2017–2018 is significantly different from zero at the .05 level, two-tailed test.

NA = not available; SY = school year.

Seven States experienced statistically significant increases in the percentage of students certified for free meals overall. These changes ranged from 9.0 percentage points in Connecticut to 2.5 percentage points in Nebraska. There was no statistically significant change in this measure for four States. West Virginia had a statistically significant decrease in the percentage of students certified for free meals, again related to the increase in CEP.

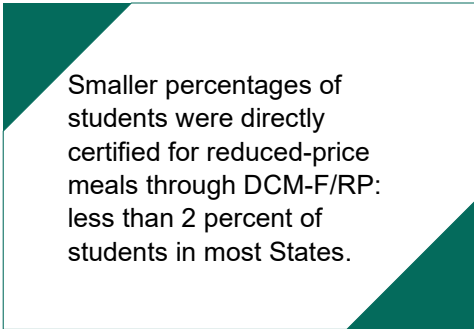
The changes in the percentage of students certified for free meals overall were smaller than the changes in free direct certifications in both pooled samples and in most States. This reflects the fact that many students directly certified free based on Medicaid would have been certified free by application in the absence of the demonstration. Even if it did not change these students' status, the DCM-F/RP demonstration reduces administrative burden on families and district staff because they do not need to submit or process an application. In addition, increasing the number of students directly certified for free meals increases schools' and districts' identified student percentages, which are used to determine eligibility and reimbursement for CEP.

In West Virginia, there was a substantial and statistically significant decrease in total free certifications (10.8 percentage points). This was due to the large expansion in CEP in that State the previous year and does not represent an actual reduction in the percentage of students with access to free meals. The percentage of students either certified for free meals or attending CEP schools in West Virginia increased from 68.4 percent in the baseline year to 84.1 percent in SY 2017–2018 (not shown). This increase in CEP schools might have been due in part to free direct certifications resulting from operating DCM-F/RP in the previous year (see Section A.3).

2. Effects on certification for reduced-price meals

The demonstration had smaller effects on reduced-price certifications than it did on free certifications. Only two States had reduced-price direct certification rates above 2 percent (Table III.3), including 5.3 percent of students in Nebraska and 4.4 percent of students in Connecticut. Texas had the lowest rate of reduced-price direct certification, at less than 0.1 percent of students.

Some of the variation in rates of directly certifying students for reduced-price meals likely results from differences in State Medicaid income eligibility limits. On average, States in the analysis with higher Medicaid income eligibility limits directly certified a larger percentage of students for reduced-price meals through Medicaid than those with lower Medicaid eligibility limits. The correlation between Medicaid eligibility limits and reduced-price direct certification rates is strongest below the reduced-price meal eligibility limit of 185 percent of the FPL. Figure III.1 shows the relationship between State Medicaid income eligibility limits and the percentage of students directly certified for reduced-price meals in each State.



Smaller percentages of students were directly certified for reduced-price meals through DCM-F/RP: less than 2 percent of students in most States.

Table III.3. Effects of DCM-F/RP on certification for reduced-price meals in SY 2017–2018

State	Percentage of students directly certified for reduced-price meals based on Medicaid			Percentage of students certified for reduced-price meals		
	SY 2015–2016 (Baseline year)	SY 2017–2018	Change	SY 2015–2016 (Baseline year)	SY 2017–2018	Change
	Cohort 1 States included in both DCM demonstrations					
Florida	0.0	1.2	1.2*	4.0	3.5	-0.5
Massachusetts	0.0	1.2	1.2	1.4	4.3	2.9*
Pooled sample	0.0	1.2	1.2*	3.5	3.5	0.1
Cohort 1 States new to DCM in SY 2016–2017						
Nebraska	0.0	5.3	5.3*	8.6	11.1	2.5*
Utah	0.0	0.5	0.5*	7.5	6.5	-1.0*
Virginia	0.0	1.1	1.1*	5.5	5.6	0.2
West Virginia	0.0	0.6	0.6*	3.0	1.5	-1.5*
Pooled sample	0.0	2.0	2.0*	6.0	6.3	0.3*
State	Percentage of students directly certified for reduced-price meals based on Medicaid			Percentage of students certified for reduced-price meals		
	SY 2016–2017 (Baseline year)	SY 2017–2018	Change	SY 2016–2017 (Baseline year)	SY 2017–2018	Change
	Cohort 2 States					
California	0.0	1.8	1.8*	8.2	7.8	-0.4
Connecticut	0.0	4.4	4.4*	2.5	5.7	3.1*
Indiana	0.0	1.5	1.5*	6.7	7.1	0.4
Iowa	0.0	1.4	1.4*	5.6	5.9	0.4*
Michigan	0.0	1.3	1.3*	5.3	4.9	-0.4*
Texas	0.0	0.0	0.0	5.9	5.3	-0.6*
Washington	0.0	0.2	0.2	6.1	4.6	-1.5*
Wisconsin	0.0	1.4	1.4*	3.7	5.1	1.4*
Pooled sample	0.0	0.8	0.8*	6.6	6.3	-0.2*

Source: Administrative records provided by State administrators.

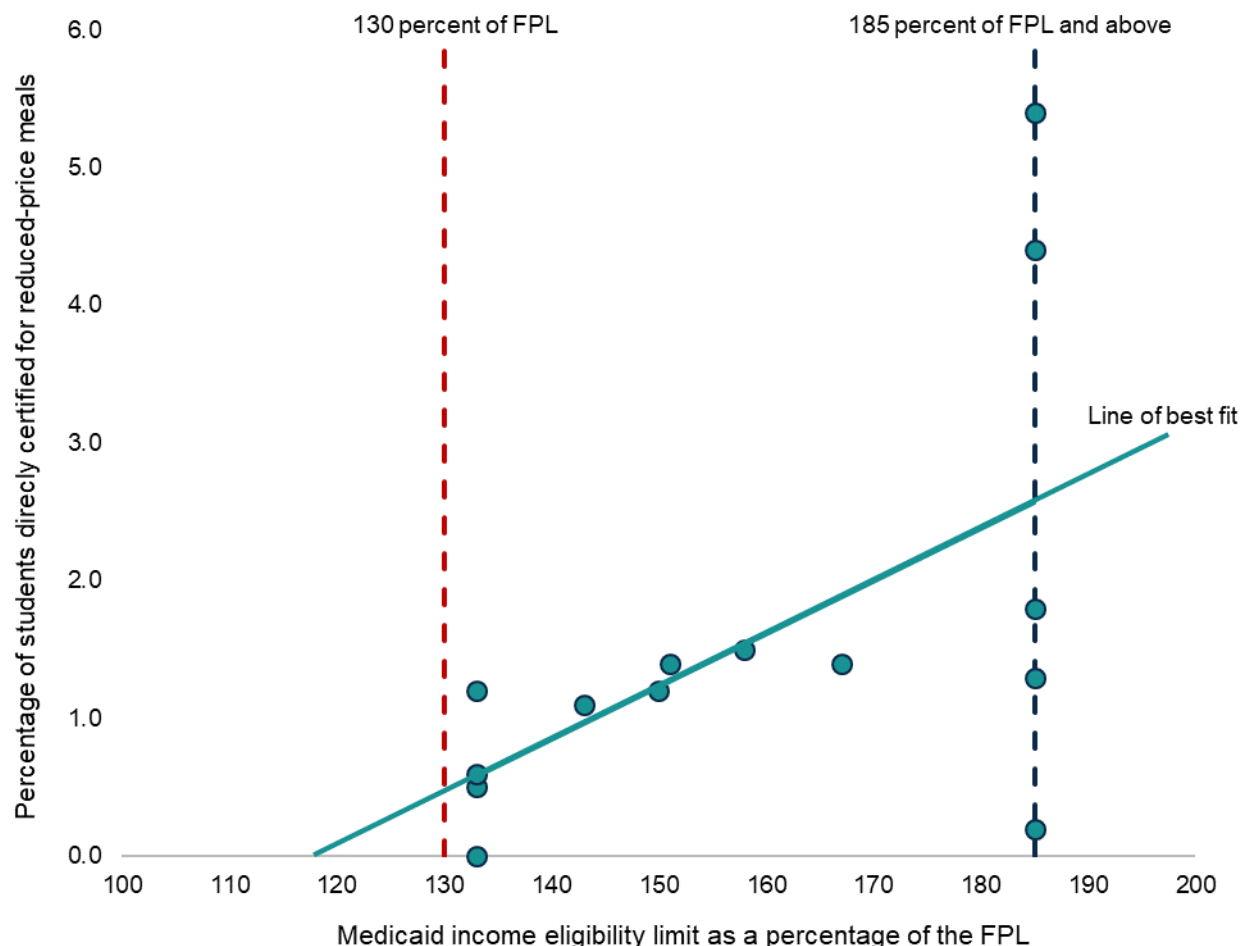
Notes: Percentages are calculated based on all students enrolled in districts included in the analysis. Each outcome in this table reflects the percentage of students who are certified for reduced-price meals based on the specified method; students attending schools that do not certify individual students, such as special provision schools in non-base years, are not counted as certified. Values in this table are regression adjusted. Appendix A lists the variables included in the regression adjustments. Changes shown in the table may differ slightly from calculated differences due to rounding.

*Change between the baseline year and SY 2017–2018 is significantly different from zero at the .05 level, two-tailed test.

SY = school year.

Five States (California, Nebraska, Michigan, Washington, and Connecticut) had Medicaid income eligibility limits greater than 185 percent of the FPL and were thus able to draw on the entire income eligibility range for reduced-price meal certification. These include the three States who directly certified the highest percentages of students for reduced-price meals (Nebraska, Connecticut, and California). Four States (Florida, Texas, Utah, and West Virginia) had a Medicaid income eligibility limit of 133 percent of the FPL and were only able to reach students in the narrow band of 130 to 133 percent of the FPL to directly certify for reduced-price meals. These include three of the four States with the lowest percentages of students directly certified for reduced-price meals (Texas, Utah, and West Virginia).

Figure III.1. State Medicaid income eligibility limits and rates of direct certification for reduced-price meals



Source: Administrative records provided by State administrators.

FPL = Federal poverty level.

Changes in total reduced-price certifications, including students directly certified and approved by application, were mixed (Table III.3). There were statistically significant increases in five States, with the largest in Connecticut (3.1 percentage points). There were statistically significant decreases in another five States, with the largest in Washington and West Virginia (1.5 percentage points in each). The remaining four States experienced no statistically significant change in this outcome.

These mixed effects are likely the result of the three mechanisms described in the callout box. Specifically, some of the students directly certified for free meals based on Medicaid might otherwise have been approved for reduced-price meals by application. In some States, this effect might have more than offset the increase resulting from new reduced-price certifications. In Nebraska, Utah, Virginia, and West Virginia, the effect DCM-F/RP had on CEP participation

DCM-F/RP can affect total reduced-price certifications through three mechanisms

1. Reduced-price direct certifications of students who otherwise would not be certified for free or reduced-price meals. *This increases total reduced-price certifications and affects all States.*
2. Free direct certifications based on Medicaid of students who would otherwise have been approved for reduced-price meals based on application. *This decreases total reduced-price certifications and affects all States except Florida and Massachusetts.*
3. In Cohort 1 States, higher CEP participation in SY 2017–2018 due to directly certifying students for free meals based on Medicaid the previous year relative to what would have otherwise occurred. *This decreases certification counts of all types and affects Nebraska, Utah, Virginia, and West Virginia.*

(see the following section) could also affect reduced-price certifications, as students attending CEP schools are not certified for free or reduced-price meals.

3. Effects on CEP participation

Free direct certifications based on Medicaid (along with direct certifications based on other programs) in one year can affect school or district eligibility for CEP in subsequent years, because increasing the number of students directly certified for free meals increases schools' and districts' percentages of identified students (those eligible for free meals through means other than applications), which are used to determine eligibility and reimbursement for CEP in subsequent school years. For a full understanding of DCM-F/RP's effects on access to meal benefits, we need to consider changes in CEP participation and certifications. We can analyze these effects for States that began directly certifying students for free meals based on Medicaid in SY 2016–2017 (Nebraska, Utah, Virginia, and West Virginia) because the data includes CEP decisions for the year after implementation began.¹⁷ Because DCM-F/RP could not affect CEP participation for these States before SY 2017–2018, this analysis compares CEP participation in that year to CEP participation in the previous year (SY 2016–2017).

Two of the four States experienced statistically significant increases in the percentage of students attending CEP schools. The increase was 2.4 percentage points in Nebraska and a 9.9 percentage points in West Virginia (Table III.4). There were no

DCM-F/RP was associated with statistically significant increases in CEP participation in SY 2017–2018 in two of the four States included in this analysis.

¹⁷ We cannot examine this effect for Florida or Massachusetts because they directly certified students based on Medicaid in this study's baseline year. We will be able to include Cohort 2 States in a similar analysis of CEP outcomes in a later report of this study.

statistically significant changes in Utah or Virginia. No State experienced a statistically significant change in the percentage of districts in which all schools participated in CEP.

Table III.4. Effects of DCM-F/RP on participation in the CEP in SY 2017–2018

State	Percentage of students attending CEP schools			Percentage of districts with all schools participating in the CEP		
	SY 2016–2017	SY 2017–2018	Change	SY 2016–2015	SY 2017–2018	Change
Nebraska	0.3	2.7	2.4*	1.5	2.1	0.6
Utah	1.3	1.7	0.4	3.0	3.0	0.0
Virginia	8.0	7.8	-0.1	4.9	5.7	0.8
West Virginia	63.1	73.0	9.9*	44.5	47.2	2.7
Pooled sample	11.9	12.7	0.8	7.4	7.0	-0.4

Source: Administrative records provided by State administrators.

Notes: Florida and Massachusetts are excluded from this table because those States participated in a prior demonstration of DCM for free meals during the baseline year, so the DCM-F/RP demonstration only affects reduced-price meals. Values in this table are regression adjusted. Appendix A lists the variables included in the regression adjustments. Changes shown in the table may differ slightly from calculated differences due to rounding.

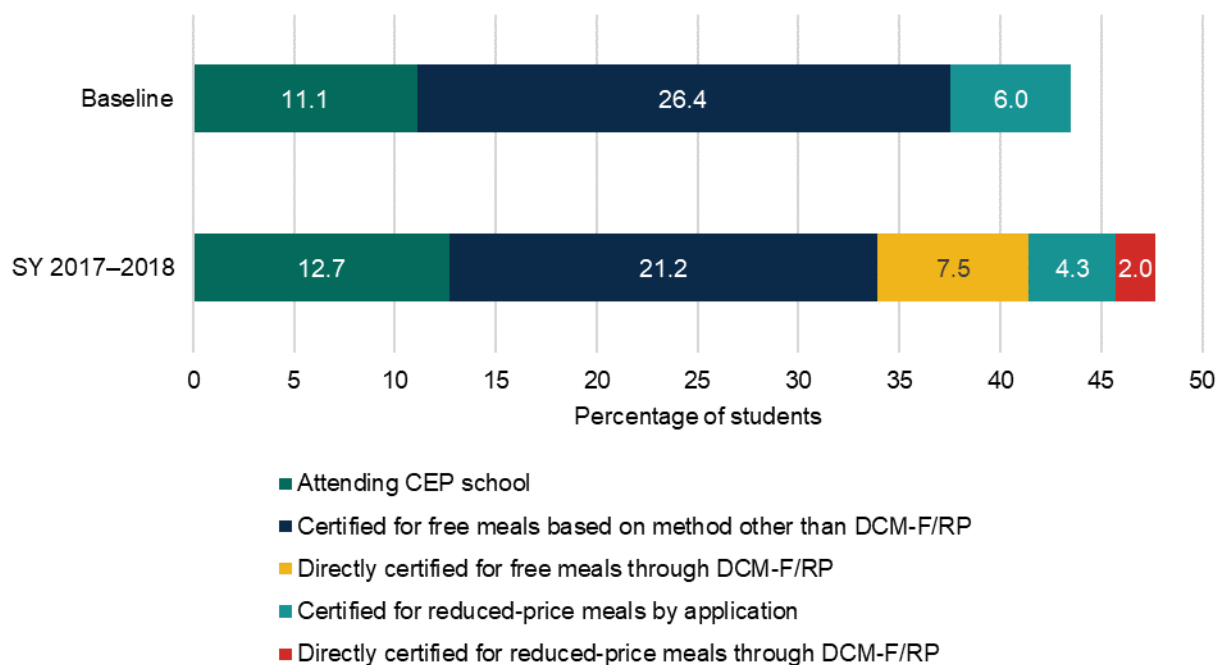
*Change between SY 2016–2017 (the baseline year for this outcome) and SY 2017–2018 is significantly different from zero at the .05 level, two-tailed test.

CEP = Community Eligibility Provision; SY = school year.

Because of its effects on CEP eligibility, beyond the initial year of implementation, DCM-F/RP can cause certifications to increase (by directly certifying students) or decrease (by expanding CEP, which leaves fewer students who could be certified for free or reduced-price meals). West Virginia was a striking example of this in SY 2017–2018, where certifications decreased for both free (Table III.2) and reduced-price (Table III.3) meals, due to the large expansion in CEP over the same time period. Combining the findings on CEP participation with those on certification status can show the changes in the total percentage of students with access to free or reduced-price meals. Figure III.2 shows this for the baseline year (SY 2015–2016) and SY 2017–2018 for the pooled sample that combines districts across the Cohort 1 States new to DCM in 2016–2017. Increases in CEP participation (from 11.1 to 12.7 percent of students) combined with the students newly directly certified for free or reduced-price meals based on Medicaid (7.5 percent and 2.0 percent of students respectively) increased the share of students with access to free or reduced-price meals.¹⁸ This was despite the decrease in certification for free or reduced-price meals by other methods.

¹⁸ Some of the increase in CEP shown in Figure III.2 occurred from SY 2015–2016 to SY 2016–2017, before the demonstration would have affected this outcome.

Figure III.2. Effects of DCM-F/RP on certification and CEP percentages in SY 2017–2018 for Cohort 1 States new to DCM in SY 2016–2017



Source: Administrative records provided by State administrators.

CEP = Community Eligibility Provision; SY = school year.

B. Effects on certification outcomes across demonstration years

SY 2017–2018 was the second year of DCM-F/RP for Cohort 1 States, so the outcomes in that year can help us understand how the effects of the demonstration change following the initial implementation year. Outcomes might have changed in the second demonstration year due to changes in CEP (as discussed in Section A.3) that could have been driven by free direct certifications based on Medicaid in the first year of the demonstration. Additionally, for States that initially implemented the demonstration partway through the year, outcomes could differ in the second year, when the demonstration would have been in place for the entire year.¹⁹

Operating the demonstration for the entire year might increase the percentage of students directly certified based on Medicaid because, once certified, students retain their certification status for the rest of the school year (unless they subsequently become eligible to be certified under a higher status). To examine this, we compared the SY 2017–2018 effects to those of the previous year for Nebraska, Utah, Virginia, and West Virginia.²⁰

¹⁹ Florida and Nebraska certified students by the beginning of SY 2016–2017, Utah did so in November 2016, Massachusetts and Virginia in May 2017, and West Virginia in June 2017 (see Figure I.1 for the timing of the initial DCM-F/RP match in each State).

²⁰ Florida and Massachusetts did not provide the needed data to estimate certification outcomes in SY 2016–2017 and are therefore excluded from this analysis.

1. Effects on certification for free meals across demonstration years

Free direct certifications based on Medicaid increased in SY 2017–2018 relative to the previous year. The effect in SY 2017–2018 was statistically significantly different for three of the four States in this analysis: Utah, Virginia, and West Virginia (Table III.5). These increases could be related to the fact that these States all operated DCM-F/RP through the entire school year in SY 2017–2018. Of the four States included in this analysis, only Nebraska implemented the demonstration at the beginning of SY 2016–2017. By contrast, the three States with statistically significant increases across demonstration years in the effect on the percentage of students directly certified for free meal based on Medicaid all implemented DCM-F/RP after the school year began in SY 2016–2017. Virginia did not begin the demonstration until spring 2017, and West Virginia did not certify students based on Medicaid until June 2017, after the school year had ended in many schools.²¹ For the pooled sample of Cohort 1 States new to DCM in 2016–2017, the effect in SY 2017–2018 was 2.7 percentage points higher than that in SY 2016–2017 (Figure III.3).

Table III.5. Effects of DCM-F/RP on certification for free meals across two years for Cohort 1 States

State	Percentage of students directly certified for free meals based on Medicaid			Percentage of students directly certified for free meals			Percentage of students certified for free meals		
	Change from baseline to Year 1	Change from baseline to Year 2	Difference	Change from baseline to Year 1	Change from baseline to Year 2	Difference	Change from baseline to Year 1	Change from baseline to Year 2	Difference
Nebraska	7.2*	8.2*	0.9	7.8*	7.9*	0.1	4.0*	2.5*	-1.4†
Utah	5.0*	5.8*	0.8†	5.5*	6.1*	0.6	2.8*	1.5	-1.4
Virginia	4.6*	8.1*	3.6†	6.4*	8.6*	2.2†	5.2*	6.1*	0.9
West Virginia	2.5*	4.7*	2.2†	-4.2*	-7.9*	-3.7†	-6.1*	-10.8*	-4.7†
Pooled sample	4.8*	7.5*	2.7†	4.9*	6.3*	1.4†	2.7*	2.3*	-0.3

Source: Administrative records provided by State administrators.

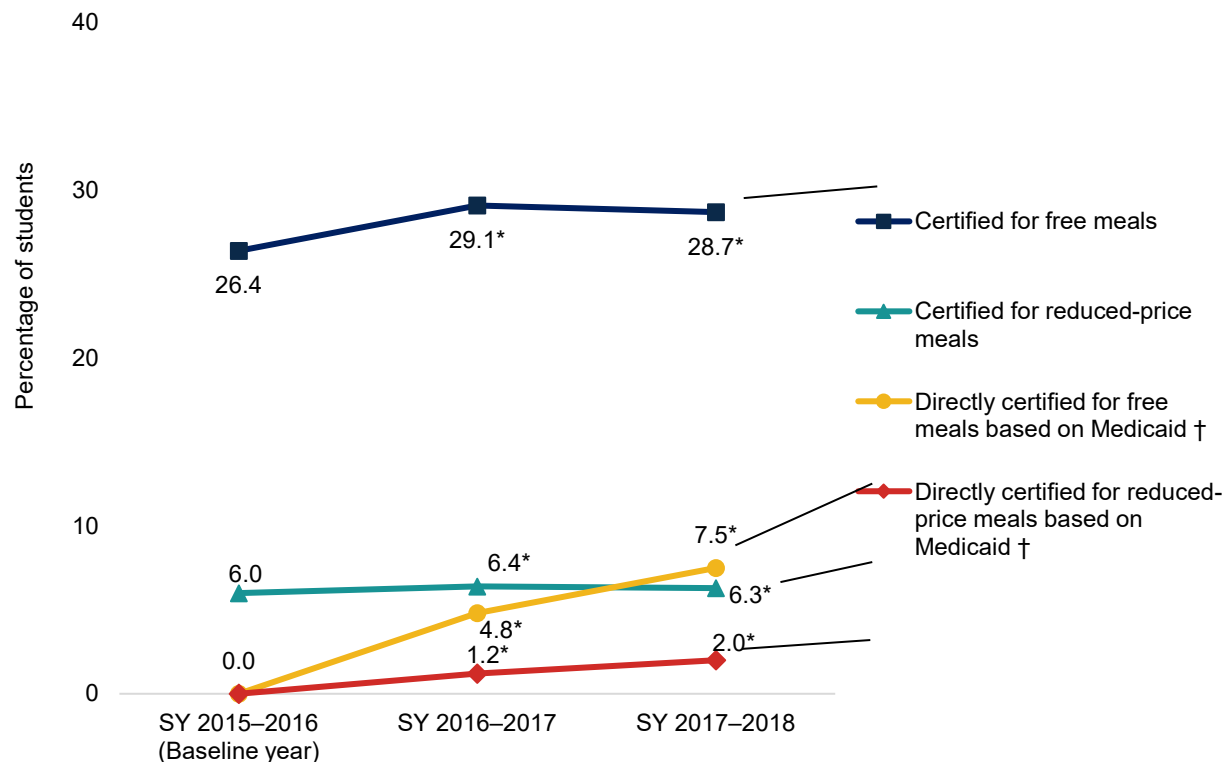
Notes: Percentages are calculated based on all students enrolled in districts included in the analysis. Each outcome in this table reflects the percentage of students who are certified for free meals based on the specified method; students attending schools that do not certify individual students, such as special provision schools in non-base years, are not counted as certified. Florida and Massachusetts are excluded from this table because those States participated in a prior demonstration of DCM for free meals during the baseline year, so the DCM-F/RP demonstration only affects reduced-price meals. Values in this table are regression adjusted. Appendix A lists the variables included in the regression adjustments. Changes shown in the table may differ slightly from calculated differences due to rounding.

*Change from the baseline year is significantly different from zero at the .05 level, two-tailed test.

†Difference between the Year 1 and Year 2 effects is significantly different from zero at the .05 level, two-tailed test.

²¹ Although West Virginia did not certify students under DCM-F/RP until June 2017, FNS allowed the State to include free direct certifications based on Medicaid in the identified student percentage calculations used to determine CEP eligibility for SY 2017–2018.

Figure III.3. Effects of DCM-F/RP on certification for free and reduced-price meals across two years for Cohort 1 States



Source: Administrative records provided by State administrators.

*Change from baseline year is significantly different from zero at the .05 level, two tailed test.

†Difference between the SY 2016–2017 and SY 2017–2018 effects is significantly different from zero at the .05 level, two tailed test.

SY = school year.

The demonstration’s effect on total free direct certifications in SY 2017–2018 compared to the previous year was mixed. Only Virginia experienced a statistically significant increase from SY 2016–2017 to SY 2017–2018 in the effect on this outcome (Table III.5). There was no statistically significant difference for Nebraska or Utah, and the effect decreased in West Virginia. The decreased effect in West Virginia likely reflects the sustained expansion of CEP throughout the study period.

DCM-F/RP’s effect on total free certifications decreased from SY 2016–2017 to SY 2017–2018 in Nebraska and West Virginia (Table III.5). The expansion in CEP in these States during the same period (Table III.4) could explain this decrease because students attending CEP schools are not certified for free or reduced-price meals. There were no statistically significant differences in effects on this outcome across

DCM-F/RP’s effects on the percentages of students directly certified for free and reduced-price meals based on Medicaid each grew in SY 2017–2018 relative to the prior year for three of the four States included in this analysis.

demonstration years in Utah or Virginia or in the pooled sample of States included in this analysis (Figure III.3).

2. Effects on certification for reduced-price meals across demonstration years

DCM-F/RP's effect on reduced-price direct certifications grew in SY 2017–2018 relative to the previous year in all States except Utah, where there was no statistically significant change (Table III.6). The demonstration's effect on total reduced-price certifications was statistically significantly higher in SY 2017–2018 relative to the prior year in Nebraska and statistically significantly lower in Utah. There were no statistically significant differences in effects on that outcome across demonstration years in Virginia or West Virginia.

Table III.6. Effects of DCM-F/RP on certification for reduced-price meals across two years for Cohort 1 States

State	Percentage of students directly certified for reduced-price meals based on Medicaid			Percentage of students certified for reduced-price meals		
	Change from baseline to Year 1	Change from baseline to Year 2	Difference	Change from baseline to Year 1	Change from baseline to Year 2	Difference
Nebraska	4.4*	5.3*	0.9†	2.0*	2.5*	0.5†
Utah	0.5*	0.5*	0.1	-0.1	-1.0*	-0.8†
Virginia	0.6*	1.1*	0.6†	0.4	0.2	-0.2
West Virginia	0.2*	0.6*	0.4†	-1.0*	-1.5*	-0.5
Pooled sample	1.2*	2.0*	0.8†	0.4*	0.3*	-0.1

Source: Administrative records provided by State administrators.

Notes: Percentages are calculated based on all students enrolled in districts included in the analysis. Each outcome in this table reflects the percentage of students who are certified for reduced-price meals based on the specified method; students attending schools that do not certify individual students, such as special provision schools in non-base years, are not counted as certified. Florida and Massachusetts are excluded from this table because the necessary Year 1 data were not available for those States. Values in this table are regression adjusted. Appendix A lists the variables included in the regression adjustments. Changes shown in the table may differ slightly from calculated differences due to rounding.

*Change from the baseline year is significantly different from zero at the .05 level, two-tailed test.

†Difference between the Year 1 and Year 2 effects is significantly different from zero at the .05 level, two-tailed test.

C. Direct certification match results

Students can be eligible for direct certification based on multiple programs. Students whose student enrollment records match to program participation records for multiple programs should be directly certified based on the highest-priority program. States and districts prioritize programs according to FNS guidance, in particular ensuring that students who match to SNAP and another program are directly certified based on SNAP (as discussed further in Chapter VII). Some States enforce this priority in the program data before matching them against school enrollment data. In these States, the extent of program overlap among matched students is unknown. Other States match enrollment data against program data files and retain indicators for all programs children participate in. In these States it is possible to examine program overlap in

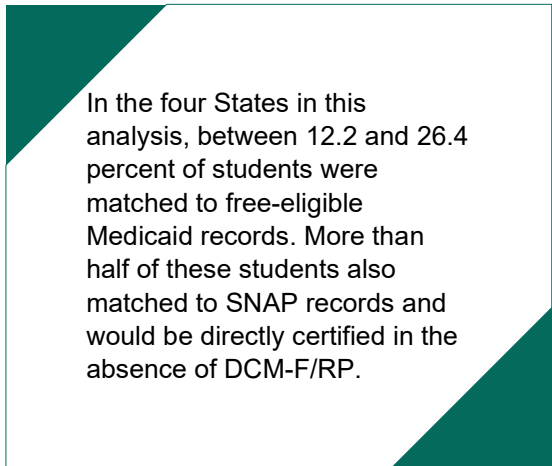
State direct certification matches. Additionally, because Medicaid is the lowest priority direct certification program, it is only in States that preserve program overlap among matches that we can see the full set of students who were matched to eligible Medicaid records. Regardless of the prioritization method, assuming States implemented it correctly, none of the students identified earlier in this chapter as directly certified based on Medicaid would have matched to other programs, because all other programs take priority over Medicaid.

Four demonstration States provided data on the full set of eligible Medicaid matches and program overlap in their direct certification match results.²² Two of these States, Michigan and Nebraska, provided data that excluded students attending CEP or non-base year special provision schools. These results correspond to the certification outcomes presented earlier in this chapter, as students attending these schools are not certified for meal benefits. The other two States, Iowa and Wisconsin, were not able to remove students attending special provision schools from the match counts. These results thus include matches for students who cannot be directly certified, because they already receive free meals based on their attendance at a special provision school.

1. Free-eligible Medicaid matches

Among the four States included in this analysis, the percentage of students matched to free-eligible Medicaid records (Medicaid records with incomes at or below 130 percent of the FPL) ranged from 12.2 percent in Iowa to 26.4 percent in Wisconsin (Tables III.7 and III.8). In all four States, more than half of students who matched to free-eligible Medicaid records also matched to SNAP records (Tables III.7 and III.8). These students would be directly certified based on SNAP regardless of whether the States operated DCM-F/RP. The overlap percentage was highest in Wisconsin, in which 79 percent of students who matched to free-eligible Medicaid records also matched to SNAP records.²³

Virtually all of the remaining free-eligible Medicaid matches matched only to Medicaid. There was almost no overlap with any other



In the four States in this analysis, between 12.2 and 26.4 percent of students were matched to free-eligible Medicaid records. More than half of these students also matched to SNAP records and would be directly certified in the absence of DCM-F/RP.

²² The program match data also supported an analysis of Medicaid match rates, documented in Appendix B. Table B.5 shows the percentages of total free- and reduced-price-eligible Medicaid records that matched to student enrollment records in Michigan and Wisconsin.

²³ This could be the result of higher SNAP participation in Wisconsin relative to the other three States in this analysis as measured by the SNAP Program Access Index (PAI). The PAI indicates the average monthly SNAP participation level in each State as a percentage of the number of people with incomes below 125 of the FPL. In FY 2016, the last year for which data are available, the PAI for Wisconsin was 0.815. The other three States had somewhat lower PAI figures for FY 2016: 0.794 in Iowa, 0.767 in Michigan, and 0.612 in Nebraska (Food and Nutrition Service, 2018).

program, likely due to a low number of direct certifications based on programs other than SNAP or Medicaid.²⁴

2. Reduced-price-eligible Medicaid matches

Among the four States included in this analysis, the percentage of total students who matched to reduced-price-eligible Medicaid records (Medicaid records with incomes between 130 and 185 percent of the FPL) ranged from 1.9 percent in Michigan to 5.5 percent in Nebraska (Tables III.7 and III.8). This difference could be the result of different levels of CEP enrollment in the two States, because both States excluded students attending CEP or other non-base year special provision schools—and Michigan had a much higher rate of CEP participation (not shown). In Michigan, the higher rate of special provision attendance likely results in a substantial portion of the State’s school-age Medicaid population from being excluded from this analysis, whereas in Nebraska, fewer low-income students are excluded from the analysis due to attending special provision schools.

Table III.7. Full direct certification match results for students matched to DCM-eligible Medicaid records in SY 2017–2018, excluding students attending special provision schools

Outcome	Michigan			Nebraska		
	Number	Percentage of total students	Percentage of eligible Medicaid matches	Number	Percentage of total students	Percentage of eligible Medicaid matches
Total students enrolled	1,499,505	100.0	n.a.	342,898	100.0	n.a.
Students matched to free-eligible Medicaid records in State match	353,086	23.5	100.0	68,069	19.9	100.0
Among those, highest priority direct certification match						
SNAP ^a	202,366	13.5	57.3	38,896	11.3	57.1
TANF ^a	1,719	0.1	0.5	10	0.0	0.0
Foster care ^a	193	0.0	0.1	1,266	0.4	1.9
Medicaid only ^b	148,808	9.9	42.1	27,897	8.1	41.0
Students matched to reduced-price-eligible Medicaid records in State match	28,520	1.9	100.0	18,731	5.5	100.0
Among those, highest priority direct certification match						
SNAP ^a	5,353	0.4	18.8	1,905	0.6	10.2
TANF ^a	6	0.0	0.0	2	0.0	0.0
Foster care ^a	8	0.0	0.0	37	0.0	0.2
Medicaid only ^b	23,153	1.5	81.2	16,787	4.9	89.6

²⁴ These results do not identify students who might have matched to Medicaid, SNAP, and a third program. We retained only the highest-priority additional program match to provide the clearest picture of how each student would be classified in the absence of the demonstration.

Outcome	Michigan		Nebraska			
	Number	Percentage of total students	Percentage of eligible Medicaid matches	Number	Percentage of total students	Percentage of eligible Medicaid matches
Number of districts in sample for this analysis ^c	710		344			

Source: Administrative records provided by State administrators.

Note: Subgroup percentages may differ slightly from totals due to rounding.

^aDirect certification based on these programs takes priority over direct certification based on Medicaid. Therefore, the DCM demonstration did not change the certification status or basis for these students.

^bSome of these students might have been directly certified for free meals at the district level, either based on programs matched locally or through extension to students residing in a household with a directly certified student. Others might have been approved for free or reduced-price meals by application. Others might not have been approved for free or reduced-price meals in the absence of DCM.

^cThe match results data did not include all districts in some States.

n.a. = not applicable; SNAP = Supplemental Nutrition Assistance Program; TANF = Temporary Assistance for Needy Families.

The percentage of these reduced-price–eligible Medicaid matches that also matched to SNAP varied widely across the States, from 10.2 percent in Nebraska to 34.4 percent in Wisconsin (Tables III.7 and III.8). The lower rate in Nebraska is likely the result of differences in the income eligibility requirements between SNAP and Medicaid. For households not containing elderly or disabled individuals, Nebraska uses the Federal SNAP gross income eligibility threshold of 130 percent of the FPL. Therefore, few Medicaid recipients with incomes in the reduced-price meal eligibility range would qualify for SNAP. At the same time, Nebraska’s Medicaid eligibility limit (213 percent of the FPL) encompasses the entire range of reduced-price meal eligibility. This policy combination is consistent with a low rate of overlap between SNAP and reduced-price–eligible Medicaid records.

By contrast, under Wisconsin’s Broad-Based Categorical Eligibility policy, families can qualify for SNAP if their gross incomes are less than or equal to 200 percent of the FPL, provided that their net incomes (calculated by deducting eligible expenses from their gross income) are low enough to qualify for a SNAP benefit. This means that some families who participate in SNAP have gross incomes that would otherwise qualify them for reduced-price meals. This is consistent with a high rate of overlap between SNAP and reduced-price–eligible Medicaid records.

As with free-eligible Medicaid matches, there was virtually no overlap between reduced-price–eligible records and administrative records for programs other than SNAP.

Table III.8. Full direct certification match results for students matched to DCM-eligible Medicaid records in SY 2017–2018, including students attending special provision schools

Outcome	Iowa			Wisconsin		
	Number	Percentage of total students	Percentage of eligible Medicaid matches	Number	Percentage of total students	Percentage of eligible Medicaid matches
Total students enrolled	521,237	100.0	n.a.	748,620	100.0	n.a.
Students matched to free-eligible Medicaid records in State match	63,584	12.2	100.0	197,694	26.4	100.0
Among those, highest priority direct certification match						
SNAP ^a	32,785	6.3	51.6	156,106	20.9	79.0
TANF ^a	95	0.0	0.1	66	0.0	0.0
Foster care ^a	329	0.1	0.5	n.a.	n.a.	n.a.
Medicaid only ^b	30,375	5.8	47.8	41,522	5.5	21.0
Students matched to reduced-price-eligible Medicaid records in State match	14,915	2.9	100.0	25,040	3.3	100.0
Among those, highest priority direct certification match						
SNAP ^a	2,069	0.4	13.9	8,623	1.2	34.4
TANF ^a	4	0.0	0.0	2	0.0	0.0
Foster care ^a	25	0.0	0.2	n.a.	n.a.	n.a.
Medicaid only ^b	12,817	2.5	85.9	16,415	2.2	65.6
Number of districts in sample for this analysis^c		363			489	

Source: Administrative records provided by State administrators.

Note: Subgroup percentages may differ slightly from totals due to rounding.

^aDirect certification based on these programs takes priority over direct certification based on Medicaid. Therefore, the DCM demonstration did not change the certification status or basis for these students.

^bSome of these students might have been directly certified for free meals at the district level, either based on programs matched locally or through extension to students residing in a household with a directly certified student. Others might have been approved for free or reduced-price meals by application. Others might not have been approved for free or reduced-price meals in the absence of DCM.

^cThe match results data did not include all districts in some States.

n.a. = not applicable; SNAP = Supplemental Nutrition Assistance Program; TANF = Temporary Assistance for Needy Families.

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IV. EFFECTS ON PARTICIPATION OUTCOMES

DCM-F/RP could increase school meal participation—that is, the number of meals served—if more students are certified to receive free or reduced-price meals and those students obtain school meals more often in response to the reduction in price. Even if those students do not participate more often, the proportion of meals served for free or at a reduced price could change. This proportion could increase if students who had been participating at full price continue to participate but now receive free meals or reduced-price meals. If students who had been participating at a reduced price continue to participate but now receive free meals, that would increase the proportion of meals served for free but decrease the proportion of meals served for a reduced price. However, other factors unrelated to DCM-F/RP, such as changes in student preferences, could also influence school meal participation.

The participation analysis focuses on three main outcomes, each defined separately for lunches and breakfasts: the participation rate, defined as average number of meals served per enrolled student per day; the percentage of meals that were served for free; and the percentage of meals that were served at a reduced price.²⁵ For States that participated in the previous demonstration of DCM, we examine only outcomes that could have been affected by changes in reduced-price participation. Because these States were already conducting DCM for free meals before the first year of the study, we are not able to assess potential effects of DCM-F/RP on free meals by comparing a year in which Medicaid was used for direct certification to a year in which it was not.

The analyses in this chapter address the first set of research questions under Objective 4 of the study, as well as the portion of research question C.4 that pertains to the participation findings (Table IV.1). The other research questions under this objective are discussed in Chapters V and VI. This chapter presents findings on the effects of DCM-F/RP on these participation outcomes, first for the NSLP and then for the SBP. It then compares findings across demonstration years. Finally, it discusses how these findings relate to those on certification presented in the previous chapter.

A. Effects on SY 2017–2018 participation outcomes

Overall, DCM-F/RP had mixed effects on school meal participation rates and the percentages of meals served for free and at a reduced price. For the analysis in this section, each outcome is defined for the set of months during which DCM-F/RP was conducted in SY 2017–2018, and for the same set of months in the baseline school year.²⁶

²⁵ As discussed in Chapter II, the measures of meals served for free and meals served at a reduced price are actually meals reimbursed at the free rate and meals reimbursed at the reduced-price rate. Although these concepts are identical in schools that certify students individually, they differ in special provision schools, where all meals are served for free but some are reported as reduced price (in Provision 2 or 3 schools) or paid in the participation data because they are reimbursed at those rates.

²⁶ Nevada is excluded from the analysis because the State had not implemented DCM-F/RP by the end of SY 2017–2018.

Table IV.1. Research questions and objectives related to participation, Federal reimbursement, and State administrative costs

Question number	Research questions	Relevant chapter
Objective 4. Examine the effect of DCM-F/RP on school meal participation, Federal reimbursement costs, and State administrative costs.		
C.1	How does DCM-F/RP affect the average number of meals served (breakfast and lunch separately) per student per day? How does DCM-F/RP affect the percentage of meals (breakfast and lunch separately) served for free? Served at a reduced price?	IV
C.2	How does DCM-F/RP affect the total Federal reimbursement costs for meals served to students per school day? How does DCM-F/RP affect the blended reimbursement rate (BRR), defined as total Federal reimbursement costs divided by the number of meals served?	V
C.3	How does DCM-F/RP affect the total State administrative costs relative to existing costs for direct certification broken down by agency (child nutrition or Medicaid)? Start-up costs versus ongoing costs?	VI
Objective 5. For Cohort 1, examine continuing effects of Medicaid data matching on eligibility and costs over a second, full school year under the demonstration.		
C.4	For Cohort 1 demonstration States, how have the effects on reimbursement, participation, and costs described in research questions C.1 through C.3 changed from Year 1 (SY 2016–2017) of the demonstration?	IV, V, and VI

SY = school year.

1. Effects on NSLP outcomes

The implementation of DCM-F/RP was associated with changes in NSLP participation rates in some States, but the direction of the changes was mixed (Table IV.2). Eight demonstration States experienced no statistically significant change between the baseline year and SY 2017–2018, three States experienced increases, and three States experienced decreases in the measure. Among the three States (California, Texas, and Washington) with statistically significant increases, the largest change was a 6.6 percentage point increase in the participation rate in Washington, which translates to 0.066 lunches per student per day, or about 12 meals per student across a full school year. Among the three other States with statistically significant decreases (Florida, Virginia, and Michigan), the largest of these was a decrease of 0.031 lunches per student per day in Florida, which translates to less than six meals per student per year. The smallest statistically significant change was a decrease of 0.007 meals per student per day in Michigan.²⁷

²⁷ A common way to examine magnitudes of effects across outcomes is to translate into effect sizes. Generally, an effect size of 0.25 standard deviations or larger is considered to be substantively important (U.S. Department of Education 2017). For the percentage of lunches served per student per day, the effect size is approximately 0.54 for the increase of 0.066 lunches per student per day in Washington, 0.33 for the decrease of 0.031 lunches per student per day in Florida, 0.12 for the decrease of 0.018 lunches per student per day in Texas, and 0.05 for the decrease of 0.007 lunches per student per day in Michigan. We were able to identify the small changes in Michigan and Texas (and even smaller changes in the pooled samples) as statistically significant because the statistical procedures we used to estimate the effects explain a large proportion of variance in this outcome. Therefore, the estimates are precise and are likely to be identified as statistically significant.

Table IV.2. Effects of DCM-F/RP on NSLP participation in SY 2017–2018

State	Average number of lunches served per student per day			Percentage of lunches served for free			Percentage of lunches served at a reduced price		
	SY 2015–2016 (Baseline year)	SY 2017– 2018	Change	SY 2015–2016 (Baseline year)	SY 2017– 2018	Change	SY 2015–2016 (Baseline year)	SY 2017– 2018	Change
Cohort 1 States included in both DCM demonstrations^a									
Florida	0.589	0.559	-0.031*	n.a.	n.a.	n.a.	4.7	2.8	-1.9*
Massachusetts	0.469	0.467	-0.001	n.a.	n.a.	n.a.	2.7	5.3	2.6*
Pooled sample	0.555	0.541	-0.014*	n.a.	n.a.	n.a.	3.1	4.5	1.4*
Cohort 1 States new to DCM in SY 2016–2017									
Nebraska	0.645	0.651	0.006	40.6	43.0	2.4*	10.2	9.5	-0.7*
Utah	0.491	0.485	-0.006	39.9	40.6	0.7	10.4	9.8	-0.7*
Virginia	0.503	0.474	-0.029*	55.7	56.2	0.6	8.1	7.8	-0.3
West Virginia	0.620	0.610	-0.009	67.4	75.4	8.0*	3.2	1.6	-1.6*
Pooled sample	0.529	0.518	-0.011*	51.4	52.5	1.2*	8.4	7.7	-0.7*
State	Average number of lunches served per student per day			Percentage of lunches served for free			Percentage of lunches served at a reduced price		
	SY 2016–2017 (Baseline year)	SY 2017– 2018	Change	SY 2016–2017 (Baseline year)	SY 2017– 2018	Change	SY 2016–2017 (Baseline year)	SY 2017– 2018	Change
Cohort 2 States									
California	0.407	0.430	0.023*	69.3	70.8	1.5*	10.8	10.0	-0.8*
Connecticut	0.469	0.485	0.016	56.2	60.3	4.1*	5.1	5.0	-0.2
Indiana	0.609	0.608	-0.002	51.7	53.4	1.7*	8.0	8.3	0.3
Iowa	0.637	0.634	-0.003	42.4	44.2	1.8*	6.4	6.3	-0.2
Michigan	0.478	0.471	-0.007*	62.5	65.7	3.2*	7.2	5.4	-1.7*
Texas	0.567	0.585	0.018*	68.0	72.4	4.3*	7.0	5.7	-1.3*
Washington	0.377	0.444	0.066*	63.7	62.3	-1.4*	8.5	8.5	0.0
Wisconsin	0.524	0.518	-0.006	50.7	51.7	0.9*	5.5	5.6	0.1
Pooled sample	0.491	0.500	0.009*	63.3	66.5	3.2*	8.3	7.3	-1.0*

Source: Administrative records provided by State administrators.

Notes: The results for Cohort 1 States reflect all months in the school year; the results for each Cohort 2 State reflect all months after the State conducted its first DCM-F/RP match in SY 2017–2018 (in July for California and Indiana, September for Michigan, October for Texas, December for Wisconsin, March for Connecticut and Iowa, and April for Washington). Values in this table are regression adjusted. Appendix A lists the variables included in the regression adjustments. Changes shown in the table may differ slightly from calculated differences due to rounding.

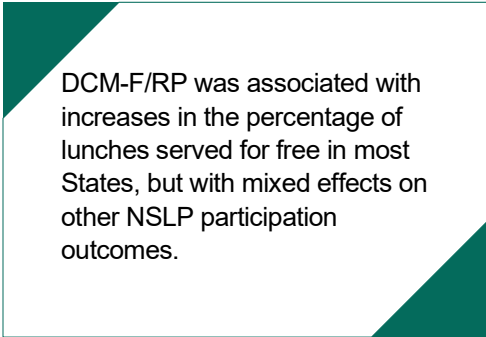
*Change between the baseline year and SY 2017–2018 is significantly different from zero at the .05 level, two-tailed test.

^aOutcomes related to free meals are not shown for Florida and Massachusetts because those States participated in a prior demonstration of DCM for free meals during the baseline year, so the DCM-F/RP demonstration only affects reduced-price meals.

n.a. = not applicable; SY = school year.

The estimates of the changes between the baseline year and SY 2017–2018 might reflect changes over time that did not result from DCM-F/RP, such as changes in student preferences. Although the regression adjustments were intended to control for time-invariant district characteristics and changes in economic conditions that might affect outcomes, regressions cannot control for unmeasured time-variant factors (such as other changes to school meal operations or changes in student preferences for school meals).

The percentage of lunches served for free increased between the baseline year and SY 2017–2018 in 9 of the 12 States for which we measured this outcome.²⁸ The largest change was an 8.0 percentage point increase (approximately 14 additional free meals per student per year) in West Virginia, which is likely related to the large increase in the number of schools adopting CEP in that State (see Chapter III).²⁹ One State, Washington, experienced a small but statistically significant decrease of 1.4 percentage points, or about 2.5 additional free meals per student per year. There was no statistically significant change in Utah or Virginia.



DCM-F/RP was associated with increases in the percentage of lunches served for free in most States, but with mixed effects on other NSLP participation outcomes.

In contrast to the findings for free lunches, changes in the percentage of lunches served at a reduced price were smaller and tended to be in the opposite direction. The percentage of lunches served a reduced price decreased in 7 of the 14 demonstration States, by amounts ranging from 0.7 percentage points in Nebraska to 1.9 percentage points in Florida. These decreases translated to approximately 3 or fewer reduced-price lunches per student per year. The percentage of lunches served at a reduced price increased in one State, Massachusetts, by 2.6 percentage points. There was no statistically significant change in this measure in the remaining six demonstration States.

As noted at the beginning of this chapter, there was no clear expectation of how the demonstration might affect the percentage of meals served at a reduced price in States new to DCM because two aspects of DCM-F/RP work in opposite directions for reduced-price meals: students moving from reduced-price to free status potentially decrease the proportion of meals served at a reduced price, whereas participating students moving from paid to reduced-price status potentially increase that proportion.³⁰ The decreases in the percentage of lunches served at a reduced price in States new to DCM could indicate that participation among those who moved from reduced-price to free meals changed more than participation among those who moved from

²⁸ As mentioned previously, States that participated in the first DCM demonstration were not included in the analysis of this outcome.

²⁹ Because the measure of the percentage of lunches served for free is actually the percentage of lunches reimbursed at the free Federal reimbursement rate, it could understate changes in the actual percentage of lunches served for free in States like West Virginia where the number of CEP schools increased. Although all meals are served for free in CEP schools, some are reimbursed at the paid rate.

³⁰ For States that participated in the previous DCM demonstration, any shift to free status would have occurred before baseline, so the new demonstration could only result in students moving from paid to reduced-price status.


paid to reduced-price status. Students changing from reduced-price to free meals might be more likely to participate than those moving from paid to reduced-price meals, because those who received reduced-price meals in the absence of DCM-F/RP had to complete an application to become certified. Completing an application could indicate a greater interest in school meals and therefore a higher participation rate.

For States new to DCM-F/RP, it is also useful to examine the changes in the percentage of meals served for free in combination with the percentage served at a reduced price. In all five States with statistically significant changes in both outcomes, the magnitude of the increase in the percentage of meals served for free was larger than the decrease in the percentage of meals served at a reduced price, resulting in an increase in the overall percentage of meals served for free or at a reduced price, despite the decline in the reduced price outcome.

For the two States included in the prior demonstration, students could have already been certified for free meals through DCM in the baseline year, so the expected direction of any effect of the new demonstration on reduced-price meals would be positive. Consistent with these expectations, the percentage of lunches served at a reduced price increased between the baseline year and SY 2017–2018 in Massachusetts. However, Florida experienced a decrease in the percentage of lunches served at a reduced price, which was inconsistent with the anticipated direction of the effects of the demonstration and might reflect changes in factors unrelated to DCM-F/RP.

2. Effects on SBP participation outcomes

DCM-F/RP was associated with small changes to SBP participation rates (Table IV.3). The number of breakfasts served per student per day increased between the baseline year and SY 2017–2018 in 5 of the 14 demonstration States and decreased in one State, but there was no statistically significant change in this outcome for the remaining 8 States. Statistically significant increases in the SBP participation rate ranged from 0.010 in Nebraska to 0.038 in Washington. The other 3 States with increases were California (0.016), Texas (0.013), and Virginia (0.021). These increases translated to fewer than seven additional breakfasts per student per year in each of the 5 States. Iowa experienced a small, statistically significant decrease in the participation rate of 0.007, which translated to just over one additional breakfast per student per year. As noted above, the statistical procedures used to estimate the effects explain a large proportion of variance in this outcome, and this precision resulted in statistical significance for many samples with small changes. The small magnitude of the changes limits their practical importance.



DCM-F/RP was associated with small, mixed effects on all three SBP participation outcomes.

The percentage of breakfasts served for free increased between the baseline year and SY 2017–2018 in five States and decreased in one other. Specifically, California, Michigan, Nebraska, Texas, and West Virginia experienced statistically significant increases in the percentage of breakfasts served for free, ranging from a 1.3 percentage point change in California to a 6.2 percentage point change in West Virginia. The increase in the number of CEP districts in West

Table IV.3. Effects of DCM-F/RP on SBP participation in SY 2017–2018

State	Average number of breakfasts served per student per day			Percentage of breakfasts served for free			Percentage of breakfasts served at a reduced price		
	SY 2015–2016 (Baseline year)	SY 2017– 2018	Change	SY 2015–2016 (Baseline year)	SY 2017– 2018	Change	SY 2015–2016 (Baseline year)	SY 2017– 2018	Change
Cohort 1 States included in both DCM demonstrations^a									
Florida	0.283	0.277	-0.006	n.a.	n.a.	n.a.	4.4	2.2	-2.1*
Massachusetts	0.191	0.168	-0.023	n.a.	n.a.	n.a.	2.3	3.6	1.3
Pooled sample	0.255	0.250	-0.004	n.a.	n.a.	n.a.	3.0	3.5	0.5
Cohort 1 States new to DCM in SY 2016–2017									
Nebraska	0.198	0.208	0.010*	59.1	61.6	2.5*	11.5	9.9	-1.6*
Utah	0.120	0.126	0.006	66.9	65.9	-1.0	10.4	10.4	0.0
Virginia	0.216	0.238	0.021*	74.3	71.1	-3.2*	7.9	7.4	-0.6*
West Virginia	0.491	0.495	0.004	71.9	78.1	6.2*	2.8	1.3	-1.5*
Pooled sample	0.220	0.236	0.017*	71.4	70.3	-1.1*	7.5	6.6	-0.9*
State	Average number of breakfasts served per student per day			Percentage of breakfasts served for free			Percentage of breakfasts served at a reduced price		
	SY 2016–2017 (Baseline year)	SY 2017– 2018	Change	SY 2016–2017 (Baseline year)	SY 2017– 2018	Change	SY 2016–2017 (Baseline year)	SY 2017– 2018	Change
Cohort 2 States									
California	0.216	0.232	0.016*	74.1	75.4	1.3*	9.8	9.2	-0.7*
Connecticut	0.187	0.184	-0.003	81.1	83.0	1.9	4.0	3.3	-0.7
Indiana	0.223	0.226	0.002	74.5	75.0	0.5	6.9	7.9	1.0*
Iowa	0.178	0.171	-0.007*	71.5	71.8	0.3	6.5	6.3	-0.2
Michigan	0.236	0.237	0.000	77.0	78.9	1.9*	5.9	4.5	-1.4*
Texas	0.313	0.326	0.013*	77.7	81.5	3.7*	6.3	4.8	-1.5*
Washington	0.143	0.181	0.038*	77.7	76.9	-0.9	8.9	9.2	0.3
Wisconsin	0.198	0.200	0.002	73.6	72.7	-0.9	5.2	5.3	0.1
Pooled sample	0.239	0.248	0.008*	75.6	78.1	2.5*	7.7	6.5	-1.2*

Source: Administrative records provided by State administrators.

Notes: The results for Cohort 1 States reflect all months of the school year, and the results for each Cohort 2 State reflect all months after the State conducted its first DCM-F/RP match in SY 2017–2018 (in July for California and Indiana, September for Michigan, October for Texas, December for Wisconsin, March for Connecticut and Iowa, and April for Washington). Values in this table are regression adjusted. Appendix A lists the variables included in the regression adjustments. Changes shown in the table may differ slightly from calculated differences due to rounding.

*Change between the baseline year and SY 2017–2018 is significantly different from zero at the .05 level, two-tailed test.

^aOutcomes related to free meals are not shown for Florida and Massachusetts because those States participated in a prior demonstration of DCM for free meals during the baseline year, so the DCM-F/RP demonstration only affects reduced-price meals.

n.a. = not applicable.

Virginia likely contributed to this State's increase. Virginia, the only State with a statistically significant decrease in the percentage of breakfasts served for free, experienced a 3.2 percentage point decrease. The remaining 6 States for which this outcome was measured did not have statistically significant changes to the percentage of breakfasts served for free.

As with lunches, changes in the percentage of breakfasts served at a reduced price were typically decreases. Seven of the 14 demonstration States experienced a statistically significant decrease in this outcome between the baseline year and SY 2017–2018, ranging from 0.6 percentage points in Virginia to 2.1 percentage points in Florida. One State, Indiana, had a small, statistically significant increase of 1.0 percentage points in the percentage of meals served at a reduced price. The remaining 6 States experienced no statistically significant change between the baseline year and SY 2017–2018. As discussed above regarding NSLP outcomes, the two potential effects of DCM-F/RP on the proportion of meals served at a reduced price in States not participating in the prior DCM demonstration work in opposite directions. The decreases in this measure in some States could indicate that participation among those who moved from reduced-price to free meals was higher, or changed more, than participation among those who moved from paid to reduced-price status.

Five States experienced both a statistically significant increase in the percentage of breakfasts served for free and a corresponding statistically significant decrease in the percentage served at a reduced price. In each State, the increases in the percentage of breakfasts served for free were larger than the respective decreases in the percentage of breakfasts served at a reduced price, resulting in an increase in the overall percentage of meals served for free or at a reduced price. In Virginia, the percentage of breakfasts served for free and the percentage served at a reduced price decreased by 3.2 percentage points and 0.6 percentage points, respectively.

In Florida and Massachusetts, where students could be certified for free meals through the prior DCM demonstration, the circumstances under which students would move from reduced-price to free meals between the baseline year and SY 2017–2018 did not apply. However, the percentage of breakfasts served at a reduced price decreased in Florida and did not change significantly in Massachusetts.

B. Effects on participation outcomes across demonstration years

As discussed in Chapter III, a comparison of the effects of DCM-F/RP on key outcomes in Cohort 1 States in the first year of the demonstration (SY 2016–2017) to those in the second year of the demonstration (SY 2017–2018) can help us understand how stable the effects are over time. The analysis uses data for all months in each school year, regardless of when the State conducted its first match in the first demonstration year.³¹ For States that implemented DCM-F/RP late in SY 2016–2017, such as Massachusetts and Virginia, reimbursement amounts are likely to be larger in the second year of the demonstration than in the first year, because the demonstration could not affect participation patterns during months before it began in SY 2016–2017, whereas it could affect participation patterns in all months in SY 2017–2018. Because the

³¹ Florida and Nebraska conducted their first matches in August 2016; Utah conducted its first match in November 2016; and Massachusetts and Virginia conducted their first matches in May 2017.

effects on participation outcomes are often small, and changes over time might be due to changes in unmeasured factors unrelated to the demonstration, the differences presented here should be interpreted with caution. The analysis excludes West Virginia, which did not implement DCM-F/RP until the end of SY 2016–2017, and California, which transitioned to statewide implementation in SY 2017–2018.

1. Effects on NSLP outcomes across demonstration years

For most Cohort 1 States, the effect of DCM-F/RP on the average number of lunches served per student per day did not change significantly in SY 2017–2018 relative to the previous year (Table IV.4). However, for Virginia, the demonstration had no effect on lunches served per student per day in SY 2016–2017 and a negative effect in SY 2017–2018 relative to the baseline year. The pattern of decreasing participation over time in this State might be explained by factors that are not included in our analysis and cannot be accounted for by our model. The change in Virginia drove a similar pattern for the pooled sample of Cohort 1 States new to DCM, where the demonstration had no statistically significant effect on lunches served per student per day in SY 2016–2017 but a negative effect in SY 2017–2018 relative to baseline (Figure IV.1). The effect of DCM-F/RP did not change significantly across demonstration years for the pooled sample of States included in both DCM demonstrations.

The effect of the demonstration on the percentage of lunches served for free only differed significantly across demonstration years in one State, Virginia, where the percentage of lunches served for free decreased in SY 2016–2017 but had no statistically significant change in SY 2017–2018 relative to the baseline.³² The increase in the effect from SY 2016–2017 to SY 2017–2018 on the percentage of lunches served for free could be related to the fact that these States operated DCM-F/RP through the entire school year in SY 2017–2018, but for just a portion of the school year in SY 2016–2017, before which the demonstration would not have had an effect on participation outcomes.

The effect of the demonstration on the percentage of lunches served at a reduced price changed significantly between SY 2016–2017 and SY 2017–2018 for three States but followed a different pattern in each. DCM-F/RP did not have a statistically significant effect in SY 2016–2017 on either of the States included in both DCM demonstrations, but Florida experienced a decrease in SY 2017–2018 relative to the baseline, whereas Massachusetts experienced an increase in SY 2017–2018 relative to the baseline. Among Cohort 1 States new to DCM, only Virginia experienced a statistically significant change in the effect of the demonstration between years: the percentage of lunches served at a reduced price increased in SY 2016–2017 but did not differ significantly from baseline in SY 2017–2018. For this State, the 1.8 percentage point increase in the effect of the demonstration on the percentage of lunches served for free was larger than the 0.7 percentage point decrease in the effect of the demonstration on the percentage of lunches served at a reduced price, indicating that the effect on the total percentage meals served for free or at a reduced price between SY 2016–2017 and SY 2017–2018 was positive, though small.

³² States that participated in the first DCM demonstration were not included in the analysis of this outcome.

Table IV.4. Effects of DCM-F/RP on NSLP participation across two years for Cohort 1 States

State	Average number of lunches served per student per day			Percentage of lunches served for free			Percentage of lunches served at a reduced price		
	Change from baseline to Year 1	Change from baseline to Year 2	Difference	Change from baseline to Year 1	Change from baseline to Year 2	Difference	Change from baseline to Year 1	Change from baseline to Year 2	Difference
Cohort 1 States included in both DCM demonstrations^a									
Florida	-0.017*	-0.031*	-0.013	n.a.	n.a.	n.a.	0.2	-1.9*	-2.1 [†]
Massachusetts	0.000	-0.001	-0.001	n.a.	n.a.	n.a.	0.8	2.6*	1.8 [†]
Pooled sample	-0.011*	-0.014*	-0.003	n.a.	n.a.	n.a.	1.5*	1.4*	-0.1
Cohort 1 States new to DCM in SY 2016–2017									
Nebraska	0.007	0.006	0.000	2.3*	2.4*	0.1	-0.9*	-0.7*	0.2
Utah	-0.001	-0.006	-0.005	0.9*	0.7	-0.2	-0.5*	-0.7*	-0.2
Virginia	-0.009	-0.029*	-0.020 [†]	-1.3*	0.6	1.8 [†]	0.3*	-0.3	-0.7 [†]
Pooled sample	-0.001	-0.012*	-0.012[†]	0.3*	1.2*	0.9[†]	-0.2*	-0.5*	-0.3[†]

Source: Administrative records provided by State administrators.

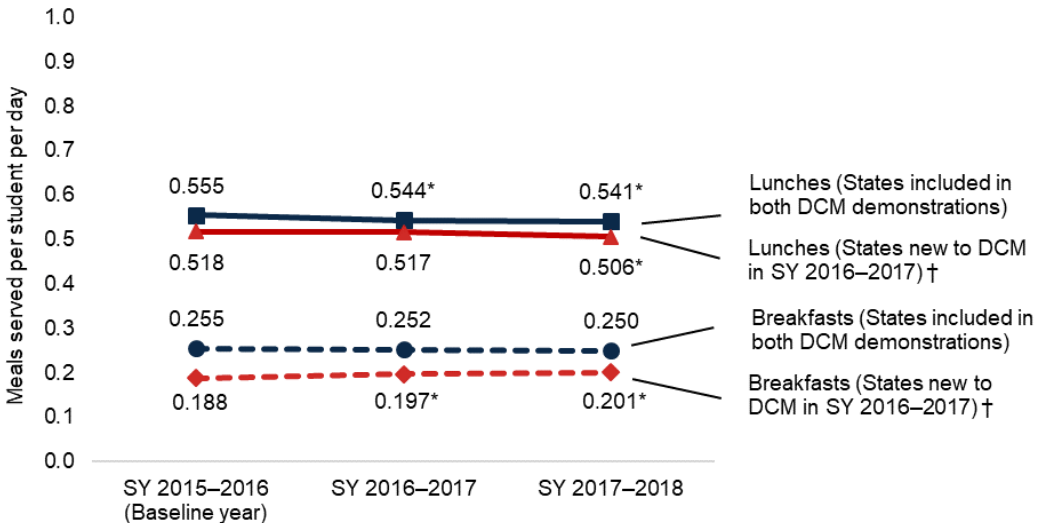
Notes: West Virginia is excluded from this table because it conducted its first DCM-F/RP match in June 2017, after school had ended for most districts in the State in Year 1. Values in this table are regression adjusted. Appendix A lists the variables included in the regression adjustments. Changes shown in the table may differ slightly from calculated differences due to rounding.

*Change between the baseline year and demonstration year is significantly different from zero at the .05 level, two-tailed test.

[†]Difference between the Year 1 and Year 2 effects is significantly different from zero at the .05 level, two-tailed test.

^aOutcomes related to free meals are not shown for Florida and Massachusetts because those States participated in a prior demonstration of DCM for free meals during the baseline year, so the DCM-F/RP demonstration only affects reduced-price meals.

n.a. = not applicable.

Figure IV.1. Meals served per student per day in Cohort 1 States

Source: Administrative records provided by State administrators

SY = school year note.

*Change between the baseline year and demonstration year is significantly different from zero at the .05 level, two-tailed test.

†Difference between the SY 2016–2017 and SY 2017–2018 effects is significantly different from zero at the .05 level, two-tailed test.

2. Effects on SBP outcomes across demonstration years

As with lunches, the effect of the demonstration on the average number of breakfasts served per student per day did not change significantly in SY 2017–2018 relative to the previous year for most States. However, two States did experience a statistically significant difference in the effect of the demonstration between the two years (Table IV.5). In Massachusetts, the demonstration was associated with a decrease in the average number of breakfasts served per student per day in SY 2016–2017 and no change in SY 2017–2018 relative to the baseline year. Virginia experienced increases relative to baseline in both demonstration years, and the effect in the second year was larger than that in the first year by 0.008 breakfasts per student per day.

The effect of the demonstration on the percentage of breakfasts served for free changed significantly in SY 2017–2018 relative to SY 2016–2017 for only one State, Utah. Although DCM-F/RP had no statistically significant effect on this outcome in either year, the decline between the two demonstration years was statistically significant.

Three of the five Cohort 1 States in this analysis experienced changes in the effect of the demonstration on the percentage of breakfasts served at a reduced price between SY 2016–2017 and SY 2017–2018. In Florida and Virginia, DCM-F/RP did not have a statistically significant effect in SY 2016–2017, but both State experienced a decrease in SY 2017–2018 relative to the baseline. In Massachusetts there was a positive difference between demonstration years in the effect on percentage of meals served at a reduced price. There was no statistically significant change in the effect of the demonstration on the percentage of meals served at a reduced price in Nebraska or Utah.

Table IV.5. Effects of DCM-F/RP on SBP participation across two years for Cohort 1 States

State	Average number of breakfasts served per student per day			Percentage of breakfasts served for free			Percentage of breakfasts served at a reduced price		
	Change from baseline to Year 1	Change from baseline to Year 2	Difference	Change from baseline to Year 1	Change from baseline to Year 2	Difference	Change from baseline to Year 1	Change from baseline to Year 2	Difference
Cohort 1 States included in both DCM demonstrations^a									
Florida	-0.003	-0.006	-0.003	n.a.	n.a.	n.a.	0.0	-2.1*	-2.1†
Massachusetts	-0.032*	-0.023	0.009†	n.a.	n.a.	n.a.	0.5	1.3	0.8†
Pooled sample	-0.003	-0.004	-0.001	n.a.	n.a.	n.a.	1.0*	0.5	-0.5†
Cohort 1 States new to DCM in SY 2016–2017									
Nebraska	0.007*	0.010*	0.003	1.8*	2.5*	0.7	-1.2*	-1.6*	-0.3
Utah	0.005*	0.006	0.001	0.0	-1.0	-1.0†	-0.1	0.0	0.1
Virginia	0.014*	0.021*	0.008†	-3.2*	-3.2*	0.0	0.3	-0.6*	-0.8†
Pooled sample	0.009*	0.013*	0.004†	-1.2*	-1.3*	-0.1	-0.1	-0.5*	-0.4†

Source: Administrative records provided by State administrators.

Notes: West Virginia is excluded from this table because it conducted its first DCM-F/RP match in June 2017, after school had ended for most districts in the State in Year 1. Values in this table are regression adjusted. Appendix A lists the variables included in the regression adjustments. Changes shown in the table may differ slightly from calculated differences due to rounding.

*Change between the baseline year and demonstration year is significantly different from zero at the .05 level, two-tailed test.

†Difference between the Year 1 and Year 2 effects is significantly different from zero at the .05 level, two-tailed test.

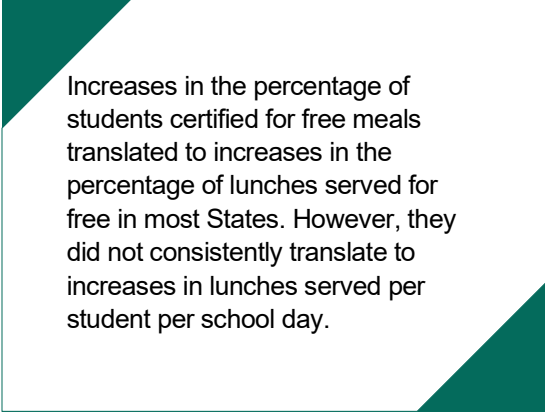
^aOutcomes related to free meals are not shown for Florida and Massachusetts because those States participated in a prior demonstration of DCM for free meals during the baseline year, so the DCM-F/RP demonstration only affects reduced-price meals.

n.a. = not applicable.

C. Comparisons with certification findings

As discussed in Chapter III, DCM-F/RP resulted in statistically significant increases in certification outcomes, including increases in the overall percentages of free certifications in most States (7 of the 12 in the analysis of that outcome), and in the percentage of reduced-price certifications in some States (5 of the 14). Focusing first on the NSLP participation outcomes, 6 of the 7 States with statistically significant increases in the percentage of free certifications also had statistically significant increases in the percentage of lunches served for free. However, three other States where the number of free certifications did not increase significantly experienced decreases in the percentage of lunches served for free.³³

Four of the five States that experienced decreases in the reduced-price certification rates also had decreases in the percentage of lunches served at a reduced price. However, only one of the five States that experienced increases in the reduced-price certification rates had increases in the percentage of lunches served at a reduced price. Still, increases in the reduced-price certification rates are not necessarily inconsistent with the decreases in the percentage of lunches served at a reduced price in the other four of those five States because the decreases in the percentage of lunches served for reduced price were smaller than the increases in the percentage of lunches served for free. This pattern could be explained by greater participation among students certified for free meals through DCM-F/RP who would have been certified for reduced-price meals in the absence of the demonstration than among students certified for reduced-price meals through DCM-F/RP who would not have been certified otherwise. As suggested earlier in the chapter, students who had completed an application to become certified for reduced-price meals might have a greater interest in school meals and therefore a higher participation rate than those who would not have been certified in the absence of the demonstrations. The increased certifications did not typically yield a statistically significant increase in the NSLP participation rate.



Increases in the percentage of students certified for free meals translated to increases in the percentage of lunches served for free in most States. However, they did not consistently translate to increases in lunches served per student per school day.

The results for SBP participation outcomes were less consistent with the certification findings. For example, just three of the seven States with statistically significant increases in the percentage of free certifications also had statistically significant increases in the percentage of breakfasts served for free, and these increases translated into an increase in the breakfast participation rate for only two of those three States. Two of the five States that experienced decreases in the reduced-price certification rate also had decreases in the percentage of breakfasts served at a reduced price; none of the five States that experienced increases in the reduced-price certification rates had increases in the percentage of breakfasts served at a reduced price.

³³ One of these States is West Virginia, which experienced increases in CEP that affected other outcomes.

V. EFFECTS ON FEDERAL REIMBURSEMENT OUTCOMES

If DCM-F/RP influences the number of free, reduced-price, and paid meals served, as discussed in the previous chapter, it will also affect the Federal reimbursements provided to districts. These reimbursements are revenues for the districts but are costs from the Federal perspective. Reimbursements for each meal vary by meal type, recipient's certification or school's special provision status,³⁴ district- or school-level measures of need, and whether the district meets school nutrition performance standards.

To address the second set of research questions under Objective 4 (Table IV.1), this chapter focuses on two outcome measures, each defined separately for lunches and breakfasts:

1. Reimbursements per student per day, defined as average daily reimbursements per student enrolled
2. Blended reimbursement rate (BRR), which measures the average reimbursement rate per meal served

The BRR reflects the distribution of meals served across the free, reduced-price, and paid categories and is thus influenced by changes in certification status of students who participate in the school meals programs. Reimbursement cost per student per day equals the BRR multiplied by the average number of meals served per student per day (one of the outcomes presented in Chapter IV) and thus also reflects any changes in the total number of meals per student resulting from DCM-F/RP. Even if participation and the distribution of meals by certification status does not change, the outcome measures could change if districts or schools qualify for additional payments (based on need or fulfillment of school nutrition performance standards) in one year but not the other. For example, if the number of districts eligible for needs-based reimbursements changes between years, reimbursements would change, even if the number of meals served at each certification status remained constant.

NSLP base rates (that is, before any adjustments based on need or fulfillment of performance standards) in SY 2015–2016 were \$3.07 for free lunches, \$2.67 for reduced-price lunches, and \$0.29 for paid lunches. Free breakfasts were reimbursed at a base rate of \$1.66, reduced-price breakfasts at \$1.36, and paid breakfasts at \$0.29. Appendix Table A.3 presents the full sets of rates for SYs 2015–2016, 2016–2017, and 2017–2018. Because reimbursement rates increase each year, outcomes based on these rates would be expected to increase from the baseline year to the demonstration year even if the demonstration had no effect. To remove this aspect of variation that is unrelated to the demonstration, we hold rates constant at SY 2015–2016 values in the analyses.

³⁴ Although students attending CEP or other non-base year special provision schools are not certified, all meals served in those schools are served at no cost to students. However, they are not all reimbursed at the free rate. Per-meal reimbursement rates under the CEP are based on the percentage of identified students, and under Provisions 2 and 3 they are based on the certification rates determined during a baseline year.

This chapter presents findings on the effects of DCM-F/RP on NSLP and SBP Federal reimbursement outcomes in SY 2017–2018. It then presents a comparison of findings across demonstration years. Finally, it discusses how these findings relate to those presented in Chapter IV.


A. Effects on SY 2017–2018 Federal reimbursement outcomes

DCM-F/RP had mixed but largely positive effects on NSLP and SBP Federal reimbursement outcomes. For the analysis in this section, each outcome measure is based on the same set of months as is used for the participation outcomes.

1. Effects on NSLP outcomes

The implementation of DCM-F/RP was associated with positive changes in NSLP Federal reimbursements per student per day in most demonstration States (Table V.1). In total, 8 of the 14 States experienced increases in NSLP Federal reimbursements per student per day in SY 2017–2018 relative to the baseline year, ranging from 2 cents in Iowa to 13 cents in Washington. These changes translate to a range of \$3.60 to \$23.40 per student over the course of a year. Texas and West Virginia had increases of 10 cents, and Connecticut had a 9-cent increase.

Five of the remaining States experienced no statistically significant change in Federal reimbursements per student per day between the baseline year and SY 2017–2018. Virginia was the only State with a statistically significant decrease, equal to 6 cents per student per day, between the two school years. This decrease was inconsistent with the anticipated direction of the effect of the demonstration, and could be the result of factors other than the demonstration that are correlated with reimbursements and were not controlled for by the regression adjustments.



DCM-F/RP was associated with increases in NSLP Federal reimbursement outcomes in most States.

The demonstration also had positive effects on the NSLP BRR in most demonstration States. The NSLP BRR increased between the baseline year and SY 2017–2018 in 10 of the 14 States, ranging from 2 cents in California to 18 cents in West Virginia. The increase in West Virginia could be due, in part, to more districts adopting CEP in the State, thereby also increasing the percentage of meals served for free. As noted in Chapter III, the percentage of students attending CEP schools in West Virginia increased from the baseline year to SY 2017–2018. Seven of the 10 States with statistically significant increases in the BRR also had statistically significant increases in NSLP reimbursements per student per day. Only 1 State, Washington, experienced a statistically significant decrease (4 cents) in the BRR, despite the increase in Federal reimbursements per student per day. The decrease in this State is inconsistent with the anticipated direction of the effect of the demonstration, possibly due to unmeasured, time-variant factors. The pattern of the two NSLP reimbursement outcomes in Washington indicates, as observed in the participation outcome findings presented in Chapter IV, a concurrent increase in the participation rate and decrease in the percentage of meals served for free. There were no statistically significant changes in the other 3 States (Massachusetts, Utah, and Virginia).

Table V.1. Effects of DCM-F/RP on NSLP Federal reimbursement costs in SY 2017–2018

State	Federal reimbursements per student per day (dollars)			Blended reimbursement rate (dollars)		
	SY 2015–2016 (Baseline year)	SY 2017–2018	Change	SY 2015–2016 (Baseline year)	SY 2017–2018	Change
Cohort 1 States included in both DCM demonstrations						
Florida	1.60	1.55	-0.05	2.70	2.78	0.08*
Massachusetts	0.99	0.99	0.00	2.13	2.11	-0.02
Pooled sample	1.44	1.41	-0.03	2.59	2.61	0.02
Cohort 1 States new to DCM in SY 2016–2017						
Nebraska	1.12	1.15	0.03*	1.73	1.78	0.05*
Utah	0.84	0.83	-0.01	1.71	1.72	0.00
Virginia	1.06	1.00	-0.06*	2.10	2.11	0.01
West Virginia	1.43	1.53	0.10*	2.32	2.50	0.18*
Pooled sample	1.06	1.04	-0.02*	1.99	2.00	0.02*
State	Federal reimbursements per student per day (dollars)			Blended reimbursement rate (dollars)		
	SY 2016–2017 (Baseline year)	SY 2017–2018	Change	SY 2016–2017 (Baseline year)	SY 2017–2018	Change
Cohort 2 States						
California	1.04	1.11	0.07*	2.55	2.57	0.02*
Connecticut	0.96	1.05	0.09*	2.04	2.16	0.12*
Indiana	1.21	1.24	0.03*	1.99	2.04	0.05*
Iowa	1.08	1.10	0.02*	1.69	1.73	0.05*
Michigan	1.09	1.09	0.01	2.27	2.32	0.05*
Texas	1.37	1.47	0.10*	2.42	2.51	0.09*
Washington	0.89	1.01	0.13*	2.34	2.30	-0.04*
Wisconsin	0.99	1.00	0.00	1.90	1.93	0.03*
Pooled sample	1.14	1.20	0.06*	2.32	2.39	0.07*

Source: Administrative records provided by State administrators.

Notes: The results for Cohort 1 States reflect all months of the school year, and the results for each Cohort 2 State reflect all months after the State conducted its first DCM-F/RP match in SY 2017–2018 (in July for California and Indiana, September for Michigan, October for Texas, December for Wisconsin, March for Connecticut and Iowa, and April for Washington). Values in this table are regression adjusted. Appendix A lists the variables included in the regression adjustments. Changes shown in the table may differ slightly from calculated differences due to rounding.

*Change between the baseline year and SY 2017–2018 is significantly different from zero at the .05 level, two-tailed test.

SY = school year.

2. Effects on SBP outcomes

Fewer States experienced statistically significant effects on SBP reimbursement outcomes, relative to the NSLP reimbursement findings. Between the baseline year and SY 2017–2018, there were no statistically significant changes in SBP reimbursements per student per day in 7 of the 14 demonstration States: Connecticut, Florida, Indiana, Iowa, Michigan, Utah, and

DCM-F/RP was associated with mixed effects on SBP Federal reimbursement outcomes.

Wisconsin (Table V.2). However, six other States experienced statistically significant increases in SBP reimbursements per student per day, ranging from 2 cents in Nebraska and Virginia to 6 cents in Washington. These increases translate to a range of \$3.60 to \$10.80 per student over the course of a year. The increases in SBP average daily reimbursements were generally smaller than the increases in NSLP average daily reimbursements because the dollar value difference between reimbursement categories is higher for lunches than for breakfasts. One State, Massachusetts, experienced a 7-cent decrease in SBP reimbursements per student per day.

Table V.2. Effects of DCM-F/RP on SBP Federal reimbursement costs in SY 2017–2018

State	Federal reimbursements per student per day (dollars)			Blended reimbursement rate (dollars)		
	SY 2015–2016 (Baseline year)	SY 2017– 2018	Change	SY 2015–2016 (Baseline year)	SY 2017– 2018	Change
Cohort 1 States included in both DCM demonstrations						
Florida	0.50	0.51	0.01	1.74	1.84	0.10*
Massachusetts	0.36	0.28	-0.07*	1.82	1.73	-0.09*
Pooled sample	0.45	0.45	-0.01	1.78	1.79	0.01
Cohort 1 States new to DCM in SY 2016–2017						
Nebraska	0.28	0.30	0.02*	1.43	1.45	0.02*
Utah	0.18	0.19	0.01	1.54	1.53	-0.01
Virginia	0.36	0.38	0.02*	1.65	1.59	-0.06*
West Virginia	0.76	0.80	0.04*	1.55	1.63	0.08*
Pooled sample	0.35	0.37	0.01*	1.59	1.56	-0.03*
State	Federal reimbursements per student per day (dollars)			Blended reimbursement rate (dollars)		
	SY 2016–2017 (Baseline year)	SY 2017– 2018	Change	SY 2016–2017 (Baseline year)	SY 2017– 2018	Change
Cohort 2 States						
California	0.36	0.39	0.03*	1.68	1.70	0.01*
Connecticut	0.32	0.32	0.00	1.70	1.73	0.03
Indiana	0.37	0.37	0.01	1.64	1.66	0.02*
Iowa	0.28	0.27	-0.01	1.55	1.55	0.01
Michigan	0.39	0.40	0.00	1.67	1.67	0.00
Texas	0.53	0.57	0.04*	1.69	1.73	0.04*
Washington	0.25	0.31	0.06*	1.73	1.72	-0.01
Wisconsin	0.31	0.31	0.00	1.58	1.57	-0.01
Pooled sample	0.40	0.42	0.02*	1.67	1.70	0.03*

Source: Administrative records provided by State administrators.

Notes: The results for Cohort 1 States reflect all months of the school year, and the results for each Cohort 2 State reflect all months after the State conducted its first DCM-F/RP match in SY 2017–2018 (in July for California and Indiana, September for Michigan, October for Texas, December for Wisconsin, March for Connecticut and Iowa, and April for Washington). Values in this table are regression adjusted. Appendix A lists the variables included in the regression adjustments. Changes shown in the table may differ slightly from calculated differences due to rounding.

*Change between the baseline year and SY 2017–2018 is significantly different from zero at the .05 level, two-tailed test.

SY = school year.

The SBP BRR increased between the baseline year and SY 2017–2018 in six States and decreased in two others. The remaining six States had no statistically significant change in the BRR. Statistically significant increases in the SBP BRR between the baseline year and SY 2017–2018 occurred in California, Florida, Indiana, Nebraska, Texas and West Virginia. The largest increase was a 10-cent increase in Florida. The smallest were a 1-cent increase in California and 2-cent increases in Nebraska and Indiana, where they represent just a 1 percent change in the BRR. The two States that had statistically significant decreases in the SBP BRR were Massachusetts, where the decrease was 9 cents, and Virginia, where the decrease was 6 cents.

B. Effects on Federal reimbursement outcomes across demonstration years

As with the assessments in Chapters III and IV, we compared the effects of DCM-F/RP on key Federal reimbursement outcomes in Cohort 1 States in the first year of the demonstration (SY 2016–2017) to those in the second year of the demonstration (SY 2017–2018) to assess whether there were any differences in the changes over time. Reimbursement amounts might be larger in the second year of the demonstration than in the first year for States that implemented late in SY 2016–2017, because the demonstration could not affect participation patterns, and thus, Federal reimbursement patterns, during months before it began in SY 2016–2017 than in SY 2017–2018. Because the effects of DCM-F/RP on reimbursement outcomes are mixed, and changes over time might be due to changes in unmeasured factors unrelated to the demonstration, the differences presented here should be interpreted with caution.

1. Effects on NSLP outcomes across demonstration years

There was no consistent pattern of differences in the effects of DCM-F/RP on Federal reimbursement outcomes across demonstration years. The difference in the effect on average NSLP Federal reimbursements per student per day was statistically significant in one of the five States in this analysis: Virginia (Table V.3). This State experienced decreases relative to baseline in both demonstration years, but the decrease in SY 2017–2018 was two cents larger. As noted earlier, decreasing Federal reimbursements over time in Virginia might be explained by changes in unmeasured factors, such as student preferences for school meals. The pooled sample of Cohort 1 States new to DCM also experienced a statistically significant decrease in the effect on NSLP reimbursements per student per day across demonstration years (Figure V.1). Both pooled samples had a statistically significant increase in the effect on the BRR.

For the NSLP BRR, on the other hand, the difference in the effect of DCM-F/RP across years was statistically significant in two of the five States, and both differences were positive. Florida experienced no change in the BRR in the first year of the demonstration but an 8-cent increase, relative to baseline, in the second year. Virginia experienced a small but statistically significant decrease in the BRR in the first year of the demonstration, but the BRR returned to roughly the baseline level in the second year. Virginia conducted its first match late in SY 2016–2017, which might explain the difference in the BRR in SY 2017–2018 relative to SY 2016–2017. However, Florida was included in the initial DCM demonstration and thus was only affected by the reduced-price component of DCM-F/RP. Because this component would not be expected to have

Table V.3. Effects of DCM-F/RP on NSLP Federal reimbursement costs across two years for Cohort 1 States

State	Federal reimbursements per student per day (dollars)			Blended reimbursement rate (dollars)		
	Change from baseline to Year 1	Change from baseline to Year 2	Difference	Change from baseline to Year 1	Change from baseline to Year 2	Difference
Cohort 1 States included in both DCM demonstrations						
Florida	-0.05*	-0.05	0.00	0.00	0.08*	0.08†
Massachusetts	0.00	0.00	0.00	-0.03	-0.02	0.00
Pooled sample	-0.05*	-0.03	0.02	-0.03*	0.02	0.05†
Cohort 1 States new to DCM in SY 2016–2017						
Nebraska	0.04*	0.03*	-0.01	0.04*	0.05*	0.01
Utah	0.00	-0.01	-0.01	0.01	0.00	-0.01
Virginia	-0.04*	-0.06*	-0.02†	-0.03*	0.01	0.04†
Pooled sample	0.00	-0.02*	-0.01†	0.00	0.02*	0.02†

Source: Administrative records provided by State administrators.

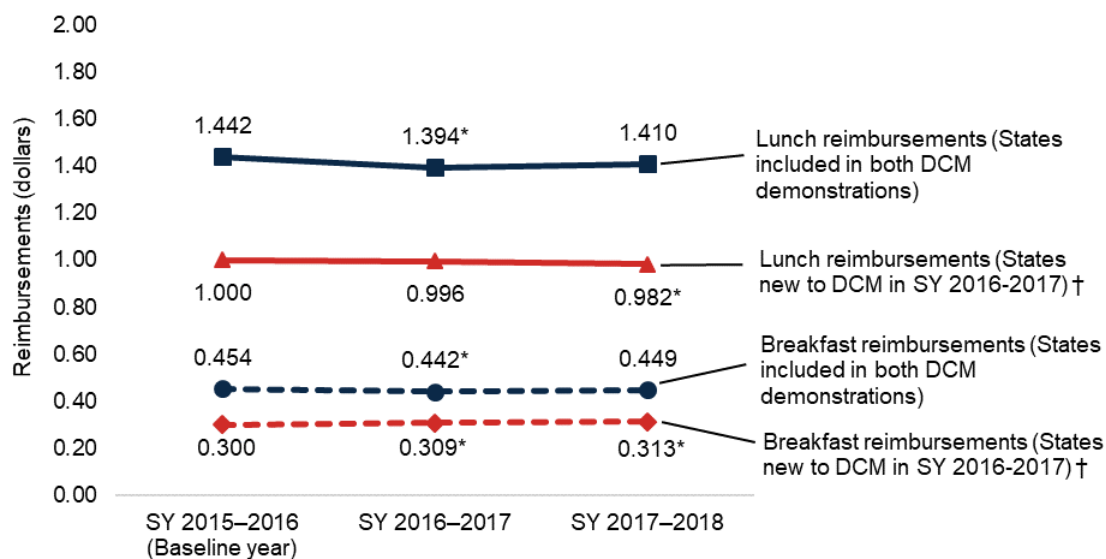
Notes: West Virginia is excluded from this table because it conducted its first DCM-F/RP match in June 2017, after school had ended for most districts in the State in Year 1. Values in this table are regression adjusted. Appendix A lists the variables included in the regression adjustments. Changes shown in the table may differ slightly from calculated differences due to rounding.

*Change between the baseline year and demonstration year is significantly different from zero at the .05 level, two-tailed test.

†Difference between the Year 1 and Year 2 effects is significantly different from zero at the .05 level, two-tailed test.

SY = school year.

Figure V.1. Reimbursements per student per day in Cohort 1 States



Source: Administrative records provided by State administrators

*Change between the baseline year and demonstration year is significantly different from zero at the .05 level, two-tailed test.

† Difference between the SY 2016-2017 and SY 2017-2018 effects is significantly different from zero at the .05 level, two-tailed test.

SY = school year.

as much of an effect on the BRR, it seems likely that the changes were a result of unmeasured factors not included in the model.

2. Effects on SBP outcomes across demonstration years

Patterns across years for SBP Federal reimbursements also changed in more States for the BRR than for Federal reimbursements per student per day. As with lunches, the effect on average daily SBP reimbursements per student did not differ significantly between the two demonstration years for most States (Table V.4 and Figure V.1). Massachusetts was the only State to experience a statistically significant difference (an increase of just over 1 cent) in the effect on SBP reimbursements per student per day across years, and the small sizes of this change limits its practical importance.

The results were mixed for changes in the effect of the demonstration on the SBP BRR in SY 2017–2018 relative to SY 2016–2017. One State experienced a statistically significantly larger effects, whereas three others had statistically significantly smaller effects in the second year. The largest difference was a statistically significant 8-cent increase in the effect in Florida, where the demonstration was associated with positive effects on the SBP BRR in both years.

Massachusetts, Utah, and Virginia experienced small, statistically significant decreases in the effect on the BRR from one year to the next, ranging from 1 to 2 cents.

Table V.4. Effects of DCM-F/RP on SBP Federal reimbursement costs across two years for Cohort 1 States

State	Federal reimbursements per student per day (dollars)			Blended reimbursement rate (dollars)		
	Change from baseline to Year 1	Change from baseline to Year 2	Difference	Change from baseline to Year 1	Change from baseline to Year 2	Difference
Cohort 1 States included in both DCM demonstrations						
Florida	-0.004	0.010	0.015	0.02*	0.10*	0.08†
Massachusetts	-0.082*	-0.071*	0.011†	-0.07*	-0.09*	-0.02†
Pooled sample	-0.012*	-0.006	0.006	-0.02*	0.01	0.03†
Cohort 1 States new to DCM in SY 2016–2017						
Nebraska	0.012*	0.019*	0.006	0.01*	0.02*	0.01
Utah	0.009*	0.009	0.000	0.00	-0.01	-0.02†
Virginia	0.008	0.017*	0.008	-0.05*	-0.06*	-0.01†
Pooled sample	0.009*	0.013*	0.004†	-0.02*	-0.03*	-0.01†

Source: Administrative records provided by State administrators.

Notes: West Virginia is excluded from this table because it conducted its first DCM-F/RP match in June 2017, after school had ended for most districts in the State in Year 1. Values in this table are regression adjusted. Appendix A lists the variables included in the regression adjustments. Changes shown in the table may differ slightly from calculated differences due to rounding.

*Change between the baseline year and demonstration year is significantly different from zero at the .05 level, two-tailed test.

†Difference between the Year 1 and Year 2 effects is significantly different from zero at the .05 level, two-tailed test.

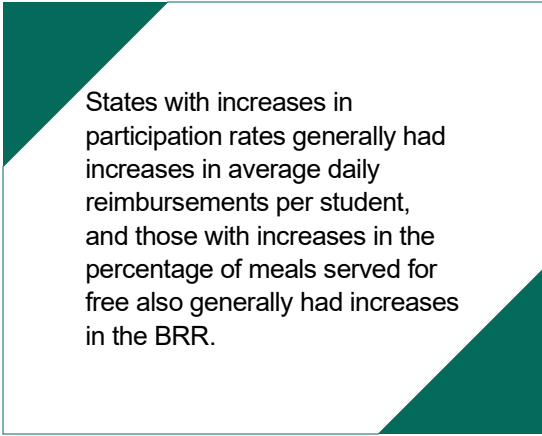
SY = school year.

C. Comparisons with participation findings

Because average daily reimbursements per student depend on the number of daily meals per student and the BRRs depend on the distribution of the meal types (free, reduced-price, or paid), we expect the Federal reimbursement findings to be generally consistent with the participation findings. Specifically, average daily reimbursements per student will generally increase when the school meals participation rates increase. Likewise, the BRR generally increases when the percentage of meals served for free or at a reduced price increases (assuming no large changes in the number of schools qualifying for the base rates).

The Federal reimbursement findings presented in this chapter are generally consistent with the participation findings discussed in Chapter IV. For half of the demonstration States, the effects of DCM-F/RP on average daily NSLP reimbursements per student aligned as expected with the effects on the related participation outcome (meals served per student per day). Most of the remaining States experienced a statistically significant increase in NSLP average daily reimbursements per student, despite no statistically significant change in the NSLP participation rate. For the SBP, the effects of DCM-F/RP on average daily reimbursements per student aligned with the effects on the meals served per student per day in 11 of the 14 States.

We could not assess the alignment of the percentage of meals served for free or at a reduced price to the BRR for the two States included in both DCM demonstrations because we did not examine the percentage of meals served for free in those States (for reasons discussed in Chapter IV). For States where we examined that outcome, changes to the BRR generally aligned with changes in the percentage of free or reduced-price meals served. For example, all 9 States that experienced statistically significant increases in the percentage of lunches served for free and smaller or no changes in the percentage of lunches served at a reduced price also experienced statistically significant increases in the NSLP BRR. For the SBP, the effects of DCM-F/RP on the BRR aligned with the effects on the percentage of breakfasts served for free in 10 of the 12 States.




States with increases in participation rates generally had increases in average daily reimbursements per student, and those with increases in the percentage of meals served for free also generally had increases in the BRR.

VI. EFFECTS ON STATE ADMINISTRATIVE COST OUTCOMES

Implementing the DCM-F/RP demonstration may benefit students, but it also requires an investment of time and resources on the part of the agencies involved. At the State level, at least one child nutrition agency and one Medicaid eligibility agency were involved in the demonstration.³⁵ Child nutrition agencies led the demonstrations and communicated with FNS, other State agencies, and districts about DCM-F/RP. These agencies also were typically responsible for matching Medicaid data with student enrollment data and provided direct certification results (or lists of eligible students, in local–matching States) to districts. Medicaid eligibility agencies produced files of children enrolled in Medicaid, typically assessing eligibility for DCM-F/RP and restricting the file to eligible children. In Cohort 2 States, which were new to DCM-F/RP, child nutrition agencies were also responsible for incorporating the new Medicaid program data into existing direct certification processes.

State administrative costs of DCM-F/RP are defined as all expenditures these State agencies incurred over and above those that would be necessary in the absence of DCM-F/RP, such as costs related to direct certification with SNAP and other programs other than Medicaid. This chapter describes the State administrative costs that agencies incurred for DCM-F/RP during SY 2017–2018 and, for Cohort 2 States, costs incurred in preparing for implementation in prior months since the time the State was approved for the demonstration.³⁶ For Cohort 1 States, the Year 1 DCM-F/RP report covered their first year of implementation and this report builds on those findings by adding a second year.



State administrative costs of the demonstration are defined as all expenditures State agencies incurred above those that would be necessary in the absence of DCM-F/RP.

The analyses presented in this chapter address the third set of research questions under Objective 4, as well as a related question under Objective 5 (Table IV.1). Key outcomes that directly address the two parts of research question C.3 include the following:

- Total administrative costs of DCM-F/RP by State and agency type.
- Start-up costs (those incurred up to and including the month of the first match) and ongoing costs (those incurred in later months).

To aid in understanding patterns observed in these key outcomes, this chapter also explores the breakdown of costs by category and the costs per 1,000 students enrolled or directly certified,

³⁵ For the evaluation, each agency involved in DCM-F/RP was categorized as either a child nutrition agency or a Medicaid eligibility agency based on its role in the direct certification process (see Table A.2). Five States involved more than one agency of a particular type: Michigan had three child nutrition agencies; Nevada had two child nutrition agencies; and Utah, Washington, and Wisconsin each had had two Medicaid eligibility agencies.

³⁶ Although SY 2017–2018 is defined as July 2017 through June 2018 for the purposes of the evaluation, all Cohort 2 States began incurring costs related to DCM-F/RP planning or preparation before July 2017, and these costs are also included in this analysis.

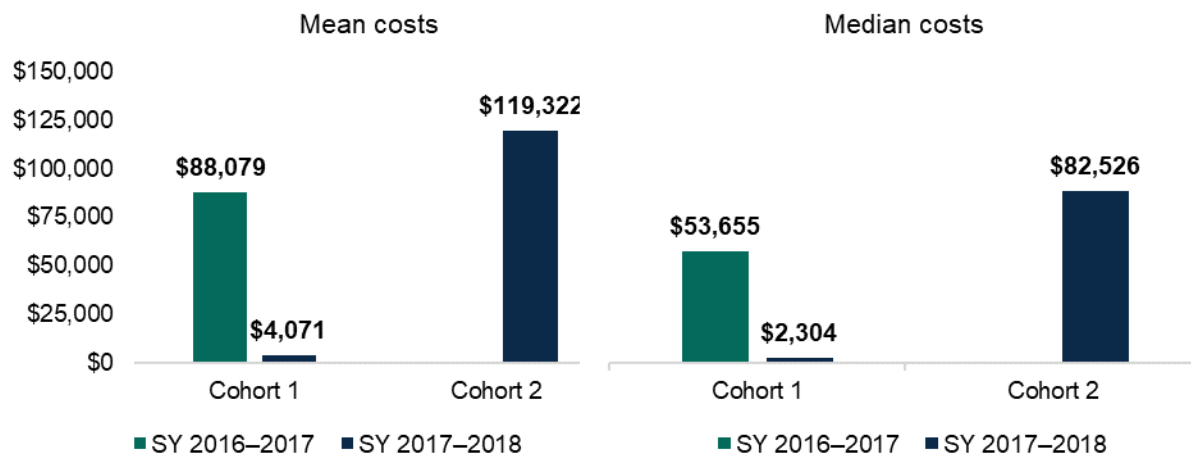
adding detail and perspective. Finally, we compare costs across demonstration years for Cohort 1 States and California.

Results are presented separately for Cohort 1, Cohort 2, and California. Nevada is included in Cohort 2 for this analysis because it was approved to begin the demonstration during the same time period as the other Cohort 2 States and was working toward implementation during that school year, although it did not certify any students through DCM-F/RP in SY 2017–2018. Results for California are presented separately because California implemented DCM-F/RP in 14 districts in SY 2016–2017 and statewide in SY 2017–2018. This differentiates it from the other States, which implemented DCM-F/RP in all districts at the same time. Grouping States this way is useful because the costs of conducting DCM-F/RP might differ for States at different stages of implementation.

A. Total State administrative costs in SY 2017–2018

Administrative costs incurred during the second year of DCM-F/RP averaged about \$4,000 for Cohort 1 States and \$119,000 for Cohort 2 States (Figure VI.1), indicating that costs in the first year of implementing DCM-F/RP are, on average, much higher than costs of continuing DCM-F/RP into a second year. Cohort 2 had higher average costs in their first year of implementation than did Cohort 1 in their first year of implementation (\$88,000, as reported in Hulsey et al. 2019). Median costs, which are not affected by very high values for the highest cost States, were lower than average costs, and follow the same pattern.

Figure VI.1. Average State administrative costs of DCM-F/RP across two years



Source: Cost-tracking workbooks completed quarterly by State administrators for SY 2016–2017 and SY 2017–2018.

Note: California is excluded from this figure because it includes both Cohort 1 and Cohort 2 districts.

SY= school year.

Among Cohort 2 States, Texas had the highest reported costs at \$373,000, and Michigan had the lowest costs at \$30,000. The costs for the other six Cohort 2 States ranged from \$51,000 to \$149,000.³⁷ California's costs in SY 2017–2018 were higher than any Cohort 1 State and lower than the average Cohort 2 State costs, as might be expected for a State that had implemented DCM-F/RP in some districts previously but still had to undertake additional work to implement statewide.

Costs in SY 2017–2018 were much higher for States in their first year of implementation (Cohort 2 States) than for those continuing DCM-F/RP into a second year (Cohort 1 States).

The average cost of conducting DCM-F/RP for Cohort 1 agencies was about \$2,000 for each agency type (Table VI.1). Child nutrition agency costs were \$6,000 at most, and Medicaid eligibility agency costs were \$10,000 at most, with many agencies reporting no costs.

For Cohort 2, Medicaid eligibility agencies typically had higher costs, averaging \$83,000, than child nutrition agencies, at \$36,000 on average. Child nutrition agency costs ranged from \$16,000 to \$65,000, whereas Medicaid eligibility agency costs ranged from \$800 to \$352,000. Costs incurred by Medicaid eligibility agencies in Michigan and Washington were the lowest among Cohort 2, at less than \$1000. These States' Medicaid eligibility agencies reported only spending time on meetings, coordination, and in the case of Washington, data-sharing agreements. The Washington Medicaid eligibility agencies attributed their low costs to the fact that they already provided Medicaid data for direct verification, so no additional programming was required on their part. As discussed in the next chapter, Michigan and Washington were two of three States where the child nutrition agency was responsible for determining DCM-F/RP eligibility. However, the third State, Texas, had the highest Medicaid eligibility agency costs, at over \$350,000, driven primarily by large contractor costs for programming to produce the Medicaid data extracts needed for DCM-F/RP.

B. Start-up and ongoing costs

Implementing DCM-F/RP involves upfront costs as new procedures and systems get underway, as well as costs related to continuous maintenance that may be required once the demonstration is in place. For this study, we define *start-up costs* as costs that were incurred up to and including the month of the first DCM-F/RP match (July 2017 for Indiana, September 2017 for Michigan, October 2017 for Texas, December 2017 for Wisconsin, March 2018 for Connecticut and Iowa, and April 2018 for Washington). *Ongoing costs* are defined as costs that occurred in subsequent months. Total ongoing costs for the year are a function of the monthly cost of continuing DCM-F/RP and the number of months after initial implementation. States that conducted their first DCM-F/RP match earlier in the school year had more time to incur ongoing costs than those that did so later in the year. Cohort 1 States had ongoing costs only, as they implemented DCM-F/RP in SY 2016–2017. Cohort 2 States and California incurred start-up and ongoing costs and are

³⁷ Only one of two child nutrition-related agencies in Nevada provided quantitative information on labor costs, so child nutrition costs for Nevada presented in this chapter are underestimates.

therefore the focus of this section of the report.³⁸ Nevada did not certify any students through DCM-F/RP in SY 2017–2018, and thus all costs the State incurred in SY 2017–2018 were considered start-up costs and the State did not incur any ongoing costs.

Table VI.1. State administrative costs of DCM-F/RP in SY 2017–2018, by agency type

State administrative costs in SY 2017–2018 (dollars)			
State	Child nutrition agency	Medicaid eligibility agency	Total
Cohort 1 States			
Florida	0	0	0
Massachusetts	3,504	0	3,504
Nebraska	0	0	0
Utah	5,922	10,394	16,316
Virginia	1,358	1,731	3,089
West Virginia	1,520	0	1,520
Mean^a	2,051	2,021	4,071
Median^a	1,439	0	2,304
Cohort 2 States			
Connecticut	34,935	62,756	97,692
Indiana	65,346	2,015	67,361
Iowa	17,418	33,513	50,931
Michigan	29,639	856	30,496
Nevada ^b	42,889	81,336	124,225
Texas	21,079	352,410	373,489
Washington	60,284	799	61,084
Wisconsin	16,057	133,245	149,302
Mean^a	35,956	83,366	119,322
Median^a	32,287	48,135	82,526
Hybrid State			
California	25,208	10,776	35,984

Source: Cost-tracking workbooks completed quarterly by State administrators for SY 2017–2018.

Note: Cohort 1 States implemented DCM-F/RP in SY 2016–2017. All Cohort 2 States except Nevada implemented DCM-F/RP in SY 2017–2018. California implemented DCM-F/RP in 14 districts in SY 2016–2017 and statewide in SY 2017–2018.

^aMeans and medians were calculated using un-rounded totals and may differ slightly from calculated totals due to rounding.

^bOnly one of two child nutrition-related agencies in Nevada provided quantitative information on labor costs and is included in this table.

SY = school year.

Start-up costs ranged from \$26,000 in Indiana to \$369,000 in Texas (Table E.2). California had even lower start-up costs to expand DCM-F/RP statewide, with \$11,000 in costs. The lowest

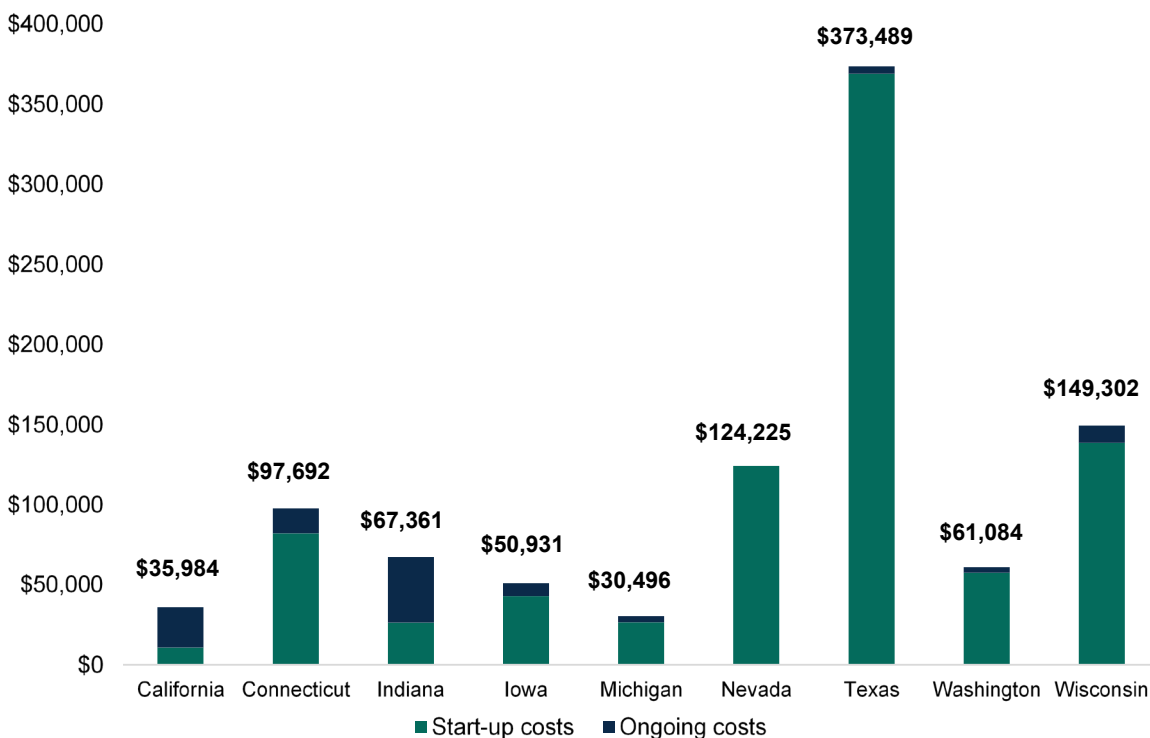
³⁸All of the costs California incurred in SY 2017–2018 were considered ongoing costs because the State had conducted the first match for the 14 States participating in the demonstration in SY 2016–2017. However, the State incurred some costs in April–June 2017 to prepare for statewide DCM-F/RP implementation, and these costs were counted as start-up costs in SY 2017–2018.

ongoing costs among Cohort 2 States were in Washington (\$3,000), which implemented in April 2018, last among the States that implemented DCM-F/RP in SY 2017–2018.³⁹ The highest ongoing costs were in Indiana (\$41,000), which began certifying students before the first day of school.

Start-up costs were substantially higher than ongoing costs in all Cohort 2 States except for Indiana (Figure VI.2). Indiana had higher ongoing costs than start-up costs, which is consistent with the State’s low start-up costs and early date for the first DCM-F/RP match. Because Indiana implemented in July 2017, costs incurred beginning in August 2017 were counted as ongoing costs. The State incurred a sizeable proportion of its total costs in August 2017, and costs decreased over the course of the school year.

All Cohort 2 States except Indiana reported substantially lower ongoing costs than start-up costs.

Figure VI.2. Cohort 2 start-up and ongoing State administrative costs of DCM-F/RP



Source: Cost-tracking workbooks completed quarterly by State administrators for SY 2017–2018.

Notes: Start-up costs are defined as costs that occur up to and including the month of the first DCM-F/RP match (July for Indiana, September for Michigan, October for Texas, December for Wisconsin, March for Connecticut and Iowa, and April for Washington). All States incurred start-up costs in preparation for implementing DCM-F/RP, but the month they began preparing for DCM-F/RP varied. All costs in months following the month of implementation are classified as ongoing costs. Totals shown may differ slightly from calculated totals due to rounding.

^aNevada did not certify any students through DCM-F/RP during SY 2017–2018.

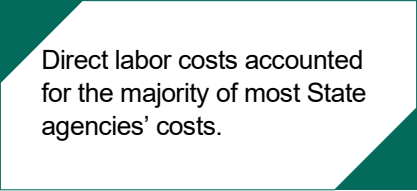
³⁹ Excluding Nevada, which did not certify any students through DCM-F/RP in SY 2017–2018 and thus did not incur any ongoing costs.

Medicaid eligibility agencies incurred a larger proportion of the total start-up costs than child nutrition agencies in most States (Figure E.1), and these Medicaid eligibility agency start-up costs tended to be a driver of total costs. States that had high total costs, such as Texas, had high start-up costs from their Medicaid eligibility agencies (\$352,000 in Texas). In contrast, Washington and Michigan had low total costs and low start-up costs from the Medicaid eligibility agencies: Washington had \$61,000 in total costs and Michigan had \$30,000 in total costs. Each of their Medicaid eligibility agencies incurred \$700 in start-up costs.

C. Direct labor costs, direct costs other than labor, and indirect costs

Total administrative costs for the State agencies consist of (1) direct labor costs, including wage and fringe benefits for time spent on DCM-F/RP, (2) other direct costs, excluding labor (ODCs), and (3) indirect costs, which can include administrative support and facilities costs. Payment to contractors was usually reported as an ODC, but some States reported contractor payments in the direct labor category.

For most agencies, direct labor costs accounted for the majority of costs (Table VI.2). For Cohort 1, 90 percent of the costs for the child nutrition agencies and 100 percent of the costs for the Medicaid eligibility agencies were direct labor costs. Cohort 2 agencies reported more diverse cost breakdowns, but direct labor costs still accounted for the majority of costs for most agencies.



Direct labor costs accounted for the majority of most State agencies' costs.

A few Cohort 2 agencies incurred ODCs that were higher than their labor costs. These included the Medicaid eligibility agencies in Texas and Wisconsin, which had ODCs equal to 96 percent and 88 percent of total costs for the agency, respectively, and the child nutrition agencies in Nevada and Washington, which had ODCs equal to 81 percent and 71 percent of the total costs for the agencies, respectively. These agencies reported their large contractor costs as ODCs. The time spent by the contractors hired by the Texas and Wisconsin Medicaid eligibility agencies was for programming to produce the Medicaid data extracts needed for DCM-F/RP. For the Nevada child nutrition agency, the ODCs were for a contracted project manager and a software purchase. The Washington child nutrition agency paid a contractor to incorporate DCM-F/RP into the State's direct certification system, using input and business rules provided by the agency. The work done by the Washington child nutrition agency's contractor included meetings with agency staff, programming, testing, and other related tasks. In most other States, this type of work was done by staff who are agency employees, and the associated costs are thus counted as direct labor costs. Although contractor costs were the largest ODCs, they were not the only ODCs incurred. For example, Wisconsin's child nutrition agency reported costs for office supplies, information technology, and certain types of insurance.

Indirect costs were small relative to total costs for most agencies that reported them. One exception was the Texas child nutrition agency, where indirect costs of about \$5,000 comprised 24 percent of the agency's total costs.

Table VI.2. Percentage of State DCM-F/RP administrative costs in SY 2017–2018 by cost and agency type

State	Child nutrition agency			Medicaid eligibility agency		
	Direct labor costs	Other direct costs	Indirect costs	Direct labor costs	Other direct costs	Indirect costs
Cohort 1 States						
Florida	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Massachusetts	91.7	0.0	8.3	n.a.	n.a.	n.a.
Nebraska	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Utah	88.2	0.0	11.8	100.0	0.0	0.0
Virginia	77.3	8.7	14.0	100.0	0.0	0.0
West Virginia	100.0	0.0	0.0	n.a.	n.a.	n.a.
Pooled sample	89.5	1.0	9.6	100.0	0.0	0.0
Cohort 2 States						
Connecticut	100.0	0.0	0.0	97.5	0.0	2.5
Indiana	78.6	14.8	6.6	62.8	37.2	0.0
Iowa	63.0	25.6	11.4	100.0	0.0	0.0
Michigan	92.0	0.0	8.0	100.0	0.0	0.0
Nevada ^a	18.9	81.1	0.0	86.8	0.0	13.2
Texas	74.9	1.0	24.1	4.2	95.8	0.0
Washington	24.7	70.6	4.7	100.0	0.0	0.0
Wisconsin	82.6	0.0	17.4	12.4	87.6	0.0
Pooled sample	61.4	31.9	6.7	29.9	68.2	1.8
Hybrid State						
California	69.3	12.2	18.6	100.0	0.0	0.0

Source: Cost-tracking workbooks completed quarterly by State administrators for SY 2017–2018.

Note: Cohort 1 States implemented DCM-F/RP in SY 2016–2017. All Cohort 2 States except Nevada implemented DCM-F/RP in SY 2017–2018. California implemented DCM-F/RP in 14 districts in SY 2016–2017 and statewide in SY 2017–2018.

^aOnly one of two child nutrition-related agencies in Nevada provided quantitative information on labor costs and is included in this table.

n.a. = not applicable. These agencies reported zero costs.

D. Costs per student enrolled or directly certified

Administrative costs might be higher for States with more enrolled students, directly certified students, or students certified through DCM-F/RP if larger eligibility and match files make the demonstration more costly to implement. To normalize costs by number of students, we examined State administrative costs of DCM-F/RP in SY 2017–2018 per student enrolled, per student directly certified for free meals (through any program), and per student directly certified for free or reduced-price meals based on Medicaid. Costs per student enrolled shows costs of DCM-F/RP relative to the size of the student population, and costs per student directly certified for free meals can provide context for including Medicaid within the existing set of direct certification programs. The cost per student directly certified for free or reduced-price meals

based on Medicaid provides a cost-benefit measure for students impacted by the demonstration.⁴⁰

Costs by all three measures were small for all Cohort 1 States. Utah, which had the highest total costs among Cohort 1 States (\$16,000), also had the highest costs by these three measures (Table VI.3). However, translating to cost per student illustrates how small these costs still are: Utah's costs were 3 cents per student enrolled, 15 cents per student directly certified for free meals, and 42 cents per student directly certified for free or reduced-price meals based on Medicaid. Costs per student were even lower for other Cohort 1 States.



The costs per student enrolled, directly certified for free meals, and directly certified for free or reduced-price meals based on Medicaid were very small for nearly all States.

Costs per student enrolled or directly certified are also consistent with overall costs, relative to other States, for many of the Cohort 2 States. For example, Michigan, which had the lowest total costs among Cohort 2 States (\$30,000), also had the lowest costs per student by all three measures (2 cents per student enrolled, 9 cents per student directly certified for free meals, and 21 cents per student directly certified for free or reduced-price meals based on Medicaid). Wisconsin and Connecticut costs per student enrolled and directly certified is consistent with their overall costs, which were at the high end of the range. California's costs per student enrolled and directly certified land between the averages for Cohort 1 and Cohort 2 (as expected for a hybrid State), at 1 cent per student enrolled, 2 cents per student directly certified for free meals, and 6 cents per student directly certified for free or reduced price meals based on Medicaid. In contrast, Washington had relatively low total costs compared to other Cohort 2 States (\$61,000), but relatively high costs per student enrolled and directly certified: 11 cents per student enrolled, 64 cents per student directly certified, and \$5.75 per student directly certified for free or reduced-price meals based on Medicaid.

Texas had much higher total costs than any other State (\$373,000) but had costs per student enrolled and directly certified that were similar to other Cohort 2 States: 10 cents per student enrolled and 44 cents per student directly certified. Texas is a large State with more than 1,200 school districts, and this result indicates that although the State's costs were large in absolute terms, the costs per student enrolled and directly certified are similar to those of other States implementing DCM-F/RP. However, Texas's cost per student directly certified for free or reduced-price meals based on Medicaid was by far the highest of any State, at \$10 per student. As shown in Tables III.2 and III.3, Texas directly certified relatively small percentages of students for free and reduced-price meals based on Medicaid compared to other States; this, combined with the State's overall high costs for DCM-F/RP, resulted in a higher-than-average cost per student directly certified based on Medicaid.

⁴⁰ Nevada was excluded from these measures since the State did not certify any students through DCM-F/RP in SY 2017–2018.

Table VI.3. State administrative costs of DCM-F/RP per student enrolled or directly certified in SY 2017–2018

State	State administrative costs (dollars)		
	Per student enrolled	Per student directly certified for free meals	Per student directly certified for free or reduced-price meals based on Medicaid
Cohort 1 States			
Florida	0.00	0.00	0.00
Massachusetts	0.00 [^]	NA	NA
Nebraska	0.00	0.00	0.00
Utah	0.03	0.15	0.42
Virginia	0.00 [^]	0.01	0.03
West Virginia	0.01	0.05	0.14
Pooled sample	0.00[^]	NA	NA
Cohort 2 States			
Connecticut	0.21	1.16	2.41
Indiana	0.06	0.25	0.54
Iowa	0.09	NA	2.32
Michigan	0.02	0.09	0.21
Texas	0.10	0.44	10.00
Washington	0.11	0.64	5.75
Wisconsin	0.18	0.93	3.35
Pooled sample	0.09	NA	1.94
Hybrid State^a			
California	0.01	0.02	0.06

Sources: Cost-tracking workbooks completed quarterly by State administrators for SY 2017–2018 and enrollment and direct certification data from administrative records provided by State administrators for SY 2017–2018.

Notes: Cohort 1 States implemented DCM-F/RP in SY 2016–2017. All Cohort 2 States except Nevada implemented DCM-F/RP in SY 2017–2018. California implemented DCM-F/RP in 14 districts in SY 2016–2017 and statewide in SY 2017–2018. Nevada did not certify any students through DCM-F/RP in SY 2017–2018 and is therefore excluded from this table.

^aThe 14 California districts that implemented DCM-F/RP in SY 2016–2017 were excluded from the certification analysis and therefore excluded from the denominators used to compute the numbers in this table.

[^]Number rounds to zero.

NA = not available. The total number of students directly certified for free meals was not available for Iowa, and the number of students directly certified for free meals based on Medicaid was not available for Florida or Massachusetts.

E. State administrative costs across demonstration years

The costs of conducting DCM-F/RP decreased substantially for States in their second year of implementation (Table VI.4). For all Cohort 1 States, SY 2017–2018 costs were less than half of SY 2016–2017 costs. Florida and Nebraska reported no State administrative costs for DCM-F/RP in SY 2017–2018 above those incurred for certification activities generally. Among States that incurred costs for DCM-F/RP in SY 2017–2018, Massachusetts had the largest decrease between years: the State's SY 2017–2018 costs were 2 percent of their SY 2016–2017 costs. Virginia's SY 2017–2018 costs were 6 percent of SY 2016–2017 costs, and West Virginia's SY 2017–2018 costs were 12 percent of SY 2016–2017 costs.

Table VI.4. Total State administrative costs of DCM-F/RP across two years for Cohort 1 States

State	Total State administrative costs (dollars)		SY 2017–2018 costs as a percentage of SY 2016–2017 costs
	SY 2016–2017	SY 2017–2018	
California	81,237	35,984	44.3%
Florida	256,708	0	0.0%
Massachusetts	151,754	3,504	2.3%
Nebraska	14,760	0	0.0%
Utah	45,862	16,316	35.6%
Virginia	53,665	3,089	5.8%
West Virginia	12,576	1,520	12.1%
Pooled sample, excluding California	535,325	24,429	4.6%

Source: Cost-tracking workbooks completed quarterly by State administrators for SY 2016–2017 and SY 2017–2018.

Note: California implemented DCM-F/RP in 14 districts in SY 2016–2017 and statewide in SY 2017–2018. The remaining States in this table implemented DCM-F/RP in SY 2016–2017.

SY = school year.

As discussed previously, California’s higher SY 2017–2018 costs relative to other States that began implementing DCM-F/RP in SY 2016–2017, at \$36,000, are not surprising given that the State expanded to statewide implementation in SY 2017–2018. However, even this State’s costs decreased substantially, illustrating that much of the start-up groundwork for DCM-F/RP was completed in SY 2016–2017. Examples of this work include programming and changes to computer systems used to produce Medicaid data extracts and match with student enrollment data. The Medicaid eligibility agency provided the child nutrition agency with the data file needed for DCM-F/RP for the entire State in SY 2016–2017, and the child nutrition agency conducted DCM-F/RP matching statewide but masked the results for non-demonstration districts. For this reason, less work was required of the California Medicaid eligibility agency in SY 2017–2018 than in the previous year. The costs incurred by California’s Medicaid eligibility agency were substantially lower in SY 2017–2018, accordingly (Table E.4). Half of California’s SY 2017–2018 costs were incurred by the child nutrition agency for providing training and technical assistance to districts. As described in Chapter VII, training and outreach were more prevalent in California than in Cohort 1 States.

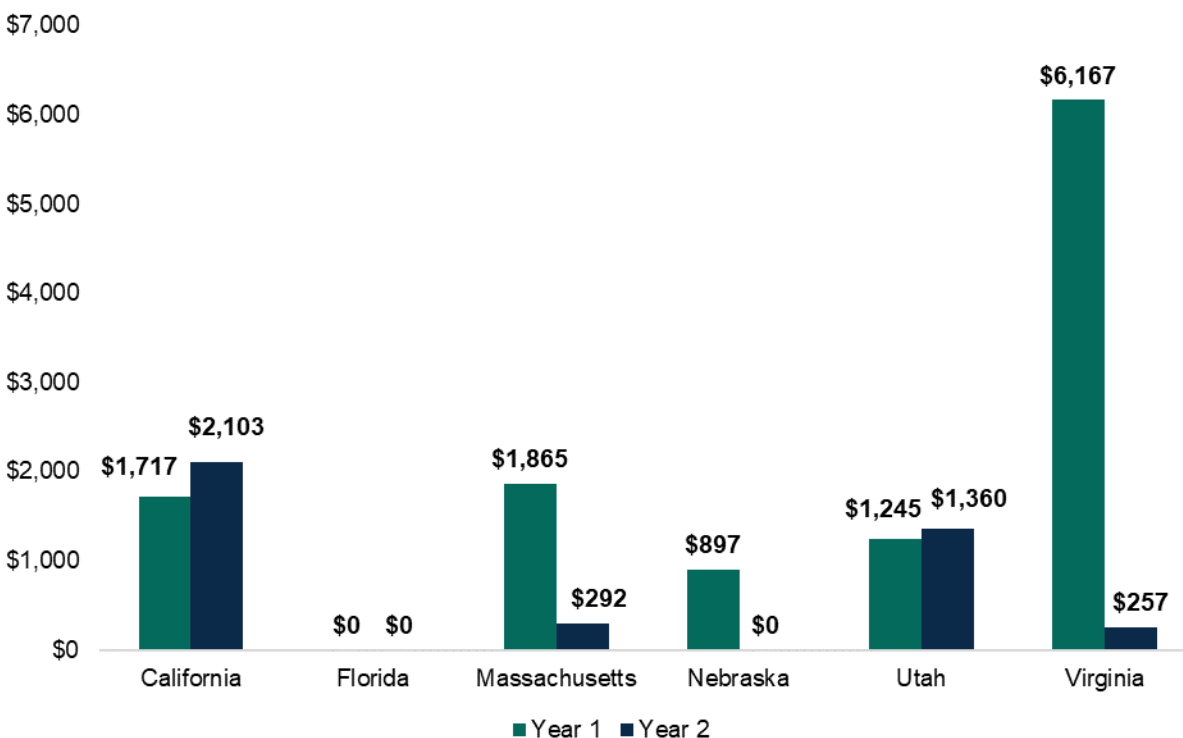
SY 2017–2018 costs were less than 5 percent of SY 2016–2017 costs across the 6 States that implemented DCM-F/RP statewide in SY 2016–2017.

Comparing average monthly ongoing costs from SY 2016–2017 to SY 2017–2018 can provide insight into whether the lower overall costs in SY 2017–2018 for Cohort 1 States were due entirely to the absence of start-up costs, or whether the ongoing cost of conducting DCM-F/RP also changed. Average monthly ongoing costs is a useful metric, because comparing total ongoing costs between SY 2016–2017 and SY 2017–2018 would not account for the differences in the number of months of ongoing costs that the Cohort 1 States incurred in each year (because the number of

Average monthly ongoing costs were lower in SY 2017–2018 than in SY 2016–2017 for most Cohort 1 States.

months with ongoing costs in SY 2016–2017 depended on the timing of the State’s first DCM-F/RP match). Average monthly ongoing costs were lower in SY 2017–2018 than in SY 2016–2017 for three of the five Cohort 1 States, indicating that costs declined for Cohort 1 States between their first and second year of implementation (Figure VI.3). Florida reported zero ongoing costs in each year, resulting in no difference in average monthly ongoing costs between the two years. Utah had higher average monthly ongoing costs in SY 2017–2018 than in SY 2016–2017, due largely to efforts to correct an issue that arose late in the prior school year (as noted earlier in this chapter and discussed in Chapter VII).

Figure VI.3. Average monthly ongoing State administrative costs of DCM-F/RP across two years for Cohort 1 States



Source: Cost-tracking workbooks completed quarterly by State administrators for SY 2016–2017 and SY 2017–2018.

Notes: California implemented DCM-F/RP in 14 districts in SY 2016–2017 and statewide in SY 2017–2018. The remaining States in this figure implemented DCM-F/RP in SY 2016–2017. West Virginia is excluded from this figure because the State conducted its first DCM-F/RP match in June 2017 and therefore did not incur any ongoing costs in SY 2016–2017.

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VII. IMPLEMENTATION PROCESSES AND CHALLENGES

In addition to estimating the effects of DCM-F/RP, this evaluation documents the implementation process and examines challenges and successes States and districts experienced. The findings presented in this chapter address, for Year 2 of the demonstration, research questions under Objective 1 (Table VII.1), which required examination of States' and districts' processes and resources used for DCM-F/RP (research questions A.1–A.4), respondents' perceptions of factors that influence matching success (A.5–A.6), and challenges and best practices (A.7–A.8).⁴¹ This chapter also contains descriptions of changes from Year 1 of the demonstration under Objective 5 (A.9). The analysis is based on interviews with staff of school districts, State child nutrition agencies, and Medicaid eligibility agencies across the 15 States during SY 2017–2018; observations of State and district direct certification processes; and documentation received from States and districts of their direct certification systems and processes. Burden estimates are based on hours reported as part of the cost data collection discussed in the previous chapter.

A. DCM-F/RP processes

Demonstration States and districts incorporated DCM-F/RP into well-established procedures for conducting direct certification for free meals. All 15 States used SNAP (as required nationwide) and TANF data for direct certification, and some also conducted direct certification using foster care, and migrant data. However, unlike Medicaid, participation in these programs confers categorical eligibility for free meals, so States can directly certify any student matched to administrative records from these programs. Adding DCM-F/RP entailed revising the eligibility determination process to use information on household size and income to identify Medicaid recipient children with household incomes below 130 percent of the FPL for free meals and between 130 and 185 percent of the FPL for reduced-price meals. This step is a key difference between DCM-F/RP and direct certification with other programs. States new to DCM needed to identify the data source that contained the necessary information for assessing eligibility, modify existing data transfer and matching processes to incorporate the additional program type, and track which students were identified as eligible by the State and directly certified by districts for free and reduced-price meals based on Medicaid.

DCM-F/RP, like direct certification with other programs, is an interagency process. In all States, DCM-F/RP involved the State's child nutrition agency (which administers the NSLP at the State level and is responsible for overseeing direct certification) and Medicaid eligibility agency (which determines eligibility for Medicaid and provides data needed for direct certification). In 7 of the 15 demonstration States, additional agencies played key roles in implementing DCM-F/RP (Table A.2). These included departments of education in States where the department of agriculture served as the main child nutrition agency (in three States), agencies responsible for overseeing Medicaid in States where a separate agency determined eligibility (in two States),

⁴¹ Nevada conducted its first DCM-F/RP match after the school year had ended; thus, this chapter discusses the DCM-F/RP processes developed and tested in Nevada during SY 2017–2018.

Table VII.1. Research questions and objectives related to DCM-F/RP processes

Question number	Research questions
Objective 1. Describe the processes and resources used by States and/or districts to match Medicaid data with school enrollment data and communicate the direct certification results to households, and the challenges to attaining high matching rates.	
A.1	<p>How is DCM-F/RP currently implemented or performed in each State and district?</p> <p>What are the State/district information systems, databases, and data elements used for DCM-F/RP?</p> <p>How frequently are the matches occurring?</p> <p>Are there different procedures and matching protocols for public school districts and private schools, or large school districts versus small or medium-sized districts?</p> <p>How feasible and effective are the different matching systems?</p> <p>Are procedures in place to extend eligibility to other children because they are members of the same household as a child identified as receiving Medicaid benefits? How is this extended eligibility process constructed?</p>
A.2	<p>What testing or monitoring is conducted to ensure that the Medicaid matching list has been produced correctly (that is, students in Medicaid households are accurately identified as eligible for free or reduced-price meals)?</p> <p>What monitoring is conducted to ensure that students reported as directly certified by Medicaid are not already directly certified by SNAP, TANF, or FDPIR?</p>
A.3	<p>For how many individual students (number and percentage) was the match performed at the State level, at the school district level, and at both levels?</p>
A.4	<p>How much staff time was required by State and local employees to complete the match?</p> <p>For Cohort I States, how did staff time required by State and local employees to complete the match in SY 2017–2018 compare to SY 2016–2017?</p> <p>How did the staff time differ among the different districts and States?</p> <p>What led to particularly large and small staff time burdens?</p>
A.5	<p>What are the relationships among DCM-F/RP implementation procedures, State information systems and databases, and State DCM-F/RP matching rates?</p>
A.6	<p>How did success in matching vary by State and school district characteristics including, but not limited to, urban/rural, public/private, higher versus lower percentage of students certified for free/reduced-price meals, State and local data systems, levels of DC-SNAP as a percentage of free certifications, or by recipient characteristics (including, but not limited to, race, ethnicity, family/household size and composition, name difference of members of the family/household, etc.)?</p>
A.7	<p>What challenges were encountered in implementing the match to Medicaid data in the study States?</p> <p>Are these challenges different for public versus private schools? Large school districts versus small/medium school districts?</p> <p>How were each of these challenges resolved?</p>
A.8	<p>What are the best practices that could be used to provide technical assistance to future DCM-F/RP States to achieve high data-matching rates?</p> <p>What improvements or system changes in computer database elements or name-matching algorithms could States make to improve DCM-F/RP matching rates?</p> <p>What proven, new, and emerging approaches to data matching might be most useful to FNS, States, and districts in improving DCM-F/RP in the future?</p>
Objective 5. For Cohort 1, examine continuing effects of Medicaid data matching on eligibility and costs over a second, full school year under the demonstration.	
A.9	<p>For Cohort 1 demonstration States, how have the Medicaid data-matching processes described in research questions A.1 through A.8 changed from Year 1 (SY 2016–2017) of the demonstration?</p>

FDPIR = Food Distribution Program on Indian Reservations; SNAP = Supplemental Nutrition Assistance Program; SY = school year; TANF = Temporary Assistance for Needy Families.

and agencies responsible for overseeing other programs involved in direct certification—such as SNAP, TANF, and foster care—in some States where different agencies oversee different benefit programs (in two States).⁴²

The remainder of this section describes how the State agencies and districts implemented DCM-F/RP in SY 2017–2018, in the context of their general direct certification processes, highlighting notable differences between the States’ approaches and any notable differences across years. Appendix F contains State profiles (Figures F.1–F.15) that summarize each State’s process for implementing DCM-F/RP, including specific agencies and data systems involved in DCM-F/RP.

1. Planning and preparation

In SY 2017–2018, seven Cohort 2 States implemented DCM-F/RP. Nevada prepared for implementation but did not certify any students through DCM-F/RP during the school year.⁴³ California, which had implemented DCM-F/RP in 14 pilot districts during SY 2016–2017, expanded the demonstration statewide in SY 2017–2018. The remaining Cohort 1 States continued their participation in the demonstration but required little additional planning or preparation.

As in Year 1, child nutrition agencies were responsible for coordinating demonstration efforts and convening meetings with their partners—including State Medicaid eligibility agencies, districts, and point-of-service (POS) vendors—to discuss the demonstration.⁴⁴ In most States, child nutrition agencies also oversaw changes to the direct-certification matching systems.

Implementing the demonstration typically required interagency data-sharing agreements or memorandums of understanding (MOUs) to allow Medicaid eligibility agencies to transfer data identifying children potentially eligible for free or reduced-price meals through DCM-F/RP. However, these MOUs were typically revisions of existing agreements because in each State the agencies housing the Medicaid eligibility data also provided the SNAP, TANF, and sometimes foster care or migrant data used for direct certification.⁴⁵

Child nutrition agency staff conducted training and outreach to district staff to help them prepare for the demonstration. Training and outreach were more prevalent among Cohort 2 States and California in Year 2 than among Cohort 1 States in Year 1. Of the seven Cohort 2 States that implemented DCM-F/RP in SY2017–2018, six conducted training for district staff, though the

⁴² In the cost analysis presented in the previous chapter, departments of education and departments of agriculture were categorized as child nutrition agencies, and agencies involved in overseeing Medicaid or eligibility for any program used for direct certification were categorized as Medicaid eligibility agencies.

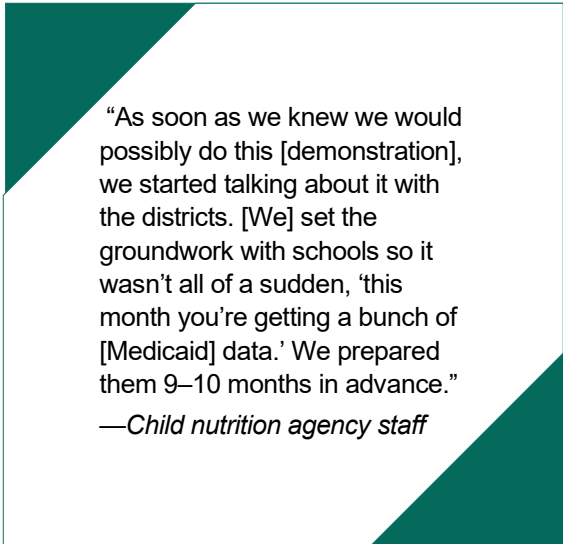
⁴³ Descriptions of demonstration procedures for Nevada in this chapter refer to the procedures they were testing and planned to use beginning in SY 2018–2019.

⁴⁴ Throughout this chapter, we use the term *point-of-service (POS) systems* to refer to the local data systems districts use to track school meal certification status. These systems are typically used by administrative staff in conducting certification as well as by staff at school cafeteria check-out counters.

⁴⁵ In all of the demonstration States except Massachusetts the Medicaid eligibility agency is also the SNAP agency, and it provided SNAP (and TANF) data for direct certification. In Massachusetts, the Medicaid eligibility agency was already providing foster care data for direct certification.

number and efficacy of the trainings varied by State. For example, in one State, a short webinar was posted online, but neither district interviewed was aware of it. California, however, conducted a more involved training and outreach campaign than the other States. It conducted 12 regional in-person trainings and recorded a webinar that described DCM-F/RP, the certification hierarchy, changes needed to district POS systems, and other details. California required districts to either attend the training or view the webinar, submit their reduced-price direct certification letter for review, and sign a form indicating they understood DCM-F/RP and confirming their POS system was capable of implementing it properly.

Most States relied on districts to inform POS vendors of any necessary updates related to the demonstration. Connecticut learned from district staff that informing POS vendors of the demonstration was a priority and created documentation outlining business rules for districts to share with their vendors. California convened a POS vendor working group to discuss changes vendors needed to make to their systems to accommodate DCM-F/RP and address any questions they had about the demonstration.



“As soon as we knew we would possibly do this [demonstration], we started talking about it with the districts. [We] set the groundwork with schools so it wasn’t all of a sudden, ‘this month you’re getting a bunch of [Medicaid] data.’ We prepared them 9–10 months in advance.”

—*Child nutrition agency staff*

The preparatory steps, along with the development and testing of the data extract identifying eligible or potentially eligible children, often took time. Only one of the eight Cohort 2 States, Indiana, conducted the first DCM-F/RP match before the beginning of school year. Michigan conducted its first DCM-F/RP match in September 2017, Texas in October 2017, Wisconsin in December 2017, Connecticut and Iowa in March 2018, and Washington in April 2018; Nevada did not certify students in SY 2017–2018. The most common reason States discussed for not conducting their first match until spring 2018 were delays in executing the revised data-sharing agreements and lengthened quality assurance procedures to ensure the accuracy of the data extract. The longest delay, in Nevada, was largely because of administrative delays associated with executing the MOU and staffing vacancies.

Cohort 1 States, other than California, needed little dedicated preparation for their second year of implementation. For example, Florida conducted no additional planning for SY 2017–2018 because no changes were needed to the procedures established during the previous year. Utah, Virginia, and West Virginia corrected issues encountered during SY 2016–2017 before the start of SY 2017–2018. Virginia received technical assistance from the Centers for Medicare & Medicaid Services and updated the State’s programming accordingly to eliminate ineligible Medicaid categories and reflect the proper match hierarchies. Similarly, Utah, after receiving technical assistance from FNS, eliminated some ineligible Medicaid categories where no income test was performed by the Medicaid eligibility agency. West Virginia worked with its State POS vendor to ensure the system correctly reflected the proper match hierarchies.

2. Identifying eligible children

To conduct DCM-F/RP, States must first identify children eligible for school meal benefits within the Medicaid data. Unlike SNAP and other programs used for direct certification, Medicaid participation does not confer categorical eligibility for free school meals. Instead, States must conduct an income eligibility test to determine DCM-F/RP eligibility. This process involved two components:

1. States had to identify which Medicaid administrative records contained sufficient information to determine eligibility. Records had to contain complete information on a child's household's size and income. This information is available for some but not all Medicaid aid categories.⁴⁶ For example, some Medicaid aid categories are used for individuals who are categorically eligible for Medicaid and therefore not required to report complete information on household size and income when applying. These aid categories do not provide sufficient information for States to determine whether participants are eligible for DCM-F/RP.
2. For Medicaid records with complete information on household size and income, State agencies used this information to calculate household income as a percentage of the FPL and compared it to the income-eligibility thresholds for free or reduced-price meals. States identified children residing in households with income below 130 percent of the FPL as eligible for free meals and those with household incomes between 130 and 185 percent of the FPL as eligible for reduced-price meals.

In 11 of the demonstration States, the Medicaid eligibility agency was responsible for assessing eligibility and producing a DCM-F/RP eligibility file identifying children eligible to be directly certified for free or (separately) reduced-price meals through DCM-F/RP.⁴⁷ In four Cohort 2 States—Iowa, Michigan, Texas, and Washington—the child nutrition agency was responsible for determining eligibility. In these States, the Medicaid eligibility agency provided the data necessary for the partner agency to make the eligibility determination. For example, Texas's Medicaid eligibility agency provided the child nutrition agency with each child's household size, gross income, Medicaid aid category, and an indicator of whether the child's Medicaid eligibility was determined based on Modified Adjusted Gross Income (MAGI).⁴⁸ The child nutrition agency used this information to calculate household income as a percentage of FPL and identify those with insufficient information to assess eligibility for DCM-F/RP. In some other States, the Medicaid eligibility agency computed each child's household income as a percentage of the federal poverty level and provided that variable for the child nutrition agency to use in determining DCM-F/RP eligibility.

⁴⁶ Medicaid aid categories, established by each State, are designations indicating the criteria by which an individual qualifies for Medicaid assistance, including income limits and other eligibility criteria, such as age, disability, or receipt of Supplemental Security Income.

⁴⁷ In States where more than one agency is involved in determining eligibility for and administering Medicaid, staff of the agency assessing eligibility for DCM-F/RP sometimes consulted with policy experts at the other agency to help identify relevant categories.

⁴⁸ The guidelines for assessing DCM-F/RP eligibility differ by whether income is defined based on MAGI for the Medicaid in aid category, as explained in Chapter I.

Several States encountered challenges in identifying the appropriate Medicaid categories to use, as discussed later in the chapter (Section C), but only one State had difficulties calculating gross household income as a percentage of the FPL level—a key step in determining DCM-F/RP eligibility. As in SY 2016–2017, California’s agencies had access to the FPL range the child’s household fell into instead of the household’s exact income. For income ranges that spanned multiple benefit levels, the State applied the lower benefit level to ensure no child was certified for benefits they were not eligible for.

The process of developing the specifications and programming (and testing, discussed below) the queries to produce the files identifying eligible or potentially eligible children required careful consideration and upfront effort by Cohort 2 States, much as it did for Cohort 1 States during Year 1. After the first file used for DCM-F/RP matching was created, production of subsequent files was automated. This automation enabled Cohort 1 States to continue conducting DCM-F/RP in SY 2017–2018 without needing to develop additional specifications or programming, except to correct any errors in their process.

The Medicaid eligibility agency then securely transferred these files to its partner agencies for matching, or for both eligibility assessment and matching in States where the Medicaid agency did not assess eligibility. States automated these data transfers by including the code that created and transferred the file as part of a “batch job” that would run on a set schedule.

3. Matching Medicaid and student enrollment records

The data-matching process for DCM-F/RP varied among States but was generally consistent with the matching process used for direct certification based on participation in SNAP and other programs. Of the 14 demonstration States that operated DCM-F/RP in SY 2017–2018, all but Virginia conducted central direct certification matching, in which the primary match between program participation data and school enrollment data is at the State level. In 11 of the 14 States, agencies related to child nutrition were responsible for matching. In the remaining three States, other direct certification data partners housed the matching system.

Public school districts in Virginia conducted local matching in Year 2, as they had the previous year. The child nutrition agency divided the DCM-F/RP eligibility file by zip code or county and forwarded to each district the portions corresponding to its local area for the districts to match locally. In Year 2, Virginia was able to centrally match enrollment to program data for private schools using new software that aided in conducting the match. (Private schools were excluded from the demonstration in SY 2016–2017 because of the time constraints associated with conducting this match manually.⁴⁹)

Medicaid data. The DCM-F/RP matching process requires transferring data files that identify income-eligible Medicaid participants to matching systems and comparing them with student enrollment records using a predetermined algorithm. In all 15 demonstration States, the Medicaid eligibility agency provided either (1) files identifying the income-eligible children receiving Medicaid or (2) files containing the information needed for another agency to determine which

⁴⁹ Quantitative results presented elsewhere in this report exclude private schools in Virginia.

children receiving Medicaid are income-eligible. In all States, the Medicaid eligibility agency also provided the data needed for direct certification with another program (SNAP, TANF, foster care, or migrant). Because the Medicaid eligibility agencies were already providing other program data for matching purposes, they were able to build on data-transfer procedures already in place. However, in some States, the Medicaid data are not drawn from the same database at the agency or transferred in the same file as other program data, which necessitated small adjustments to the data-transfer procedures (Appendix Figures F.1–F.15).

Student enrollment data. The other type of data needed to conduct matching for DCM-F/RP is student enrollment data, which central-matching States obtained from two broad sources:

1. **Statewide Student Information Systems (SSISs).** Most demonstration States (California, Connecticut, Indiana, Iowa, Michigan, Nebraska, Nevada, Texas, Utah, Washington, and West Virginia) matched against student enrollment data residing in their SSIS.⁵⁰
2. **Direct upload.** Florida, Massachusetts, and Wisconsin relied on districts uploading enrollment data directly to the direct-certification matching system. Indiana, Nebraska, Texas, and Utah also offered this option to districts. In Connecticut and Virginia, private schools used this approach.

In Virginia, the sole local-matching State, public school districts conducted the match against their local enrollment system.

Private schools conducted direct certification in the same manner as public districts in most States. However, in Nebraska, private schools uploaded their enrollment to a different State system than public districts did. Private schools in Connecticut had to upload enrollment data into the direct certification system because their enrollment data, unlike public school data, were not already in the SSIS. Private schools in Virginia could upload enrollment to the child nutrition agency's system for central-level matching in Year 2, though they were excluded from DCM-F/RP in Year 1. Nevada planned to exclude private schools from DCM-F/RP because they did not use the State enrollment and POS system required for direct certification. A small number of private schools in West Virginia did not use the statewide POS system required for participation in direct certification.

Matching algorithms. There are two main ways to conduct matching. Deterministic matching (used by California, Florida, Indiana, Massachusetts, Texas, Utah, and Wisconsin) requires an exact match on key variables. Probabilistic matching (used by Connecticut, Iowa, Michigan, Nebraska, Nevada, Washington, and West Virginia) allows inexact matches between fields and allows users to set a percentage threshold for identifying acceptable matches (for example, 90 percent of the fields need to match to be considered a match). Deterministic matches typically used three or four data elements, most commonly first name, last name, date of birth, and gender (Table VII.2). Cohort 1 States used the same matching methods in SY 2017–2018 as they used the previous year. Most States used the same matching algorithm for DCM-F/RP that they used

⁵⁰ In Nebraska, private school enrollment data were sourced from a separate statewide system.

for direct certification with other sources. California—the only exception—used five data elements for more stringent DCM-F/RP matching criteria than it used for matching for other programs.⁵¹ Most States' algorithms included a phonetic match to match names with minor differences in spelling. Some States also included a string match to identify potential spelling and data entry errors within a given data element.

Table VII.2. Data elements used in DCM-F/RP matching

	First name	Last name	Middle initial	Suffix	DOB	Gender	Race	SSN	Address	County	Other ^a
Cohort 1 States											
Florida ^b	●	●	-	-	●	●	●	●	-	-	-
Massachusetts	●	●	-	#	●	-	-	-	-	-	-
Nebraska	#	#	-	-	#	#	-	-	#	-	-
Utah ^c	●#	●#	-	-	●#	-	-	-	-	-	-
Virginia ^d	#	#	-	-	#	#	-	#	#	-	#
West Virginia	#	#	-	-	#	-	-	#	#	#	#
Cohort 2 States											
Connecticut	#	#	#	-	#	-	-	-	-	-	-
Indiana	#	#	-	-	#	#	-	-	-	#	-
Iowa	●	●	-	#	●	#	-	#	#	-	#
Michigan	●	●	#	#	●	●	-	-	-	-	#
Nevada	●	●	#	-	●	-	-	-	-	-	#
Texas ^e	●	●	-	-	●	●	-	●	-	-	-
Washington	#	#	-	-	#	#	-	-	-	-	#
Wisconsin	●	●	-	-	●	-	-	-	-	-	-
Hybrid State											
California	●	●	-	-	●	●	-	#	●	-	-

Source: Interviews with State staff; State documentation of matching processes

● = Data element is required for an exact match.

= Data element can be used to identify an exact or possible match.

●# = State has two different matching systems: one requires data element for an exact match, and one requires data element for an exact or possible match.

- = Data element is not used for matching.

^aOther data elements include guardian name (Virginia, West Virginia), birth order (Michigan), and statewide student identification number (Iowa, Michigan, Nevada, Washington).

^bFlorida has a 16-level deterministic match. Some matches required as few as two data elements (SSN and date of birth), whereas others required four data elements (last name, first name, date of birth, and gender).

^cUtah conducts matching using two different systems that use the same deterministic matching algorithm. One system produces exact matches when all data elements match and possible matches when two of the data elements match; the other produces only exact matches.

^dIn Virginia, matching is done locally. The State requests that districts match on at least three data elements, and districts select which data elements to use. The table indicates the data elements the State provides to districts.

^eTexas requires an exact match on four of the five data elements.

DOB = date of birth; SSN = Social Security number.

⁵¹ The match algorithm California used for Medicaid was more stringent than that used for SNAP and TANF match to reduce the risks of false positives, which was a concern for the State because Medicaid is a larger program than SNAP or TANF.

In Virginia, the one State using district-level matching, the matching process and algorithm varied across districts. Districts received program eligibility files from the State and matched them against their local enrollment data. The child nutrition agency required districts to match on at least three data elements. Districts selected which elements to use and could choose to use deterministic or probabilistic matching processes. The four Virginia districts visited for the evaluation used the same matching methods for DCM-F/RP as for direct certification with other programs, and their matching methods did not change in Year 2. One of these districts used probabilistic matching.

4. Testing and monitoring

Cohort 2 States tested and monitored the creation of the DCM-F/RP eligibility file and the matching process before the first DCM-F/RP match. A key difference between DCM-F/RP and standard direct certification is the need for States to identify which program participants meet the income-eligibility standards for free or reduced-price meals, so this step was a focus of the initial testing. To ensure the DCM-F/RP eligibility file was produced correctly and contained only eligible Medicaid records, all States tested the creation of the file before conducting the first match against student enrollment data. When creating test files, agencies that assessed eligibility confirmed the correct Medicaid aid categories were included. Most agencies selected sample cases from different Medicaid aid categories to verify they were assigned the correct certification status and program type. For instance, Iowa's Medicaid eligibility agency ran several iterations of testing prior to launching the demonstration that included verification of income as a percentage of the FPL, ages, and Medicaid aid categories included in the file; spot checks of individual cases; and consistency between program data in the benefits database versus the DCM-F/RP eligibility file, among other tests. Most States' child nutrition agencies also tested that the certification hierarchy, described below, was preserved in the lists to be provided to districts.

Ongoing monitoring of the DCM-F/RP process was uncommon among States in both cohorts. Cohort 1 States created eligibility files and conducted matching automatically using the programs developed before the first DCM-F/RP match in Year 1. Therefore, they reported that additional testing after this initial match was unnecessary. Among Cohort 1 States, only Utah tested its file to ensure it included the correct children in the demonstration after learning that it included ineligible children during Year 1. Utah's Medicaid eligibility agency tested a random sample of cases to ensure the correct cases were excluded, and another agency spot checked a number of cases to verify the accuracy of the file. Although Massachusetts and Virginia continued to monitor creation of the DCM-F/RP eligibility file as they had done in Year 1, other Cohort 1 States only initiated reviews in response to questions from districts or parents about the match results, errors that required a change, additional FNS guidance, or changes to State databases or systems that could affect direct certification.

Among Cohort 2 States, Connecticut and Washington conducted routine data validations on the DCM-F/RP eligibility file to ensure data elements were accurate and formatted correctly. Connecticut also conducted regular spot checks for duplicate cases, out-of-State addresses, and other file errors. Texas did not actively monitor its eligibility file, but the child nutrition agency's

system automatically generated error reports, such as when the number of directly certified students increased substantially from one month to the next, which could indicate a programming error. Other Cohort 2 States noted they would check files only if there were changes to their systems or issues were brought to their attention.

5. Dissemination of match results to districts

Central-matching States made match results available to their districts using the same process used for direct certification with other programs. In most States, district staff must log in to a State-administered system to download the results. In Florida, Iowa, Nebraska, and Texas, district staff received an email when new matches were available. Similarly, Nevada planned to email districts their nonmatches and allow them to set up an alert to notify them when a new file of exact matches was available for download. In Massachusetts and Wisconsin, district staff triggered each match and downloaded the results once the match was complete.

Two States, Utah and West Virginia, disseminated match results using State-sponsored POS systems. These systems could certify exact matches automatically and did not require district staff to log in to a separate State system to obtain match results and transfer them to a local POS system to complete direct certification.⁵²

All central-matching States produced lists of exact matches for each district, which typically included matches for other programs (with codes to indicate program). Connecticut, Indiana, Nebraska, Washington, and West Virginia also provided possible matches, as did Utah's State online claims and matching system. Iowa's child nutrition agency staff reviewed possible matches themselves, as time permitted, and added identified students to lists of exact matches. Most States included exact matches for all direct certification programs in a single file. However, Florida produced separate lists of free matches and reduced-price matches, and Washington provided a separate file of Medicaid matches to districts.⁵³ Florida's system also provided lists of unmatched students who had the same address as a matched student, and Indiana provided a list of unmatched children in the same SNAP, TANF, or Medicaid case as a matched student.

Most States (all but California, Nevada, and Virginia) had individual student lookup capabilities, enabling districts to check for DCM-F/RP (or other direct certification) eligibility by entering information for a single student. District staff used these features to investigate possible matches and explore the eligibility of incoming transfer students.

6. Certification of DCM-F/RP matches

Districts conducted the final steps in the direct-certification process in much the same way as before the demonstration. After obtaining match results from the States (or, in Virginia, from their own matching process), districts updated their POS systems with students' new certification

⁵² Only a subset of districts in Utah used the State system in this way. See Figure F.11 for more information.

⁵³ Washington sent Medicaid match results separately because focus groups with districts before the launch suggested it would be easier for district POS systems to accommodate Medicaid reduced-price matches if they were provided in a separate file.

status and basis,⁵⁴ drafted and mailed new DCM-F/RP letters to households, extended certification to other students in the household, and, in some cases, attempted to certify possible matches.

To complete DCM-F/RP, districts had to record DCM-free and DCM-reduced-price certifications in their POS systems. Most districts visited for this study in SY 2017–2018 reported their POS systems had been updated to include Medicaid as a program option and recognize direct certification as a certification method for reduced-price meals. As discussed in Section C, this is an improvement from SY 2016–2017, when at least one district visited in five States reported their vendor had not updated the POS system before the first match.

Direct-certification practices varied in minor ways among the districts visited for the evaluation, depending, to some extent, on district characteristics. Although many smaller, rural districts used the same POS vendors as their larger, more urban counterparts, some small districts visited matched (in Virginia) or updated students' certification status manually (in other States), regardless of whether their POS systems were updated for DCM-F/RP. Large districts with access to daily matches generally reported downloading their matches more frequently than smaller districts. Larger districts tended to download matches more often at the start of the school year and then scaled back these downloads as the year progressed.

7. Extension of certification to other students in the household

Students who reside in the same household as a student certified by DCM-F/RP are eligible to receive the same benefits through a process called extension. All 15 demonstration States relied on districts to identify unmatched students living in the same household as certified students. Florida and Indiana were the only States in which State agency staff assisted with the process. Florida provided a list of all unmatched students with the same address as a matched student to facilitate extension at the local level. Indiana provided a list of unmatched students in the same household case as a matched student.

Cohort 1 districts continued to employ the same methods to extend DCM-F/RP certifications as in Year 1, and Cohort 2 districts generally reported the same methods in Year 2 (Appendix Table F.1). None of these methods was unique to DCM-F/RP. Districts checked household identifiers within their enrollment or POS systems to identify opportunities for extension. All districts sent a letter to families notifying them of their direct-certification results and instructing them to report any other students living in the household. Another extension strategy was for district staff to identify unmatched students in a household. This strategy was observed in small districts, where staff are familiar with their student population and could sometimes identify siblings who had different meal statuses without any investigation. Some districts opted to invest more time and effort into extending match results. Some reviewed student surnames, parent or guardian names, and addresses to identify other students in the household.

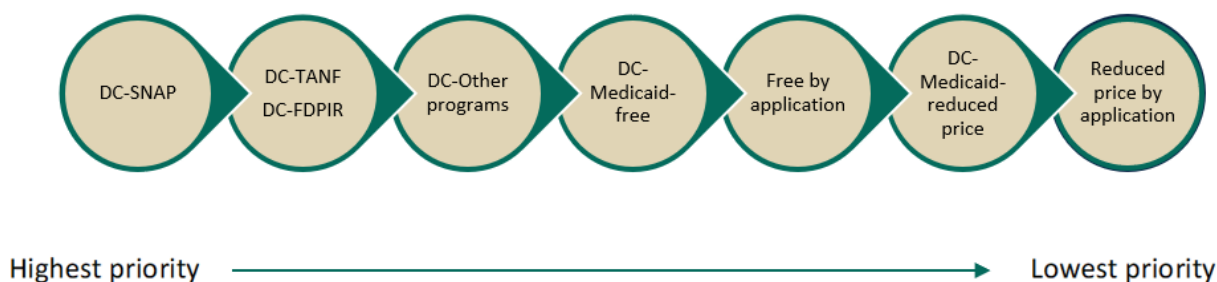
⁵⁴ Some districts use manual procedures such as Excel workbooks, rather than automated POS systems to track school meal certification status. We include those manual tracking systems and procedures when we refer to POS systems in this report.

8. Maintaining the certification hierarchy

FNS has established a certification hierarchy that indicates which certification status and basis of certification should take precedence for students eligible through multiple methods or programs. The certification status (free, reduced-price, or paid) is the aspect of certification that matters to students, but districts must also track information on the basis of certification necessary for reporting to State agencies and FNS. Free certification supersedes reduced-price certification for students identified as eligible for both (for example, eligible for free meals based on direct certification and for reduced-price meals through an application). Within a certification status, direct certification supersedes approval by application. This prioritization ideally reduces administrative burden on district staff because direct certifications are not subject to verification, the annual process through which district staff verify the information submitted on a sample of applications is accurate. Within direct certifications for free meals, the hierarchy also determines which programs supersede others for students eligible through multiple programs. Direct certification through SNAP supersedes all other methods of certification and helps States meet the SNAP direct-certification performance target set by Congress: States are required to directly certify for free meals at least 95 percent of school-aged children participating in SNAP.

All States had experience maintaining the certification hierarchy before the demonstration but implementing DCM-F/RP required States to incorporate free and reduced-price Medicaid direct certifications into the existing certification hierarchy (Figure VII.1). FNS instructed States to consider free Medicaid direct certifications as the lowest priority free direct certification—below all other programs but above approval by application. Reduced-price direct certifications supersede approval for reduced-price meals by application but are prioritized below free certifications by any method. Before DCM-F/RP, direct certification was used only for free meals and always took precedence over approval by application. Because DCM-F/RP introduced the possibility of direct certification for reduced-price meals, staff had to ensure reduced-price direct certifications through DCM-F/RP did not overwrite free certifications based on application.

Figure VII.1. DCM-F/RP certification hierarchy



In most States, State agencies and districts shared responsibility for maintaining the certification hierarchy (Appendix Table F.2).⁵⁵ To maintain the hierarchy, (1) States had to ensure the highest-level program in the hierarchy took precedence in the match result file provided to districts, and (2) districts had to maintain the hierarchy locally within their POS systems. It was especially important for districts to prevent a reduced-price match from overwriting a student's free status because it would negatively affect what the student pays for meals. States and districts also had to update the certification status of students who moved up the hierarchy (that is, changed from paid to free or reduced-price or from reduced-price to free) throughout the school year, and districts had to record the basis of certification locally. State staff trained districts on the hierarchy, stressing that all other programs supersede Medicaid and that reduced-price direct certification should never overwrite the status of a student receiving free meals.

Most States included only the highest priority program in the direct certification match results (or lists of eligible students in Virginia) provided to districts to reduce the chance of recording a student as certified based on a lower-priority program. States most commonly established the hierarchy in the same program that implemented their matching algorithm. In nine States (Connecticut, Florida, Iowa, Michigan, Nevada, Utah, Texas, Washington, and Wisconsin), the program would identify the highest-priority program for each child or student just before or after conducting the match and retain a program indicator that was then sent to districts with matches. California, Indiana, and Massachusetts matched different program data to the enrollment data sequentially, according to the hierarchy, and removed matched students from the enrollment file at each step. West Virginia enforced the hierarchy through the State-maintained POS system nearly all districts in the State used. Virginia, a local matching State, includes a program indicator for only the highest-priority program for each child in the first eligibility file sent to districts for the school year. Each subsequent file includes only children who are absent from previous files, move to a different location, or match to a program higher on the hierarchy.⁵⁶

Nebraska continued to place more responsibility on districts for maintaining the hierarchy in Year 2. Nebraska provided match results showing all programs each student matched to, relying on district staff or their POS systems to choose the correct program. However, in SY 2017–2018, the State, using a direct certification improvement grant, began to modify its system to include only the record for the highest priority program in future years. Nebraska indicated the system would be implemented by the beginning of SY 2018–2019.

9. Timing of DCM-F/RP processes

The amount of time between school or Medicaid enrollment and DCM-F/RP certification depends on the frequency of updates to the student enrollment and Medicaid data used, the State

⁵⁵ Districts in West Virginia and those in Utah that used a State-sponsored POS system relied on the State to maintain the certification hierarchy.

⁵⁶ In Year 1, once a student was certified for reduced-price meals, his or her status was not changed if the student became eligible for free meals. The State corrected its business process in Year 2 and now includes students who match to a program higher on the hierarchy on subsequent files sent to the district.

or district’s matching schedule, and, in most States, the frequency of district staff actions to complete the certification in their local POS systems.

Direct-certification matching frequency ranged from daily to the federally required minimum of three times per year, with most States allowing for daily to monthly matches (Table VII.3). The matching schedule was the same for Medicaid as for SNAP and TANF, except as affected by late implementation of DCM-F/RP in Year 1 of the demonstration for most Cohort 2 States. Late implementation reduced the number of times DCM-F/RP matching took place in some States, relative to the schedule for a full school year. For example, Iowa distributed its first file of matches to districts three months before the end of the school year, and Nevada did not certify any students through DCM-F/RP until SY 2018–2019.

Table VII.3. DCM-F/RP match and data update frequency

State	Match frequency	Frequency student enrollment data updated	Frequency Medicaid data provided
Cohort 1 States			
Florida	Daily	At least 3 times per year ^a	Daily
Massachusetts	At least 3 times per year ^a	At least 3 times per year ^a	Real time
Nebraska	Daily	At least 2 times per year ^a	Daily
Utah			
Claims and matching system	At least 3 times per year ^a	At least 3 times per year ^a	Daily
State-sponsored district enrollment system	Daily	Real time	Daily
Virginia	6 times per year	Real time	6 times per year
West Virginia	Daily	Real time	Weekly
Cohort 2 States			
Connecticut	Weekly	At least 3 times per year ^a	Weekly
Indiana	Daily	Varies by district ^b	Monthly
Iowa	Once in July; semimonthly in all other months	3 times per year	Once in July; semimonthly in all other months
Michigan	Biweekly August–September; monthly October–July	At least 3 times per year ^a	Daily
Nevada	Semimonthly	Daily	Semimonthly
Texas	Monthly	At least annually ^a	Monthly
Washington	Daily	At least annually ^a	Daily
Wisconsin	At least 3 times per year ^a	At least 3 times per year ^a	Weekly
Hybrid State			
California	Monthly	At least 2 times per year ^a	Monthly

Source: Interviews with State and district staff, State documentation of matching processes

Note: The frequencies in this table reflect the schedule for a full school year. In States that implemented the demonstration late in SY 2017–2018, DCM-F/RP was conducted less often.

^aThe frequency of this activity varies by district.

^bIndiana requests that districts update enrollment daily but indicated many districts update enrollment less frequently.

Thirteen States used fixed matching schedules determined by the State; 6 of these States matched daily. In Massachusetts, and Wisconsin, districts determined match frequency by triggering matches when they upload new enrollment data. In Texas and Utah, although the State matched on a fixed schedule in one system, districts could trigger matching in the other system available to them by uploading enrollment files.

School enrollment data updates varied by district in 11 States. The most commonly required minimum update frequency was three times per year. In some States, such as Indiana, State staff urged districts to update their enrollment data much more often. In the remaining State, school enrollment data updates occurred on a frequency set by the State. In four of these States, data were updated daily or in real time. The exception was Iowa, where all districts updated data three times per year.

Because Medicaid data were provided at the State level, all States used Medicaid data updated with a set schedule. Massachusetts matched against real-time Medicaid data. In the other States, the frequency of updates ranged from daily (in five States) to six times per year in Virginia.

In most States—even many that use set matching schedules—district staff control the ultimate frequency of direct certification (based on Medicaid or any other source). In all but two States, district staff needed take some action to complete the certification. One common district action was to log in to a secure State website, download match results, and load them into their local POS systems. The two exceptions were West Virginia and certain districts in Utah. In both cases, districts use State-sponsored POS systems, which automatically certify exact matches every day without requiring any district staff action.

B. Burden

Most State agency and district staff in both cohorts perceived the demonstration did not impose much burden on them. However, as with Cohort 1 staff in Year 1, a few common start-up activities proved arduous for Cohort 2 staff to complete (Appendix Table F.3). Because Year 2 of the demonstration was the second year of implementation for Cohort 1 States, only Cohort 2 States conducted start-up activities during this time frame. California had to take steps to expand the demonstration statewide in Year 2. The analysis in this section draws on qualitative data from interviews with State and district staff about the time required to implement DCM-F/RP and the activities associated with the demonstration that required the greatest effort. District staff also provided perspectives on ways burden might decrease in the future. The discussion of State-level burden here also incorporates quantitative information from the cost data (discussed in the previous chapter) on numbers of labor hours staff devoted to DCM-F/RP (Table VII.4).

Table VII.4. Staff hours spent on DCM-F/RP in SY 2017–2018, by State and agency type

State	Hours		
	Child nutrition agency	Medicaid eligibility agency	Total
Cohort 1 States			
Florida	0	0	0
Massachusetts	48	0	48
Nebraska	0	0	0
Utah	95	152	247
Virginia	14	31	45
West Virginia	39	0	39
Pooled sample	196	183	379
Cohort 2 States			
Connecticut	459	361	820
Indiana	889	39	927
Iowa	229	465	694
Michigan	366	16	382
Nevada ^a	159	1,390	1,549
Texas	381	376	756
Washington	268	14	281
Wisconsin	317	325	642
Pooled sample	3,299	2,752	6,051
Hybrid State			
California ^b	323	194	517

Source: Cost-tracking workbooks completed quarterly by State administrators for SY 2017–2018

Notes: All State agencies reported labor hours for State agency staff, and some also included contractor hours. Child nutrition agency hours include staff from three agencies in Michigan and two each in Nevada and Wisconsin; Medicaid eligibility agencies hours include staff from two agencies each in Utah and Washington. Totals shown in the table may differ slightly from calculated totals due to rounding.

^aNevada did not certify any students through DCM-F/RP in SY 2017–2018. The Nevada Department of Education provided only qualitative information on labor costs. Therefore, that agency's costs are excluded from this analysis.

^bCalifornia implemented DCM-F/RP in 14 districts in SY 2016–2017 and statewide in SY 2017–2018.

1. State level

In SY 2017–2018, State-level burden was notably lower in Cohort 1 than Cohort 2 States (Table VII.4), largely because Cohort 1 States had completed start-up activities in the previous school year. Cohort 1 agency staff reported the demonstration required minimal effort in their second year of implementation. Because the file creation, transmittal, and matching processes are fully automated in many States, child nutrition agency staff in two States (Florida and Nebraska) and Medicaid eligibility agency staff in four (Florida, Massachusetts, Nebraska, and West Virginia) did not spend any time on demonstration activities in Year 2 above and beyond their general direct certification activities. The two Medicaid eligibility agencies that dedicated time to the demonstration in Year 2, in Utah and Virginia, both spent time correcting errors identified in Year 1. Most Cohort 1 child nutrition agencies reported some time in Year 2 spent on demonstration activities, including providing ongoing technical assistance to districts. Although California indicated in interviews conducted in Year 1 that statewide implementation could

increase burden hours because of increased need to provide technical assistance to districts, the State reported fewer burden hours in Year 2 than in Year 1 for both agencies.

Cohort 2 States spent more than 10 times as many hours on DCM-F/RP than Cohort 1 States on average in SY 2017–2018, a difference primarily due to time spent on start-up activities they undertook during SY 2017–2018 that Cohort 1 States did not. The demonstration was more burdensome for Cohort 2 States due largely to start-up activities. The quantitative data indicate that in six of the eight Cohort 2 States, child nutrition agencies spent more time than Medicaid eligibility agencies implementing DCM-F/RP (Table VII.4).⁵⁷ Cohort 2 agencies noted that forming interagency agreements, developing and testing Medicaid data queries, and updating and testing direct certification matching systems took substantial effort. Assessing eligibility was another burdensome aspect of the demonstration, whether it was done as part of the Medicaid data query or as a separate step by another agency. Regardless of which agency was responsible for that step, in many States staff from both agency types were involved in the process of identifying eligible Medicaid aid categories for the demonstration, which they found challenging and somewhat time-consuming. Child nutrition agencies also dedicated considerable time to educating and training districts about the changes associated with the demonstration. Nevada’s Medicaid eligibility agency reported far more hours than any other Cohort 2 agency; this time was largely spent developing and testing programming necessary to construct the DCM-F/RP eligibility file.⁵⁸

2. District level

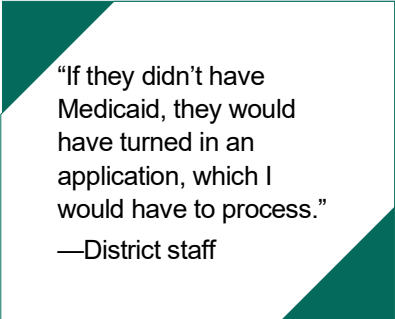
By expanding direct certification, DCM-F/RP has the potential to reduce district staff time spent on activities related to determining eligibility for school meal benefits. In SY 2017–2018, the reported reduction in burden associated with DCM-F/RP was strongly related to when it was implemented. Cohort 1 districts and Cohort 2 districts in States that launched early in SY 2017–2018 observed a decrease in time spent processing school meal applications and, to a lesser extent, conducting verifications or collecting student debt.⁵⁹ A few districts also reported DCM-F/RP helped more schools qualify for CEP, which translated into time savings for Cohort 1 districts in SY 2017–2018 (and could for Cohort 2 districts in later years).

⁵⁷ This finding is in contrast to the finding in the previous chapter that Medicaid eligibility agencies incurred higher costs, on average, than child nutrition agencies. This difference is in part related to the use of contractors (for which staff hours were not reported) for programming and testing activities, which was more prevalent among Medicaid eligibility agencies than child nutrition agencies.

⁵⁸ Nevada also developed the DCM-F/RP demonstration in the midst of transitioning from local to central direct certification matching, which entailed altering agency roles in direct certification.

⁵⁹ Some Cohort 2 districts in States that launched later in the school year anticipated fewer applications next school year but did not expect to see any time savings in SY 2017–2018 because most applications came in at the beginning of the school year.

Some districts also reported aspects of the demonstration that increased burden. Notably, Cohort 2 districts experienced greater burden than the Cohort 1 districts in Year 2, in part because they had to conduct start-up activities for the demonstration. For example, districts that receive possible matches from States reported DCM-F/RP resulted in additional possible matches that need reconciling. Additionally, despite outreach and training by Cohort 2 States, some POS vendors were unprepared for the demonstration, leading districts to manually certify their DCM-F/RP match results. A few districts also reported their POS systems required them to upload each certification type separately, so uploading free and reduced-price match results required additional time. For instance, Washington provided DCM-F/RP match results separately from other programs, requiring districts to download an additional file from the State system and upload that file into their POS system.



“If they didn’t have Medicaid, they would have turned in an application, which I would have to process.”
—District staff

C. Challenges and resolutions

States and districts encountered several challenges in implementing the DCM-F/RP demonstration (Appendix Table F.4).

Identifying Medicaid aid categories. As in Year 1, most Cohort 2 States found it challenging to determine which of their State’s Medicaid aid categories contained the household size and income information needed to determine whether children were eligible for DCM-F/RP.⁶⁰ The Medicaid eligibility agencies in these States required additional information to identify appropriate categories, and the child nutrition agencies had difficulty providing guidance because they were not familiar with the Medicaid program. Cohort 2 States found the supplementary guidance FNS shared during Year 1 helpful because it clarified States should exclude populations categorically eligible for Medicaid and those in Medicaid waiver groups where gross income was incomplete or not validated. Cohort 2 States often found they had to exclude all non-MAGI Medicaid participants because they did not have reliable gross income data for these households.

In addition to the supplementary information, States valued one-on-one consultations with FNS when determining which Medicaid aid categories to include in the demonstration. Variation in State Medicaid eligibility limits made it difficult to apply FNS’ guidance on DCM-F/RP eligibility to the specifics of a given State. Some Medicaid aid categories were included in the demonstration in one State but excluded from another because of the way income information was documented. For example, several States (California, Florida, Utah, and Wisconsin) included medically needy Medicaid recipients in their DCM-FRP eligibility file because they had complete income information on these Medicaid cases, whereas other States either did not have gross household income information for these cases or did not have a medically needy

⁶⁰ The number of categories varied across States. Massachusetts reported the most across the 15 study States, with more than 150 categories that required review.

category.⁶¹ States also varied in their inclusion of transitional Medicaid cases.⁶² The ability to discuss these topics, among others, with FNS helped lessen concerns about including ineligible cases, and qualitative findings indicated the DCM-F/RP eligibility files for Cohort 2 States appeared to be more accurate in Year 2 than for Cohort 1 States in Year 1. For example, in Year 1 four Cohort 1 States (Florida, Nevada, Utah, and Virginia) reported errors in their eligibility files, but no Cohort 2 State reported errors in its files in Year 2.⁶³

Lack of awareness of the demonstration and demonstration rules. Cohort 2 States reported that, despite the training child nutrition agencies provided, some districts were unaware of the demonstration—entirely or in key details. Although districts visited were generally aware of DCM-F/RP, a few Cohort 2 districts reported they first learned about it when they saw DCM-F/RP program codes in their match results. States educated districts unaware about the demonstration when they called to inquire about the new program codes. A few States also had to educate parents who were unaware of how their child qualified for school meals under DCM-F/RP. These parents did not necessarily realize their child was receiving Medicaid if the program went by another name in the State (such as the HUSKY health program in Connecticut or BadgerCare in Wisconsin) and called the State because they believed their child was mistakenly certified.

“Some food service directors still don’t understand that you can’t take an application and approve it based on a Medicaid number. . . . Our paper applications don’t say Medicaid anywhere in the application; districts just automatically assume [it is okay].”

—*Child nutrition agency staff*

As in Year 1, one of the most prevalent questions from districts and parents was whether all students receiving Medicaid were categorically eligible for free school meals. States clarified it was not the case, and their training materials emphasized this point. Cohort 1 States reported districts with prior exposure to DCM-F/RP still asked questions about categorical eligibility, though these types of questions decreased during Year 2.

POS systems unprepared to accommodate DCM-F/RP. As in Year 1, some POS vendors were unprepared for the demonstration, requiring district staff to enter DCM-F/RP results manually. Some POS systems prioritized all direct certifications—including for reduced-price meals—over all applications, which could decrease a student’s benefit level if staff did not make

⁶¹ The medically needy option provides Medicaid eligibility to individuals with high medical expenses who would otherwise be eligible for Medicaid except based on income.

⁶² Transitional Medicaid offers up to 12 months of Medicaid for low-income families who would otherwise lose their Medicaid coverage because of an increase in household income or loss of an earnings disregard. Students in States with a Medicaid eligibility limit less than 185 percent of FPL could potentially qualify for DCM-F/RP if enrolled in transitional Medicaid at the start of the school year.

⁶³ Nebraska, Utah, and Virginia initially included some ineligible Medicaid categories in Year 1. Florida inadvertently included students eligible for free meals based on DCM-F/RP in a file of students eligible for reduced-price meals, and Virginia did not deduplicate its eligibility file according to the hierarchy as it had intended.

manual corrections for any students eligible for free meals based on an application but identified as eligible for reduced-price meals through DCM-F/RP. Some POS systems also failed to track the basis of certification if a child was certified by Medicaid but later enrolled in SNAP or another program.

Cohort 2 States took steps to educate POS vendors about the changes they would need to make to accommodate DCM-F/RP, though some vendors were still unprepared. For instance, Indiana had a partial list of district POS vendors, which the State emailed to notify them about DCM-F/RP. It also created a website for vendors about the upcoming changes and sent information to districts to pass along to their vendors. The State found that about two-thirds of its vendors were ready for DCM-F/RP and that one-third had to make updates after the demonstration launched. In addition to State-level outreach, FNS conducted a webinar for POS vendors about key components of the demonstration to help them modify their systems, highlighting aspects such as income eligibility criteria for DCM-F/RP and the hierarchy among certification categories under the demonstration. FNS also stressed the importance of testing and data accuracy in properly implementing the demonstration. Cohort 2 districts also appeared better prepared to implement DCM-F/RP in Year 2 because some POS vendors operated across multiple States and had experience updating systems for a Cohort 1 district.

Although both large and small districts reported POS system difficulties, some staff from small districts reported that it did not pose too great a challenge because they routinely updated students' status manually after the first match of the school year. In Year 2, several small Cohort 1 districts noted they never requested their vendor to update their POS system beyond adding new program codes.

Addressing Year 1 errors. A few Cohort 1 States had issues that continued into Year 2. In one State, the hierarchy and basis of certification were not implemented correctly in the State's POS system, leading reduced-price direct certifications to supersede students receiving free meals by application. The State's POS vendor corrected this issue before October 2017 and retroactively updated students' statuses in the POS system. Another State was concerned district POS systems would enable a reduced-price certification to overwrite a certification for free meals, which was a prevalent challenge for districts in Year 1. In response, the State instructed districts not to upload students for direct certification who had previously been directly certified for free meals. The State recognized this process could lead to an incorrect basis of certification—such as maintaining a DCM-free certification for a student who subsequently began participating in SNAP—but placed greater value on ensuring students certification status was correct.

Two States corrected errors discovered in the eligibility files during Year 1 before the first day of school in Year 2.⁶⁴ Utah originally included Medicaid waiver groups and children who were eligible for Medicaid based on receipt of Supplemental Security Income—regardless of income—in its DCM-F/RP eligibility file but corrected the problem by August 2017. Virginia also included some ineligible non-MAGI Medicaid participants in Year 1 and did not deduplicate its eligibility file according to the hierarchy as it had intended. As a result, subsequent files

⁶⁴ Both Nebraska and Florida were able to fix errors in their eligibility files in Year 1.

included children who had appeared in a previous file, creating some risk that district staff might incorrectly change the eligibility status of students who had already been directly certified for free meals based on SNAP. The State fixed these issues before distributing its first file to districts in Year 2.

D. Best practices and reported factors affecting matching success

Many factors can affect matching success within a State or district (Appendix Table F.5), most of which are not unique to DCM-F/RP. This section describes characteristics and processes that facilitated or hindered DCM-F/RP implementation, and Appendix Table F.6 summarizes strategies for improving matching success, based on perspectives of State agency staff and inferences from researchers. There was little difference in responses between cohorts or demonstration years.

1. Student and household characteristics

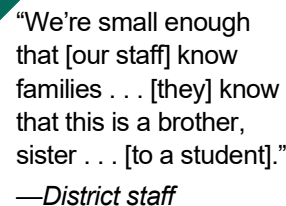
States and districts described several student and household characteristics that can affect matching success. Respondents indicated inconsistently recorded student names can decrease matching success. Complex names with punctuation and special characters were more likely to lead to a possible match or nonmatch rather than an exact match, because States and districts were sometimes inconsistent in how they entered these data. Such names could be more prevalent among certain populations. For instance, staff in some districts observed hyphenated surnames are common among Hispanic populations, and such names are more prone to data entry error or transposition. Similarly, one State with a large Burmese population noted its phonetic matching algorithm likely did a poor job matching Burmese names because the algorithm was less adept at identifying non-Western names. Differences in surnames between data sources could also make extension of eligibility more difficult for districts that relied on a student's last name to identify other students in the household.

Staff in a few Cohort 1 and Cohort 2 States discussed how address changes could decrease matching success and extension of eligibility. States that use students' address in their matching algorithms, such as California, can have difficulty matching on this data element if the Medicaid or student population moves frequently. Nevada planned to provide unmatched records to districts using the address to determine which district to send the records to. Districts could attempt to match these records manually or in their POS system to certify additional students. Inaccuracies in this file, such as outdated address data, could lead a student to be included in the list for a different district than where he or she attended school. For Virginia's localized matching process, the child nutrition agency divided the master eligibility file by Federal Information Processing System code or zip code for districts to access within the State system.⁶⁵

⁶⁵ Federal Information Processing System codes are established by the Federal Government and are used to uniquely identify geographic areas.

2. District-level factors

District and State respondents identified several key district-level factors that can affect matching success. Respondents noted matching success can depend on a district's size and resources. Some large districts have dedicated staff who support direct-certification matching. Small districts and private schools have staff who play multiple roles and have less time to dedicate to direct certification. However, because small districts typically have fewer students on their direct-certification match lists and are familiar with their student population, it is easier for them to resolve possible matches and identify opportunities for extension of eligibility.



“We're small enough that [our staff] know families . . . [they] know that this is a brother, sister . . . [to a student].”
—District staff

District staff can also positively or negatively affect matching success. Staff who regularly upload enrollment data to their State's systems, download matches on a consistent basis, and investigate possible matches may see gains in their direct-certification numbers. Staff knowledgeable about the certification hierarchy are also more likely to certify students under the correct program and ensure each student receives the correct level of benefits. However, district staff can also impede matching success. For instance, in one small rural Cohort 2 district, site visitors observed the food service director change students' direct certification status and basis unnecessarily due to a misunderstanding about the certification hierarchy.

Matching success can also depend on a district's POS vendor. Vendors that are prepared for the DCM-F/RP match are more likely to maintain the certification hierarchy and certify students under the correct program automatically, reducing the potential for human error. However, unprepared vendors meant that districts had to certify students manually, which was burdensome for larger districts and increased the possibility of introducing errors into the certification hierarchy.

3. State-level factors

The sophistication of State matching procedures can contribute to the success of DCM-F/RP. Some States use probabilistic matching algorithms and other advanced matching techniques (such as phonetic, nickname, and string matching) to increase matching opportunities by identifying close matches that can be certified and possible matches for additional review by districts. Multitiered deterministic algorithms also create more opportunities to match a student than a single deterministic match.

States that provide additional output files to districts may also increase matching success. For example, Indiana made four separate files available to districts: (1) exact matches, (2) exact matches except on county, (3) possible matches with an exact match on some variables and a partial match on others, and (4) unmatched students who share a case number with a matched student. Although Indiana has a deterministic match, its algorithms and output files provide ways for districts to potentially certify additional students.

Other means of improving direct certification are to use current data and conduct frequent matching. States that access daily or real-time Medicaid and student enrollment data for matching can increase matching success and timeliness by ensuring they use the most recent data for direct certification. States that do not have access to current enrollment data may take longer to match new students who transfer into the district during the school year. Direct certification matching systems that match daily and enable districts to look up individual students can also boost matching success and certification timeliness. Although a State may match frequently, in most States districts need to take action to certify matched students. In Florida and Nebraska, districts receive automated emails notifying them of new matches, which can prompt the district to download its matches and certify students more quickly. State-administered POS systems can expedite direct certification by certifying exact matches automatically, eliminating the need for districts to access their matches or take active steps to maintain the certification hierarchy. Some districts in Utah and nearly all districts in West Virginia use this method.

The quality of States' Medicaid data is important when matching to enrollment data. States with character limits in their Medicaid data systems can truncate names, leading to nonmatches. Expanding character limits may help States better match students with long names. For instance, Iowa's SNAP and TANF data have character limits on first name and last name, whereas the Medicaid data have no such restrictions. Because Iowa's Medicaid data were higher quality, the State attempted to match the SSNs of positive Medicaid matches to the SSNs in the SNAP and TANF program data, thereby improving SNAP and TANF direct certification rates.

Standardizing enrollment and Medicaid data before matching the two datasets can also help reduce the number of nonmatches, particularly in States with deterministic matching algorithms. For example, Iowa removed all special characters from the Medicaid and enrollment data before matching because some districts did not use them. Wisconsin removed all punctuation from its files because its phonetic algorithm did not support these characters.

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VIII. CONCLUSIONS AND LIMITATIONS

The DCM-F/RP demonstration authorizes States to directly certify students for free or reduced-price meals based on income eligibility assessed through Medicaid data. This evaluation is documenting the experiences of States and districts during the implementation process. It is also assessing the potential of DCM-F/RP to (1) expand the number of eligible students who are certified to receive free or reduced-price school meals without needing to submit applications, (2) increase the numbers of reimbursable meals served, and (3) affect the administrative costs State staff incur during the certification process. This chapter summarizes key findings from SY 2017–2018, which was the second year of the demonstration for Cohort 1 States and the first year of implementation for Cohort 2 States.

A. Summary of key findings

1. Certification, participation, and Federal reimbursements

Under the DCM-F/RP demonstration, substantial numbers of students were directly certified to receive free or reduced-price meals based on Medicaid data, comprising almost one-third of all students directly certified for free or reduced-price meals. Because Medicaid is lowest in priority among programs used for direct certification, these students would not have been directly certified in the absence of the demonstration. Although some of these students would have been certified by application in the absence of DCM-F/RP, the total percentage of students certified for free meals grew between the baseline year and SY 2017–2018 in most demonstration States, and the total percentage of students certified for reduced-price meals grew in some States. These increases in certification rates, however, did not translate into consistent increases in participation or Federal reimbursements. Although most demonstration States experienced increases in the percentages of lunches served for free, changes in other participation or Federal reimbursement outcomes were mixed.

Limitations of the DCM-F/RP demonstration design and data should be considered in interpreting the findings summarized here. The certification, participation, and Federal reimbursement outcomes were analyzed using a pre-post design, which estimated the effect of the demonstration as the change in a given outcome not explained by changes in measurable characteristics that occurred at the same time. Although the statistical model used to estimate changes accounts for the influence of included time-varying characteristics (such as local economic conditions) and any time-invariant characteristics (such as type of district) on the outcomes of interest, time-varying factors not included in the model and unrelated to the demonstration (such as other improvements to direct certification procedures, changes to school meal operations, or changes in student preferences for school meals) could still be driving some of the observed changes.

Another limitation is that some States were excluded from analyses of certain outcomes. First, because DCM-F/RP would not have affected free certifications in districts that participated in the previous DCM demonstration, the evaluation did not examine outcomes related to free meals in

Florida and Massachusetts. Second, because one key certification data outcome was unavailable for Iowa, that State was excluded from analyses of that outcome. Finally, Nevada was excluded from quantitative analyses because it did not certify any students through DCM-F/RP in SY 2017–2018. In addition to State-level exclusions, some districts had to be excluded from all analyses, notably in Washington and Texas. Chapter II and Appendix A provide a more detailed discussion of these and other limitations.

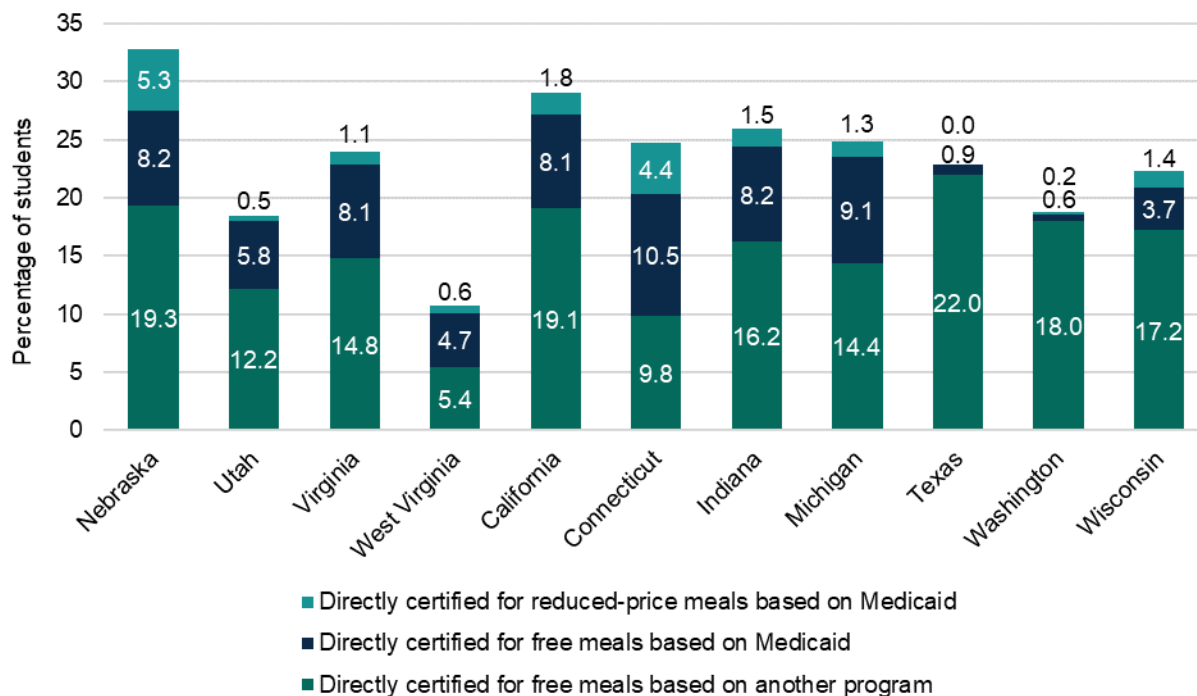
Certification. Substantial numbers of students were directly certified through DCM-F/RP in SY 2017–2018. Almost one million students were directly certified for free meals based on Medicaid data across the 12 States that participated in the DCM-F/RP demonstration but not in the previous DCM demonstration. An additional 259,000 students were directly certified for reduced-price meals based on DCM-F/RP in the fourteen States across cohorts that conducted DCM-F/RP in SY 2017–2018. All 12 States that did not participate in the previous DCM demonstration directly certified students for free meals based on DCM-F/RP, ranging from 0.6 to 10.5 percent of students (Figure VIII.1). (For comparison, between 10.1 and 27.5 percent of students were directly certified for free meals based on any program in these States.) All 14 demonstration States directly certified students for reduced-price meals based on DCM-F/RP in SY 2017–2018; these percentages ranged from less than 0.1 to 5.4 percent of enrolled students. For these two outcomes, because no students were certified through DCM-F/RP in these States in the baseline year, the full change between baseline and SY 2017–2018 is attributable to the demonstration, although experiences in other years or other States could differ.

Although some of these students would have been certified for free or reduced-price meals by application in the absence of the demonstration, overall certification rates improved during DCM-F/RP implementation in some States. Seven of the 12 States that did not participate in the previous DCM demonstration experienced statistically significant increases (of between 2.5 and 9.0 percentage points) in the total percentage of students certified for free meals. Although 1 State saw a statistically significant decrease in this outcome, it was due to even larger increases in the percentage of students attending CEP schools, which do not certify individual students. The total percentage of students certified for reduced-price meals also increased significantly in 5 of the 14 States but decreased significantly in 5 others. Mixed results on this outcome are expected as DCM-F/RP can move students from reduced-price to free status as well as from paid to reduced-price status.

Participation. The increases in certification rates translated into increases, relative to the baseline year, in the percentage of lunches served for free in most States but had more mixed effects on other participation outcomes. For the NSLP, the percentage of lunches served for free increased (by between 0.9 and 8.0 percentage points) in all but 3 of the 12 States for which the outcome was measured, but decreased (by 1.4 percentage points) in one State and did not change significantly in the remaining two. For the SBP, the percentage of breakfasts served for free increased in 5 States (by between 1.3 and 6.2 percentage points) but decreased in 1 (Virginia, by 3.2 percentage points) and did not change significantly in the other 6 States for which the outcome was measured. However, the percentage of lunches served at a reduced price decreased in seven States (by between 0.7 and 1.9 percentage points) and only increased in 1 State (Massachusetts, by 2.6 percentage points). Similarly, the percentage of breakfasts served at a

reduced price decreased in 7 States (by between 0.6 and 2.1 percentage points) and only increased in 1 (Indiana, by 1.0 percentage points); the other 6 States experienced no statistically significant change in this outcome between the baseline year and SY 2017–2018. For both breakfasts and lunches, in each State where the percentage of meals served for free increased, this increase was larger than any decrease in the percentage served at a reduced price, indicating an increase in the overall percentage of meals served for free or at a reduced price.

Figure VIII.1. Percentage of enrolled students directly certified in SY 2017–2018, for States that did not participate in previous DCM demonstration



Source: Administrative records provided by State administrators.

Notes: Each outcome in this figure reflects the percentage of students who attend schools that certify individual students and are directly certified based on the specified program, among all students enrolled in the district. Iowa is excluded from this figure because data for one outcome are unavailable. Values in this figure are regression adjusted.

Three States experienced statistically significant increases in the NSLP participation rate between the baseline and SY 2017–2018, ranging from 0.018 to 0.066 lunches served per student per day, and 5 (the same three plus two others) had significant increases in the SBP participation rate, ranging from 0.010 to 0.038 breakfasts per student per day. However, 3 other States experienced statistically significant decreases in the NSLP participation rate (of between 0.007 and 0.031 lunches per student per day) and one other saw a significant decrease in the SBP participation rate (of 0.007 breakfasts per student per day). The decreases between the baseline year and SY 2017–2018 were inconsistent with the anticipated direction of the effect of the demonstration and might reflect changes in factors unrelated to DCM-F/RP. Although the statistical model used to estimate changes accounts for the influence of included time-varying characteristics (such as local economic conditions) and any time-invariant district characteristics

(such as type of district) that might affect outcomes, regressions cannot control for unmeasured time-variant factors, such as other changes to school or meal procedures or changes in student preferences for school meals. In addition, the small magnitude of some changes in meals served per student per day limits the practical importance of the findings. For example, 0.007 breakfasts per student per day translates into less than two additional meals per student across a full school year.

Federal reimbursement costs. The findings on Federal reimbursements were similarly mixed, but more States saw increases than decreases. For the NSLP, 10 States experienced statistically significant increases in the BRR (ranging from 2 cents to 18 cents), and 7 States had increases in reimbursements per student per day (from 2 cents to 13 cents). However, the BRR decreased by a statistically significant 4 cents in 1 State, and reimbursements per student per day decreased by a statistically significant 6 cents in another. Fewer States saw statistically significant changes in SBP reimbursements. The SBP BRR and reimbursements per student per day each increased significantly, by between 1 cent and 10 cents, in 6 States, but decreased—by somewhat larger amounts—in 1 (for reimbursements per student per day) or 2 (for the BRR) States, and saw no significant changes in other States. Similar to the participation findings, these decreases between the baseline year and SY 2017–2018 were inconsistent with the anticipated effect of the demonstration and might reflect changes in factors unrelated to DCM-F/RP.

2. State administrative costs

The administrative costs incurred by State agencies in SY 2017–2018 to implement DCM-F/RP (over and above other certification costs) varied widely and were considerably lower in Cohort 1 States, which were in their second year of implementation. Costs ranged from \$0 to approximately \$16,000 in Cohort 1 States and from around \$30,000 to \$373,000 in Cohort 2 States. This cohort difference was due in part to the fact that Cohort 1 States did not incur any start-up costs in SY 2017–2018, because they had completed start-up activities in the prior year. Over 90 percent of the total administrative costs incurred by Cohort 2 States were start-up costs, a pattern similar to that Cohort 1 States experienced during their first year of DCM-F/RP implementation. In addition, costs for ongoing activities after the first DCM-F/RP match were lower on average in Cohort 1 States than Cohort 2 States.

The division of costs between child nutrition and Medicaid eligibility agencies varied by State, but on average, Medicaid eligibility agencies incurred higher costs. This was driven in part by the relatively large Medicaid eligibility agency costs in the 4 States with the largest total State administrative costs in SY 2017–2018: Texas, Wisconsin, Nevada, and Connecticut. In the 2 States with the highest costs (Texas and Wisconsin), the largest expenditure—comprising the majority of their total costs—was for work done by Medicaid eligibility agency contractors to develop the queries for producing the Medicaid data extracts needed for DCM-F/RP.

3. Implementation processes and challenges

States and districts integrated DCM-F/RP into their usual direct certification processes, and Cohort 1 States generally continued to use the same procedures they put into place during their first year of the demonstration. Key differences for Cohort 2 States to incorporate DCM-F/RP

included the need to assess eligibility based on income and household size information in the Medicaid files, and to add of new program codes to their systems to indicate DCM-free and DCM-reduced-price. The expansion of the demonstration into additional States saw somewhat more variation in approaches across States, including which agency conducted each key step. For example, in three Cohort 2 States, staff of child nutritional agencies, rather than Medicaid eligibility agencies, assess eligibility for DCM-F/RP.

While preparing for the demonstration, Cohort 2 State agencies encountered challenges similar to those reported by Cohort 1 States in their first year, including difficulties identifying which Medicaid aid categories contained the information needed to assess students' eligibility for DCM-F/RP. The process of revising interagency agreements to include DCM-F/RP and creating a Medicaid data extract containing eligible children could be time-consuming, resulting in delays in implementation in some States. At the district level, a key challenge was POS systems not recognizing Medicaid as a program option or that direct certification could confer reduced-price status, requiring staff to manually certify DCM-F/RP matches. Cohort 1 States reported resolving some of the challenges that had persisted during their first year of implementation.

B. Analyses planned for Year 3 of the evaluation

A subsequent report will examine findings from SY 2019–2020, which will be the fourth year of DCM-F/RP implementation in the Cohort 1 States and the third year of DCM-F/RP implementation in the Cohort 2 States. More complete quantitative data will be available for some Cohort 2 States in that year, which will reflect a full school year of DCM-F/RP for all 15 demonstration States. In addition, because all demonstration States will have completed at least one year of DCM-F/RP, the report will examine CEP participation for all the States.

The next report will also include comparisons of findings across multiple years of the demonstration (for all States except Nevada). These analyses will build on the comparisons presented in the current report for Cohort 2 States to explore the stability of the patterns of effects of DCM-F/RP over time.

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Appendix A

Methods

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This appendix describes the samples and the data collection and analysis methods used for the DCM-F/RP Year 2 report.

A. Sample

FNS solicited applications and selected 15 States to participate in the DCM-F/RP demonstration. Seven—California, Florida, Massachusetts, Nebraska, Utah, Virginia, and West Virginia—began implementing DCM-F/RP in SY 2016–2017.⁶⁶ Eight additional States—Connecticut, Indiana, Iowa, Michigan, Nevada, Texas, Washington, and Wisconsin—were selected to begin DCM-F/RP in SY 2017–2018, although Nevada did not certify any students through the demonstration until the following school year.

All demonstration States implemented DCM-F/RP in all school districts statewide in SY 2017–2018. The evaluation sample for quantitative analyses included all school districts in each State, with the following exceptions:

- Districts missing all certification data or all participation data for either the baseline year or SY 2017–2018. Based on their names, the majority of these appeared to be charter schools, private schools, or facilities serving special populations rather than regular public school districts.
- Districts composed entirely of Residential Child Care Institutions that had no certified students.
- Districts with zero or missing number of students.
- Districts with serious data problems—such as inconsistencies or missing values in key variables—that could not be resolved.
- Districts missing secondary data used as covariates in regressions.
- The 14 California districts that participated in DCM before SY 2017–2018. These districts could not be included in the Cohort 2 analysis with the other districts in the State because they had different baseline years and could not be analyzed separately due to insufficient statistical power.
- Private schools in Virginia. Because Virginia did not initially include private schools in the DCM-F/RP demonstration, they were not included in the evaluation. Private schools were included in the sample in other States.

These various exclusions resulted in a total sample of 6,112 districts across the demonstration States, compared to 7,235, and 7,817, records in the raw data files for the baseline year and SY 2017–2018, respectively.⁶⁷ Table II.1 shows the numbers of State agencies and districts included

⁶⁶ California implemented DCM-F/RP in only 14 districts in SY 2016–2017 and expanded the demonstration statewide in SY 2017–2018.

⁶⁷ A large majority of all excluded records were removed for one of the following three reasons: (1) missing number of students, largely in Michigan, which included educational institutions that did not participate in the NSLP in one raw SY 2017–2018 data file; (2) Residential Child Care Institutions that didn't certify students; (3) serious data problems that could not be resolved, mainly in Texas and Washington, as discussed in Section D.

in Year 2 of the demonstration evaluation; Table A.1 shows the numbers of students enrolled and the numbers of meals served in those districts in the baseline year and SY 2017–2018.

Table A.1. Numbers of students and meals served in sample, by State and school year

State	Baseline year ^a			SY 2017–2018		
	Number of students enrolled	Number of lunches served	Number of breakfasts served	Number of students enrolled	Number of lunches served	Number of breakfasts served
Cohort 1 States included in both DCM demonstrations						
Florida	2,759,612	284,708,340	137,488,910	2,795,130	284,231,312	138,496,524
Massachusetts	972,266	85,149,603	31,239,012	972,082	84,685,681	34,415,367
Pooled sample	3,731,878	369,857,943	168,727,922	3,767,212	368,916,993	172,911,891
Cohort 1 States new to DCM in SY 2016–2017						
Nebraska	335,517	38,874,170	11,988,611	342,898	38,638,968	12,653,167
Utah	623,764	51,855,745	12,916,955	633,706	51,084,945	13,124,511
Virginia	1,271,419	112,365,397	49,167,528	1,289,884	111,871,553	55,577,322
West Virginia	280,526	32,016,200	25,485,000	274,985	29,917,966	24,061,408
Pooled sample	2,511,226	235,111,512	99,558,094	2,541,473	231,513,432	105,416,408
Cohort 2 States						
California	5,721,613	498,272,181	268,873,537	5,691,376	492,534,624	264,542,469
Connecticut	472,813	16,172,203	6,394,243	471,285	16,072,014	6,349,578
Indiana	1,089,722	120,087,488	43,819,113	1,078,915	118,178,883	43,794,901
Iowa	531,680	19,986,067	5,584,680	537,816	19,571,880	5,540,074
Michigan	1,535,240	124,600,617	63,648,280	1,529,883	121,885,231	62,716,139
Texas	3,782,586	325,850,686	180,517,175	3,823,236	324,904,599	180,565,812
Washington	546,139	12,299,372	4,742,454	555,215	11,879,942	4,659,021
Wisconsin	845,144	52,725,736	20,092,384	835,854	50,896,679	19,934,836
Pooled sample	14,524,937	1,169,994,350	593,671,866	14,523,580	1,155,923,852	588,102,830
Total	20,768,041	1,774,963,805	861,957,882	20,832,265	1,756,354,277	866,431,129

^aThe baseline year is SY 2015–2016 for Cohort 1 and SY 2016–2017 for Cohort 2.

SY = school year.

However, some analyses focused on subsets of the overall sample:

- **Selection of districts for qualitative data collection.** From the main analysis sample in each State, we drew a subsample of districts for qualitative data collection. Specifically, we selected four districts in the one State (Virginia) where local staff have primary responsibility for direct certification matching; four districts in California, including two Cohort 1 districts and two Cohort 2 districts; and two districts in each of the other States. Districts were purposively chosen to ensure variation along characteristics such as enrollment, percentage of students certified to receive free or reduced-price meals, and percentage of students directly certified.
- **Outcomes relevant or available for a subset of States.** Some quantitative outcomes are relevant for only a subset of demonstration States. Outcomes related to free meals are not presented for States in which all districts participated in the earlier demonstration of DCM for free meals (Florida and Massachusetts), because the DCM-F/RP demonstration would not

have had an effect on those outcomes in those States. Iowa did not provide the data needed to compute the total percentage of students directly certified for free meals, so Iowa is not included in the analysis of that outcome. Comparisons between DCM-F/RP years are only presented for Cohort 1 States that provided data on the outcome in both years.⁶⁸

Within each State, at least two State-level agencies were included in the data collection (Table A.2). These agencies played key roles in DCM-F/RP, and most were included in site visits and provided cost logs; only one agency per State provided administrative records data.

Table A.2. State agencies included in data collection, by State and agency type

State	Agencies related to	
	Child nutrition	Medicaid eligibility
Cohort 1 States		
Florida	Department of Agriculture and Consumer Services	Department of Children and Families
Massachusetts	Department of Elementary and Secondary Education	Executive Office of Health and Human Services
Nebraska	Department of Education	Department of Health and Human Services
Utah	State Board of Education	Department of Workforce Services; Department of Health
Virginia	Department of Education	Department of Social Services
West Virginia	Department of Education	Department of Health and Human Resources ^b
Cohort 2 States		
Connecticut	Department of Education	Department of Social Services ^a
Indiana	Department of Education	Family and Social Services Administration ^a
Iowa	Department of Education	Department of Human Services
Michigan	Department of Education; Center for Educational Performance and Information; Department of Technology, Management, and Budget	Department of Health and Human Services
Nevada	Department of Agriculture; Department of Education ^{a, b}	Department of Welfare and Social Services
Texas	Department of Agriculture; Education Agency ^c	Health and Human Services Commission
Washington	Office of Superintendent of Public Instruction	Department of Social and Health Services; Health Care Authority
Wisconsin	Department of Public Instruction	Department of Health and Human Services; ^a Department of Children and Families
California	Department of Education	Department of Health Care Services; Department of Social Services ^c

Source: Interviews with State and district staff

^a Site visit interviews included contractor staff as well as State agency staff.

^b This agency provided only qualitative information on costs.

^c We did not collect State cost data from this agency because earlier discussions indicated that its SY 2017–2018 costs would be minimal.

⁶⁸ Florida and Massachusetts did not provide necessary data on reduced-price certification outcomes for SY 2016–2017, and West Virginia did not have SY 2016–2017 participation and reimbursement outcomes because it conducted its first DCM-F/RP match at the end of the school year, after most schools had closed.

B. Data collection

We collected three key types of data in SY 2017–2018: (1) district-level administrative records data on certification and NSLP and SBP participation, (2) data on the administrative costs incurred by State agencies for DCM-F/RP activities, and (3) qualitative data on DCM-F/RP implementation processes and challenges.

1. Administrative records data

Administrative data on certification and meal participation were collected for each district in the demonstration States. To enable pre-post comparisons, the data were collected from each State child nutrition agency for both SY 2017–2018, and a baseline year. The baseline year is the year before the demonstration: SY 2015–2016 for Cohort 1 States and SY 2016–2017 for Cohort 2 States.⁶⁹ Cohort 1 States also provided data for SY 2016–2017, their first demonstration year.⁷⁰ District-level data collected for each period fall into two broad categories: (1) information on enrolled students by certification status and basis for certification and (2) monthly participation (that is, meals served) information for the NSLP and SBP. The specific data elements collected largely align with the district-level data that States typically collect from districts for administrative reporting.

Core certification data. We collected data on certification status, method, and basis, including data elements reported on form FNS-742, plus the numbers of students directly certified for free meals and for reduced-price meals based on Medicaid.⁷¹ For the baseline year, the reference date for the certification data provided is the last operating day in October, the date used for the FNS-742, because the data were available for that point in time. States that conducted their first DCM-F/RP match before the end of October 2017 could report SY 2017–2018 data for the last operating day of that month, as well. However, Cohort 2 States that conducted DCM-F/RP later in the year reported the data certification elements as of about a month after their first DCM-F/RP match. The core certification data elements collected include the following:

- Total number of students enrolled in the district
- Number of students certified for free meals
- Number of students certified for reduced-price meals
- Number of students certified, by method of certification

⁶⁹ For California, the baseline year of SY 2015–2016 is the year immediately before the State began statewide implementation of DCM-F/RP.

⁷⁰ Cohort 1 States provided most baseline and SY 2016–2017 data during the first year of the evaluation.

⁷¹ Not all States were able to provide all requested certification data elements for all districts. Iowa had to be excluded from the analysis of one outcome, and we estimated some of the key outcomes for Indiana and Nebraska. Notable subsets of districts in Texas and Washington had to be excluded for quantitative analyses due to data limitations. These issues are discussed in Section C.

- By direction certification, separately by program (SNAP, Medicaid, and so on)⁷²
- By application, separately by basis of eligibility (household income or categorical eligibility)

Supplemental certification data. Only four of the demonstration States—Michigan, Nebraska, Iowa, and Wisconsin—were able to provide additional administrative data on DCM-F/RP match results and prior certification information, which are not included in the FNS-742 but are required to partially address research questions B.3 and B.4. Specifically, we collected information on (1) the total number of students identified as eligible for free meals, and separately, for reduced-price meals based on the DCM-F/RP match—regardless of whether this match was recorded as the basis of their certification status; and (2) for each group, the distribution by direct certification basis. The other demonstration States were unable to provide these data. Even in the four States that provided some supplemental data, the available data do not include sufficient information to fully address Research Questions B.3–B.4 because the data on prior certification include only direct certification match results and not application results.

NSLP/SBP participation data. Data were collected from State child nutrition agencies on the total numbers of reimbursable lunches and breakfasts served, by reimbursement category (free, reduced-price, paid) in each month during the baseline year and SY 2017–2018, for each district in the evaluation sample. To facilitate analyses of Federal reimbursement costs, we also collected data on the numbers of meals in districts certified as meeting new school meal pattern and nutrition regulations, which receive an extra six cents per lunch served, and the numbers reimbursed at the slightly higher “needs-based” NSLP rates or “severe-needs” SBP rates for which some districts or schools qualify.⁷³ Because reimbursement rates increase each year, to remove this aspect of variation unrelated to the demonstration, we used the SY 2015–2016 rates in computing all reimbursement outcomes in the analyses. The rates for SYs 2015–2016, 2016–2017, and 2017–2018 are detailed in Table A.3 for reference.

After the initial certification and participation files were received from each State, the study team examined the data in each file and compiled lists of questions, including general clarification on the format of the data received, questions on how to use or interpret specific data elements, and descriptions of unusual patterns identified for individual districts. For some data files, these questions revealed major data problems that required the State to provide a corrected file. In others, the questions could be addressed individually. Some questions about specific districts’ data could not be resolved by the States; in these cases, depending on the severity of the issue, the district was either dropped from the analysis, included with a missing value for the problematic variables, or kept unchanged.

⁷² Most States provided the number of students certified to receive free meals but not subject to verification as a more readily available proxy for the number directly certified. In addition, although we also requested as complete a breakdown as available of the number of students directly certified by program, the information available for the baseline year was typically limited to SNAP and a combined number for programs other than SNAP.

⁷³ For the NSLP, entire districts may qualify for needs-based rates. For the SBP, severe-needs rate eligibility varies by school.

Table A.3. NSLP and SBP Federal reimbursement rates, SY 2015–2016, SY 2016–2017, and SY 2017–2018

Rate type	NSLP Federal reimbursement rates (dollars)			SBP Federal reimbursement rates (dollars)		
	Free	Reduced-price	Paid	Free	Reduced-price	Paid
SY 2015–2016						
Without six-cent performance-based increase						
Standard rate	3.07	2.67	0.29	1.66	1.36	0.29
Needs-based or severe-needs rate	3.09	2.69	0.31	1.99	1.69	0.29
With six-cent performance-based increase						
Standard rate	3.13	2.73	0.35	n.a.	n.a.	n.a.
Needs-based or severe-needs rate	3.15	2.75	0.37	n.a.	n.a.	n.a.
SY 2016–2017						
Without six-cent performance-based increase						
Standard rate	3.16	2.76	0.30	1.71	1.41	0.29
Needs-based or severe-needs rate	3.18	2.78	0.32	2.04	1.74	0.29
With six-cent performance-based increase						
Standard rate	3.22	2.82	0.36	n.a.	n.a.	n.a.
Needs-based or severe-needs rate	3.24	2.84	0.38	n.a.	n.a.	n.a.
SY 2017–2018						
Without six-cent performance-based increase						
Standard rate	3.23	2.83	0.31	1.75	1.45	0.30
Needs-based or severe-needs rate	3.25	2.85	0.33	2.09	1.79	0.30
With six-cent performance-based increase						
Standard rate	3.29	2.89	0.37	n.a.	n.a.	n.a.
Needs-based or severe-needs rate	3.31	2.91	0.39	n.a.	n.a.	n.a.

Source: <https://www.fns.usda.gov/school-meals/rates-reimbursement>.

Note: These rates exclude additional commodity payments for school lunches.

n.a. = not applicable.

Secondary data. We collected additional types of data from Federal websites, rather than from demonstration State staff. First, to use in computing reimbursement amounts, we collected public Federal per-meal NSLP and SBP reimbursement rates from FNS' website (<http://www.fns.usda.gov/school-meals/rates-reimbursement>) for each school year covered by the participation data (Table A.3). In addition, we collected information from public sources on district and county characteristics; this was used to control for changes in economic characteristics between the years and to improve the precision of the estimates of demonstration effects. In particular, we collected:

- Census Small Area Income and Poverty Estimates (SAIPE): annual county-level income and poverty rates

- Bureau of Labor Statistics Local Area Unemployment Statistics: monthly county-level unemployment rates

The SAIPE data are defined based on a calendar year rather than a school year. We collected 2015 data to approximate the baseline school year for Cohort 1 States, 2016 data to approximate the baseline school year for Cohort 2 States and the first demonstration year for Cohort 1 States, and 2017 data to approximate SY 2017–2018. In addition, we collected data elements from FNS-742, such as whether a district was public or private, to use in restricting the California comparison group.

2. State administrative cost data

Data on the State-level administrative costs of launching (in Cohort 2 States) and operating DCM-F/RP in SY 2017–2018 were collected from staff of the Medicaid eligibility and child nutrition agencies that played key roles in the demonstration and had nontrivial costs in SY 2017–2018.⁷⁴ These data covered costs of DCM-F/RP over and above those of other certification activities—including, for those participating in the previous DCM demonstration, using Medicaid to directly certify students for free meals.

Excel workbooks were created for the Medicaid eligibility and child nutrition agencies and were distributed after Office of Management and Budget clearance was received (in December 2017). The workbooks recorded hours per month spent on each activity, with separate activity lists for the Medicaid eligibility and child nutrition agencies. The lists of activities in which State agency staff were involved included negotiating data-sharing agreements, developing specifications for Medicaid extracts to be used in matching, developing and testing the programs that created the extracts and assessed eligibility for DCM-F/RP, and matching Medicaid and student data. State staff could also enter other activities not listed. Hours were recorded for each staff position, and a separate page in the workbook collected salary and fringe benefit information. Additional pages in the workbook were provided for other direct and indirect costs (such as contractors, website vendors, management, human resources, accounting, information technology services, and building maintenance).

All Medicaid eligibility and child nutrition agencies completed four State cost workbooks, covering different periods: (1) approval month (for Cohort 2 States) or July–September 2017, (2) October–December 2017, (3) January–March 2018, and (4) April–June 2018. Cohort 2 States reported those costs for work on DCM-F/RP before July 2017 as well.⁷⁵ Cost data provided were approximate, particularly when the forms were filled out substantially later than the reported month. Most of the relevant State agencies provided cost data in the workbooks for all months during which DCM-F/RP activity occurred. To facilitate the process for one Medicaid eligibility agency, we collected their cost information by email and transferred it into the workbooks. In

⁷⁴ In four States (Michigan, Utah, Washington, and Wisconsin), more than one agency playing roles related to child nutrition or Medicaid eligibility completed cost workbooks.

⁷⁵ Most Cohort 2 agencies separated their approval–June 2017 costs from their July–September 2017 costs. However, the Medicaid eligibility agency in Texas submitted a workbook that combined costs for April–September 2017.

addition, the child nutrition agencies in two States completed workbooks for a partner agency, with assistance from the State liaison for one State. For four child nutrition agencies and 11 Medicaid eligibility agencies that spent minimal or no time on DCM-F/RP in some or all time periods, the agencies provided all necessary information in an email rather than completing a full workbook.

We conducted clarification calls with the Cohort 2 State agency staff who completed the first cost workbooks to confirm that the information in the workbooks was complete and that the evaluation team was interpreting the information correctly. One or two calls were completed with each agency that completed workbooks. When reviewing the cost workbooks for completeness and reasonableness, we also compared data to the findings from the site visits and follow-up calls, if available. Any questions were resolved through telephone and email communication with State agencies.

3. Qualitative data

The qualitative data collection included site visits and (for Cohort 2) follow-up telephone interviews with demonstration States and districts to learn about their DCM-F/RP processes and experiences.

Site visits. The study team conducted site visits to all 15 demonstration States in SY 2017–2018. Each visit lasted two to three days and was conducted by a two-person team. Visits to Cohort 2 States typically occurred approximately one to two months after the State’s first DCM-F/RP match, but visits to those that conducted DCM-F/RP at the beginning of the school year were delayed until after Office of Management and Budget clearance was received. Site visits included both interviews and (for Cohort 2) observations of key activities, and respondents included both State agency and school district staff.

The study team identified the main agencies involved in the demonstration using States’ DCM-F/RP applications and information obtained during Year 1 for Cohort 1 States and during introductory discussions at the beginning of SY 2017–2018 for Cohort 2 States. Site visits included at least two agencies—a child nutrition agency and a Medicaid eligibility agency—in each State, and additional agencies as necessary. Table A.2 lists the agencies visited in each State. The primary contact at each agency helped identify key personnel involved in DCM-F/RP. Child nutrition agency respondents included staff responsible for supervising DCM-F/RP implementation in the State, staff that supported districts’ direct certification efforts, and, where relevant, technical staff responsible for facilitating direct certification matching. Respondents at Medicaid eligibility agencies included policy staff involved in planning and preparing for the demonstration and technical staff responsible for providing extracts from the Medicaid data. In four States, the technical staff interviewed included contractors.⁷⁶

⁷⁶ In Washington, researchers interviewed a staff member from a district point-of-service vendor during the site visit.

Study team members visited a total of 34 school districts, including at least two in each State (Table II.1).⁷⁷ We visited four districts each in two States: (1) California, so that we could include two Cohort 1 districts and two Cohort 2 districts in the visit and (2) Virginia, where all direct certification matching is conducted at the local level. Although Nevada did not certify any students through DCM-F/RP in SY 2017–2018, we visited two districts in that State that were involved in testing the DCM-F/RP process. We used FNS-742 data to purposefully select districts and ensure variation among characteristics such as size, urbanicity, and the percentage of students certified for free and reduced-price meals. We also considered a district’s geographic convenience to the State capital and involvement in DCM-F/RP start-up activities when selecting districts to include in the study. Child nutrition agency staff in each State discussed the district selections with the study team and provided feedback and insights on each district.

We conducted semistructured interviews with State agency and school district staff. Before each interview, the study team tailored the protocols to the specific characteristics of the State and the participant(s) being interviewed. During the interviews, the study team reordered questions and asked probes and follow-up questions to obtain a comprehensive account of DCM-F/RP implementation. The length of interviews varied but averaged approximately one hour.

Interviews provided detailed descriptions of DCM-F/RP procedures at the State and district levels (Table A.4). The study team asked staff about the changes needed to conduct DCM-F/RP, including changes to data systems, staff procedures, and interagency agreements and operations. We also asked about the time and resources needed to add DCM-F/RP to their standard process for direct certification and about how they monitored and tested the process and results. In Cohort 1 States and districts, we asked about changes to the demonstration since Year 1.

Table A.4. Interview topics

Child nutrition agency	Medicaid eligibility agency	School districts
Planning and preparation	Planning and preparation	Planning and preparation
Assessing eligibility	Assessing eligibility	Obtaining the data
Matching process	Quality assurance	Timing of certification
Match schedule	Medicaid data quality	Matching and certification process
Dissemination of data to districts	Medicaid file transfer	Time and resources
Outcomes	Challenges and resolutions	Outcomes
Challenges and resolutions	Best practices and lessons learned	Challenges and resolutions
Best practices and lessons learned	Changes to DCM-F/RP (Cohort 1)	Best practices and lessons learned
Changes to DCM-F/RP (Cohort 1)		Changes to DCM-F/RP (Cohort 1)

In addition to the interviews, the site visits included direct observations of DCM-F/RP processes and direct certification systems at Cohort 2 State agencies and districts and the three Cohort 1 districts not visited in SY 2017–2018.⁷⁸ We asked to observe how staff access data used for direct certification, conduct matching, and certify students within point-of-service systems.

⁷⁷ All districts visited in Year 1 were included in the Year 2 visits, except one district in Nebraska, which did not respond to requests, so we substituted a new district.

⁷⁸ The three Cohort 1 districts not visited in Year 1 included one in Nebraska and two in West Virginia.

While on site, the study team also collected any available documentation describing the State or district's DCM-F/RP procedures, such as certification letters and descriptions of matching procedures.

Follow-up telephone interviews. The study team conducted follow-up telephone interviews toward the end of the school year to obtain updated information on how the DCM-F/RP demonstration changed in each Cohort 2 State since the site visit. These interviews included respondents at each of the State agencies and districts that they visited during the site visits, with the exception of one district in Texas.⁷⁹ We also conducted telephone interviews with the three Cohort 1 districts not visited in Year 1. The follow-up interviews provided an opportunity to address knowledge gaps and clarify topics discussed during the site visit.

The follow-up interviews provided an opportunity to learn how the demonstration progressed in each Cohort 2 State and district. The study team asked about changes to the DCM-F/RP process, staff time and resources needed to conduct DCM-F/RP, and progress in resolving existing challenges. We also asked about any new challenges that arose since the site visit and used the interviews to address issues or topics that warranted additional attention.

C. Key outcome measures

The quantitative analysis examines measures in four domains: certification, participation, Federal reimbursements, and State administrative costs. For each district with the necessary administrative records data, we computed each measure described below for the baseline year and SY 2017–2018. For Cohort 1 States, we also computed each measure for SY 2016–2017, for comparisons across DCM-F/RP years.

1. Certification outcomes

To address Research Questions B.1, B.2, B.5, and parts of B.6, we computed for each district measures of the percentages of students with each certification status, method, and basis, as well as measures of CEP participation. The primary certification measures for each district are as follows:

- Percentage of students certified for free meals based on DCM
- Percentage of students certified for reduced-price meals based on DCM
- Percentage of students directly certified for free meals
- Percentage of students certified for free meals
- Percentage of students certified for reduced-price meals
- Percentage of students attending schools participating in the CEP
- Whether all schools in the district participated in the CEP

⁷⁹ District staff were not responsive despite repeated attempts to contact them to complete the interview.

For States participating in the previous DCM demonstration, DCM-F/RP would affect only outcomes related to reduced-price meals, so those States (Florida and Massachusetts) are excluded from analyses of outcomes related to free meals.

Students attending CEP schools or other special provision schools in a non-base year receive free meals but are not certified individually for free or reduced-price meals. These students are therefore not counted in the numerators of the five “Percentage of students certified” outcomes, although the denominators include all students enrolled in the districts.

Most States provided the data elements needed to compute these seven core measures directly, by dividing the number of students in the certification category by the total number of students enrolled in schools in the district. However, the certification data available from some States suffered from notable limitations:

- Iowa did not provide the data necessary to compute one key certification outcome—the total percentage of students directly certified for free meals— and is therefore excluded from analyses of that measure.
- Indiana and Nebraska did not provide counts of free direct certifications based on Medicaid, but we were able to estimate the percentages of students directly certified for free meals based on DCM-F/RP for those States. The two States did provide counts of (1) total free direct certifications based on programs other than SNAP and (2) free direct certification matches made by the State, by program. To estimate the percentage of students certified for free meals based on DCM-F/RP for each district in these States, we computed the percentage of all non-SNAP free matches that were Medicaid matches, then applied that factor to the number of non-SNAP direct certifications. (We took this same approach for Nebraska in Year 1 of the evaluation.)
- In addition, as in Year 1, Nebraska provided counts of reduced-price certifications based on DCM-F/RP for only a subset of districts. We calculated the ratio of reduced-price–eligible Medicaid matches to reduced-price direct certifications among these 63 districts. We then applied this ratio to counts of reduced-price–eligible Medicaid matches for each of the remaining 281 districts to estimate counts of reduced-price direct certifications and used that to estimate the percentage of students certified for reduced-price meals based on DCM-F/RP. However, unlike in Year 1, the subset of districts is subject to nonresponse bias, because the state attempted to collect these data from all districts in Year 2.
- Washington provided SY 2017–2018 certification data for only about half of districts, and those without SY 2017–2018 certification data had to be excluded from the analysis.
- A limitation in the data available for Texas required excluding from the analysis districts in which some, but not all, schools participated in a special provision. Although these districts comprise only about 5 percent of Texas districts, they include some of the largest districts in the State, serving about a quarter of the student population.

Supplemental measures. For Michigan, Nebraska, Iowa, and Wisconsin (the four States that were able to provide the necessary supplemental data), we also computed measures related to Research Questions B.3 and B.4, including the following:

- Number of students matched to free-eligible Medicaid records
- Number of students matched to reduced-price-eligible Medicaid records

Each of these groups includes both students matched only to Medicaid records and students also matched to SNAP or another program, which take priority over Medicaid. For each group, we examined additional measures:

- Percentage matched to another program used for direct certification, by program conferring eligibility (SNAP, TANF, foster care)
- Percentage not matched to another program through the State match

2. Participation outcomes

To address Research Question C.1 and related parts of C.4, we examine three primary participation measures, each defined for the lunch and breakfast programs separately:⁸⁰

- **The participation rate** (that is, the average number of meals served per student per day), defined as the total number of reimbursable meals served divided by the product of the total number of students enrolled in the district and the number of operating days during the relevant time period.
- **The percentage of meals served for free**, defined as the number of meals reimbursed at the free rate divided by the total number of reimbursable meals served.
- **The percentage of meals served at a reduced price**, defined as the number of meals reimbursed at the reduced-price rate divided by the total number of reimbursable meals served.

Because participation data do not reflect DCM-F/RP until after the first match is conducted, we defined each participation outcome based on the months after the first match occurred, which varied in Cohort 2 States. We aggregated numbers of meals across all months in the 2017–2018 school year, beginning with the month in which the State conducted its first DCM-F/RP match: the first month of the school year for Cohort 1 States, California, and Indiana; September for Michigan; October for Texas; December for Wisconsin; March for Connecticut and Iowa; and April for Washington. The baseline measures cover the same set of months for the baseline

⁸⁰ These participation measures are defined for all districts, including those operating CEP and other special provisions, but the interpretation will differ in Cohort 2 States. In schools and districts where all meals are served for free, DCM-F/RP would not be expected to affect these outcomes in the first year of a State’s implementation. However, in Cohort 1 States if the demonstration increased the percentage of students directly certified in SY 2016–2017, it could increase the number of CEP schools in SY 2017–2018, which would affect these measures.

school year, and the SY 2016–2017 measures computed for Cohort 1 States cover the same set of months for that school year.

3. Federal reimbursement outcomes

To address Research Question C.2 and related parts of C.4, we combined elements from the participation data with public Federal per-meal NSLP and SBP reimbursement rates to define two primary Federal reimbursement outcome measures, each defined for the NSLP and SBP separately:

- **Reimbursements per student per school day**, defined as total Federal reimbursements for meals served to students divided by the product of the total number of students enrolled in the district and the number of operating days in the relevant set of months.
- **The blended reimbursement rate**, defined as total Federal reimbursements divided by the number of meals served. The BRR measures the average reimbursement per meal served.

Like the participation measures, these Federal reimbursement measures are defined for the set of months from the first DCM-F/RP match in SY 2017–2018 through the end of the school year and for the same months in the baseline year (and, for Cohort 1 States, for SY 2016–2017). Both measures depend on the reimbursement rates FNS pays, which vary by meal type (Table A.3). Because reimbursement rates increase each year, we use SY 2015–2016 reimbursement rates for each meal type in computing these measures for all years, to control for this aspect of variation that is unrelated to the demonstration in the pre-post analyses.

4. State administrative cost outcomes

The State administrative costs of DCM-F/RP are defined as those in excess of expenditures that would be necessary in the absence of the new demonstration. The primary outcome measures for the State administrative costs include the following:

- Total administrative cost, in dollars, of conducting DCM-F/RP across all relevant State agencies, months, activities, and cost categories

Additional measures include costs disaggregated by the following:

- Administrative costs of DCM-F/RP by agency type (child nutrition agencies and Medicaid eligibility agencies)
- Start-up costs, defined as those that occurred up to and including the month of the first DCM-F/RP match, and ongoing costs, defined as those that occurred after the month of the first DCM-F/RP match
- Direct labor costs, other direct costs, and indirect costs

In addition, we measure the cost of DCM-F/RP per student enrolled, directly certified for free meals, and directly certified for free or reduced-price meals based on Medicaid.

Unlike the certification, participation, and Federal reimbursement measures, which do not reflect the effects of the demonstration until the first DCM-F/RP match is conducted, the State cost measures cover months before the first DCM-F/RP match in Cohort 2 States to capture the costs of planning, preparation, and testing. State administrative cost measures cover July 2017 through June 2018 for all demonstration States, and Cohort 2 States also reported incurring costs related to DCM-F/RP planning or preparation before July 2017.

D. Analysis methods

We conducted analyses using the appropriate methods for each type of data.

1. Quantitative analyses

To assess effects on certification, participation, and Federal reimbursement cost outcomes data, we used comparative analyses. We conducted descriptive analyses for Medicaid data matching and State administrative cost outcomes.

Estimation of Year 2 effects: comparisons between baseline year and SY 2017–2018. We estimated the effects of DCM-F/RP on certification, participation, and Federal reimbursement outcomes by comparing the measure in the baseline year to the same measure in SY 2017–2018. We use a fixed effects model to control for changes in outcomes between years and to improve the precision of the estimates. Regression-adjusted baseline and SY 2017–2018 means (and SY 2016–2017 means for Cohort 1 States) were computed using Stata analytic software. To generate State-specific estimates and pooled estimates for each outcome, we fitted the following linear district-level fixed effects regression model:

$$(1) \quad y_{it} = \alpha + \beta_1 post_1 + \beta_2 post_2 + \gamma X_{it} + \delta_i + \varepsilon_{it} ,$$

where y_{it} is the outcome of interest for district i in year t (baseline or the district's first or second year of the demonstration); $post_t$ is a binary indicator that is equal to one in year t and zero in other years; X_{it} is a set of time-varying district characteristics, δ_i is a district fixed effect; and ε_{it} is a random error term. The coefficient of interest is β_2 for Cohort 1 States and β_1 for Cohort 2 States, which corresponds to the effect on the outcome in SY 2017–2018, controlling for time-invariant district characteristics and the following time-varying characteristics:

- Logarithmic transformation of enrollment⁸¹
- SAIPE median household income for the county
- SAIPE poverty rate for the county
- Local Area Unemployment Statistics unemployment rate for the county

Table A.5 shows, for each State implementing statewide, the values of the covariates measured for the year before DCM-F/RP began (SY 2015–2016 for Cohort 1 States and SY 2016–2017 for Cohort 2 States) and those for SY 2017–2018 under DCM-F/RP, weighted by district size. For

⁸¹ Because enrollment is positively skewed, we applied a logarithmic transformation.

most States, we found a statistically significant changes in economic conditions between the two years (Table A.5). There were statistically significant decreases in the unemployment rate all but two of the 14 States (Nebraska and Utah). In addition, three States (Florida, Massachusetts, and Michigan) experienced statistically significant increases in median household income, and one (Massachusetts) saw a decrease in the poverty rate. Changes in factors that could influence outcomes are a concern for a pre-post design and make controlling for these covariates through modeling particularly important. There were no statistically significant differences between baseline and SY 2017–2018 in the log of the number of students enrolled.

Table A.5. Regression covariates (weighted by enrollment)

	Baseline year	SY 2017–2018	Change ^a
Cohort 1 States			
Florida			
Unemployment rate for the county (percentage)	5.5	4.2	-1.3*
Median household income for the county	\$49,512.37	\$53,489.10	\$3,976.73*
Poverty rate for the county (percentage)	15.9	14.2	-1.6
Number of students enrolled (log)	11.1	11.1	0.0
Massachusetts			
Unemployment rate for the county (percentage)	4.9	3.8	-1.2*
Median household income for the county	\$71,547.00	\$78,516.43	\$6,969.43*
Poverty rate for the county (percentage)	11.6	10.6	-1.1*
Number of students enrolled (log)	8.5	8.5	0.0
Pooled sample of Cohort 1 States included in both DCM demonstrations			
Unemployment rate for the county (percentage)	5.3	4.1	-1.3*
Median household income for the county	\$55,253.05	\$59,947.09	\$4,694.04
Poverty rate for the county (percentage)	14.8	13.3	-1.5
Number of students enrolled (log)	10.4	10.4	0.0
Nebraska			
Unemployment rate for the county (percentage)	3.1	3.0	-0.1
Median household income for the county	\$56,327.33	\$59,880.54	\$3,553.20
Poverty rate for the county (percentage)	12.4	10.8	-1.6
Number of students enrolled (log)	8.5	8.5	0.0
Utah			
Unemployment rate for the county (percentage)	3.7	3.3	-0.4
Median household income for the county	\$64,018.26	\$69,153.32	\$5,135.06
Poverty rate for the county (percentage)	11.2	9.6	-1.5
Number of students enrolled (log)	10.1	10.1	0.0
Virginia			
Unemployment rate for the county (percentage)	4.6	3.8	-0.7*
Median household income for the county	\$73,325.56	\$77,410.71	\$4,085.16
Poverty rate for the county (percentage)	11.8	11.2	-0.6
Number of students enrolled (log)	10.1	10.2	0.0
West Virginia			
Unemployment rate for the county (percentage)	7.0	5.4	-1.7*
Median household income for the county	\$42,954.38	\$44,597.98	\$1,643.60
Poverty rate for the county (percentage)	18.0	18.6	0.5

	Baseline year	SY 2017–2018	Change ^a
Number of students enrolled (log)	8.9	8.8	0.0
Pooled sample of Cohort 1 States new to DCM in SY 2016–2017			
Unemployment rate for the county (percentage)	4.4	3.7	-0.7*
Median household income for the county	65349.91	69436.27	4086.36
Poverty rate for the county (percentage)	12.4	11.5	-0.9
Number of students enrolled (log)	9.8	9.8	0.0
Cohort 2 States			
California			
Unemployment rate for the county (percentage)	5.9	5.2	-0.7*
Median household income for the county	\$66,995.43	\$70,916.83	\$3,921.39
Poverty rate for the county (percentage)	15.0	13.9	-1.1
Number of students enrolled (log)	9.8	9.8	0.0
Connecticut			
Unemployment rate for the county (percentage)	5.1	4.7	-0.4*
Median household income for the county	\$74,426.46	\$75,145.63	\$719.17
Poverty rate for the county (percentage)	9.9	9.9	-0.1
Number of students enrolled (log)	8.6	8.6	0.0
Indiana			
Unemployment rate for the county (percentage)	4.4	3.5	-0.9*
Median household income for the county	\$54,920.79	\$56,805.39	\$1,884.60
Poverty rate for the county (percentage)	13.7	13.0	-0.7
Number of students enrolled (log)	8.5	8.5	0.0
Iowa			
Unemployment rate for the county (percentage)	3.7	3.2	-0.5*
Median household income for the county	\$58,214.65	\$60,087.01	\$1,872.37
Poverty rate for the county (percentage)	11.5	10.6	-0.9
Number of students enrolled (log)	8.0	8.0	0.0
Michigan			
Unemployment rate for the county (percentage)	5.0	4.7	-0.3*
Median household income for the county	\$54,087.14	\$56,379.19	\$2,292.05*
Poverty rate for the county (percentage)	15.1	14.2	-0.9
Number of students enrolled (log)	8.3	8.3	0.0
Texas			
Unemployment rate for the county (percentage)	4.9	4.5	-0.4*
Median household income for the county	\$58,364.69	\$60,592.71	\$2,228.02
Poverty rate for the county (percentage)	15.8	14.8	-1.0
Number of students enrolled (log)	9.5	9.5	0.0
Washington			
Unemployment rate for the county (percentage)	5.8	5.1	-0.8*
Median household income for the county	\$66,318.25	\$69,504.00	\$3,185.75
Poverty rate for the county (percentage)	12.0	11.7	-0.3
Number of students enrolled (log)	9.2	9.2	0.0
Wisconsin			
Unemployment rate for the county (percentage)	4.2	3.3	-0.9*
Median household income for the county	\$58,250.44	\$60,038.53	\$1,788.09
Poverty rate for the county (percentage)	11.9	11.5	-0.5
Number of students enrolled (log)	8.3	8.3	0.0

	Baseline year	SY 2017–2018	Change ^a
Pooled sample of Cohort 2 States			
Unemployment rate for the county (percentage)	5.2	4.6	-0.6*
Median household income for the county	\$61,863.74	\$64,675.53	\$2,811.79*
Poverty rate for the county (percentage)	14.5	13.6	-0.9*
Number of students enrolled (log)	9.2	9.2	0.0

Source: Bureau of Labor Statistics Local Area Unemployment Statistics and Census Small Area Income and Poverty Estimates data for 2015 (Cohort 1 baseline), 2016 (Cohort 2 baseline), and 2017 and administrative records for SY 2015–2016 (Cohort 1 baseline), SY 2016–2017 (Cohort 2 baseline), and SY 2017–2018 provided by State administrators.

Notes: Statistics in this table are weighted by enrollment because most outcomes are weighted by enrollment in the analyses. Changes shown in the table may differ slightly from calculated differences due to rounding.

*Change between the baseline year and SY 2017–2018 is significantly different from zero at the .05 level, two-tailed test.

^aThe numbers in this column for the log of the number of students enrolled are not actual zeros but round to 0.0 for each State.

SY = school year.

All regressions were weighted using the denominator of the outcome variable as a weight. For example, for the percentage of students directly certified for free meals based on Medicaid (and several other outcomes), the weighting variable was enrollment. This method was used to obtain aggregated estimates, which weighted districts according to their size. The one outcome defined as a percentage of districts (those in which all schools participate in CEP) was not weighted.

Comparisons between Year 1 and Year 2 effects. For the six Cohort 1 States, we compared the effects in the first year of the demonstration (SY 2016–2017) with those in the second year (SY 2017–2018). We assessed these changes using the same model discussed above. The coefficients of interest for this analysis are β_t , which correspond to the effect on the outcome in year t , controlling for other district characteristics.

Descriptive analyses of certification and match results. For all States, in addition to the comparative analyses focusing on the key certification outcomes defined in the previous section, we conducted descriptive analyses tabulating the distribution of students by certification status, method, and basis—including whether applications were approved on the basis of income or categorical eligibility, and as much detail on direct certification basis as provided—for the year before the demonstration and each demonstration year (Tables B.4a–B.4n). We also used descriptive methods for analyses that did not involve comparisons between years or treatment and comparison groups. These included tabulations of State DCM-F/RP match results for the four States that provided the supplemental data necessary to partially address research questions B.3 and B.4 about the number of students matched to eligible Medicaid records who were also eligible for free or reduced-price meals through other methods.

Descriptive analyses of State administrative costs. The estimates of costs State agencies incurred in conducting DCM-F/RP are based on the reports of staff at State child nutrition and Medicaid eligibility agencies in all demonstration States of the time spent and other costs incurred for DCM-F/RP beyond those that would be necessary for direct certification with SNAP and other programs in SY 2017–2018. Unlike certification and participation, detailed

administrative cost records were not available for the baseline year, and asking respondents to retrospectively estimate costs incurred over a year prior would have prompted serious concerns about recall error. Instead, the analysis of State administrative costs relies on staff to report the additional costs of DCM-F/RP.

State administrative cost data analysis covers July 2017 through June 2018 for all demonstration States. All Cohort 2 States also reported incurring costs related to DCM-F/RP planning or preparation before July 2017. This includes the period of time when Cohort 2 States began planning and preparing for DCM-F/RP through the end of SY 2017–2018, by which point all States except Nevada had certified students through DCM-F/RP. (Cohort 1 costs incurred before July 2017 are discussed in Hulsey et al. [2019].)

Monthly data from each agency were combined into one cost workbook for the agency covering the entire school year. In four States, more than one agency of the same type completed cost workbooks: three child nutrition-related agencies in Michigan, two in Wisconsin, and two Medicaid eligibility-related agencies in Utah and Washington reported cost data. In each case, the study team aggregated costs for the two (or three) agencies into a single workbook. The calculations described below were completed in the workbook for each State and agency type.

The information provided on salary (which could be reported on an hourly, weekly, biweekly (once every two weeks), bimonthly (twice a month), monthly, or annual basis) and fringe benefits (which could be reported as a percentage or dollar amount) were combined to calculate an hourly rate for each staff position.⁸² The monthly hours reported for each staff position to conduct each DCM-F/RP activity were summed to create quarterly totals for each activity, which were then multiplied by the staff's hourly rate to provide quarterly total costs per staff position for each activity. These costs were then summed across all quarters and staff positions to yield the total labor costs for all DCM-F/RP activities for each agency type in SY 2017–2018, which we then summed for each State to obtain State-level labor costs. Indirect costs were summed for all months, as were other direct costs. All three types of costs were summed together, creating total costs per agency and State to implement DCM-F/RP for SY 2017–2018.

Start-up costs were determined for each Cohort 2 State by summing costs that occurred up to and including the month of the first DCM-F/RP match, and ongoing costs were computed by summing costs for later months. (In Cohort 1 States, all SY 2017–2018 costs were ongoing costs.) The number of months included in each of these measures therefore varies by State, depending on the timing of the first match in Cohort 2 States. For example, ongoing costs cover only two months in Washington, and Nevada had no ongoing costs in SY 2017–2018 because the State did not certify any students through DCM-F/RP that year. For California, all costs incurred in SY 2017–2018 were considered ongoing costs, but costs State agencies incurred in April–June 2017 to prepare for statewide implementation of DCM-F/RP were counted as SY 2017–2018 start-up costs. Additionally, State administrative cost data were combined with certification data

⁸² We imputed the salary for one staff position in one Medicaid eligibility agency in Washington (as the average salary for the position in Washington according to indeed.com) because staff were unsure of the amount. In addition, the fringe rate in one of Wisconsin's child nutrition agencies increased in July 2017, and we used the new rate when calculating costs for all months, including those incurred before SY 2017–2018 began.

to compute three measures of the cost of DCM-F/RP per student. The total administrative cost for each State was divided by (1) the number of students enrolled, (2) the number directly certified for free meals, and (3) the number directly certified for free or reduced-price meals based on Medicaid to create estimates per student.

Pooled estimates. Within each State, district-level results are aggregated to present an estimate for demonstration districts across the State. To summarize the results obtained across the demonstration States, the analysis presents “pooled estimates,” which are derived by aggregating across States (weighting each district by size). Because the interpretation of the findings differs for States that participated in the earlier DCM demonstration than for those that were new to DCM, we present pooled estimates separately for those two sets of Cohort 1 States. Because different cohorts represent different stages of implementation, we present pooled estimates separately by cohort. California is included with Cohort 2 States in these pooled estimates because all but 14 districts in California implemented DCM for the first time in SY 2017–2018 (and those 14 districts are excluded from the quantitative analysis).

Pooled estimates pertain only to the particular collection of districts included in the evaluation sample; they are not intended to have any broader generalizability. In particular, the pooled estimates across States does not estimate the likely effects if DCM-F/RP were implemented across the country.

2. Qualitative analyses

Qualitative data collection included interviews, observations, and documents from each State. The study team took detailed notes throughout each interview and observation and, with the respondents’ permission, recorded the discussions. These activities resulted in a large amount of qualitative data that needed to be reduced and synthesized for analysis. To facilitate this process, the study team used analytic memo templates developed in Year 1 and updated for Year 2—one for States and one for districts—based on the nine sets of research questions under Objective 1 of the study.

Shortly after each site visit and follow-up telephone interview, the site teams cleaned their notes, then summarized the raw qualitative data into the analytic memo templates, adding key insights where possible. They reviewed recordings, as necessary, to fill in any gaps in their notes or memos. After each site visit, teams shared their key findings from their visits and interviews to help identify emerging trends within the data and topics for discussion during the follow-up telephone interviews. Teams also used information from State DCM-F/RP applications to draft a flowchart of each Cohort 2 State’s DCM-F/RP process—noting the agencies, systems, and databases involved—and refined the flowcharts using information acquired during the site visits and follow-up interviews. Flowcharts for Cohort 1 States developed in Year 1 were reviewed in Year 2 and revised as necessary.

Qualitative researchers reviewed all memos, flowcharts, and collected documents. They synthesized the data into an analytic framework in Excel that was developed based on the research questions under Objective 1 during Year 1 and updated for Year 2 to also address research question A.9. As many of the research questions are descriptive in nature, the

framework contained summaries of each step in a State or district's DCM-F/RP process, and the study team referred to both this and the memos to detail implementation of the demonstration. The framework also included State and district characteristics, such as matching level (central or local), district size, and urbanicity. This permitted us to identify patterns across different States and districts by specific characteristics and across years and cohorts. Key themes were translated into research findings.

Appendix B

Supplemental tables related to certification outcomes

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Table B.1. Certification for free meals (unadjusted)

State	Percentage of students directly certified for free meals based on Medicaid			Percentage of students directly certified for free meals based on any program			Percentage of students certified for free meals		
	SY 2015–2016	SY 2016–2017	SY 2017–2018	SY 2015–2016	SY 2016–2017	SY 2017–2018	SY 2015–2016	SY 2016–2017	SY 2017–2018
Cohort 1 States new to DCM in SY 2016–2017									
Nebraska	0.0	6.4	8.6	20.6	26.8	27.2	33.4	36.2	35.5
Utah	0.0	4.9	5.6	12.8	17.3	17.2	26.2	28.2	25.9
Virginia	0.0	3.8	6.7	16.9	20.3	20.8	28.5	30.5	29.2
West Virginia	0.0	2.3	3.4	16.7	14.0	11.2	20.3	16.0	12.6
Pooled sample	0.0	4.2	6.3	16.3	19.8	19.7	27.7	29.1	27.4
Cohort 2 States									
California	n.a.	0.0	7.8	n.a.	17.9	26.7	n.a.	36.1	39.0
Connecticut	n.a.	0.0	5.9	n.a.	11.1	17.9	n.a.	16.6	21.5
Indiana	n.a.	0.0	9.4	n.a.	16.9	24.6	n.a.	30.8	33.6
Iowa	n.a.	0.0	2.9	n.a.	18.5	NA	n.a.	27.2	28.1
Michigan	n.a.	0.0	8.5	n.a.	14.7	23.1	n.a.	25.3	30.0
Texas	n.a.	0.0	1.0	n.a.	19.6	22.5	n.a.	36.4	37.0
Washington	n.a.	0.0	1.3	n.a.	20.1	17.1	n.a.	27.4	22.2
Wisconsin	n.a.	0.0	4.0	n.a.	16.4	19.3	n.a.	21.7	24.2
Pooled sample	n.a.	0.0	5.5	n.a.	17.7	23.9	n.a.	32.5	34.6

Source: Administrative records provided by State administrators.

Notes: Percentages are calculated based on all students enrolled in districts included in the analysis. Each outcome in this table reflects the percentage of students who are certified for free meals based on the specified method; students attending schools that do not certify individual students, such as special provision schools in non-base years, are not counted as certified. Florida and Massachusetts are excluded from this table because those States participated in a prior demonstration of DCM for free meals during the baseline year, so the DCM-F/RP demonstration only affects reduced-price meals.

^aThe baseline year for Cohort 1 States was SY 2015–2016.

^bThe baseline year for Cohort 2 States was SY 2016–2017.

NA = not available; n.a. = not applicable.

Table B.2. Certification for reduced-price meals (unadjusted)

State	Percentage of students directly certified for reduced-price meals based on Medicaid			Percentage of students certified for reduced-price meals		
	SY 2015–2016	SY 2016–2017	SY 2017–2018	SY 2015–2016	SY 2016–2017	SY 2017–2018
Cohort 1 States included in both DCM demonstrations^a						
Florida	0.0	NA	0.8	4.1	NA	3.4
Massachusetts	0.0	NA	1.4	2.6	NA	3.2
Pooled sample	0.0	NA	1.0	3.7	NA	3.4
Cohort 1 States new to DCM in SY 2016–2017^a						
Nebraska	0.0	4.0	5.4	8.4	10.5	11.4
Utah	0.0	0.5	0.5	7.4	7.3	6.6
Virginia	0.0	0.4	0.9	5.9	5.8	5.2
West Virginia	0.0	0.2	0.4	2.8	2.0	1.7
Pooled sample	0.0	0.9	1.4	6.3	6.4	6.0
Cohort 2 States^b						
California	n.a.	0.0	2.0	n.a.	7.9	8.1
Connecticut	n.a.	0.0	2.7	n.a.	3.4	4.8
Indiana	n.a.	0.0	2.1	n.a.	6.7	7.1
Iowa	n.a.	0.0	1.2	n.a.	5.5	5.9
Michigan	n.a.	0.0	1.2	n.a.	5.3	4.9
Texas	n.a.	0.0	0.0	n.a.	5.7	5.4
Washington	n.a.	0.0	0.6	n.a.	5.8	5.0
Wisconsin	n.a.	0.0	1.3	n.a.	4.4	4.4
Pooled sample	n.a.	0.0	1.3	n.a.	6.4	6.5

Source: Administrative records provided by State administrators.

Notes: Percentages are calculated based on all students enrolled in districts included in the analysis. Each outcome in this table reflects the percentage of students who are certified for reduced-price meals based on the specified method; students attending schools that do not certify individual students, such as special provision schools in non-base years, are not counted as certified.

^aThe baseline year for Cohort 1 States was SY 2015–2016.

^bThe baseline year for Cohort 2 States was SY 2016–2017.

NA = not available; n.a. = not applicable.

Table B.3. Participation in the CEP (unadjusted)

State	Percentage of students attending CEP schools		Percentage of districts with all schools participating in the CEP	
	Baseline year	SY 2017–2018	Baseline year	SY 2017–2018
Nebraska	0.9	1.8	1.2	2.3
Utah	1.4	1.9	2.9	2.9
Virginia	7.7	12.1	5.3	9.8
West Virginia	50.7	68.9	25.8	47.0
Pooled sample	10.0	14.3	4.8	8.5

Source: Administrative records provided by State administrators.

Notes: Florida and Massachusetts are excluded from this table because those States participated in a prior demonstration of DCM for free meals during the baseline year, so the DCM-F/RP demonstration only affects reduced-price meals. This table does not include SY 2016–2017 because CEP eligibility is determined based on certification outcomes in a prior year. Therefore, because DCM-F/RP began in SY 2016–2017 in these States, it could not affect CEP participation until SY 2017–2018.

Table B.4a. Distribution of students by meal certification category in California (unadjusted)

Outcome	SY 2016–2017 (Baseline year)		SY 2017–2018 (DCM-F/RP year)	
	Number	Percentage	Number	Percentage
Total students	5,721,613	100.0	5,691,376	100.0
Students certified for free meals	2,067,557	36.1	2,217,441	39.0
Directly certified students	1,023,388	17.9	1,522,439	26.7
Based on Medicaid	0	0.0	443,141	7.8
Based on SNAP	862,826	15.1	944,462	16.6
Based on other program	160,562	2.8	134,836	2.4
Based on letter method	937	0.0	365	0.0
Students certified free by application	1,043,232	18.2	694,637	12.2
Based on income	829,044	14.5	540,835	9.5
Based on categorical eligibility	214,188	3.7	153,802	2.7
Students certified for reduced-price meals	450,101	7.9	461,435	8.1
Students directly certified based on Medicaid	0	0.0	111,750	2.0
Students certified by application	450,101	7.9	349,685	6.1
Students not certified for meal benefits	3,203,955	56.0	3,012,500	52.9
Students in CEP schools	533,155	9.3	601,047	10.6
Students in non-base year Provision 2 or 3 schools ^a	372,177	6.5	378,944	6.7
Uncertified students in non-special provision schools	2,298,623	40.2	2,032,509	35.7

Source: Administrative records provided by State administrators.

Notes: California implemented DCM-F/RP in 14 districts in SY 2016–2017 and implemented statewide in SY 2017–2018. This analysis includes only the Cohort 2 districts. Subgroup percentages may differ slightly from totals due to rounding.

^aSchools are counted as Provision 2 or 3 only if they operate the special provision for both breakfast and lunch.

Table B.4b. Distribution of students by meal certification category in Connecticut (unadjusted)

Outcome	SY 2016–2017 (Baseline year)		SY 2017–2018 (DCM-F/RP year)	
	Number	Percentage	Number	Percentage
Total students	472,813	100.0	471,285	100.0
Students certified for free meals	78,475	16.6	101,518	21.5
Directly certified students	52,647	11.1	84,464	17.9
Based on Medicaid	0	0.0	27,904	5.9
Based on SNAP	50,145	10.6	53,483	11.3
Based on other program	2,502	0.5	3,077	0.7
Based on letter method	390	0.1	476	0.1
Students certified free by application	25,438	5.4	16,578	3.5
Based on income	24,822	5.2	16,265	3.5
Based on categorical eligibility	616	0.1	313	0.1
Students certified for reduced-price meals	16,216	3.4	22,509	4.8
Students directly certified based on Medicaid	0	0.0	12,694	2.7
Students certified by application	16,216	3.4	9,815	2.1
Students not certified for meal benefits	378,122	80.0	347,258	73.7
Students in CEP schools	111,129	23.5	113,412	24.1
Students in non-base year Provision 2 or 3 schools ^a	0	0.0	482	0.1
Uncertified students in non-special provision schools	266,993	56.5	233,364	49.5

Source: Administrative records provided by State administrators.

Note: Subgroup percentages may differ slightly from totals due to rounding.

^aSchools are counted as Provision 2 or 3 only if they operate the special provision for both breakfast and lunch.

Table B.4c. Distribution of students by meal certification category in Florida (unadjusted)

Outcome	SY 2015–2016 (Baseline year)		SY 2017–2018 (DCM-F/RP Year 2)	
	Number	Percentage	Number	Percentage
Total students	2,759,612	100.0	2,795,130	100.0
Students certified for free meals	1,218,626	44.2	1,167,755	41.8
Students certified for reduced-price meals	112,021	4.1	95,570	3.4
Students directly certified based on Medicaid	0	0.0	22,990	0.8
Students certified by application	112,021	4.1	72,580	2.6
Students not certified for meal benefits	1,428,965	51.8	1,531,805	54.8

Source: Administrative records provided by State administrators.

Table B.4d. Distribution of students by meal certification category in Indiana (unadjusted)

Outcome	SY 2016–2017 (Baseline year)		SY 2017–2018 (DCM-F/RP year)	
	Number	Percentage	Number	Percentage
Total students	1,089,722	100.0	1,078,915	100.0
Students certified for free meals	335,167	30.8	362,478	33.6
Directly certified students	184,299	16.9	264,891	24.6
Based on Medicaid	0	0.0	101,359	9.4
Based on SNAP	174,595	16.0	158,941	14.7
Based on other program	9,704	0.9	4,591	0.4
Based on letter method	151	0.0	707	0.1
Students certified free by application	150,717	13.8	96,880	9.0
Based on income	127,367	11.7	82,713	7.7
Based on categorical eligibility	23,350	2.1	14,167	1.3
Students certified for reduced-price meals	73,449	6.7	76,867	7.1
Students directly certified based on Medicaid	0	0.0	22,431	2.1
Students certified by application	73,449	6.7	54,436	5.0
Students not certified for meal benefits	681,106	62.5	639,570	59.3
Students in CEP schools	115,899	10.6	108,178	10.0
Students in non-base year Provision 2 or 3 schools ^a	2,488	0.2	2,041	0.2
Uncertified students in non-special provision schools	562,719	51.6	529,351	49.1

Source: Administrative records provided by State administrators.

Note: Subgroup percentages may differ slightly from totals due to rounding.

^aSchools are counted as Provision 2 or 3 only if they operate the special provision for both breakfast and lunch.

Table B.4e. Distribution of students by meal certification category in Iowa (unadjusted)

Outcome	SY 2016–2017 (Baseline year)		SY 2017–2018 (DCM-F/RP year)	
	Number	Percentage	Number	Percentage
Total students	531,680	100.0	537,816	100.0
Students certified for free meals	144,677	27.2	150,858	28.1
Directly certified students	98,534	18.5	NA	NA
Based on Medicaid	0	0.0	15,396	2.9
Based on SNAP	93,618	17.6	NA	NA
Based on other program	4,916	0.9	NA	NA
Based on letter method	1,909	0.4	NA	NA
Students certified free by application	44,234	8.3	NA	NA
Based on income	38,338	7.2	NA	NA
Based on categorical eligibility	5,896	1.1	NA	NA
Students certified for reduced-price meals	29,445	5.5	31,971	5.9
Students directly certified based on Medicaid	0	0.0	6,602	1.2
Students certified by application	29,445	5.5	25,369	4.7
Students not certified for meal benefits	357,558	67.3	354,987	66.0
Students in CEP schools	51,176	9.6	54,046	10.0
Students in non-base year Provision 2 or 3 schools ^a	0	0.0	0	0.0
Uncertified students in non-special provision schools	306,382	57.6	300,941	56.0

Source: Administrative records provided by State administrators.

Note: Subgroup percentages may differ slightly from totals due to rounding.

^aSchools are counted as Provision 2 or 3 only if they operate the special provision for both breakfast and lunch.

NA = not available.

Table B.4f. Distribution of students by meal certification category in Massachusetts (unadjusted)

Outcome	SY 2015–2016 (Baseline year)		SY 2017–2018 (DCM-F/RP Year 2)	
	Number	Percentage	Number	Percentage
Total students	972,266	100.0	972,082	100.0
Students certified for free meals	195,256	20.1	175,681	18.1
Students certified for reduced-price meals	25,212	2.6	30,748	3.2
Students directly certified based on Medicaid	0	0.0	14,011	1.4
Students certified by application	25,212	2.6	16,737	1.7
Students not certified for meal benefits	751,798	77.3	765,653	78.8

Source: Administrative records provided by State administrators.

Note: Subgroup percentages may differ slightly from totals due to rounding.

Table B.4g. Distribution of students by meal certification category in Michigan (unadjusted)

Outcome	SY 2016–2017 (Baseline year)		SY 2017–2018 (DCM-F/RP year)	
	Number	Percentage	Number	Percentage
Total students	1,535,240	100.0	1,529,883	100.0
Students certified for free meals	388,679	25.3	459,578	30.0
Directly certified students	225,884	14.7	353,418	23.1
Based on Medicaid	0	0.0	130,089	8.5
Based on SNAP	212,288	13.8	192,951	12.6
Based on other program	13,596	0.9	30,378	2.0
Based on letter method	0	0.0	0	0.0
Students certified free by application	162,795	10.6	106,160	6.9
Based on income	119,115	7.8	76,910	5.0
Based on categorical eligibility	43,680	2.8	29,250	1.9
Students certified for reduced-price meals	81,564	5.3	74,764	4.9
Students directly certified based on Medicaid	0	0.0	18,474	1.2
Students certified by application	81,564	5.3	56,290	3.7
Students not certified for meal benefits	1,064,997	69.4	995,541	65.1
Students in CEP schools	269,919	17.6	295,982	19.3
Students in non-base year Provision 2 or 3 schools ^a	0	0.0	0	0.0
Uncertified students in non-special provision schools	795,078	51.8	699,559	45.7

Source: Administrative records provided by State administrators.

Note: Subgroup percentages may differ slightly from totals due to rounding.

^aSchools are counted as Provision 2 or 3 only if they operate the special provision for both breakfast and lunch.

Table B.4h. Distribution of students by meal certification category in Nebraska (unadjusted)

Outcome	SY 2015–2016 (Baseline year)		SY 2016–2017 (DCM-F/RP year 1)		SY 2017–2018 (DCM-F/RP year 2)	
	Number	Percentage	Number	Percentage	Number	Percentage
Total students	335,517	100.0	338,857	100.0	342,898	100.0
Students certified for free meals	111,991	33.4	122,669	36.2	121,652	35.5
Directly certified students	69,239	20.6	90,912	26.8	93,247	27.2
Based on Medicaid	0	0.0	21,523	6.4	29,574	8.6
Based on SNAP	64,979	19.4	67,537	19.9	61,323	17.9
Based on other program	4,260	1.3	1,852	0.5	2,350	0.7
Based on letter method	108	0.0	221	0.1	122	0.0
Students certified free by application	42,644	12.7	31,536	9.3	28,283	8.2
Based on income	38,396	11.4	27,333	8.1	24,775	7.2
Based on categorical eligibility	4,248	1.3	4,203	1.2	3,508	1.0
Students certified for reduced-price meals	28,204	8.4	35,602	10.5	39,182	11.4
Students directly certified based on Medicaid	0	0.0	13,557	4.0	18,580	5.4
Students certified by application	28,204	8.4	22,045	6.5	20,602	6.0
Students not certified for meal benefits	195,322	58.2	180,586	53.3	182,064	53.1
Students in CEP schools	2,979	0.9	3,570	1.1	6,084	1.8
Students in non-base year Provision 2 or 3 schools ^a	329	0.1	322	0.1	309	0.1
Uncertified students in non-special provision schools	192,014	57.2	176,694	52.1	175,671	51.2

Source: Administrative records provided by State administrators.

Note: Subgroup percentages may differ slightly from totals due to rounding.

^aSchools are counted as Provision 2 or 3 only if they operate the special provision for both breakfast and lunch.

Table B.4i. Distribution of students by meal certification category in Texas (unadjusted)

Outcome	SY 2016–2017 (Baseline year)		SY 2017–2018 (DCM-F/RP year)	
	Number	Percentage	Number	Percentage
Total students	3,782,586	100.0	3,823,236	100.0
Students certified for free meals	1,376,787	36.4	1,414,674	37.0
Directly certified students	743,066	19.6	861,399	22.5
Based on Medicaid	0	0.0	37,076	1.0
Based on SNAP	650,702	17.2	754,426	19.7
Based on other program	92,364	2.4	69,897	1.8
Based on letter method	0	0.0	0	0.0
Students certified free by application	633,721	16.8	553,275	14.5
Based on income	539,017	14.2	479,624	12.5
Based on categorical eligibility	94,704	2.5	73,651	1.9
Students certified for reduced-price meals	216,922	5.7	206,331	5.4
Students directly certified based on Medicaid	0	0.0	583	0.0
Students certified by application	216,922	5.7	205,748	5.4
Students not certified for meal benefits	2,188,877	57.9	2,202,230	57.6
Students in CEP schools	518,915	13.7	570,604	14.9
Students in non-base year Provision 2 or 3 schools ^a	170,525	4.5	148,110	3.9
Uncertified students in non-special provision schools	1,499,437	39.6	1,483,516	38.8

Source: Administrative records provided by State administrators.

Note: Subgroup percentages may differ slightly from totals due to rounding.

^aSchools are counted as Provision 2 or 3 only if they operate the special provision for both breakfast and lunch.

Table B.4j. Distribution of students by meal certification category in Utah (unadjusted)

Outcome	SY 2015–2016 (Baseline year)		SY 2016–2017 (DCM-F/RP year 1)		SY 2017–2018 (DCM-F/RP year 2)	
	Number	Percentage	Number	Percentage	Number	Percentage
Total students	623,764	100.0	584,555	100.0	633,706	100.0
Students certified for free meals	163,613	26.2	164,679	28.2	163,836	25.9
Directly certified students	79,746	12.8	100,978	17.3	109,000	17.2
Based on Medicaid	0	0.0	28,545	4.9	35,596	5.6
Based on SNAP	75,017	12.0	60,917	10.4	68,606	10.8
Based on other program	4,729	0.8	11,516	2.0	4,798	0.8
Based on letter method	0	0.0	0	0.0	0	0.0
Students certified free by application	83,867	13.4	63,701	10.9	54,836	8.7
Based on income	73,491	11.8	56,929	9.7	48,686	7.7
Based on categorical eligibility	10,376	1.7	6,772	1.2	6,150	1.0
Students certified for reduced-price meals	45,944	7.4	42,543	7.3	42,033	6.6
Students directly certified based on Medicaid	0	0.0	2,850	0.5	3,463	0.5
Students certified by application	45,944	7.4	39,693	6.8	38,570	6.1
Students not certified for meal benefits	414,207	66.4	377,333	64.6	427,837	67.5
Students in CEP schools	8,756	1.4	4,707	0.8	11,934	1.9
Students in non-base year Provision 2 or 3 schools ^a	402	0.1	416	0.1	907	0.1
Uncertified students in non-special provision schools	405,049	64.9	372,210	63.7	414,996	65.5

Source: Administrative records provided by State administrators.

Note: Subgroup percentages may differ slightly from totals due to rounding.

^aSchools are counted as Provision 2 or 3 only if they operate the special provision for both breakfast and lunch.

Table B.4k. Distribution of students by meal certification category in Virginia (unadjusted)

Outcome	SY 2015–2016 (Baseline year)		SY 2016–2017 (DCM-F/RP year 1)		SY 2017–2018 (DCM-F/RP year 2)	
	Number	Percentage	Number	Percentage	Number	Percentage
Total students	1,271,419	100.0	1,235,970	100.0	1,289,884	100.0
Students certified for free meals	362,342	28.5	376,966	30.5	376,586	29.2
Directly certified students	214,297	16.9	251,348	20.3	267,659	20.8
Based on Medicaid	0	0.0	46,706	3.8	86,169	6.7
Based on SNAP	201,851	15.9	194,054	15.7	165,231	12.8
Based on other program	12,446	1.0	10,588	0.9	16,259	1.3
Based on letter method	0	0.0	0	0.0	0	0.0
Students certified free by application	148,045	11.6	125,618	10.2	108,927	8.4
Based on income	130,041	10.2	108,016	8.7	89,588	6.9
Based on categorical eligibility	18,004	1.4	17,602	1.4	19,339	1.5
Students certified for reduced-price meals	75,306	5.9	71,624	5.8	66,649	5.2
Students directly certified based on Medicaid	0	0.0	5,222	0.4	11,500	0.9
Students certified by application	75,306	5.9	66,402	5.4	55,149	4.3
Students not certified for meal benefits	833,771	65.6	787,380	63.7	846,649	65.6
Students in CEP schools	98,034	7.7	92,480	7.5	155,763	12.1
Students in non-base year Provision 2 or 3 schools ^a	0	0.0	0	0.0	38	0.0
Uncertified students in non-special provision schools	735,737	57.9	694,900	56.2	690,848	53.6

Source: Administrative records provided by State administrators.

Note: Subgroup percentages may differ slightly from totals due to rounding.

^aSchools are counted as Provision 2 or 3 only if they operate the special provision for both breakfast and lunch.

Table B.4I. Distribution of students by meal certification category in Washington (unadjusted)

Outcome	SY 2016–2017 (Baseline year)		SY 2017–2018 (DCM-F/RP year)	
	Number	Percentage	Number	Percentage
Total students	546,139	100.0	555,215	100.0
Students certified for free meals	149,736	27.4	123,151	22.2
Directly certified students	109,728	20.1	94,953	17.1
Based on Medicaid	0	0.0	7,096	1.3
Based on SNAP	98,090	18.0	76,137	13.7
Based on other program	11,638	2.1	11,720	2.1
Based on letter method	0	0.0	0	0.0
Students certified free by application	40,008	7.3	28,198	5.1
Based on income	31,858	5.8	24,021	4.3
Based on categorical eligibility	8,150	1.5	4,177	0.8
Students certified for reduced-price meals	31,575	5.8	27,652	5.0
Students directly certified based on Medicaid	0	0.0	3,533	0.6
Students certified by application	31,575	5.8	24,119	4.3
Students not certified for meal benefits	364,828	66.8	404,412	72.8
Students in CEP schools	75,142	13.8	83,663	15.1
Students in non-base year Provision 2 or 3 schools ^a	6,270	1.1	2,713	0.5
Uncertified students in non-special provision schools	283,416	51.9	318,036	57.3

Source: Administrative records provided by State administrators.

Note: Subgroup percentages may differ slightly from totals due to rounding.

^aSchools are counted as Provision 2 or 3 only if they operate the special provision for both breakfast and lunch.

Table B.4m. Distribution of students by meal certification category in West Virginia (unadjusted)

Outcome	SY 2015–2016 (Baseline year)		SY 2016–2017 (DCM-F/RP year 1)		SY 2017–2018 (DCM-F/RP year 2)	
	Number	Percentage	Number	Percentage	Number	Percentage
Total students	280,526	100.0	280,385	100.0	274,985	100.0
Students certified for free meals	57,020	20.3	44,796	16.0	34,686	12.6
Directly certified students	46,918	16.7	39,221	14.0	30,736	11.2
Based on Medicaid	0	0.0	6,523	2.3	9,397	3.4
Based on SNAP	44,528	15.9	31,587	11.3	20,168	7.3
Based on other program	2,390	0.9	1,111	0.4	1,171	0.4
Based on letter method	0	0.0	0	0.0	0	0.0
Students certified free by application	10,102	3.6	5,575	2.0	3,950	1.4
Based on income	9,100	3.2	5,014	1.8	3,614	1.3
Based on categorical eligibility	1,002	0.4	561	0.2	336	0.1
Students certified for reduced-price meals	7,911	2.8	5,573	2.0	4,545	1.7
Students directly certified based on Medicaid	0	0.0	495	0.2	1,117	0.4
Students certified by application	7,911	2.8	5,078	1.8	3,428	1.2
Students not certified for meal benefits	215,595	76.9	230,016	82.0	235,754	85.7
Students in CEP schools	142,214	50.7	176,288	62.9	189,498	68.9
Students in non-base year Provision 2 or 3 schools ^a	0	0.0	0	0.0	0	0.0
Uncertified students in non-special provision schools	73,381	26.2	53,728	19.2	46,256	16.8

Source: Administrative records provided by State administrators.

Note: Subgroup percentages may differ slightly from totals due to rounding.

^aSchools are counted as Provision 2 or 3 only if they operate the special provision for both breakfast and lunch.

Table B.4n. Distribution of students by meal certification category in Wisconsin (unadjusted)

Outcome	SY 2016–2017 (Baseline year)		SY 2017–2018 (DCM-F/RP year)	
	Number	Percentage	Number	Percentage
Total students	845,144	100.0	835,854	100.0
Students certified for free meals	183,571	21.7	202,638	24.2
Directly certified students	138,473	16.4	161,259	19.3
Based on Medicaid	0	0.0	33,395	4.0
Based on SNAP	134,399	15.9	122,308	14.6
Based on other program	4,074	0.5	5,556	0.7
Based on letter method	56	0.0	0	0.0
Students certified free by application	45,042	5.3	41,379	5.0
Based on income	37,292	4.4	32,268	3.9
Based on categorical eligibility	7,750	0.9	9,111	1.1
Students certified for reduced-price meals	36,903	4.4	36,847	4.4
Students directly certified based on Medicaid	0	0.0	11,165	1.3
Students certified by application	36,903	4.4	25,682	3.1
Students not certified for meal benefits	624,670	73.9	596,369	71.3
Students in CEP schools	152,097	18.0	153,588	18.4
Students in non-base year Provision 2 or 3 schools ^a	251	0.0	251	0.0
Uncertified students in non-special provision schools	472,322	55.9	442,530	52.9

Source: Administrative records provided by State administrators.

Note: Subgroup percentages may differ slightly from totals due to rounding.

^aSchools are counted as Provision 2 or 3 only if they operate the special provision for both breakfast and lunch.

Table B.5. Medicaid match rates in SY 2017–2018

State	Age range of Medicaid records used for the match	Free-eligible Medicaid records		Reduced-price-eligible Medicaid records	
		Number used for the match	Percent matched to school enrollment records	Number used for the match	Percent matched to school enrollment records
Michigan	0–27	1,290,432	41.3	56,344	63.4
Wisconsin	0–18	337,370	58.6	47,472	52.7

Source: Administrative records provided by State administrators.

Note: Medicaid match rates were computed as the total number of Medicaid matches in the State, including students attending special provision schools, divided by the total number of students enrolled in districts included in the analysis sample for each State.

Appendix C

Supplemental Tables Related to Participation Outcomes

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Table C.1. NSLP participation outcomes (unadjusted)

State	Average number of lunches served per student per day			Percentage of lunches served for free			Percentage of lunches served at a reduced price		
	SY 2015–2016	SY 2016–2017	SY 2017–2018	SY 2015–2016	SY 2016–2017	SY 2017–2018	SY 2015–2016	SY 2016–2017	SY 2017–2018
Cohort 1 States included in both DCM demonstrations^{a, b}									
Florida	0.576	0.570	0.574	n.a.	n.a.	n.a.	4.7	4.9	2.8
Massachusetts	0.471	0.466	0.468	n.a.	n.a.	n.a.	3.8	3.1	4.7
Pooled sample	0.549	0.543	0.547	n.a.	n.a.	n.a.	4.5	4.5	3.2
Cohort 1 States new to DCM in SY 2016–2017^b									
Nebraska	0.656	0.653	0.638	41.1	43.0	42.4	9.8	9.2	9.9
Utah	0.495	0.488	0.482	41.1	40.1	40.1	10.5	9.9	9.7
Virginia	0.504	0.490	0.477	54.8	53.5	57.9	8.5	8.6	7.3
West Virginia ^c	0.622	n.a.	0.610	66.6	n.a.	76.6	3.0	n.a.	1.8
Pooled sample	0.535	0.527	0.514	50.9	51.1	53.6	8.5	8.2	7.6
Cohort 2 States^d									
California	n.a.	0.416	0.421	n.a.	69.5	70.7	n.a.	10.8	10.0
Connecticut	n.a.	0.478	0.477	n.a.	57.1	59.4	n.a.	5.0	5.1
Indiana	n.a.	0.610	0.608	n.a.	51.7	53.4	n.a.	8.2	8.1
Iowa	n.a.	0.643	0.628	n.a.	42.8	43.8	n.a.	6.4	6.4
Michigan	n.a.	0.476	0.472	n.a.	62.6	65.6	n.a.	7.1	5.5
Texas	n.a.	0.571	0.580	n.a.	69.0	71.5	n.a.	6.8	5.9
Washington	n.a.	0.373	0.447	n.a.	63.7	62.3	n.a.	8.5	8.5
Wisconsin	n.a.	0.522	0.519	n.a.	50.7	51.7	n.a.	5.7	5.4
Pooled sample	n.a.	0.492	0.499	n.a.	64.0	65.8	n.a.	8.2	7.5

Source: Administrative records provided by State administrators.

Notes: The results for Cohort 1 States reflect all months of the school year, and the results for each Cohort 2 State reflect all months after the State conducted its first DCM-F/RP match in SY 2017–2018 (in July for California and Indiana, September for Michigan, October for Texas, December for Wisconsin, March for Connecticut and Iowa, and April for Washington).

^aOutcomes related to free meals are not shown for Florida and Massachusetts because those States participated in a prior demonstration of DCM for free meals during the baseline year, so the DCM-F/RP demonstration only affects reduced-price meals.

^bThe baseline year for Cohort 1 States was SY 2015–2016.

^cResults for SY 2016–2017 are excluded from this table for West Virginia because that State conducted its first DCM-F/RP match in June 2017, after school had ended for most districts.

^dThe baseline year for Cohort 2 States was SY 2016–2017.

n.a. = not applicable; SY = school year.

Table C.2. SBP participation outcomes (unadjusted)

State	Average number of breakfasts served per student per day			Percentage of breakfasts served for free			Percentage of breakfasts served at a reduced price		
	SY 2015–2016	SY 2016–2017	SY 2017–2018	SY 2015–2016	SY 2016–2017	SY 2017–2018	SY 2015–2016	SY 2016–2017	SY 2017–2018
Cohort 1 States included in both DCM demonstrations^{a,b}									
Florida	0.277	0.279	0.284	n.a.	n.a.	n.a.	4.1	4.3	2.5
Massachusetts	0.165	0.173	0.180	n.a.	n.a.	n.a.	3.3	2.6	3.1
Pooled sample	0.248	0.252	0.257	n.a.	n.a.	n.a.	4.0	4.0	2.6
Cohort 1 States new to DCM in SY 2016–2017^b									
Nebraska	0.200	0.204	0.206	60.0	61.2	60.5	11.0	10.1	10.6
Utah	0.124	0.124	0.124	68.0	65.9	65.8	10.4	10.4	10.2
Virginia	0.221	0.225	0.238	73.3	70.3	72.8	8.1	8.5	7.0
West Virginia ^c	0.496	n.a.	0.492	70.5	n.a.	80.2	2.6	n.a.	1.5
Pooled sample	0.225	0.230	0.233	70.3	69.7	72.1	7.4	7.3	6.6
Cohort 2 States^d									
California	n.a.	0.222	0.227	n.a.	74.5	75.1	n.a.	9.8	9.1
Connecticut	n.a.	0.184	0.186	n.a.	81.8	82.3	n.a.	3.7	3.6
Indiana	n.a.	0.223	0.226	n.a.	74.6	74.9	n.a.	7.3	7.5
Iowa	n.a.	0.179	0.170	n.a.	71.7	71.5	n.a.	6.4	6.4
Michigan	n.a.	0.237	0.237	n.a.	77.0	78.9	n.a.	5.9	4.5
Texas	n.a.	0.316	0.323	n.a.	78.4	80.9	n.a.	6.1	5.0
Washington	n.a.	0.144	0.181	n.a.	78.1	76.5	n.a.	8.9	9.2
Wisconsin	n.a.	0.197	0.201	n.a.	73.2	73.1	n.a.	5.4	5.1
Pooled sample	n.a.	0.241	0.246	n.a.	76.2	77.5	n.a.	7.5	6.7

Source: Administrative records provided by State administrators.

Notes: The results for Cohort 1 States reflect all months of the school year, and the results for each Cohort 2 State reflect all months after the State conducted its first DCM-F/RP match in SY 2017–2018 (in July for California and Indiana, September for Michigan, October for Texas, December for Wisconsin, March for Connecticut and Iowa, and April for Washington).

^aOutcomes related to free meals are not shown for Florida and Massachusetts because those States participated in a prior demonstration of DCM for free meals during the baseline year, so the DCM-F/RP demonstration only affects reduced-price meals.

^bThe baseline year for Cohort 1 States was SY 2015–2016.

^cResults for SY 2016–2017 are excluded from this table for West Virginia because that State conducted its first DCM-F/RP match in June 2017, after school had ended for most districts.

^dThe baseline year for Cohort 2 States was SY 2016–2017.

n.a. = not applicable; SY = school year.

Appendix D

Supplemental Tables Related to Federal Reimbursement Cost Outcomes

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Table D.1. NSLP Federal reimbursement outcomes (unadjusted)

State	Federal reimbursements per student per day (dollars)			Blended reimbursement rate (dollars) ^a		
	SY 2015–2016	SY 2016–2017	SY 2017–2018	SY 2015–2016	SY 2016–2017	SY 2017–2018
Cohort 1 States included in both DCM demonstrations^b						
Florida	1.55	1.54	1.61	2.68	2.70	2.80
Massachusetts	0.99	0.99	0.99	2.09	2.12	2.12
Pooled sample	1.40	1.40	1.45	2.55	2.57	2.65
Cohort 1 States new to DCM in SY 2016–2017^b						
Nebraska	1.14	1.16	1.13	1.73	1.77	1.77
Utah	0.87	0.83	0.82	1.75	1.71	1.70
Virginia	1.05	1.01	1.02	2.09	2.05	2.14
West Virginia ^c	1.42	n.a.	1.55	2.29	n.a.	2.54
Pooled sample	1.06	1.04	1.04	1.98	1.97	2.03
Cohort 2 districts^d						
California	n.a.	1.06	1.08	n.a.	2.56	2.57
Connecticut	n.a.	0.99	1.02	n.a.	2.07	2.14
Indiana	n.a.	1.21	1.24	n.a.	1.99	2.04
Iowa	n.a.	1.09	1.08	n.a.	1.70	1.72
Michigan	n.a.	1.08	1.09	n.a.	2.27	2.32
Texas	n.a.	1.40	1.45	n.a.	2.44	2.49
Washington	n.a.	0.87	1.03	n.a.	2.34	2.30
Wisconsin	n.a.	0.99	1.00	n.a.	1.90	1.92
Pooled sample	n.a.	1.15	1.18	n.a.	2.34	2.37

Source: Administrative records provided by State administrators.

Note: The results for Cohort 1 States reflect all months of the school year, and the results for each Cohort 2 State reflect all months after the State conducted its first DCM-F/RP match in SY 2017–2018 (in July for California and Indiana, September for Michigan, October for Texas, December for Wisconsin, March for Connecticut and Iowa, and April for Washington).

^aThe blended reimbursement rate is the per-meal reimbursement rate.

^bThe baseline year for Cohort 1 States was SY 2015–2016.

^cResults for SY 2016–2017 are excluded from this table for West Virginia because that State conducted its first DCM-F/RP match in June 2017, after school had ended for most districts.

^dThe baseline year for Cohort 2 States was SY 2016–2017.

n.a. = not applicable; SY = school year.

Table D.2. SBP Federal reimbursement outcomes (unadjusted)

State	Federal reimbursements per student per day (dollars)			Blended reimbursement rate (dollars) ^a		
	SY 2015–2016	SY 2016–2017	SY 2017–2018	SY 2015–2016	SY 2016–2017	SY 2017–2018
Cohort 1 States included in both DCM demonstrations^b						
Florida	0.49	0.49	0.52	1.75	1.76	1.83
Massachusetts	0.29	0.31	0.32	1.75	1.78	1.76
Pooled sample	0.43	0.44	0.47	1.75	1.76	1.82
Cohort 1 States new to DCM in SY 2016–2017^b						
Nebraska	0.29	0.29	0.30	1.44	1.44	1.44
Utah	0.19	0.19	0.19	1.56	1.53	1.52
Virginia	0.36	0.36	0.38	1.64	1.59	1.61
West Virginia ^c	0.75	n.a.	0.82	1.52	n.a.	1.67
Pooled sample	0.35	0.36	0.37	1.57	1.56	1.59
Cohort 2 districts^d						
California	n.a.	0.37	0.38	n.a.	1.69	1.69
Connecticut	n.a.	0.32	0.32	n.a.	1.71	1.72
Indiana	n.a.	0.37	0.37	n.a.	1.64	1.65
Iowa	n.a.	0.28	0.26	n.a.	1.55	1.55
Michigan	n.a.	0.39	0.39	n.a.	1.67	1.67
Texas	n.a.	0.54	0.56	n.a.	1.70	1.73
Washington	n.a.	0.25	0.31	n.a.	1.74	1.71
Wisconsin	n.a.	0.31	0.32	n.a.	1.58	1.57
Pooled sample	n.a.	0.40	0.42	n.a.	1.68	1.69

Source: Administrative records provided by State administrators.

Note: The results for Cohort 1 States reflect all months of the school year, and the results for each Cohort 2 State reflect all months after the State conducted its first DCM-F/RP match in SY 2017–2018 (in July for California and Indiana, September for Michigan, October for Texas, December for Wisconsin, March for Connecticut and Iowa, and April for Washington).

^aThe blended reimbursement rate is the per-meal reimbursement rate.

^bThe baseline year for Cohort 1 States was SY 2015–2016.

^cResults for SY 2016–2017 are excluded from this table for West Virginia because that State conducted its first DCM-F/RP match in June 2017, after school had ended for most districts.

^dThe baseline year for Cohort 2 States was SY 2016–2017.

n.a. = not applicable; SY = school year.

Appendix E

Supplemental Tables and Figures Related to State Administrative Cost Outcomes

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Table E.1. State administrative costs of DCM-F/RP in SY 2017–2018, by agency type

State administrative costs in SY 2017–2018			
State	Child nutrition agency (percentage of total costs)	Medicaid eligibility agency (percentage of total costs)	Total (dollars)
Cohort 1 States			
Florida	0.0	0.0	0
Massachusetts	100.0	0.0	3,504
Nebraska	0.0	0.0	0
Utah	36.3	63.7	16,316
Virginia	44.0	56.0	3,089
West Virginia	100.0	0.0	1,520
Average ^a	50.4	49.6	4,071
Cohort 2 States			
Connecticut	35.8	64.2	97,692
Indiana	97.0	3.0	67,361
Iowa	34.2	65.8	50,931
Michigan	97.2	2.8	30,496
Nevada ^b	34.5	65.5	124,225
Texas	5.6	94.4	373,489
Washington	98.7	1.3	61,084
Wisconsin	10.8	89.2	149,302
Average ^a	30.1	69.9	119,322
Hybrid State			
California	70.1	29.9	35,984

Source: Cost-tracking workbooks completed quarterly by State administrators for SY 2017–2018.

Note: Cohort 1 States implemented DCM-F/RP in SY 2016–2017. All Cohort 2 States except Nevada implemented DCM-F/RP in SY 2017–2018. California implemented DCM-F/RP in 14 districts in SY 2016–2017 and statewide in SY 2017–2018.

^aAverage costs reported in this table are weighted averages computed by dividing the cost for the agency type by total costs for all agencies in the pooled sample.

^bOnly one of two child nutrition-related agencies in Nevada provided quantitative information on labor costs and is included in this table.

SY = school year.

Table E.2. Start-up and ongoing State administrative costs of DCM-F/RP in SY 2017–2018, by agency type

State administrative costs in SY 2017–2018 (dollars)													
State	Pre-SY 2017–2018		Quarter 1 (July–Sept. 2017)		Quarter 2 (Oct.–Dec. 2017)		Quarter 3 (Jan.–March 2018)		Quarter 4 (Apr.–June 2018)		Total costs		Total
	Child nutrition agency	Medicaid eligibility agency	Child nutrition agency	Medicaid eligibility agency	Child nutrition agency	Medicaid eligibility agency	Child nutrition agency	Medicaid eligibility agency	Child nutrition agency	Medicaid eligibility agency	Child nutrition agency	Medicaid eligibility agency	
California													
Start-up costs	10,752	0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	10,752	0	10,752
Ongoing costs	n.a.	n.a.	4,782	0	8,310	0	547	3,167	816	7,609	14,456	10,776	25,232
Connecticut													
Start-up costs	11,119	24,902	2,776	18,008	2,185	9,329	9,104	4,696	n.a.	n.a.	25,183	56,935	82,119
Ongoing costs	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	9,752	5,821	9,752	5,821	15,573
Indiana													
Start-up costs	14,187	1,093	11,042	56	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	25,229	1,149	26,378
Ongoing costs	n.a.	n.a.	18,460	166	10,155	326	10,900	188	602	188	40,117	867	40,983
Iowa													
Start-up costs	3,539	9,728	1,330	13,303	1,300	2,173	9,767	1,856	n.a.	n.a.	15,935	27,059	42,994
Ongoing costs	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	1,483	6,453	1,483	6,453	7,936
Michigan													
Start-up costs	14,937	525	10,907	221	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	25,844	746	26,590
Ongoing costs	n.a.	n.a.	n.a.	n.a.	2,263	111	1,210	0	323	0	3,795	111	3,906
Nevada^a													
Start-up costs	0	4,883	27	20,115	0	22,099	28,244	30,349	14,618	3,890	42,889	81,336	124,225
Ongoing costs ^b	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Texas^c													
Start-up costs	4,353	NA	10,297	352,410	1,811	0	n.a.	n.a.	n.a.	n.a.	16,462	352,410	368,872
Ongoing costs	n.a.	n.a.	n.a.	n.a.	3,128	0	1,300	0	190	0	4,618	0	4,618
Washington													
Start-up costs	570	0	712	0	14,834	600	38,859	68	1,944	0	56,919	668	57,587
Ongoing costs	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	3,365	131	3,365	131	3,496
Wisconsin													
Start-up costs	5,170	37,388	3,152	88,496	1,579	2,742	n.a.	n.a.	n.a.	n.a.	9,901	128,627	138,527
Ongoing costs	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	2,694	1,716	3,462	2,902	6,157	4,618	10,775
Pooled sample, excluding California													
Start-up costs	53,874	78,519	40,244	492,609	21,709	36,943	85,974	36,968	16,562	3,890	218,362	648,929	867,292
Ongoing costs	n.a.	n.a.	18,460	166	15,547	436	16,104	1,904	19,176	15,495	69,286	18,001	87,288

Source: Cost-tracking workbooks completed quarterly by State administrators for SY 2017–2018.

Notes: Start-up costs are defined as costs that occur up to and including the month of the first DCM-F/RP match (July for Indiana, September for Michigan, October for Texas, December for Wisconsin, March for Connecticut and Iowa, and April for Washington). All States incurred start-up costs in preparation for implementing DCM-F/RP, but the

month they began preparing for DCM-F/RP varied. All costs in months following the month of implementation are classified as ongoing costs. Totals shown may differ slightly from calculated totals due to rounding.

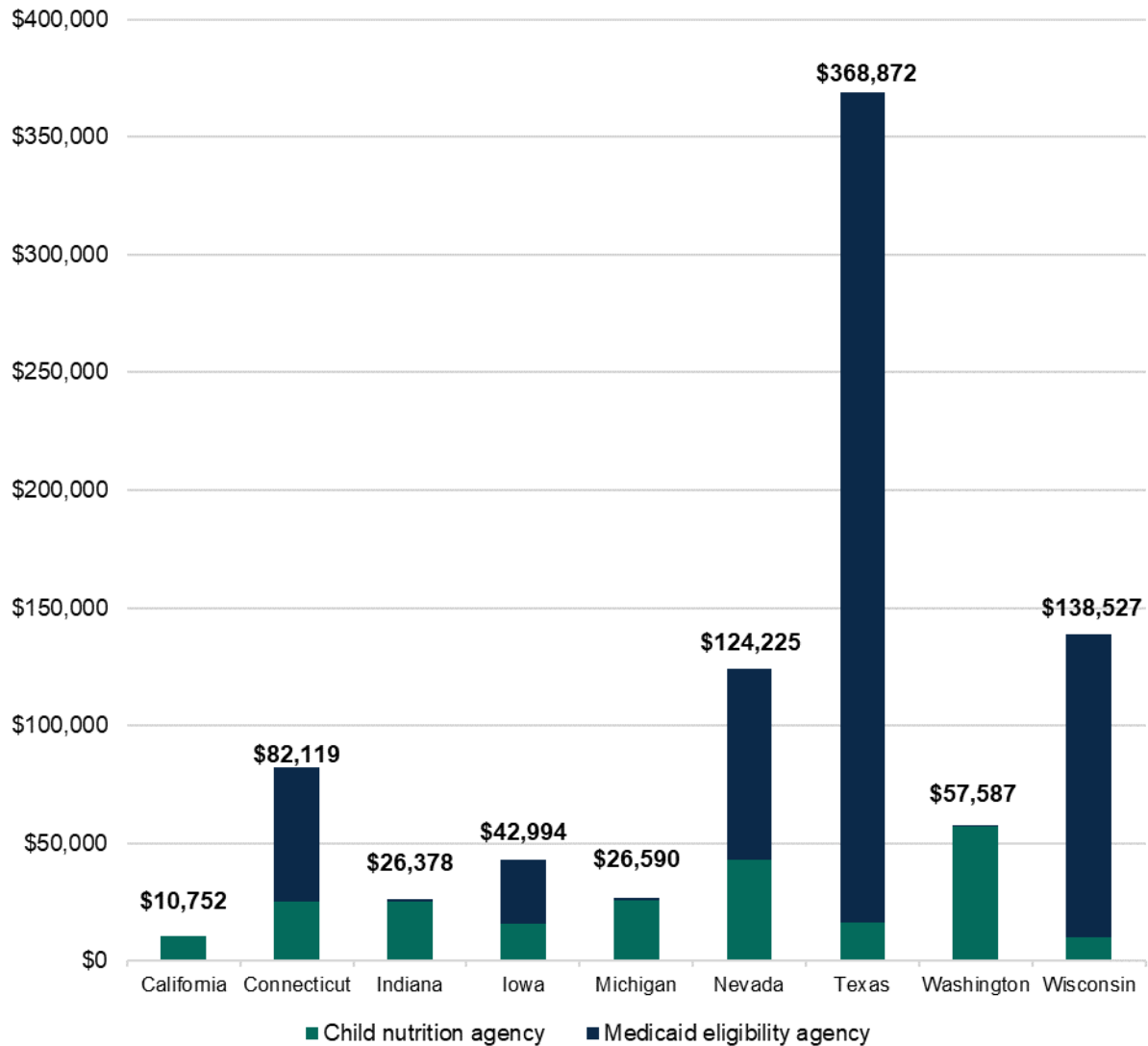
^aOnly one of two child nutrition-related agencies in Nevada provided quantitative information on labor costs and is included in this table.

^bNevada did not certify any students through DCM-F/RP during SY 2017–2018.

^cThe Texas Medicaid eligibility agency could not separate out their pre-July costs from July–September costs, so all costs for that agency and included in Quarter 1 (July – September).

NA = not available; n.a. = not applicable SY = school year.

Figure E.1. Cohort 2 start-up State administrative costs of DCM-F/RP, by agency type



Source: Cost-tracking workbooks completed quarterly by State administrators for SY 2017–2018.

Notes: Start-up costs are defined as costs that occur up to and including the month of the first DCM-F/RP match (July for Indiana, September for Michigan, October for Texas, December for Wisconsin, March for Connecticut and Iowa, and April for Washington). All States incurred start-up costs in preparation for implementing DCM-F/RP, but the month they began preparing for DCM-F/RP varied. All costs in months following the month of implementation are classified as ongoing costs. Totals shown may differ slightly from calculated totals due to rounding.

^aOnly one of two child nutrition-related agencies in Nevada provided quantitative information on labor costs and is included in this table.

Table E.3. Average monthly ongoing State administrative costs of DCM-F/RP across two years for Cohort 1 States

State	Average monthly ongoing State administrative costs (dollars)		SY 2017–2018 costs as a percentage of SY 2016–2017 costs
	SY 2016–2017	SY 2017–2018	
California	1,717	2,103	122.5
Florida	0	0	n.a.
Massachusetts	1,865	292	15.7
Nebraska	897	0	0.0
Utah	1,245	1,360	109.2
Virginia	6,167	257	4.2
Pooled sample, excluding California	10,174	1,909	18.8

Source: Cost-tracking workbooks completed quarterly by State administrators for SY 2016–2017 and SY 2017–2018.

Notes: California implemented DCM-F/RP in 14 districts in SY 2016–2017 and statewide in SY 2017–2018. The remaining States in this table implemented DCM-F/RP in SY 2016–2017. West Virginia is excluded from this table because the State conducted its first DCM-F/RP match in June 2017 and therefore did not incur any ongoing costs in SY 2016–2017.

n.a. = not applicable; SY = school year.

Table E.4. State administrative costs of DCM-F/RP across two years for Cohort 1 States, by State and agency type

State	State administrative costs (dollars)	
	SY 2016–2017	SY 2017–2018
California		
Child nutrition agency	42,114	25,208
Medicaid eligibility agency	39,123	10,776
Florida		
Child nutrition agency	11,570	0
Medicaid eligibility agency	245,138	0
Massachusetts		
Child nutrition agency	10,473	3,504
Medicaid eligibility agency	141,281	0
Nebraska		
Child nutrition agency	6,287	0
Medicaid eligibility agency	8,473	0
Utah		
Child nutrition agency	23,583	5,922
Medicaid eligibility agency	22,279	10,394
Virginia		
Child nutrition agency	8,130	1,358
Medicaid eligibility agency	45,525	1,731
West Virginia		
Child nutrition agency	3,848	1,520
Medicaid eligibility agency	8,728	0
Average, excluding California		
Child nutrition agency	10,649	2,051
Medicaid eligibility agency	78,571	2,021

Source: Cost-tracking workbooks completed quarterly by State administrators for SY 2016–2017 and SY 2017–2018.

Notes: California implemented DCM-F/RP in 14 districts in SY 2016–2017 and statewide in SY 2017–2018. The remaining States in this table implemented DCM-F/RP in SY 2016–2017. West Virginia is excluded from this table because the State conducted its first DCM-F/RP match in June 2017 and therefore did not incur any ongoing costs in SY 2016–2017.

SY = school year.

Appendix F

Supplemental Tables and Figures Related to Implementation Processes and Challenges

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Table F.1. Methods used by States and districts to extend DCM-F/RP certification status to other students in the household

Method	Description
State-level approaches^a	
List of students eligible for extension	Florida provided districts a list of all unmatched students who have the same address as a matched student in their district, which districts could use to determine if a student was eligible for extension. The list includes the type of residence, such as an apartment building or a single-family home, identified using a mapping tool.
Maintain a State household identifier	Indiana allowed districts to download a file listing unmatched children eligible for DCM-F/RP who share a household case number with a matched student, allowing the district to identify children who may be eligible for extension. The household case number is consistent across SNAP, TANF, and Medicaid.
District-level approaches	
Letter notification	District staff sent notification letters to households with directly certified students. These letters instructed parents and guardians to report other students living in the household who were not directly certified for free or reduced-price meals.
Manual review	District staff manually reviewed the list of direct certification matches to identify opportunities for extension of benefits to other students in the household. Districts that used this approach often did so by looking up last names, parent or guardian names, or addresses.
Maintain a district household identifier	Districts maintained household IDs or family groupings in their enrollment or POS system to identify students who are living together. Districts that maintained a household ID frequently used it to identify opportunities to extend benefits.
Staff referral	District staff familiar with their student population and family groupings noticed when members of a household had different certification statuses. They informed the staff responsible for direct certification, and these staff extended benefits.
Household match	Some POS systems can match children based on address to identify opportunities for extension. However, staff noted this match can be problematic when multiple families are listed at one address, such as an apartment complex, necessitating manual review of the match results (e.g., matching guardian name, phone number) by staff before approving an extension.
Reference applications	Districts referenced prior school meal applications to identify other students in the household. Districts that used this approach compared these students with those directly certified and extended certification where appropriate.
Investigate negative balances	Districts described investigating students who were accruing school meal debt to determine if they had siblings who were directly certified. Districts that practiced this approach hoped to reduce negative balances.

Source: Interviews with State and district staff.

Note: These extension methods are the same for SNAP and TANF.

^aNone of the States extended direct certification centrally; however, the methods described here helped facilitate extension at the district level.

Table F.2. Methods designed to maintain the certification hierarchy

State	Process for maintaining the certification hierarchy
Cohort 1 States	
Florida	Florida's matching system is programmed to retain only the highest priority match for each student. The child nutrition agency informs districts of the highest program in the certification hierarchy that matched to each student and provides a report showing which students moved from DCM-reduced-price to DC-free.
Massachusetts	Massachusetts' matching system matches first on SNAP, then TANF; however, Medicaid is matched prior to foster care. Foster children receiving Medicaid are excluded from the DCM eligibility file (because they do not provide income information when applying for Medicaid), which eliminates the possibility of overlap between the Medicaid and foster care files, thereby maintaining the certification hierarchy.
Nebraska	The State provides districts indicators for all programs each student matched to. The districts are responsible for certifying students using the highest-level program in the certification hierarchy.
Utah	The State Medicaid eligibility agency establishes the certification hierarchy for SNAP, TANF, and Medicaid before matching is conducted and provides a combined eligibility file to the child nutrition agency that indicates only one program per child. Foster care data are provided separately, so the matching systems apply the hierarchy between foster care and the other programs. The statewide POS system automatically recertifies students as DC-SNAP if they previously matched under another program.
Virginia	As a local matching State, district staff and vendors are responsible for maintaining the correct certification hierarchy. To aid districts, the State sends only the highest priority program for the first eligibility file of the school year. Each subsequent file includes only children who are absent from previous files, move to a different location, or match to a program higher on the hierarchy.
West Virginia	The certification hierarchy is written into the statewide POS system where the match occurs. This system retains only the highest priority match for each student and ensures a student matched to a SNAP record is reclassified as DC-SNAP if previously certified under another program. The system also allows staff to view historical matches. West Virginia discovered some Medicaid matches were superseding DC-SNAP matches, but its POS vendor corrected this error.
Cohort 2 States	
Connecticut	The child nutrition agency establishes the certification hierarchy when merging Medicaid data with SNAP, TANF, and foster care data. The matching system keeps the highest-priority program, which is provided to districts.
Indiana	Indiana's matching system matches sequentially according to the certification hierarchy, removing matched students from the student enrollment file at each step. The direct certification system retains the highest priority match throughout the school year, ensuring students do not move down the certification hierarchy. The child nutrition agency also notified POS vendors of the demonstration and provided guidance for districts to share with their vendors.
Iowa	Iowa's matching system establishes the certification hierarchy and indicates only the highest-priority program in the match results. The child nutrition agency worked with POS vendors early in the demonstration to ensure the hierarchy was correct in their systems.
Michigan	Michigan's matching system retains only the highest-priority match for each student. The child nutrition agency provided guidance about the demonstration, including the certification hierarchy, to districts and POS vendors.
Nevada	The Medicaid eligibility agency establishes the certification hierarchy before matching and provides a combined eligibility file that indicates only the highest-priority program for each child to the Department of Education. The State-sponsored POS system also maintains the correct hierarchy for districts that use it.

State	Process for maintaining the certification hierarchy
Texas	The child nutrition agency establishes the certification hierarchy before matching is conducted. The unmatched direct certification eligibility file contains flags for all programs by which a student is eligible for direct certification, but the child nutrition agency only provides the highest-priority match to districts.
Washington	The child nutrition agency establishes the certification hierarchy after assessing eligibility within the Medicaid data. The child nutrition agency first removes any children from the combined eligibility file who are not eligible for free or reduced-price meals; then they match; and last they enforce the SNAP, TANF, and Medicaid hierarchy on the match results. Match results sent to the districts include only the highest-priority match for each student.
Wisconsin	The direct certification system establishes the certification hierarchy after matching. Match results sent to the districts only include the highest-priority match for each student.
Hybrid State	
California	Matches are conducted sequentially according to the certification hierarchy. At each step, matched students are removed from the student enrollment file used for the next step, thereby creating the hierarchy. For each match after the first one of the school year, the State removes any children from the enrollment file who previously matched under DC-SNAP. In Year 2, California held trainings for district staff on DCM-F/RP, including how to enforce the hierarchy. The State required districts to sign a form acknowledging their POS system was capable of implementing DCM-F/RP correctly. The State also convened a POS vendor working group, responded to their questions, and provided specifications on how to update their systems to accommodate the new match results and hierarchy.

Source: Interviews with State and district staff.

Figure F.1. California profile

Summary of DCM-F/RP process

Each month, the Department of Health Care Services assesses DCM-F/RP eligibility and sends a file identifying children eligible for DCM-F/RP and those participating in SNAP or TANF to a mainframe maintained by the California Office of Technology. The child nutrition agency provides a monthly student enrollment file to the same mainframe, extracted from the statewide student information system (SSIS), which districts must update at least twice a year. Staff from the Department of Social Services trigger a four-step deterministic match, which generates exact matches. DCM-F/RP records are matched in the final step, and those records must match exactly on five data elements. The criteria for this match are more stringent than California’s match with other programs because Medicaid is a larger program, and the State wanted to reduce the likelihood of false positives. A combined list of exact matches is made available in the SSIS for district staff to download. In Year 2, California expanded DCM-F/RP from 14 districts to the entire State and included four new Medicaid aid categories in its eligibility file.

Matching level	Match algorithm type	DCM-F/RP certifications began
Central	Deterministic	May (pilot) and July (statewide) 2017

Flowchart of DCM-F/RP process

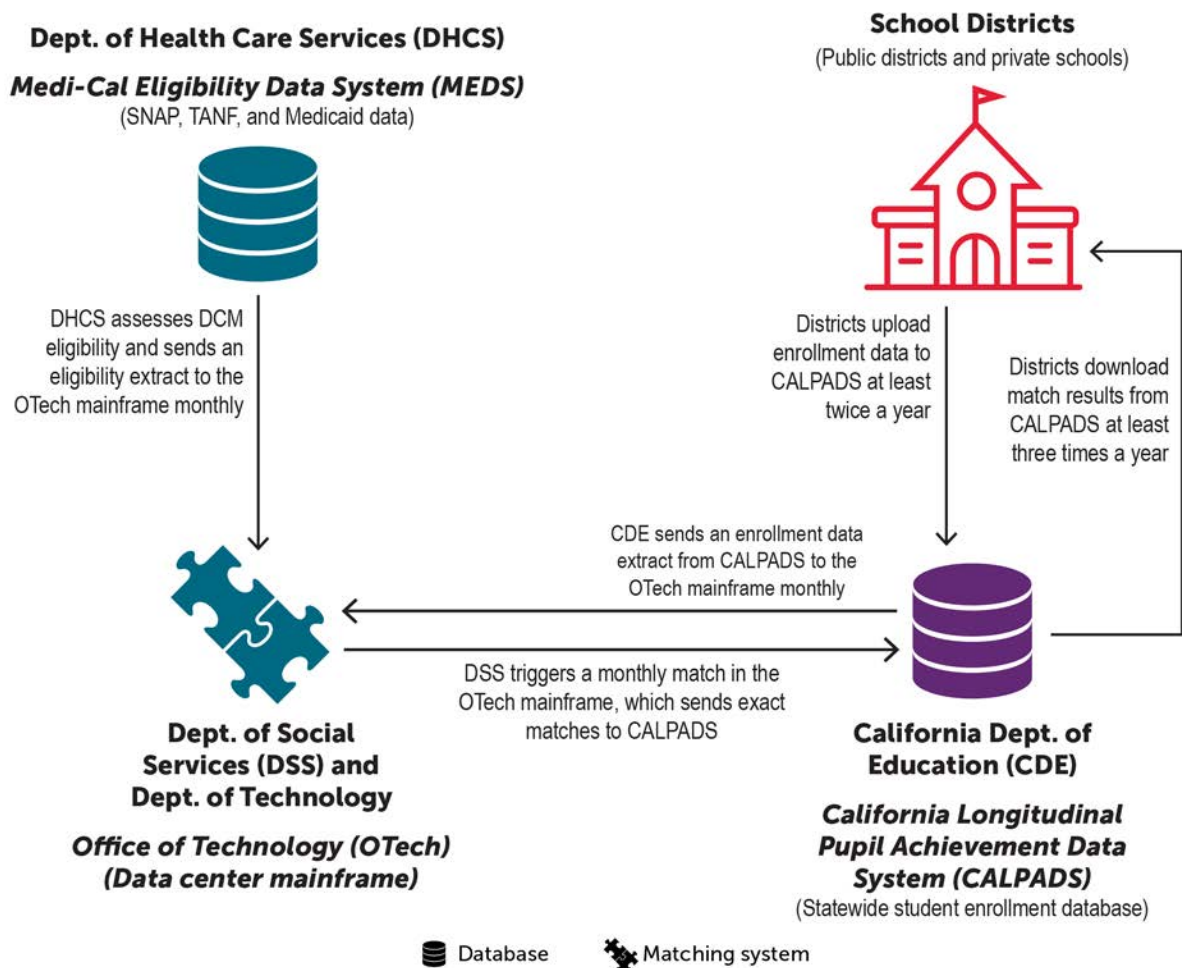


Figure F.2. Connecticut profile

Summary of DCM-F/RP process

Each week, the Medicaid eligibility agency assesses DCM-F/RP eligibility and provides a file identifying children eligible for DCM-F/RP and a separate file indicating children participating in SNAP or TANF to the child nutrition agency. The Department of Children and Families provides foster care data monthly, which the child nutrition agency merges with other program data. The direct certification system, maintained by the child nutrition agency, conducts a weekly match against the SSIS. Private schools upload their enrollment directly to the State's direct certification system for matching. The match uses a probabilistic algorithm with up to six data elements, requiring a match on three elements. District staff log into the direct certification system to review possible matches and download a list of matches.

Matching level	Match algorithm type	DCM-F/RP certifications began
Central	Probabilistic	March 2018

Flowchart of DCM-F/RP process

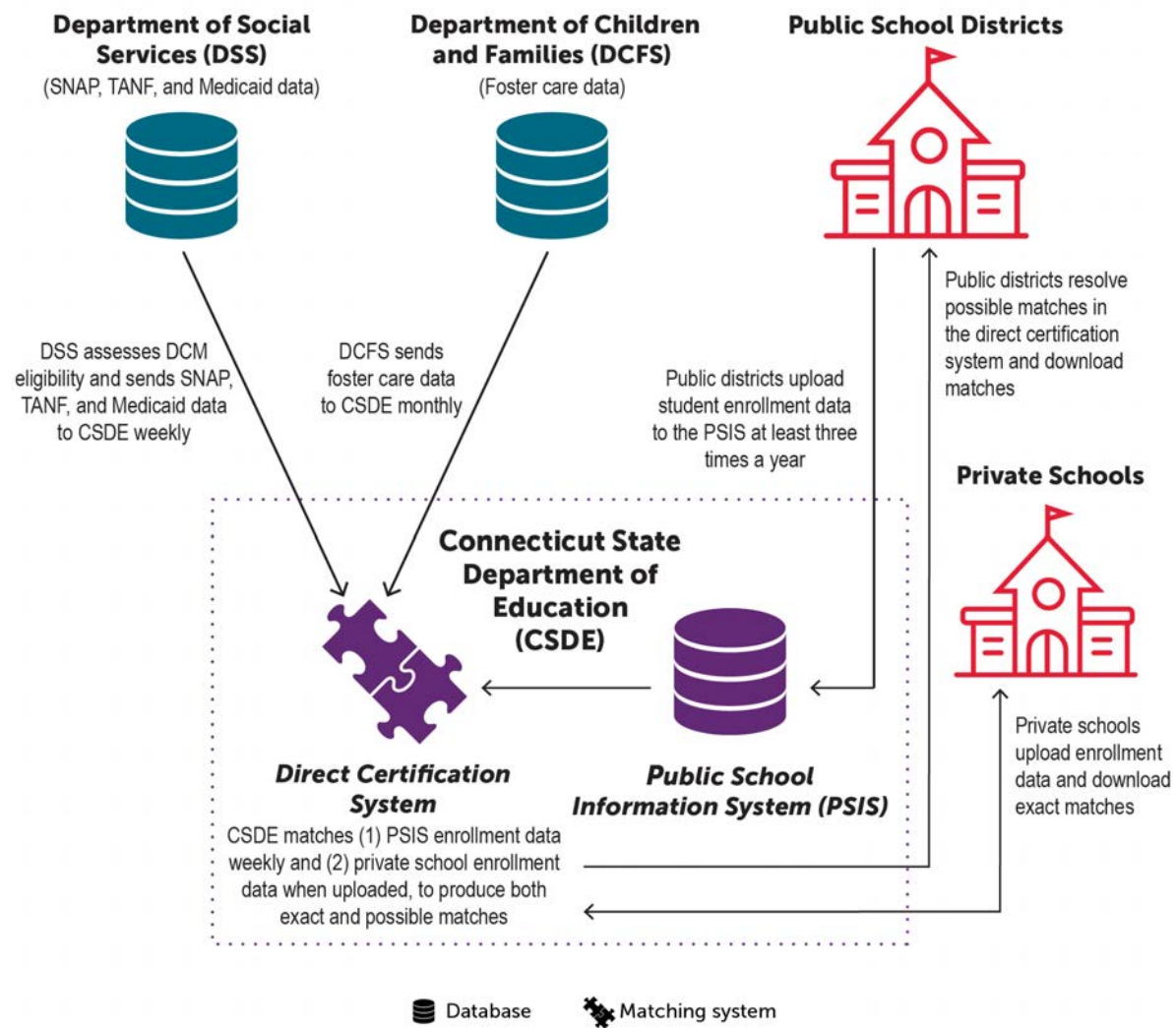


Figure F.3. Florida profile

Summary of DCM-F/RP process

Each day, the Medicaid eligibility agency provides a file identifying children eligible for DCM-F/RP and those participating in SNAP or TANF, which the child nutrition agency matches against the last enrollment file uploaded by districts to the direct certification system. The system attempts a 16-level deterministic match daily, using a combination of data elements, and employs nickname and phonetic algorithms to help identify matches. It sends an email to districts notifying them of any new matches. The child nutrition agency makes available separate lists of exact free matches (including Medicaid and other programs), exact Medicaid reduced-price matches, and unmatched students for download in the direct certification system, as well as a list of unmatched students who have the same address as a matched student. Florida’s process did not change in Year 2.

Matching level	Match algorithm type	DCM-F/RP certifications began
Central	Deterministic	July 2016

Flowchart of DCM-F/RP process

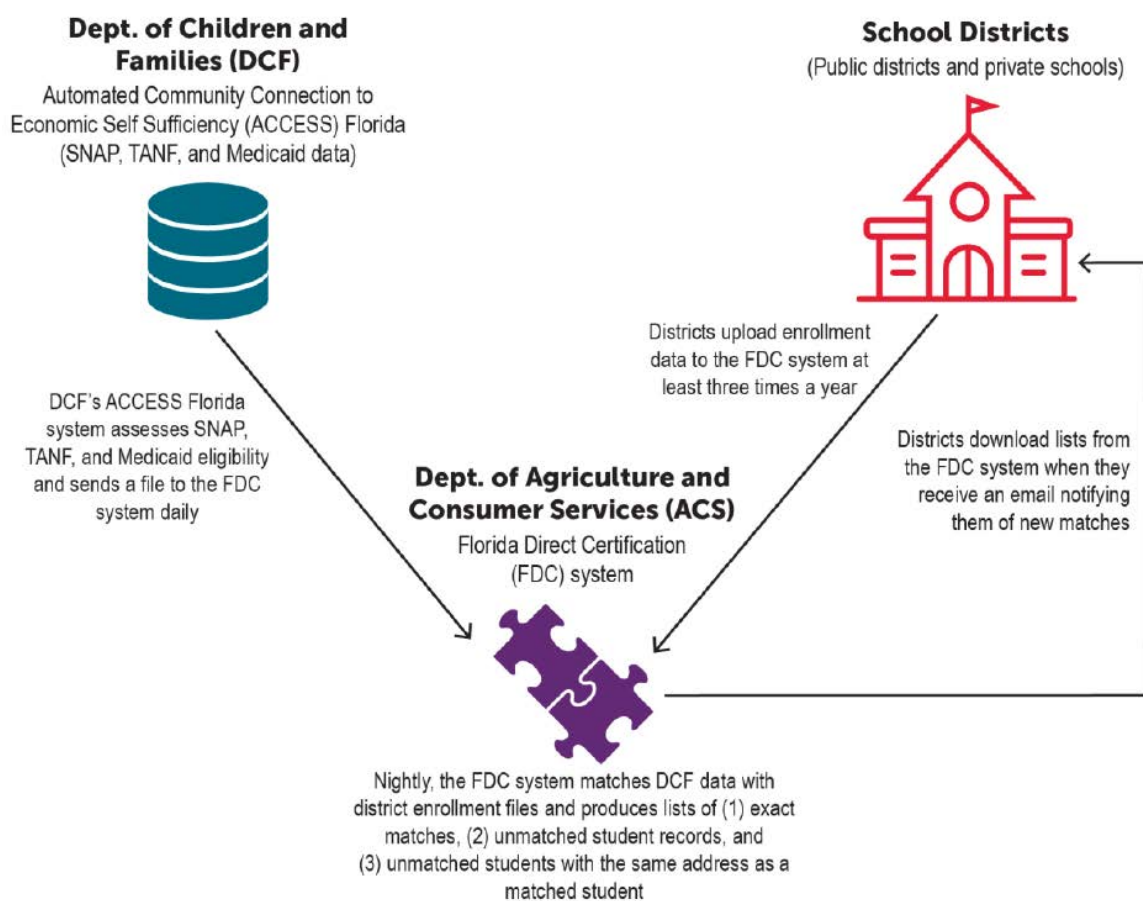


Figure F.4. Indiana profile

Summary of DCM-F/RP process

Each month, the Medicaid eligibility agency assesses DCM-F/RP eligibility and provides a file identifying children eligible for DCM-F/RP, along with a separate file indicating children participating in SNAP or TANF, to the child nutrition agency. The Department of Child Services provides foster care data monthly. The child nutrition agency uploads the files to the agency’s direct certification system. The system conducts a daily match against the SSIS. The match uses a deterministic algorithm with five data elements. The child nutrition agency provides four match lists to districts: (1) exact matches; (2) partial matches for which first name, last name, and date of birth match, but the county does not; (3) unmatched siblings; and (4) possible matches with an exact match on some data elements and a partial match on others. Districts can download new matches or their full match list.

Matching level	Match algorithm type	DCM-F/RP certifications began
Central	Deterministic	July 2017

Flowchart of DCM-F/RP process

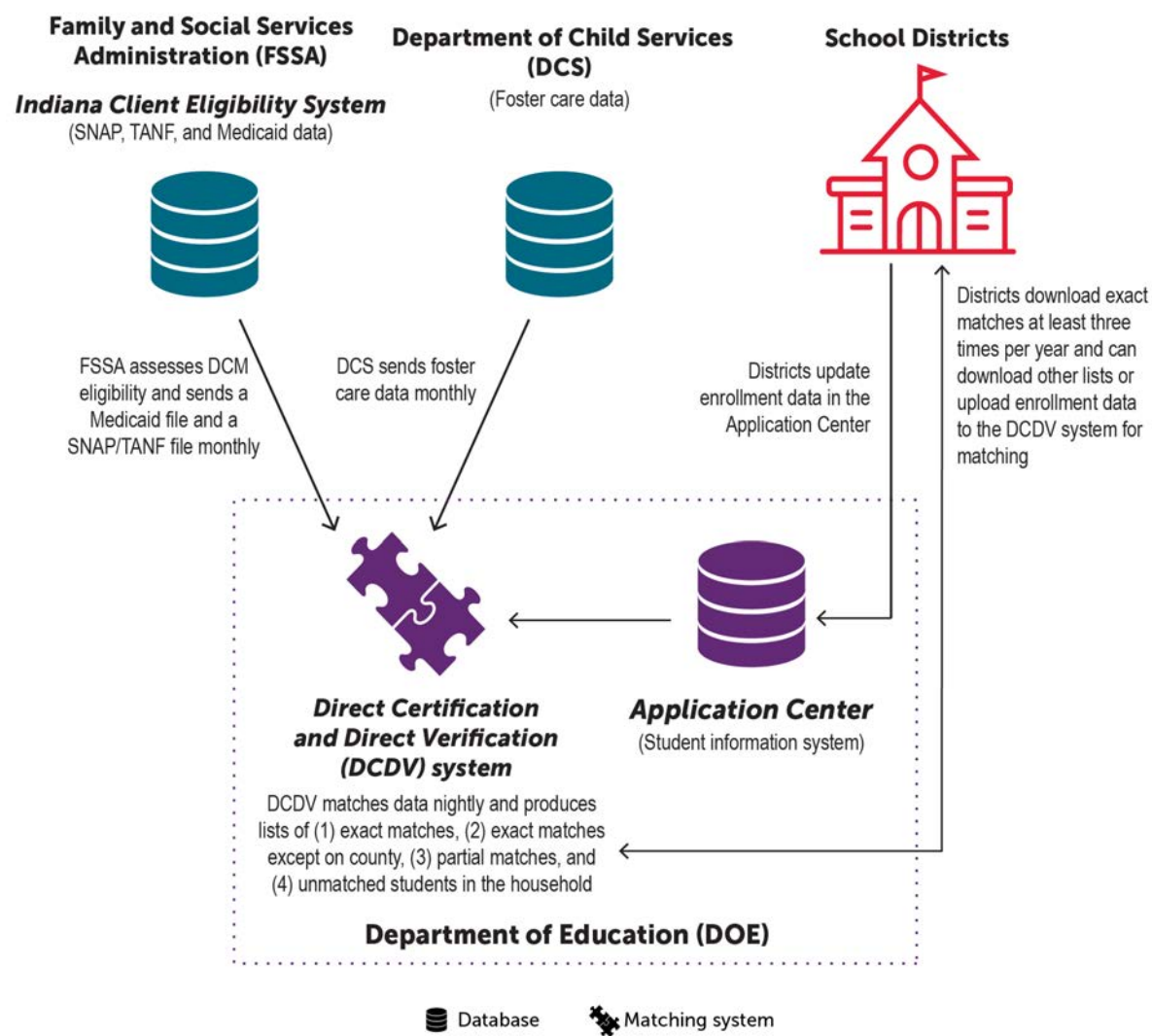


Figure F.5. Iowa profile

Summary of DCM-F/RP process		
Matching level	Match algorithm type	DCM-F/RP certifications began
Central	Probabilistic	March 2018

Twice a month (and once in July), the Medicaid eligibility agency saves three separate direct certification data files to its mainframe: one file contains SNAP and TANF information, a second contains foster care information, and a third contains Medicaid information. The child nutrition agency imports these files into its direct certification and student ID system, cleans the data, and removes ineligible Medicaid cases. The system conducts a probabilistic match on three data elements to assign a student ID to each case in the program data. The child nutrition agency manually resolves cases with a match to more than one student ID and then merges the file with enrollment data in the SSIS, which districts update three times per year. Districts receive an email notifying them when new files are available in the enrollment system from which they can download (1) exact matches, (2) migrant matches, (3) unmatched family members for SNAP and TANF cases, and (4) students matched via the State's individual student lookup feature.

Flowchart of DCM-F/RP process

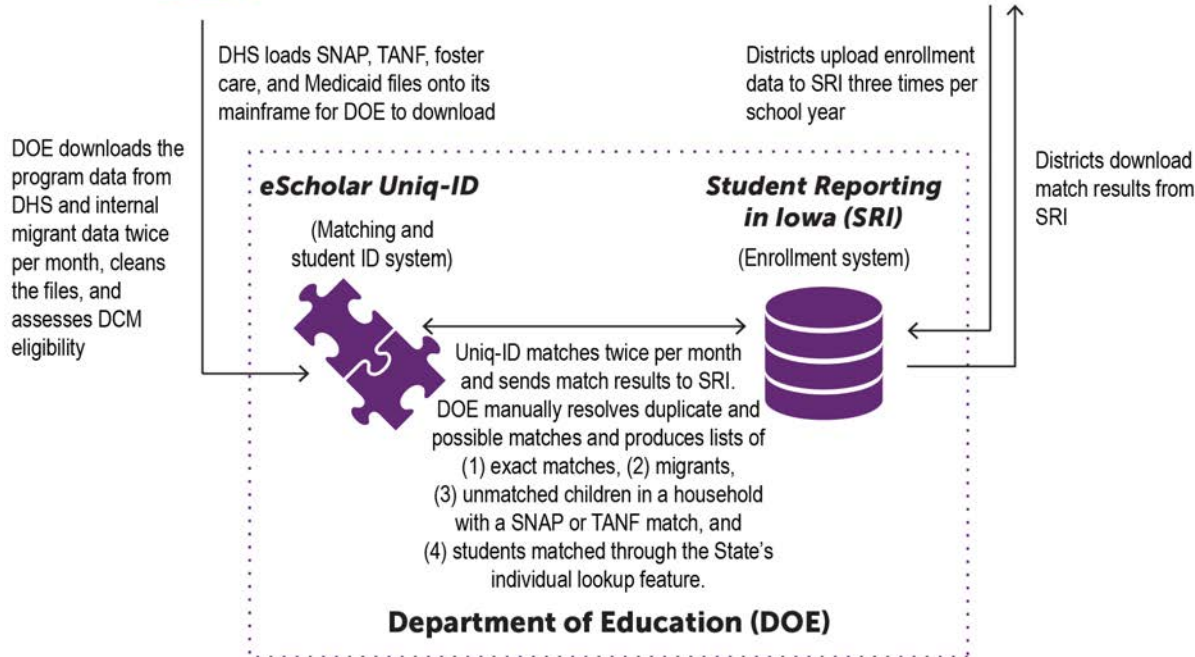
Department of Human Services (DHS)

Eligibility Integrated Application Solution (ELIAS)

(SNAP, TANF, foster care, and Medicaid data)



School Districts



Department of Education (DOE)

Database Matching system

Figure F.6. Massachusetts profile

Summary of DCM-F/RP process		
Matching level	Match algorithm type	DCM-F/RP certifications began
Central	Deterministic	May 2017

Flowchart of DCM-F/RP process

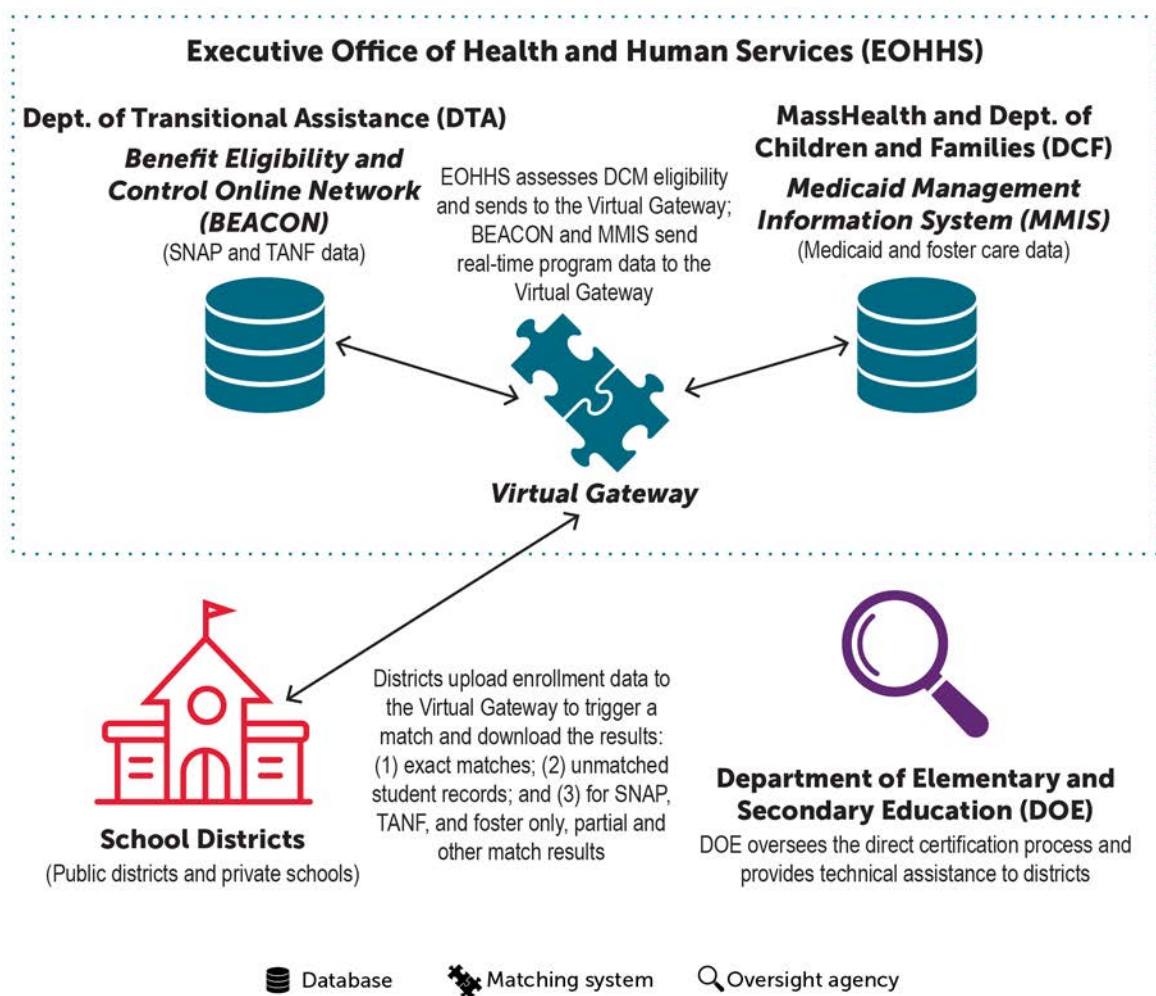


Figure F.7. Michigan profile

Summary of DCM-F/RP process

Each day, the Department of Technology, Management, and Budget pulls SNAP, TANF, Medicaid, and foster care data from the Medicaid eligibility agency data system into its data warehouse and assesses eligibility for DCM-F/RP. The Center for Educational Performance and Information (CEPI) retrieves the eligibility data and conducts a probabilistic match on four data elements against enrollment data in the SSIS to assign student IDs to each case in the program data. CEPI then merges student IDs to the enrollment data in the SSIS. Matching occurs biweekly from late July through September and monthly the rest of the year. District staff can download a list of exact matches through the SSIS.

Matching level	Match algorithm type	DCM-F/RP certifications began
Central	Probabilistic	September 2017

Flowchart of DCM-F/RP process

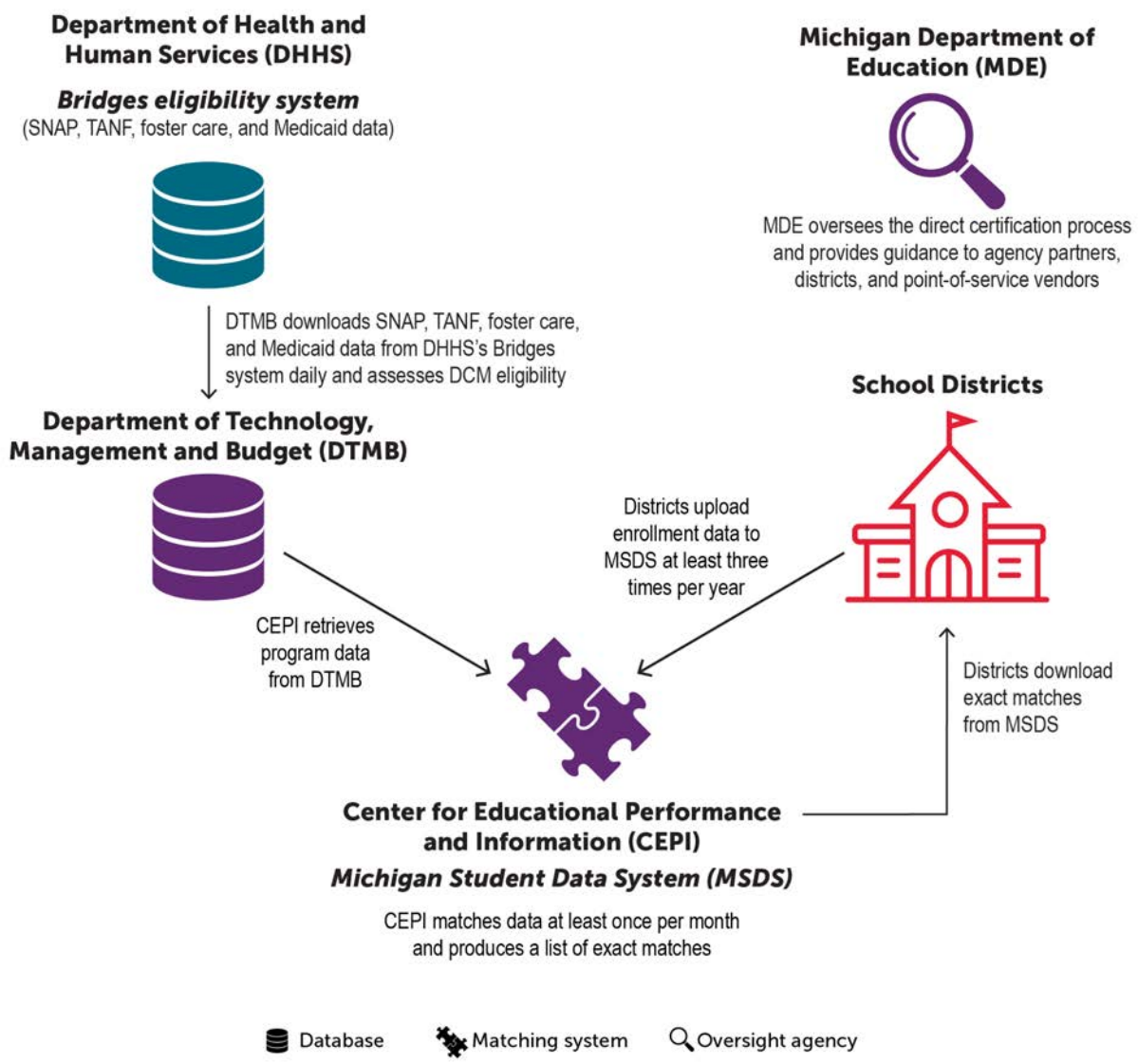


Figure F.8. Nebraska profile

Summary of DCM-F/RP process

Each day, the Medicaid eligibility agency provides a file identifying children eligible for DCM-F/RP, children participating in SNAP or TANF, and foster children to the direct certification system maintained by the child nutrition agency. The system pulls student enrollment data daily from three systems: (1) the SSIS for public schools, (2) the enrollment system for private schools, or (3) the online application and claims system for public and private schools. The direct certification system conducts a probabilistic match daily on four data elements and emails districts when a new match is identified. A list of exact and possible matches is made available for district staff download through the State claims system. Nebraska’s process did not change in Year 2.

Matching level	Match algorithm type	DCM-F/RP certifications began
Central	Probabilistic	August 2016

Flowchart of DCM-F/RP process

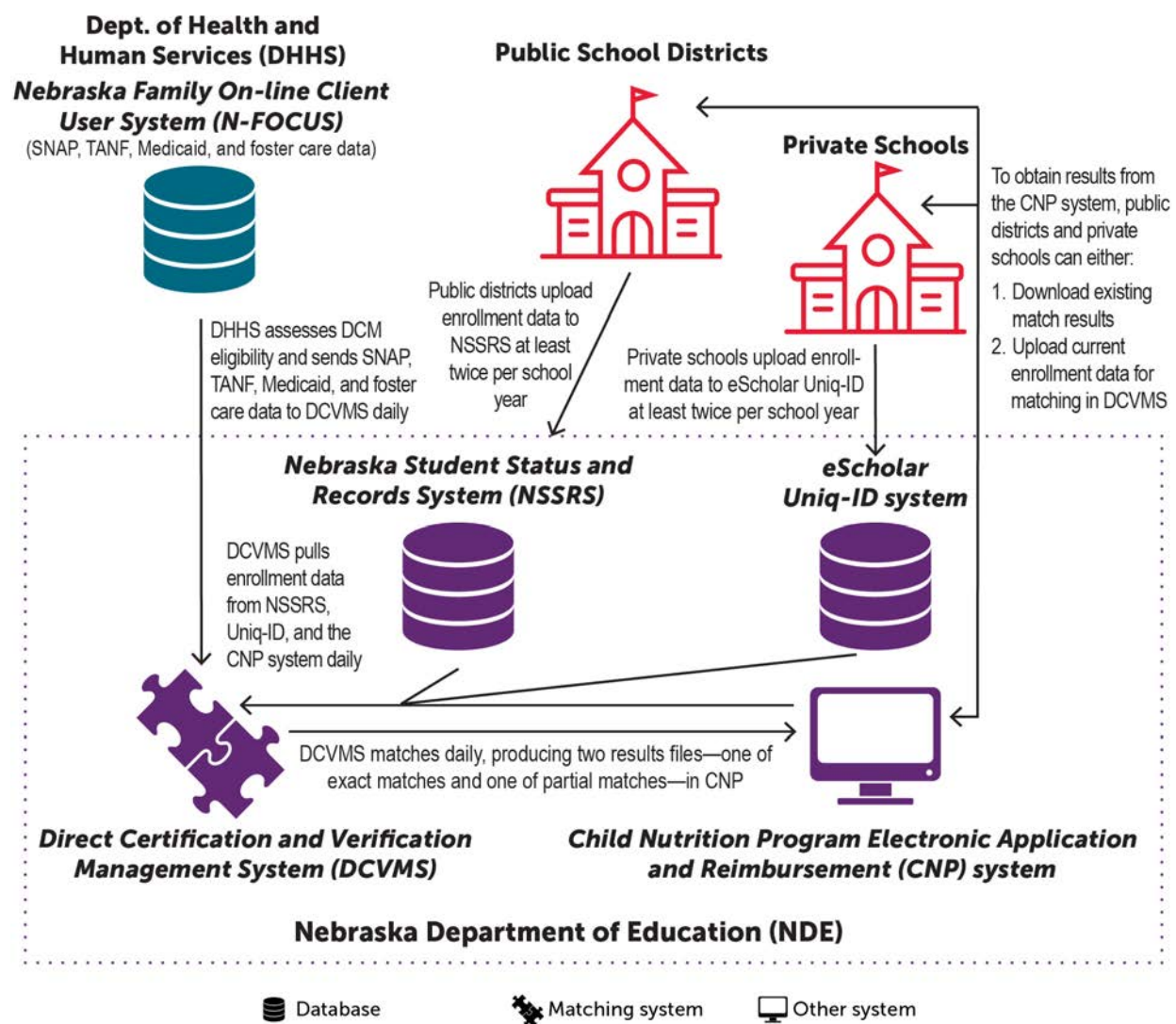


Figure F.9. Nevada profile

Summary of DCM-F/RP process

Nevada developed and tested the DCM-F/RP demonstration in SY 2017–2018 but did not implement the demonstration until SY 2018–2019. Under the planned demonstration procedures, twice a month, the Medicaid eligibility agency assesses DCM-F/RP eligibility and sends a file identifying children eligible for DCM-F/RP and those participating in SNAP or TANF to the Department of Education (DOE). The direct certification matching software, maintained by DOE, conducts a semimonthly probabilistic match against real-time enrollment data from the State-sponsored enrollment system. After the match is complete, DOE reviews the matches and identifies exact matches and nonmatches. Districts download exact matches from an online portal, and DOE emails unmatched enrollment records specific to each district. District staff may set up an alert in the online portal to notify when a new match file is available.

Matching level	Match algorithm type	DCM-F/RP certifications began
Central	Probabilistic	August 2018

Flowchart of DCM-F/RP process

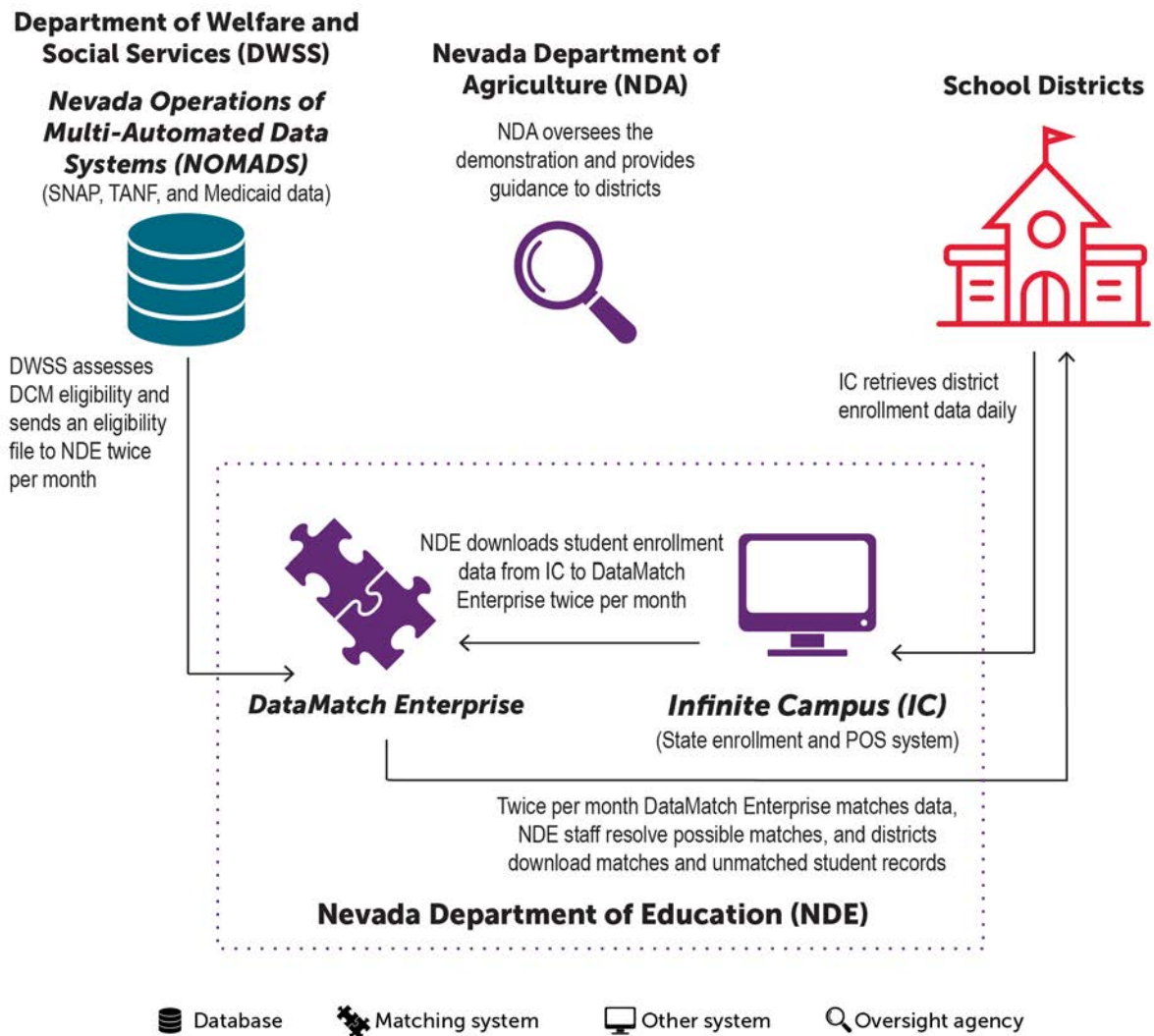


Figure F.10. Texas profile

Summary of DCM-F/RP process

Each month, the Medicaid eligibility agency provides a file identifying children participating in SNAP, TANF, or Medicaid to the child nutrition agency. The child nutrition agency determines eligibility for DCM-F/RP. The agency cleans the names in this file, such as removing special characters, before sending eligible students to the Texas Education Agency (TEA) for matching. TEA matches the program data to the agency’s student enrollment file for the previous spring. The monthly match uses a deterministic algorithm and requires at least four data elements to match. TEA produces a list of exact matches, which the child nutrition agency uploads to its direct certification system. Districts receive an email notification when a new match file is available for download. Districts are also encouraged to upload current student enrollment data to the system for matching.

Matching level	Match algorithm type	DCM-F/RP certifications began
Central	Deterministic	October 2017

Flowchart of DCM-F/RP process

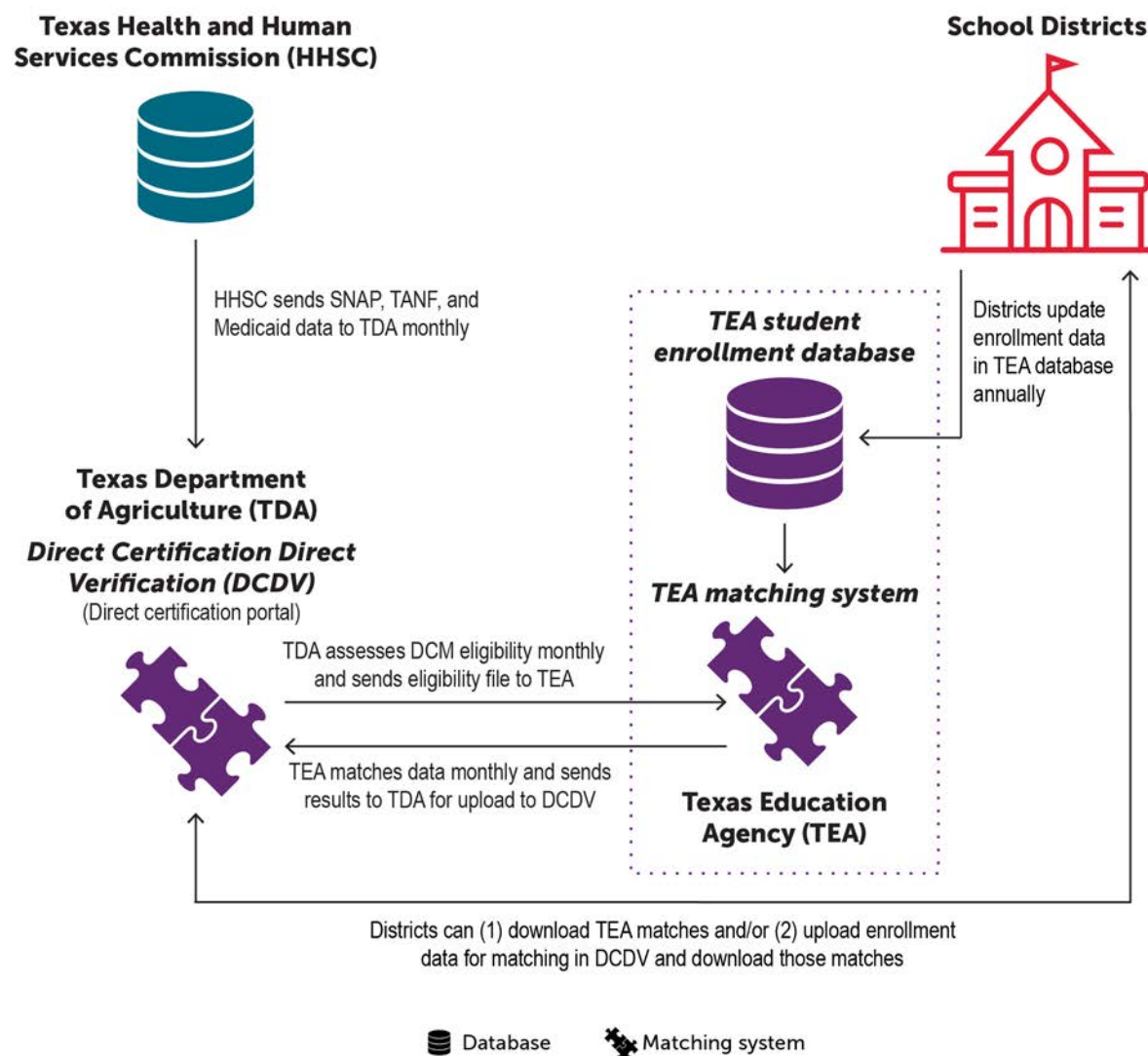


Figure F.11. Utah profile

Summary of DCM-F/RP process

Each day, the Medicaid eligibility agency provides a file identifying children eligible for DCM-F/RP and children participating in SNAP or TANF to two systems maintained by the child nutrition agency. (A separate agency provides data on foster children weekly.) Matching occurs in (1) the State online claims system and (2) the State-sponsored district enrollment system used by many but not all districts. Both systems use the same deterministic algorithm using three data elements. The first system produces exact matches when all data elements match and possible matches when two data elements match. It matches against enrollment data from the statewide student information system (SSIS), or districts can upload a current file to the claims system for matching. All districts must access matches from this system at least three times a year. The second option matches to enrollment data in the State-sponsored enrollment system; it produces only exact matches. For districts also using the second system as a POS, exact matches are certified automatically each day. In Year 2, Utah removed ineligible Medicaid aid categories found during Year 1 but did not otherwise change its process.

Matching level	Match algorithm type	DCM-F/RP certifications began
Central	Deterministic	November 2016

Flowchart of DCM-F/RP process

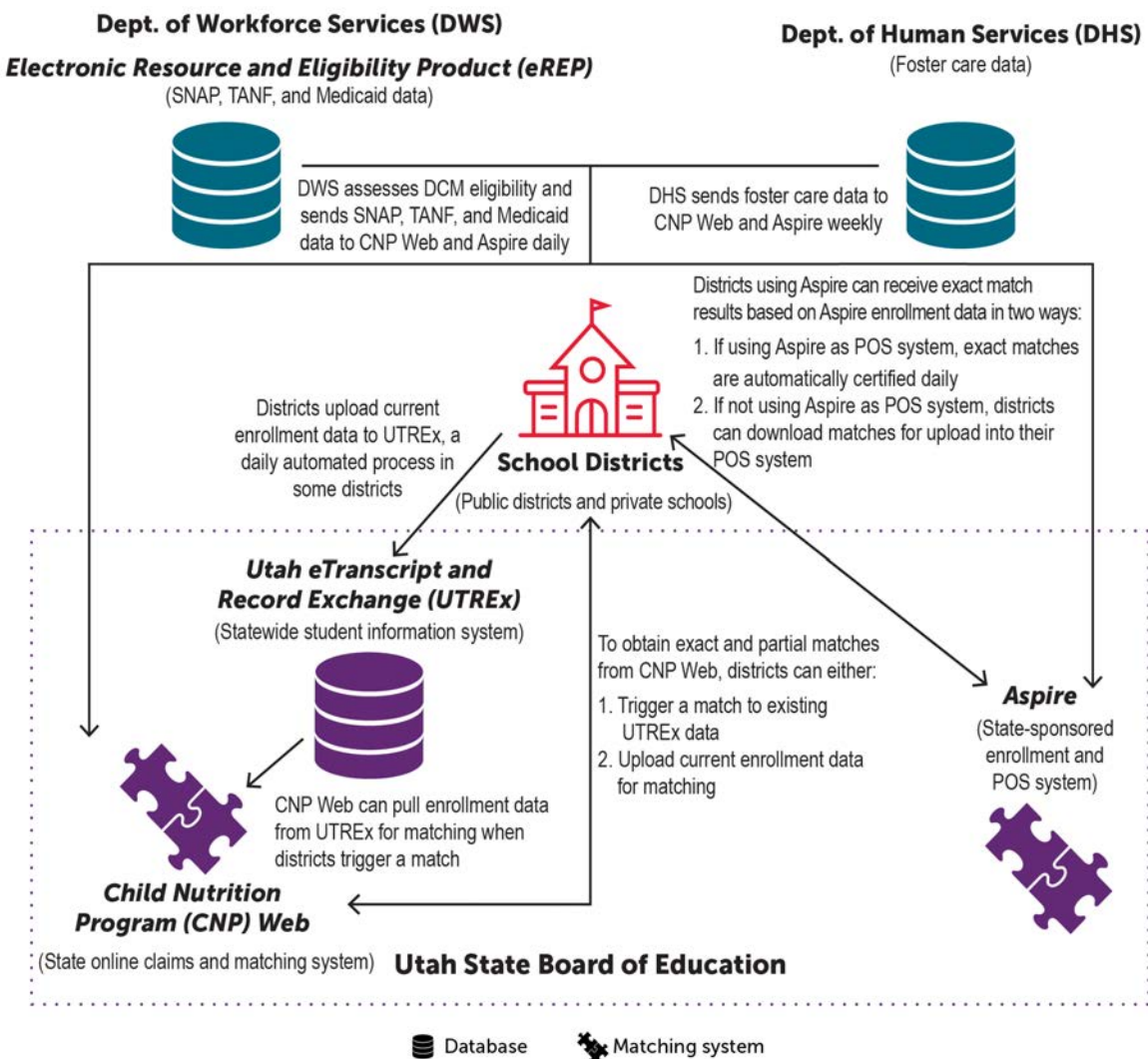


Figure F.12. Virginia profile

Summary of DCM-F/RP process		
Matching level	Match algorithm type	DCM-F/RP certifications began
Local	Varies by district	May 2017

Flowchart of DCM-F/RP process

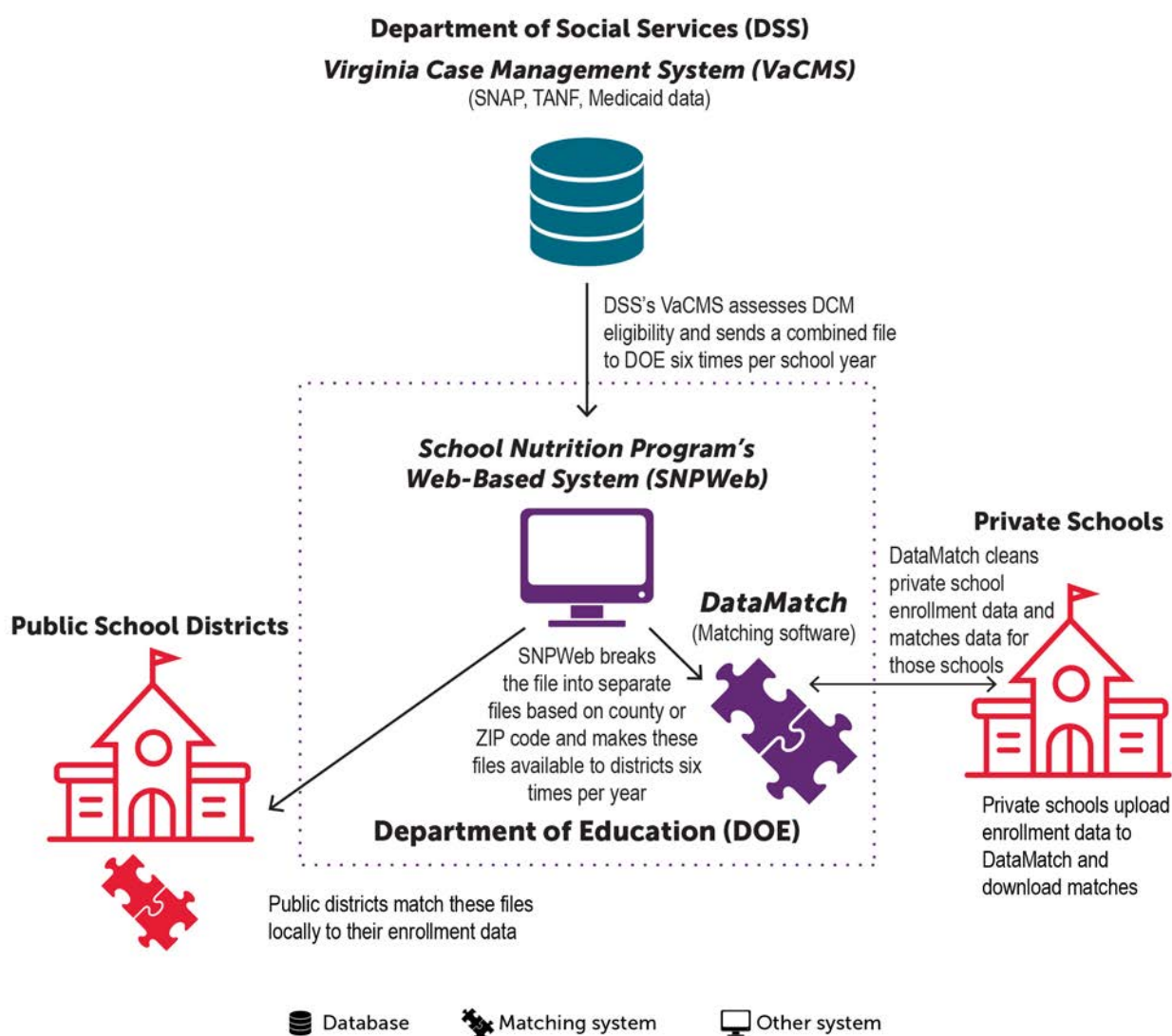


Figure F.13. Washington profile

Summary of DCM-F/RP process

Each day, the Medicaid eligibility agency provides the child nutrition agency with a file identifying children participating in Medicaid, SNAP, or TANF, as well as foster children and migrants. The child nutrition agency assesses eligibility for DCM-F/RP. The direct certification system, maintained by the child nutrition agency, conducts a daily match against the SSIS. The match uses a probabilistic algorithm with four data elements. The child nutrition agency makes two files available to districts: (1) a list of Medicaid free and Medicaid reduced-price matches and (2) a list of matches for all other programs. Districts can view and resolve possible matches in the direct certification system. A match links the student ID in the enrollment system to the program data, which can facilitate future matching.

Matching level	Match algorithm type	DCM-F/RP certifications began
Central	Probabilistic	April 2018

Flowchart of DCM-F/RP process

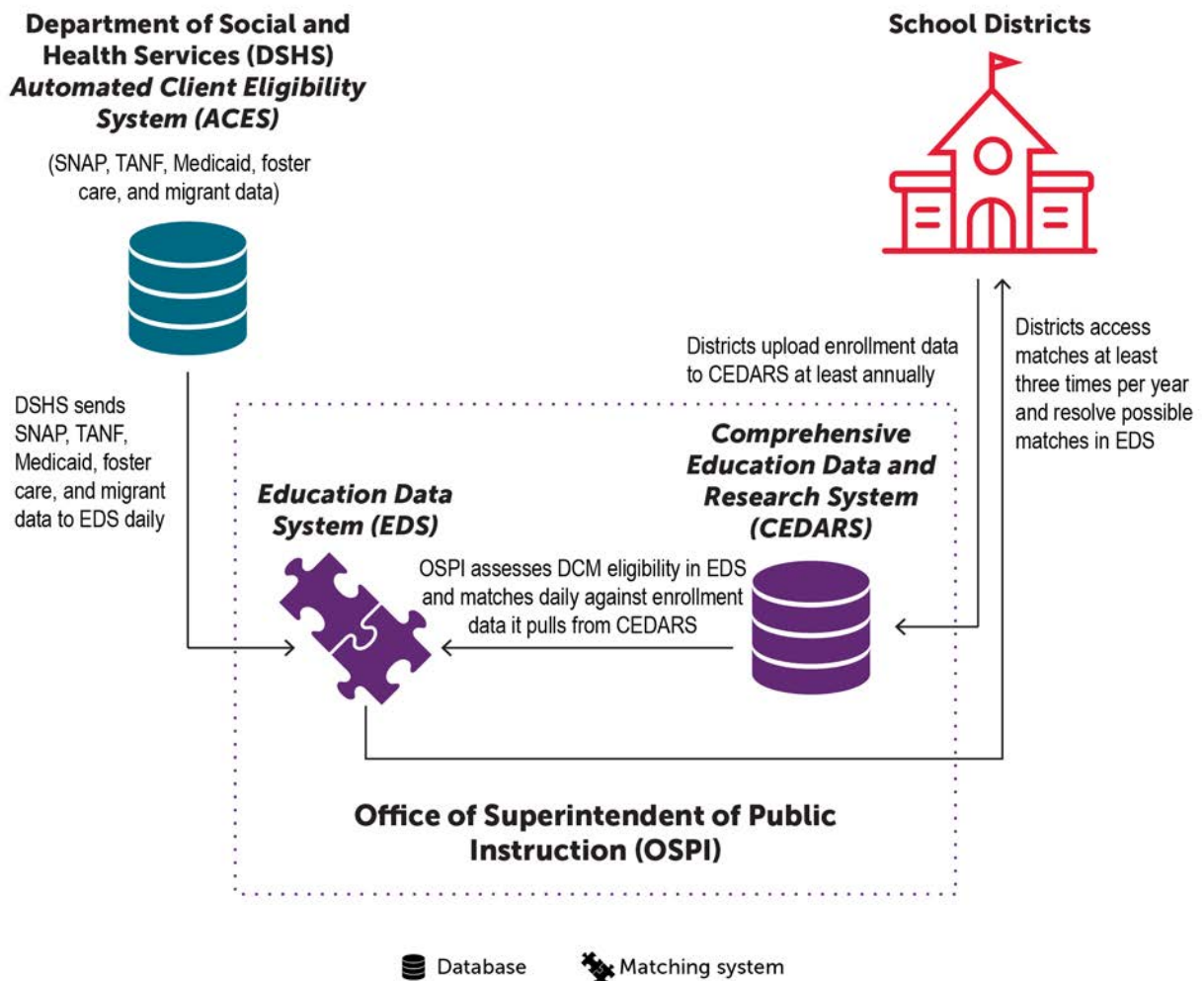


Figure F.14. West Virginia profile

Summary of DCM-F/RP process		
Matching level	Match algorithm type	DCM-F/RP certifications began
Central	Probabilistic	June 2017

Flowchart of DCM-F/RP process

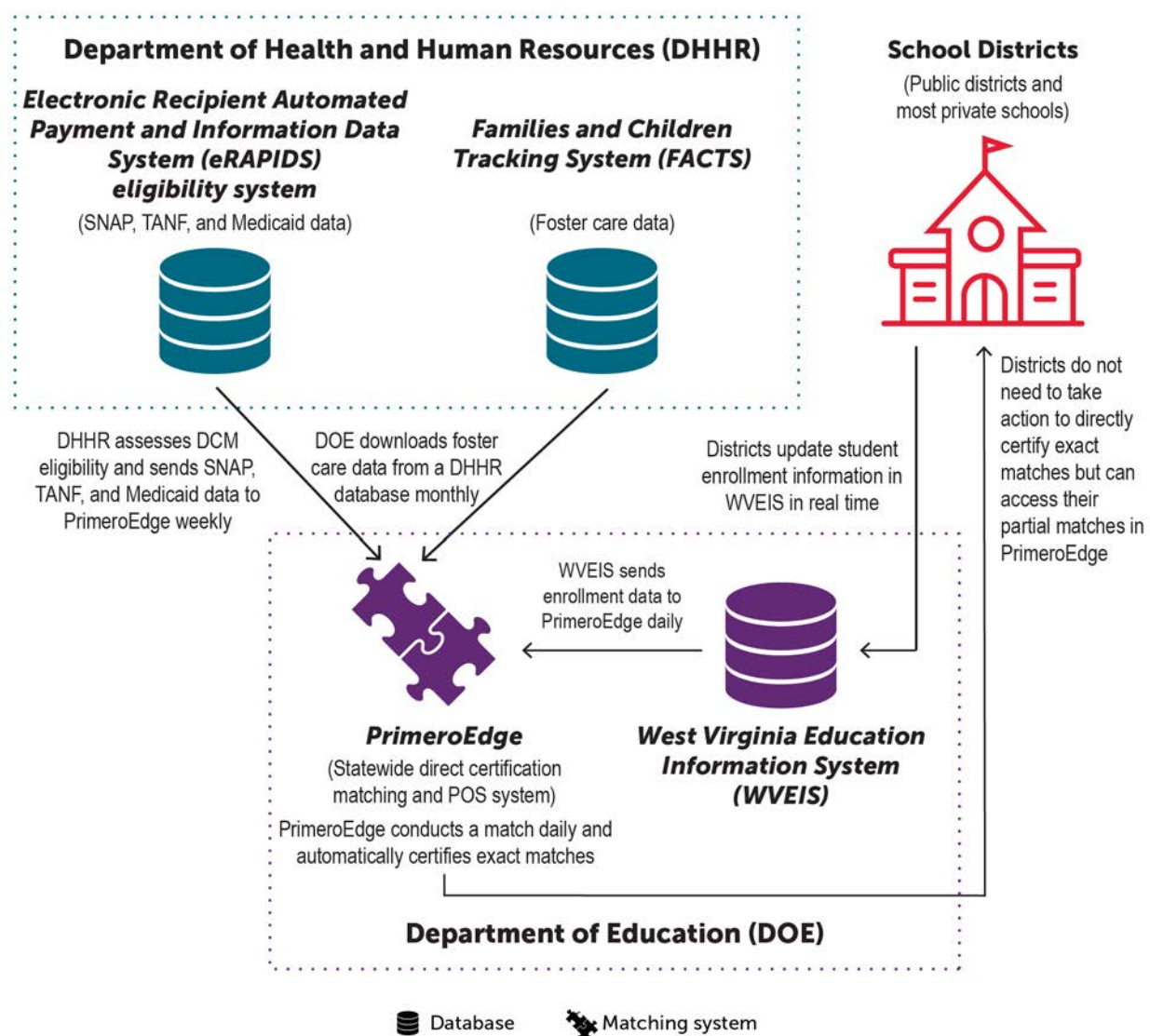


Figure F.15. Wisconsin profile

Summary of DCM-F/RP process		
Matching level	Match algorithm type	DCM-F/RP certifications began
Central	Deterministic	December 2017

Flowchart of DCM-F/RP process

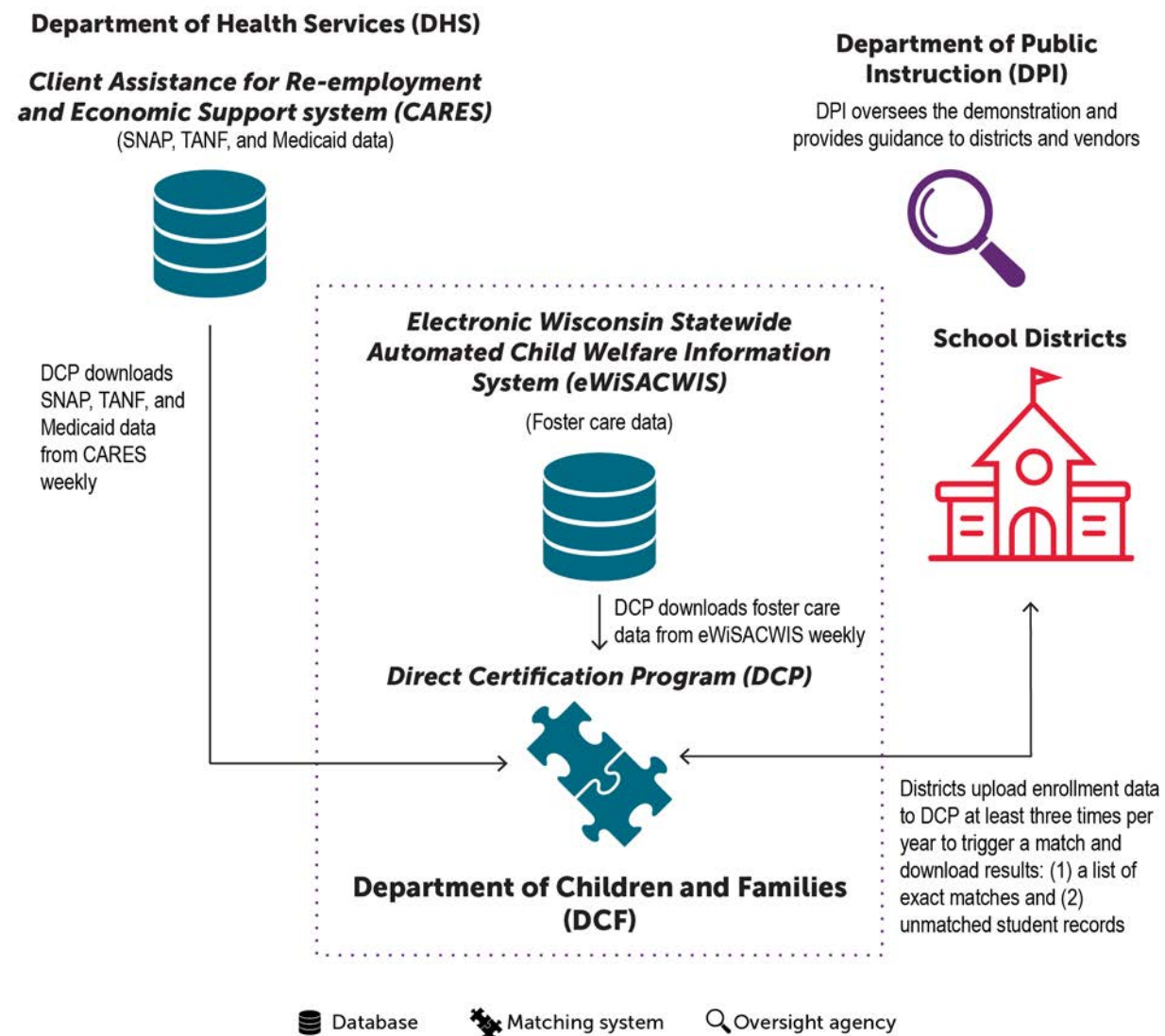


Table F.3. Reported effects of DCM-F/RP on staff time burdens

Staff time burdens	Description
State staff activities for which DCM-F/RP increased burden	
Interagency agreements	Several Cohort 2 States encountered delays in getting interagency agreements in place for DCM-F/RP, leading State staff to spend additional time monitoring and following up on an agreement's progress.
Programming and testing	<p>Cohort 2 States invested time in updating their data systems to identify eligible children and apply the certification hierarchy. Depending on the complexity of the systems involved, this process was time-consuming for some States. When Medicaid data originated from a different system than other program data and were not already being provided for direct verification, State agencies had to spend additional time formatting the Medicaid file and updating their systems and processes to accommodate the new data transfer.</p> <p>Cohort 2 States conducted testing to ensure State systems identified eligible children within the Medicaid data and matched them correctly. They also ran tests to confirm that modifications made to systems did not have any unanticipated consequences.</p> <p>Cohort 1 States generally did not have to spend additional time programming or testing data systems in Year 2. However, some Cohort 1 States had to update their systems to correct errors identified during Year 1 of the demonstration.</p>
Training and communication	<p>Child nutrition agencies had to (1) train districts about the demonstration and how to document Medicaid direct certifications in the FNS-742 and (2) respond to questions from districts and parents. Some States informed POS vendors about the demonstration and the changes that would be needed to their systems to accommodate it. Cohort 2 States spent more time on outreach and training than Cohort 1 States because the Cohort 2 States provided more training to districts and POS vendors than Cohort 1 States did in either Year 1 or Year 2.</p> <p>Cohort 1 States did not report any noticeable changes in the amount of training provided relative to Year 1, but some States reported receiving fewer questions from districts.</p>
District staff activities for which DCM-F/RP increased burden	
Manual certification	<p>DCM-F/RP was more burdensome in districts that certify match results manually. In some cases, this was due to vendors' lack of preparation for the demonstration, requiring districts to manually certify their DCM-F/RP matches to maintain the correct certification hierarchy. This process was particularly time-consuming for districts with large student bodies. Districts in both cohorts experienced time burden as a result of this activity.</p> <p>Many Cohort 1 districts continued to certify matches manually in Year 2. In some districts, this was because POS vendors did not correct errors in the certification hierarchy. In others it was because the districts did not request POS vendors to modify their systems. Manual certification was a standard part of their process.</p>
Reconciling possible matches	<p>In States that provided possible matches in addition to exact matches, DCM-F/RP increased the size of districts' possible match list, which staff in many districts reviewed manually.^a The size of a possible match list varied depending on district size and matching algorithms. Reconciling possible matches appeared less burdensome in small districts because of the shorter length of their lists and their greater familiarity with their student population.</p>
Reporting	<p>Districts had to spend additional time reporting DCM-F/RP matches for the verification summary report (FNS-742). This reporting was burdensome for some districts where DCM-reduced-price certifications had to be counted manually.</p>

Staff time burdens	Description
District staff activities for which DCM-F/RP decreased burden	
Applications and verification	<p>Some districts certifying students through DCM-F/RP by the start of SY 2017–2018 saw a decrease in the number of applications and verifications, and in some cases, an increase in the number of schools qualifying for CEP. In Cohort 2 States implementing DCM-F/RP after the beginning of the school year, districts generally expected to see a reduction in the number of applications in SY 2018–2019.</p> <p>Cohort 1 districts that conducted their first DCM-F/RP match late in the school year in Year 1 were more likely to see a decrease in the number of applications and verifications in Year 2.</p>
Reconciling debt	Districts that collected outstanding meal balances noted that DCM-F/RP reduced the number of families they had to pursue to collect debt or complete a school meals application.

Source: Interviews with State and district staff.

^aIn addition to the six States that provided possible matches to districts for manual review, DCM-F/RP could lead to longer lists of possible matches for Nevada State staff, who review possible matches for districts.

Table F.4. DCM-F/RP challenges and resolutions for demonstration States and districts

Challenge	Description	Resolution
Incorporating match results	<p>Vendor readiness. Some vendors for districts in both cohorts did not update their software to accommodate the DCM-F/RP demonstration. As a result, some districts had difficulty tracking DCM-reduced-price certifications, maintaining the correct certification hierarchy, and ensuring DCM-reduced-price eligibility did not overwrite free meal certification status. Cohort 2 States' vendors appeared better prepared for DCM-F/RP compared to vendors in Year 1, possibly due to prior experience with DCM-F/RP or to increased communication and training by Cohort 2 States compared to Cohort 1 States the previous year.</p> <p>State processes. Some DCM certifications initially overwrote SNAP direct certifications in one Cohort 1 State's POS system. Another Cohort 1 State was concerned that vendors' systems would overwrite a free certification status and changed its messaging to districts to prevent this.</p>	<p>Most Cohort 2 States and some Cohort 1 States provided information on DCM-F/RP to vendors and districts for the demonstration. Vendors worked to update their POS software when districts requested changes. Districts updated or reviewed Medicaid match results manually while waiting for a software update. If POS systems did not include indicators for DCM-reduced-price, districts recorded these matches locally. States also trained districts not to reduce benefits during the school year.</p> <p>The State's software vendor adjusted its systems early in Year 2 to avoid overwriting SNAP direct certifications.</p> <p>This State continued to instruct districts not to upload students who had previously been directly certified for free meals.</p>
Understanding demonstration rules	<p>Understanding demonstration guidelines. Most Cohort 2 Medicaid eligibility agencies found it challenging to identify children eligible for DCM-F/RP. The child nutrition agencies typically lacked expertise in Medicaid, making it difficult to address questions about eligibility.</p> <p>Misperceptions about categorical eligibility. Some families and frontline eligibility workers mistakenly believed that any child receiving Medicaid was eligible for free school meals. This problem improved in Cohort 1 States compared to the first year of the demonstration but was still present in at least one Cohort 1 State.</p>	<p>This challenge was present in Year 1. In response, FNS provided guidance to States and helped them decide which Medicaid aid categories to include. Unlike Year 1, none of the Cohort 2 States included ineligible categories of children in the demonstration.</p> <p>States provided training to districts about the DCM-F/RP eligibility criteria and how to respond to questions from parents.</p>
Lack of awareness	<p>District awareness. Despite States' communication efforts, some Cohort 2 districts were unaware of DCM-F/RP and how it would affect their local processes.</p> <p>Parent awareness. Some parents believed their children were mistakenly directly certified because they did not know their children received Medicaid, possibly because many States do not call it Medicaid.</p>	<p>Cohort 2 States provided additional communication about DCM-F/RP and offered technical assistance to districts unfamiliar with the demonstration.</p> <p>States confirmed the child was on Medicaid. One State updated its direct certification letter to include the local name for Medicaid.</p>

Source: Interviews with State and district staff.

Table F.5. Factors affecting matching success in DCM-F/RP demonstration States and districts

Reported factors	Description
Student and household characteristics	
Address changes	For States that match on address, split families and transitory populations can be difficult to match.
Name complexity	Names with punctuation and special characters—hyphens and spaces—were less likely to lead to an exact match. Program and enrollment data occasionally transposed hyphenated surnames or omitted the hyphen. Complex names could be more prevalent among certain populations. For example, districts noted hyphenated surnames are more common among Hispanic students. Differences in surnames of students in blended families could also make extension of benefits more difficult.
District characteristics	
District size and resources	Large districts often have POS systems and IT staff that can support direct certification matching. However, small districts' staff are more likely to be familiar with their student population, which can help them identify students for direct certification matching and extension without the aid of a POS system.
Staff availability and knowledge	The availability and willingness of staff to send updated enrollment data to States, access match results, and investigate possible matches can affect certification timeliness and matching success. Staff knowledge about DCM-F/RP and the certification hierarchy could also affect certification in local POS systems.
Technology	POS vendors that served districts in multiple DCM-F/RP States or had experience with the prior demonstration or the first year of DCM-F/RP generally appeared to be aware of the demonstration. Some of these vendors made the necessary updates to accommodate DCM-F/RP matches, which could improve the certification results recorded in local POS systems.
State characteristics	
Data quality	State agencies can require data standardization as part of the data entry process. Data standardization might increase the accuracy of data elements. A few States also cleaned data, such as removing special characters from student names, to ensure consistent formatting.
Size of Medicaid population	States with large Medicaid populations may have more students that share the same name and date of birth, which can increase the risk of false positives. This issue led one State to adopt a more stringent algorithm for DCM-F/RP matching.

Reported factors	Description
State system capabilities	<p>The following features and capabilities of State systems can potentially affect direct certification matching success:</p> <p>Requiring frequent enrollment updates to statewide student information systems may increase matching success for States that use those systems for matching. The type and stringency of matching algorithms can affect matching success. In particular, seven States used probabilistic matching, which could lead to improved matching outcomes.</p> <p>Providing possible matches to districts may increase matching success.</p> <p>Individual student lookup capabilities can make it easier for districts to investigate a student's direct certification status.</p> <p>Some State-administered POS systems automatically update students' certification status without any action by districts. They also enable the State to establish the correct direct certification hierarchy instead of relying on districts' vendors to update their systems or district staff to manually update certification status.</p> <p>Linking student IDs to program IDs can facilitate future matching by eliminating the need to match on data elements that may be subject to change or data entry errors.</p>
Timing and preparation	<p>State webinars, trainings, working groups, guidance documents, and FAQ sheets may have prepared districts and vendors to conduct an accurate match. Cohort 1 States and vendors were also better prepared to conduct DCM-F/RP in Year 2.</p>

Source: Interviews with State and district staff.

Note: Most reported factors affecting DCM-F/RP matching success also affect the matching success of direct certification with SNAP, TANF, or other programs.

Table F.6. Strategies for improving DCM-F/RP matching success

Strategy	Description
Matching algorithms	
Advanced matching algorithms	Advanced matching algorithms are designed to account for inconsistencies between datasets to improve matching success. Examples of these include the following: Phonetic matching: matches names that have multiple spellings based on sound ^a Nickname matching: matches given names to common nicknames String matching: accounts for spelling and data entry errors within a given data element
Multilevel matching	Running multiple matching algorithms using different data elements may boost matching success, especially for States with a deterministic match. For example, Florida conducted a 16-level deterministic match using various combinations of four data elements.
Probabilistic matching	Probabilistic match scores indicate the likelihood of a correct match. This strategy helps districts narrow the pool of possible matches to those most likely to be true matches. States can help districts reconcile possible matches by providing the data elements that failed to match and additional program data that were excluded from the matching algorithm.
Data elements	
Expanded character limits	Character limits in data systems may truncate names and prevent matches. Expanding these limits may increase match success.
Household ID	Grouping families together within an enrollment or POS system can facilitate extension of benefits to other students in the household.
Link between student and program IDs	Linking student IDs to program IDs upon matching can enable matches in future years based on the ID instead of relying on other data elements.
Reformatted data	A few States standardized birth dates and removed all spaces, hyphens, suffixes, and other special characters from the program and/or enrollment data. This reformatting was expected to increase matching success.
Processes and systems	
Daily matching	Most States where program or enrollment data are updated daily conducted a daily match. Daily matching can decrease certification wait time and increase the number of matches.
Email notification	States that notify districts of new match results can decrease certification wait time. This strategy can also encourage districts to resolve possible matches promptly throughout the school year.
Technology	State or district technology—enrollment systems, POS systems, student lookup functions—can affect matching success and timeliness. Robust systems can improve access to timely enrollment information, lead to frequent updates of students' certification status, maintain the certification hierarchy, and help identify possible matches.
Training, communication, technical assistance	Districts are often responsible for maintaining the certification hierarchy and extending benefits to other students in the household. Frequent training, communication, and technical assistance can help ensure the certification hierarchy is maintained and increase extension of benefits to other students in the household.

Source: Interviews with State and district staff.

^aSome States noted that certain phonetic algorithms (e.g., SoundEx) are better at matching Western European names and may not improve matching for certain populations.

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