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Maxwell Shumway April 8, 2025

Direct Certification and its Impacts: How Policy Shapes School Lunch Participation Among Treated Households in the Southeast

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Abstract

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The National School Lunch Program as a widely recognizable means-tested government program has seen very little quantitative analysis associated with its impacts. The nationwide implementation of direct certification of this program as a policy tool boasts minor statistically significant increases in participation. Current research shows that at the state level, there have been incremental increases in participation around the policy implementation period. This study intends to provide a more contemporary analysis of these policy effects while utilizing the most recent data from the Current Population Survey as provided by the U.S. Census Bureau. The model compares grouped state-level impacts of participation in the National School Lunch Program between low and high implementation levels of direct certification post-policy. The results suggest the effect of direct certification helped states with low implementation rise to levels of high implementation states in the post-policy period.

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Introduction

In 1946, the Richard B. Russell National School Lunch Act was signed into law by President Truman. In this piece of legislation, the National School Lunch Program (NSLP) as perceived today was born. The purpose of the act was to support children in the United States with at least one nutritious meal a day. The National School Lunch Program is a federally assisted meal program that operates in public and private not-for-profit schools, participating charter schools, and residential child-care centers and institutions. These participating school districts and independent bodies of education are to provide their qualified students with nutritionally balanced low-cost or no-cost lunches each school day. The districts or independent schools are to receive cash subsidies and United States Department of Agriculture (USDA) surplus foods for each meal that they serve to students. These institutions, however, must serve lunches that meet federal meal pattern requirements as outlined by the USDA. The NSLP is administered by the Food and Nutrition Service of the United States Department of Agriculture. This indicates that the program begins at the federal level and most powers are vested in the secretary of the USDA to allocate the monetary sums that are to be distributed to the states.

The children targeted by the program are those that are “categorically eligible” for free meals. This categorical eligibility is connected to other means-tested government assistance programs such as the Supplemental Nutrition Assistance Program (SNAP). This means that if a student’s family is already receiving SNAP benefits their child also qualifies for the NSLP. This is similar for students’ families also receiving benefits from Temporary Assistance for Needy Families (TANF) or from the Food Distribution Program on Indian Reservations. Eligibility has also been extended over time to students who are designated as homeless, migrant, runaway,

or fostered. Household income and family size also play a pivotal role in determining eligibility for needy families. Children whose families have incomes at or below 130% of the Federal poverty level are eligible for entirely free meals. Children whose families fall between 130% and 185% of the Federal poverty level are eligible for reduced-price meals (USDA). Therefore, within the definition of the program, eligibility ranges depending on various demographics of both the child and the family.

For this study, the problem that the Child Nutrition and Woman Infant and Children (WIC) Reauthorization Act of 2004 is attempting to address is the process that a family must undertake to certify their children, which can itself be a hindrance. This hindrance is referred to as administrative burden which can be broken into three main components: cognitive, procedural, and emotional. The cognitive component characterizes the mental effort required to understand or navigate the system. This has to do with individuals processing multiple options for application, understanding eligibility criteria, and making decisions on how to proceed. The procedural component refers to logistical efforts such as time costs and documentation requirements. This refers to the raw amount of time a parent or guardian must spend gathering the necessary documentation, filling out forms, and navigating the various stages of the application process. Emotional burden is the psychological toll that arises from interacting with the governmental system. Stress and anxiety may arise from the possibility of missing deadlines or not receiving benefits and services from the system at all. All these components have very tangible connections to important issues that the policy intends to address (Moynihan Herd). In theory, this leaves the program's target at the outskirts of its benefits. Specifically, the Child Nutrition and WIC Reauthorization Act largely amends the

Richard B. Russell National School Lunch Act and the Child Nutrition Act of 1966. This means that it reauthorizes the provision of national school lunch and breakfast in the participating school districts as mentioned before. In the Child Nutrition Act of 1966, the purpose was to extend, expand, and strengthen the efforts of the NSLP under the authority of the Secretary of Agriculture. This was in hopes of encouraging the domestic consumption of agricultural foods through the assistance of grants-in-aid provided by the states. The new provisions of the reauthorization, however, directly targeted the issue of accessibility for families. The legislation stated that access would be provided to those already receiving benefits from the SNAP program, FDPIR, and TANF. The inclusion of these groups intends to expand access across the same population while limiting the number of application processes one must endure to help their families. Furthermore, the legislation requires that School Food Authorities (SFAs) who are the governing body responsible for administering school meal programs at the local level will also be responsible for directly certifying potential beneficiaries without further application. With this provision, the bill also gives SFAs the power to directly certify homeless children or children already protected by the Runaway and Homeless Youth Act. It is with these extensions of the policy that it is hoped that access will reach those who previously were overlooked by legislative efforts.

Literature Review

The purpose of this literature review is to establish a working contextual background of the progression of direct certification as a policy tool as well as examine its past evaluations. Much of the information regarding the history of the NSLP can be found either in its original

legislative form or reports to Congress. The Direct Certification in the National School Lunch Program State Implementation Progress Report to Congress in 2008 outlines many of the important milestones the policy has undertaken. This report details the need for a process that we now recognize as Direct Certification dating back to the early 1980s in which there were overlapping efforts being made in the certification of children for benefits under the NSLP and the School Breakfast Program (SBP). These programs, some of which have been referred to in the introductory section of this paper, have very similar income thresholds for categorical eligibility which creates considerable overlap for American students and their families. More specifically, SNAP and TANF applications are much more rigorous in their requirements in areas such as income characteristics in comparison to the application that would typically be returned to a local education agency to certify a child for access to free or reduced-price meals.

Therefore, by considering these programs as proxies for eligibility there could be improvements in both the accuracy of certification as well as eligibility. It was in 1986 that under the amendment to the Richard B. Russell National School Lunch Act families would be considered optionally eligible for free meals if they were also beneficiaries of SNAP and TANF. This change to the existing policy made it optional but not mandatory for families to include their case numbers from these two means-assisted programs in their usual applications for free meals at their children's schools. Furthermore, in 1989 School Food Administrations (SFAs) were given the option to communicate with these other agencies that distribute SNAP and TANF to directly certify overlapping families. It is important to note that this was not a compulsory order for the agencies and there were varying take-up rates of this process depending on factors such as state and LEA size. Finally, in the Child Nutrition and WIC Reauthorization Act of 2004 there

was an amendment to the original policy that mandated the direct certification of children for free meals of families that were already beneficiaries of SNAP by all existing Local Educational Agencies. Within the amendment, states were given until school year (SY) 2008-2009 to have a method of direct certification for this population of students. Given the independent nature of state-operated agencies, many methods were implemented to phase in this new process through the partnership of the SNAP agencies in the states with LEAs. Important figures from this report were that by SY 2004-2005, 56% of LEAs did implement some form of direct certification and that schools in those LEAs were successful in enrolling almost 79% of students in the NSLP (Report to Congress 2008)[1]. These trends in uptake of the new system of certification and their impacts on enrollment rates for the NSLP are consistent with those discussed in the academic literature investigating similar questions related to direct certification and its impacts on NSLP uptake.

Philip Gleason (2008) examined how direct certification expands access for children in the NSLP. This study uses data from the National Survey of School Food Service Directs as well as state-level administrative data on participation rates for the NSLP. Gleason notes the lack of pre-existing connections between needy-persons programs and the NSLP. An interesting component of the paper's discussion of theory connects to how effective results were found in other government program linkages such as Medicaid and welfare (Gleason 83). This is consistent with the notes above about how using SNAP eligibility and application components would function as an accurate proxy for the eligibility for the NSLP.

[1] See Appendix for Report to Congress figure breaking down rates of LEAs with DC systems by state.

Gleason's paper also mentions the importance of the pilot programs that existed in states and school districts before the 2004 policy. The trends of direct certification began in these pilot states and districts in the late 1980s and early 1990s but did not grow considerably until the mid-1990s. This is consistent with the knowledge from the 2008 Report to Congress in which it was highlighted that optional certification was not included in the amendments to the original policy until 1989. More notably, Gleason writes about the importance of passive consent. Passive consent is defined as the component of direct certification in which a family is notified that their children will be eligible to receive free or reduced-priced lunches without any further action on their behalf (Gleason 84). Within this component, there is a built-in path for recourse such that if a family does not wish to receive the benefit all they must do is submit a letter to the district declining the benefit. This is different than active consent under which parents or legal guardians are notified of the status of their children and then must sign and return a letter to the district to obtain the program benefits. This directly targets the issue of the pre-2004 program in which the burden of physical application was left largely on the family itself. Therefore, the theoretical purpose of this is to curb both the costs and issues associated with the certification process for eligible families leading to a higher uptake of the program within eligible families. It was also a goal of this component of the policy that there would be administrative benefits for the school districts in that there would be fewer applications to process, thus enhancing the overall efficiency of their offices as well. The methodology of the Gleason study focused largely on the fact that U.S. states were not regulated in the uniform

rollout of this policy in 2004[2]. In the paper, two separate models are discussed to estimate the impacts of direct certification on the uptake of the NSLP. The first of which focuses on the state level of analysis since direct certification was first implemented at different times in different states. For this model, states who took part in direct certification earlier in the post-policy period were compared to those who did not implement direct certification as quickly. This was under the assumption that states with slower roll-out rates would function as a credible counterfactual comparison for states that did roll out direct certification. The second model used a lower-level unit of analysis at the school district level. This was implemented to determine whether effects could be inferred more confidently given that there are differences between district efficiency between larger and smaller districts and their LEAs. In the results, Gleason reported that in both the school district and state models there was a small but statistically significant positive effect on increases in the rates of certification for free lunches and the NSLP. This finding provided evidence for the claim that direct certification had a positive increase during the post-policy period of the expansion of access to the NSLP by making it easier for these children and their families to participate in the program. Moreover, these findings provided another credible basis for the connection of means-tested government programs to be a strong approach to improving program accessibility.

Another notable study that attempts to explain the impacts of the policy is Jeounghee Kim and Myungkook Joo's (2020) paper on the effects of direct certification on program participation in the NSLP. Kim and Joo's study took a different approach in comparison to

[2] See Appendix for 2008 Report to Congress Figure on Percent of School-Age SNAP Children Directly Certified SY 2007-2008.

Gleason's as they concentrated on sub-sample comparisons rather than those at the state or district level. They applied a difference in difference method to the Annual Social and Economic Supplement of the Current Population Survey (CPS) from the U.S. Census Bureau over the years 1994-2010 covering both the pre-and post-policy period. This sample consisted of almost 400,000 students aged 5-18 with families with incomes at or below 185% of the federal poverty level. This sub-sample utilizes the thresholds for which families are considered categorically eligible for free or reduced-price lunches. Within these sub-samples, observations were restricted to students who were the children, grandchildren, relatives, or foster children of household reference persons. These students were then further separated by income level. The sub-sample populations included roughly 255,000 poor students who were eligible for free lunch with family incomes at or below 130% of the federal poverty level and 125,000 low-income students who were eligible only for reduced-price lunch with incomes between 131%-185% of the federal poverty level. This division of groups focuses more on differences in NSLP take-up among eligible population subgroups to measure disparities in take-up by income. The expressed objective is to determine whether these groups exemplified a potential spillover effect as a result of the policy. If there was a significant increase in take-up in the non-target group (students in low-income families not categorically eligible) while also an increase in target students (students in low-income families categorially eligible), there would not be a significant difference in the take-up rate as evidenced by their model. The results of this design found that the combination of categorical eligibility and mandatory direct certification are effective ways to increase program participation. The categorically eligible and poor students were 47 percentage points more likely to participate in the NSLP than the poor-student non-target counterparts.

This would indicate that there is no detectable spillover effect on the non-target group and the policy functions as an accurate mechanism to provide program benefits to the target population. This is another block of evidence for the claim that the connection of means-tested programs increases participation in programs while also protecting the integrity of the qualification process.

Theory

This section provides a framework for why direct certification as a policy tool would be effective in increasing the overall participation of children in the National School Lunch program. Given that few studies have investigated the effectiveness of direct certification it is important to acknowledge both the similarities and differences in their approaches to dissect what kind of questions are being addressed in this field of study.

The first step the theory addresses is whether the population of interest is within the direct certification framework. Those who would benefit from the National School Lunch Program would be families that are structured in a way or of a certain economic class in which it is a challenging task to send their children to school in the K-12 system with consistently nutritious meals. It follows that adding the bureaucratic process associated with filling out applications correctly and on time each school year period would also pose a potential roadblock to these children receiving benefits. Although applications must not be mailed to the LEA, the family is still responsible for bringing that completed application to school to be considered for the benefits of the NSLP. Further, families must receive these physical applications in some capacity. This is where the issue of accessibility becomes more threatening

as families that are not living in a location with a permanent address, run away, or homeless children can fall between the cracks in the certification process.

The second component of the theory posits that using a proxy for eligibility for the NSLP will yield greater program take-up. A proxy is established to no longer require using approaches with multiple applications. This is related to the idea of passive consent where families are simply notified of their categorical eligibility based on a program that they already receive benefits from. In the case of direct certification families would be categorically eligible for their reception of benefits via SNAP. The SNAP application has much more rigorous requirements that a family must meet to be certified to receive benefits. The most glaring of these requirements is the total reported family income of an applicant which can also be found on an application form for the NSLP. Therefore, the theory follows that if a family's income meets the requirements for SNAP, they would also be eligible for the benefits of the NSLP.

Under these assumptions, the policy change with respect to direct certification would have a positive impact on the target population. The question of how to measure this impact is what the few researchers on this topic have debated. An essential piece of this theory is that although changes are made through the legislature at the federal level, the actual modifications to existing systems such as LEAs, SNAP offices, and SFAs are done at the state level. As previously discussed, many states already had pilot programs in place, and some states implemented these programs a full decade before the 2004 WIC Reauthorization Act. Therefore, certain models have been utilized to capture the estimated effects at the state level for direct certification. More specifically, in the Gleason paper (2008) the state model takes into account variations in implementation rates and compares states who immediately took part in direct

certification to those who did not implement direct certification. This approach allows for a fixed effects model to be used to account for the varying characteristics between states that could contribute to students being directly certified or not. Empirical findings from this approach suggest a positive significant effect for each additional year of direct certification a state's certification rate increase by 0.2 on average and controlling for the other factors included in the model.

Method and Design

The key question this research examines is how variation in implementation rates affects take-up in the NSLP program. The central hypothesis of this study is that states with higher implementation of direct certification policies experienced a greater increase in school lunch participation among SNAP-receiving households after 2004. The dependent variable for this research is the NSLP participation rate measured as the proportion of SNAP-recipient households who report receiving free or reduced-price lunch. The independent variables are the state-groups and pre- v. post-policy. The state groups are defined by low or high implementation of direct certification. The pre-policy period is before the year 2004 and the post-policy period is after 2004. The two control variables for this research were two economic variables: median and average household income

To investigate this, data was selected from the IPUMS CPS based on implementation rates for several southeastern states. States were first categorized into two separate groups. To determine whether a state had low or high implementation rates the 2008 Progress Report to

Congress on direct certification was used. This report[3] provides the percentage of school-age SNAP participant children that had been directly certified. From this information, two separate groups could be formed to compare program take-up between states that utilized direct certification versus those that did not. The limitations of this approach will be discussed later with complications regarding the by-state variability. Given that many states in the pre-policy period had already introduced direct certification pilot programs, it is not unusual to see higher proportions of students whose families are SNAP recipients already being directly certified even in the low-implementation states. The three states selected for the low implementation group were Georgia, Alabama, and South Carolina. These states function as the group that had a smaller uptick in overall direct certification four years after the policy went into effect in the year 2008. To create a comparison, three other states from the southeast with similar population size and regional characteristics are included in the analysis. These states were Kentucky, North Carolina, and Louisiana.

Low Implementation Group	Georgia	Alabama	South Carolina
	65%	61%	60%
High Implementation Group	Kentucky	North Carolina	Louisiana
	82%	79%	76%

Table 1. Percentage of School Age SNAP participant children directly certified (2008 Report to Congress)

[3] See Appendix for 2008 Report to Congress Figure on Percent of School-Age SNAP Children Directly Certified SY 2007-2008.

To isolate these groups in the IPUMS CPS the data frame was split into two different subsets across the years 1994-2024 which would be ten years before and twenty years after the policy went into effect. This sets up the analysis to be of a longitudinal design to investigate effects over the years between the states. Given that the IPUMS CPS was originally at the individual level meaning that each given observation was a respondent within a household each subset was collapsed at the household level using a unique combination of the year, month, and serial number given to a household. This is done such that households with the same serial number are not reduced to be treated as the same unit over different month and year combinations in the entire dataset. At this point, the two subsets were filtered on whether the unique households had a response within the universe for having some or all children receive a free or reduced-priced lunch as well as whether one or more members of the household received benefits from SNAP during the prior year. This ensures that all observations were only in the treated population (receiving SNAP benefits) and contained households with children that either received a free or reduced-price school lunch or did not. State groups were then restructured at the group-year level which means that each row became a year for that state group. These groups were dummy-coded for the analysis where the low-implementation group serves as the comparison. This allows for the calculation of participation for that state group in that entire year to be compared against the other group's relative group-year estimate. This estimate takes the total number of households participating in the NSLP indicated by responding [Yes] to the question about whether some or all children receive a free or reduced-price lunch in the numerator over the total number of households in the state group that were

classified as having been treated indicated by responding [Yes] to whether some or all of the members of the household receive SNAP benefits. Therefore, the unit of analysis is the state-year constructed by collapsing household-level data. In context, each data point in the dataset reflects outcomes aggregated at the state level for a given calendar year. Every unique state-year estimate was based on a population of anywhere from 150-200 households. Specifically, the dependent variable- school lunch participation rate among SNAP-recipient households-is calculated annually for the two groups of states across multiple years before and after the 2004 policy change.

To measure the statistical significance of the difference between state-year estimates a difference-in-difference model was utilized. The state-year estimates were plotted against one another over the thirty years to ensure the parallel trends assumptions were met.

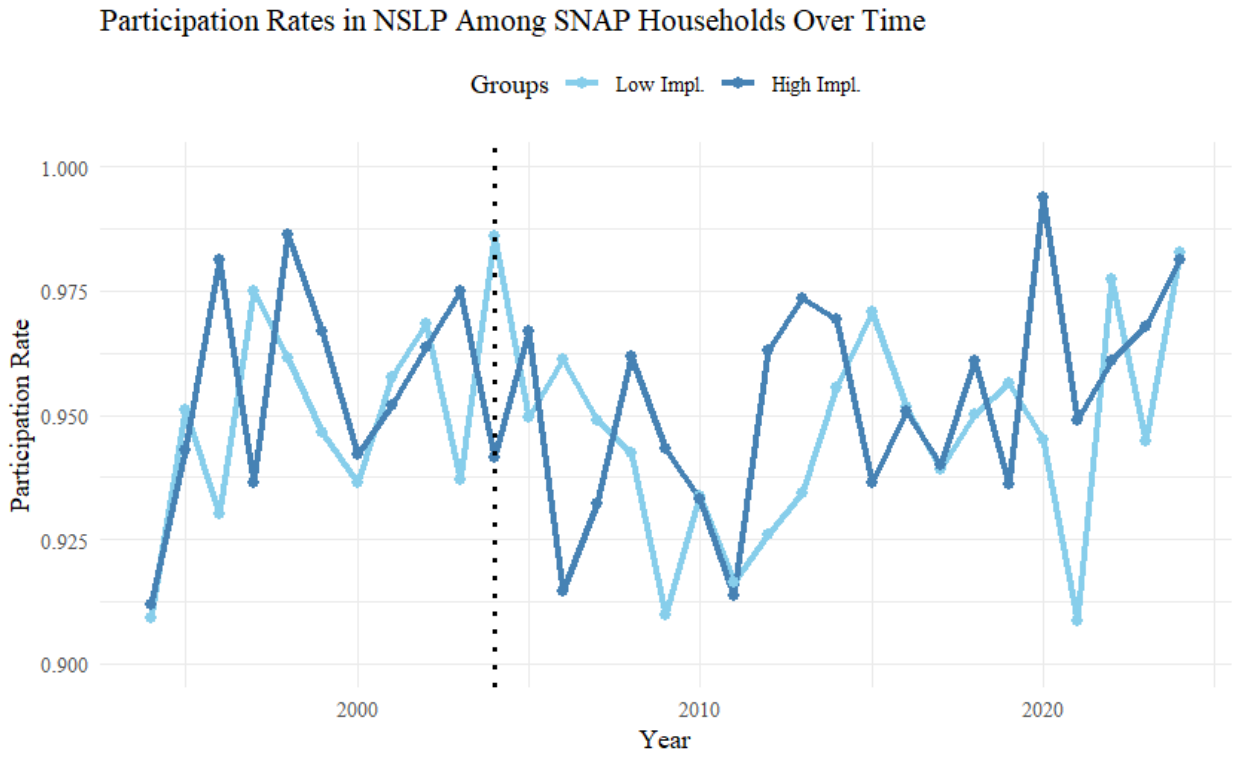

Figure 1. Raw Participation Rates Among Low- and High-Implementation Groups (1994-2024)

At this point, a regression formula was created to best estimate the difference between groups dependent on the period being either pre- or post-policy:

$$Y_{it} = \beta_0 + \beta_1 \text{Group}_i + \beta_2 \text{Post}_t + \beta_3 (\text{Group}_i \times \text{Post}_t) + \beta_4 \text{AvgIncome}_{it} + \beta_5 \text{MIncome}_{it} + \gamma_t + \varepsilon_{it}$$

The beta zero term (Intercept) is the intercept of the equation indicating the baseline participation rate for the slow uptake group before the policy change. The second term is the group effect which captures the pre-existing differences in participation rates between the low and high implementation states. The next term (Post) is the time effect which will capture any overall change in participation rates after the policy change that would potentially affect both groups. The beta three term is the actual difference in difference coefficient meaning that it measures the treatment effect. This is the key parameter of interest as it is designed to capture the causal impact of the policy by measuring the change in participation in high implementation states relative to the low implementation states. Two control variables were also added to the model to account for broad economic conditions that may influence school lunch participation rates. The first captures the average household income each year in a state group, which is calculated from the IPUMS CPS sample subset for the group of interest, either pre or post-policy, and then summarized across the years 1994-2024. A similar approach is used to capture the median household income. This provides the model with a more robust measure of central income distribution which can address potential skewness in income effects. These two controls are important for this question as they both take into account the economic differences across

the state groups that could influence participation in the NSLP. Substantively, although all households are receiving SNAP benefits, a higher household income might reduce the need for subsidized lunches. After these controls is the year fixed effects term controlling for time-specific changes having a potential effect on participation rates. Finally, the model includes the error term which is clustered at the group level to account for within-group correlation. This ensures a more accurate statistical inference given that it reduces the risk of underestimating the standard errors.

Data

The data utilized for this project is similar to that of previous research utilizing the IPUMS Current Population Survey (CPS). This dataset is a harmonized version of the U.S. Census Bureau's Current Population Survey, which occurs monthly and is used primarily for the tracking of labor force statistics. Other information, however, such as rich demographic characteristics are included in the survey that would help isolate policy effects. The importance of the IPUMS CPS for this research project is its inclusion of variables that indicate a household's participation in programs such as SNAP and NSLP. More specifically, one of the survey questions asks a respondent whether some or all of the children received free or reduced-price lunches. This dataset also has strong longitudinal linkages as households are typically surveyed for four months, then left out for eight months, and then surveyed again for four months. Given that all variables are harmonized, this allows for drawing inferences on demographic trends as is the goal of this paper.

Results

The results of the model for estimating the difference in participation rates between the low and high implementation groups pre- and post-policy provide an important insight into how the two groups behaved in the post-policy period. The state-cluster model estimates a very small but significant negative effect at the $p < 0.001$ level for the coefficient representative of the difference between high implementation and low implementation groups. Given that the coefficient is negative this indicates that after 2004 participation in the school lunch program increased less in the high-implementation states compared to the low-implementation states. This effect is captured by the main coefficient group:postTRUE which could also be interpreted as evidence that the policy change in 2004 had a differential effect across the two types of groups: high- and low-implementation of direct certification. To better interpret this result it is also important to also look at the group coefficient which was significant at the $p < 0.001$ level. This coefficient provides evidence for the fact that, before 2004, the high-implementation state cluster had a higher participation rate than the low-implementation rate. This would be consistent with the characteristics of the high-implementation group in the year 2008 with which the two group types were created. Important to this observation is that given the figure explaining the raw parallel trends it is clear that the disparity in the sample between the two groups pre-policy was incredibly small. This trend continued in the raw rates until the years following the policy itself when the variation in participation rates across years is finally visible. Therefore, this can better explain the behavior of the two groups in the context of the differential effects across the groups.

Coefficient	Significance	Standard Error
(Intercept)	0.89862980652053 **	3.911165e-03
group	0.0104523654770602 ***	1.221079e-10
postTRUE	0.0503824735442113 *	1.350794e-03
factor(YEAR)1995	0.0345613989961075 *	2.515732e-03
factor(YEAR)1996	0.0444020671477845	2.343267e-02
factor(YEAR)1997	0.0388344795658769	1.574349e-02
factor(YEAR)1998	0.0612320909614003	1.040539e-02
factor(YEAR)1999	0.0454170583079064	9.352987e-03
factor(YEAR)2000	0.0291683488087623	3.103028e-03
factor(YEAR)2001	0.0421591322741762	3.818952e-03
factor(YEAR)2002	0.0523814869542859 *	1.634767e-03
factor(YEAR)2003	0.0448333420372786	1.653052e-02
factor(YEAR)2004	0.00218884788688616	2.073302e-02
factor(YEAR)2005	-0.00254666609439501	1.153541e-02
factor(YEAR)2006	-0.0246013444049799	2.112313e-02
factor(YEAR)2007	-0.0209607238134656	3.808636e-03
factor(YEAR)2008	-0.00812015179357123	1.213425e-02
factor(YEAR)2009	-0.0371487766348911	1.880424e-02
factor(YEAR)2010	-0.0300868030107265 *	1.682660e-03
factor(YEAR)2011	-0.0484731286016913 **	1.111322e-04
factor(YEAR)2012	-0.0167289872315225	2.118621e-02
factor(YEAR)2013	-0.00859884978215216	2.421879e-02
factor(YEAR)2014	-0.00391362391766352	1.110448e-02
factor(YEAR)2015	-0.0159406484596011	9.708204e-03
factor(YEAR)2016	-0.0169747647096193	5.465666e-03
factor(YEAR)2017	-0.0336966386828478	5.749465e-03
factor(YEAR)2018	-0.0145904011581645	7.559616e-03
factor(YEAR)2019	-0.0211066332695021	7.512074e-03
factor(YEAR)2020	-0.00353925074664469	3.340930e-02
factor(YEAR)2021	-0.0528645388197656	2.075709e-02
factor(YEAR)2022	-0.0144248587407263	6.895978e-03
factor(YEAR)2023	-0.02349066469082	6.563898e-03
factor(YEAR)2024	NA	NA
avg_hh_income	2.07413059461257e-06	NaN
med_hh_income	-1.91596743326881e-06 ***	2.744620e-13
group:postTRUE	-0.00508175177345121 ***	2.322180e-10

Table 2. Determinants of National School Lunch Program Participation, (1994-2024)

Key: p-value < 0.05 *, p-value < 0.01 **, p-value < 0.001 ***

Another coefficient of note is the median household income which was added to the model to function as a robust measure of central income distribution of the groups. This coefficient was also very small and significantly negative at the $p < 0.001$ level. This would suggest that a higher median household income could be associated with lower participation in the school lunch program. This would align with the theory that households with higher median incomes are less likely to qualify for or proportionately benefit more from free or reduced-price lunch which leads to a lower overall participation rate in these demographics. One potential limitation of this inference is that this coefficient could capture only broader state-level economic conditions. This is coupled with the fact that the magnitude of the coefficient is quite small. This means that although the coefficient is statistically significant, the practical impact may be limited and difficult to calculate per household.

Discussion

This paper attempts to examine the impact of the 2004 policy implementing direct certification on school lunch participation rates, comparing states with high versus low initial implementation levels. The difference-in-difference model results indicate that, contrary to hypothesized expectations, the increase in participation among the sampled population groups post-2004 was smaller in the high implementation state group relative to the low implementation state group. This would suggest that the policy had a stronger relative impact in states that initially had lower direct certification rates.

One possible explanation for this result is the ceiling effect playing a role within the high-implementation group. This means that high-implementation states may have already captured

the most eligible participants before the policy change, which would leave little room for substantial gains post-policy. In contrast, the low-implementation states had more room for growth meaning that their pre-policy effectiveness was perhaps not as strong or built out. Therefore, the policy could have facilitated this accelerated catch-up by increasing the efficiency of administrative processes and streamlining certification. This inference would be consistent with the component of the theory of the policy such that the marginal benefits of the policy were greater in areas where baseline participation rates were lower.

Another potential factor related to the limited inferential power of the model is the issue of state-level variability in the creation of the low- and high-implementation groups. This means that the low-implementation group could not perfectly represent a less-treated group but rather a distinct set of states with different administrative characteristics irrespective of the policy. Therefore, while the selection of the states was based on 2008 direct certification rates as stated in the report to Congress and matched population size as well as region, there may be still unobserved factors that may have contributed to the observed differences in participation trends as demonstrated by the model. This is coupled with the overall sample size as acquired through the IPUMS CPS. For the entire period of observation in this study (1994-2024), when the survey observations were subset for only observations with information on the outcomes of interest the overall size of the dataset shrunk dramatically. This led to each group having roughly 200 observations or households per year. It is incredibly plausible that this is another contributing factor to the model's limited ability to detect effects that are consistent with prior research. The effects detected in past models such as f's and the Kim and Joo paper were incredibly small and utilized data sets of much greater magnitudes to calculate these estimates.

Therefore, it is not unreasonable to assume that the policy effect itself could be relatively undetectable given the current methods being utilized in this paper.

Future research efforts could benefit from two specific alternative methods to detect the effects of the 2004 policy. The first of which is to create better comparison groups using information that captures more variability in state-level characteristics outside of only income and population size. The groups created in this study are potentially weakened by the assumption that their certification rates in the year 2008 function as a reliable indicator of the low-implementation group being less treated than its high-implementation counterpart. This specific model could benefit from including a separate level of implementation perhaps capturing the middle percentages of certification as of the 2008 report figures. The low-implementation group as defined in this model could be redefined as mid-implementation given that percentages stood around 60% whereas there were other states listed that fell below 50% as of 2008. This approach has its complications given that certain states with smaller LEAs did not have the same requirements regarding the timeline on which they were required to directly certify all SNAP recipients in their districts.

The second method is utilizing a different unit of analysis to detect policy effects. For example, utilizing data from the National Center for Education Statistics could provide information at the unique school or school district level giving information on students rather than state-level information of households. This is similar to the method in the Gleason paper in which a state and a district-level model were both used to compare varying effects. This kind of comparison provides an extra level of robustness that would indicate whether one level of unit

of analysis or another is more effective in determining policy effectiveness by aligning the level of the analysis with the level of action of the policy.

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Appendix

Number and Percent of LEAs with Direct Certification Systems SY 2004-2005 through SY 2007-2008[14]

	SY 2004 2005			SY 2005 2006			SY 2006 2007			SY 2007 2008		
	Number of Districts	Direct Certification or Provision 2/3 LEAs		Number of Districts	Direct Certification or Provision 2/3 LEAs		Number of Districts	Direct Certification or Provision 2/3 LEAs		Number of Districts	Direct Certification or Provision 2/3 LEAs	
		Number	Percent		Number	Percent		Number	Percent		Number	Percent
US Total	16,612	9,239	55.6%	17,397	10,467	60.2%	17,748	11,113	62.6%	18,141	12,097	66.7%
AK	54	43	79.6%	35	34	97.1%	47	43	91.5%	50	46	92.0%
AL	163	62	38.0%	148	87	58.8%	145	93	64.1%	147	110	74.8%
AR	251	247	98.4%	258	12	4.7%	281	256	91.1%	286	252	88.1%
AZ	302	251	83.1%	333	243	73.0%	334	256	76.6%	372	307	82.5%
CA	1,004	399	39.7%	1033	469	45.4%	1,024	518	50.6%	1028	555	54.0%
CO	178	44	24.7%	168	68	40.5%	205	78	38.0%	175	81	46.3%
CT	185	146	78.9%	187	148	79.1%	193	161	83.4%	192	161	83.9%
DC	47	1	2.1%	51	4	7.8%	52	2	3.8%	58	2	3.4%
DE	27	22	81.5%	34	28	82.4%	32	28	87.5%	29	27	93.1%
FL	145	74	51.0%	96	62	64.6%	145	88	60.7%	159	98	61.6%
GA	171	155	90.6%	175	158	90.3%	183	166	90.7%	216	187	86.6%
HI	N/A	N/A	N/A	32	18	56.3%	38	20	52.6%	36	22	61.1%
IA	496	339	68.3%	508	372	73.2%	507	383	75.5%	499	393	78.8%
ID	125	97	77.6%	266	218	82.0%	133	106	79.7%	121	106	87.6%
IL	1,036	749	72.3%	1113	835	75.0%	1,075	839	78.0%	1115	904	81.1%
IN	407	73	17.9%	468	106	22.6%	478	143	29.9%	482	184	38.2%
KS	403	314	77.9%	404	333	82.4%	403	335	83.1%	403	327	81.1%
KY	197	128	65.0%	192	145	75.5%	189	154	81.5%	193	171	88.6%
LA	98	57	58.2%	36	34	94.4%	107	92	86.0%	112	95	84.8%
MA	N/A	N/A	N/A	357	216	60.5%	370	232	62.7%	357	245	68.6%
MD	47	29	61.7%	47	29	61.7%	46	31	67.4%	48	40	83.3%
ME	245	199	81.2%	228	194	85.1%	233	201	86.3%	246	223	90.7%
MI	741	331	44.7%	698	349	50.0%	803	449	55.9%	836	570	68.2%
MN	610	392	64.3%	620	387	62.4%	630	413	65.6%	650	433	66.6%
MO	762	453	59.4%	711	476	66.9%	749	490	65.4%	756	510	67.5%
MS	183	93	50.8%	72	47	65.3%	184	134	72.8%	179	144	80.4%
MT	236	130	55.1%	233	159	68.2%	234	177	75.6%	244	188	77.0%
NC	N/A	N/A	N/A	172	117	68.0%	178	133	74.7%	170	141	82.9%
ND	160	126	78.8%	216	170	78.7%	193	142	73.6%	223	170	76.2%
NE	407	241	59.2%	433	313	72.3%	381	290	76.1%	381	297	78.0%
NH	82	57	69.5%	88	65	73.9%	89	60	67.4%	92	65	70.7%
NJ	661	159	24.1%	661	185	28.0%	663	206	31.1%	660	247	37.4%
NM	142	98	69.0%	150	118	78.7%	167	119	71.3%	189	135	71.4%
NV	40	35	87.5%	39	34	87.2%	19	15	78.9%	20	16	80.0%
NY	1,096	797	72.7%	1054	889	84.3%	1,042	857	82.2%	1083	951	87.8%
OH	1,093	178	16.3%	1196	302	25.3%	1,129	223	19.8%	1166	258	22.1%
OK	533	248	46.5%	613	322	52.5%	573	333	58.1%	568	373	65.7%
OR	205	166	81.0%	227	178	78.4%	232	185	79.7%	235	183	77.9%
PA	724	368	50.8%	776	458	59.0%	826	501	60.7%	837	523	62.5%
RI	N/A	N/A	N/A	55	47	85.5%	55	50	90.9%	53	50	94.3%
SC	86	85	98.8%	85	83	97.6%	88	84	95.5%	87	84	96.6%
SD	223	119	53.4%	227	127	55.9%	221	127	57.5%	222	128	57.7%
TN	169	132	78.1%	175	154	88.0%	171	144	84.2%	168	142	84.5%
TX	1,202	741	61.6%	1026	797	77.7%	1,189	839	70.6%	1264	989	78.2%
UT	51	45	88.2%	53	50	94.3%	49	45	91.8%	55	51	92.7%
VA	160	136	85.0%	141	138	97.9%	152	139	91.4%	151	139	92.1%
VT	204	186	91.2%	217	200	92.2%	215	201	93.5%	219	194	88.6%
WA	292	215	73.6%	345	260	75.4%	330	260	78.8%	325	266	81.8%
WI	842	177	21.0%	823	138	16.8%	840	180	21.4%	853	218	25.6%
WV	73	54	74.0%	68	54	79.4%	73	55	75.3%	75	55	73.3%
WY	54	48	88.9%	54	37	68.5%	53	37	69.8%	56	41	73.2%

Percent of School-Age SNAP Participant Children Directly Certified for Free School Meals SY 2007-2008