Alternative School Lunch Valuation in the CPS ASEC During COVID-19

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Introduction

The Supplemental Poverty Measure (SPM) is an annual poverty measure released by the U.S. Census Bureau based on data collected in the Current Population Survey Annual Social and Economic Supplement (CPS ASEC). The SPM takes into account various governmental assistance programs when estimating resources for the poverty rate. One such program is the National School Lunch Program (NSLP), which provides subsidies for lunches served in public and nonprofit private schools. All student lunches in participating schools are at least partially subsidized, with eligible children receiving lunches for free or at a further reduced rate. The value of these lunches is included as a resource in the SPM, traditionally calculated based on per-meal reimbursement rates assuming a 179-day school year.

The COVID-19 pandemic and associated response led to substantial changes in how lunch assistance was provided in 2020. With most schools closed for in-person learning for at least part of the year, districts either stopped serving lunches or shifted from serving in-school meals to providing grab-and-go meals, though not necessarily every day. In addition, the Families First Coronavirus Response Act of 2020 (FFCRA) (PL 116-127) established the Pandemic Electronic Benefit Transfer (P-EBT) program, which distributed benefits to children who had been receiving free and reduced price lunches. The existing lunch valuation method used for the SPM would not account for these changes.

Given these complications, the 2020 SPM developed a different method to calculate the value of school lunches. This paper describes the NSLP and how school lunch provisions changed in response to the COVID-19 pandemic. It then describes how school lunches are valued in the 2020 SPM, comparing the traditional method and the new method that accounts for the pandemic response. The paper concludes with a discussion of the limitations of the new method.

NSLP and the COVID-19 Pandemic

The NSLP provides low-cost or no-cost meals to children at public and nonprofit private schools and residential childcare institutions. Participating schools receive cash and USDA Foods subsidies for each reimbursable meal they serve. In exchange, they must serve meals that meet federal nutritional standards and offer free or reduced price meals to students who qualify.[2] Children qualify for free or

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[1] The views expressed in this paper, including those related to statistical, methodological, technical, or operational issues, are solely those of the author and do not necessarily reflect the official positions or policies of the U.S. Census Bureau. The author accepts responsibility for all errors. More information on confidentiality protection, methodology, sampling and nonsampling error, and definitions within the Current Population Survey Annual Social and Economic Supplement (CPS ASEC) is available at <www2.census.gov/programs-surveys/cps/techdocs/cpsmar21.pdf>. All estimates have been rounded as required by the Census Bureau's DRB disclosure avoidance guidelines. The U.S. Census Bureau reviewed this data product for unauthorized disclosure of confidential information and approved the disclosure avoidance practices applied to this release. CBDRB-FY21-POP001-0224.

[2] More details on NSLP available at: < https://www.fns.usda.gov/nslp/nslp-fact-sheet >.

reduced price lunches if their family income is below 185 percent of the Federal poverty line; if they participate in certain assistance programs, like the Supplemental Nutritional Assistance Program (SNAP); or if they are homeless, a runaway, a migrant, or a foster child.[3]

In the pre-pandemic period, school lunches provided through the NSLP could only be served on school premises to a child who was in attendance that day. With the closure of many schools, this was no longer feasible. The FFCRA granted exceptions so that grab-and-go lunches could be provided through the NSLP and other existing USDA programs, particularly the Summer Food Service Program (SFSP) and the Seamless Summer Option (SSO). In non-pandemic times, sites are eligible for the SFSP and SSO if 50 percent or more of the children in the area are in low-income households. The FFCRA also waived these eligibility requirements so that sites could operate regardless of local income levels.

In addition to these added flexibilities, the FFCRA established the P-EBT program, which distributed the value of school meal benefits to children who received free and reduced price lunches.[4] If schools were operating with reduced hours or were closed for at least 5 consecutive days, children could receive temporary emergency nutrition benefits. If the child normally received SNAP, the value was added to either their or their family's SNAP card. If they did not receive SNAP, they would receive the value on a separate P-EBT card.[5] For the 2019-2020 school year, all children receiving P-EBT benefits in the contiguous United States received $5.70 per school day.[6] This rate was based on the reimbursement rates for free lunch under the NSLP and free breakfast under the School Breakfast Program (SBP) and did not vary between children who received free or reduced price lunches.

Together, the P-EBT program and the transition to grab-and-go lunches significantly changed both the way school lunch benefits were provided and the value of those benefits. While sites operating under the SFSP and SSO continued to provide meals to children when schools were closed, there was no guarantee that children received the same number of meals that they would have received had schools been open. Neither program requires sites to provide daily meals. Some sites may provide a single meal once a week, while others might provide the equivalent of a daily breakfast and lunch. As such, it is not reasonable to assume that children relying on the SFSP and SSO received the same number of meals as they would have received had school been in person. Using the traditional school lunch value

[3] If the child's family income is at or below 130 percent of the federal poverty level, they are eligible for free lunches. Those who fall between 130 and 185 percent of the federal poverty level are eligible for reduced price lunches.

[4] The P-EBT program was later amended and continued by the Continuing Appropriations Act 2021 and Other Extensions Act (PL 116-159), the Consolidated Appropriations Act 2021 (PL 116-260), and the American Rescue Plan Act of 2021 (PL 117-2).

[5] New York uses a Common Benefit Identification Card (CBIC) to administer several public assistance programs simultaneously. If the child receives other benefits on a CBIC but does not receive SNAP, the P-EBT benefits were loaded onto the CBIC. If the child does not receive benefits on a CBIC, they received a separate P-EBT card.

[6] The P-EBT program was extended into the 2020-2021 school year at a higher reimbursement rate. The initial extension covered August and September, but the data on which states participated is sparse. The second extension, which covered the entire 2020-2021 school year, came well into the fall, with the earliest states applying in mid-to-late November. The initial payments were not disbursed until late December or early January. Because it is unclear where and how much funding was distributed for August and September and because most, if not all, of the remaining fall P-EBT funding was not disbursed until 2021, the SPM lunch calculations do not take the fall P-EBT rates into account.

calculation could considerably overestimate the value of lunch benefits for children relying on sites that offered fewer meals or in areas with no distribution at all.

On the other hand, the P-EBT program provided more benefits than the traditional school lunch valuation method used in the CPS ASEC for estimation of the SPM. Because the P-EBT rate accounts for both breakfast and lunch, it is higher than the reimbursement rates used in the traditional SPM school lunch value calculation, which does not include breakfast. Thus, the traditional SPM method would undervalue the school lunch benefit for everyone who received P-EBT. This is particularly the case for those who would normally receive reduced price lunches in school as the P-EBT benefit is based on the free reimbursement rates.

Since the traditional formula used to calculate this value for the SPM cannot take such changes into account, it would likely misestimate the value of school lunch benefits for most children. Therefore, we have developed a new method that accounts for P-EBT and school closures.

SPM School Lunch Value Calculations

Traditional Value Calculation

Traditionally, the SPM school lunch values have been based on a formula that takes a weighted average of the federal reimbursement rate, adds the weighted average commodities, and adds the bonus commodities received by each school per child.[7,8] These values are then multiplied by 179 days to get the school lunch value for the year.[9] Different rates are used for those who receive free, reduced-price, and paid lunches.[10]

Using the traditional method for 2020 would have given a value of $104.50 for children receiving paid lunches, $591.40 for children receiving reduced price lunches, and $663.00 for children receiving free lunches.

Updated Value Calculation

The updated method accounts for both school closures and P-EBT to assign school lunch values based on a combination of school operating status and SNAP receipt.

[7] Lunch reimbursement rates are set for each school year. In 2020, the spring months were reimbursed at the 2019-2020 rate, while the fall months were reimbursed at the 2020-2021 rate. Because the CPS ASEC asks about the previous calendar year, it contains five months of one school year and 4 months of the next school year. The traditional method uses the weighted average of these two reimbursement rates as the yearly rate. Commodity values are also weighted to account for the different school years.

[8] Participating schools receive commodities, which are USDA Foods distributed based on program participation. The amount of commodities schools will receive is established and is a regular part of the NSLP. Bonus commodities are extra USDA Foods that are distributed to schools when there is a surplus. The amount of bonus commodities varies over time.

[9] The traditional school lunch valuation is still available on the public use CPS ASEC file at the family level as F_MV_SL, while the new valuation is available at the SPM unit level as SPM_SCHLUNCH.

[10] All school lunches for children are partially subsidized. “Paid” refers to the partially subsidized lunches that are purchased by children not eligible for free or further reduced price lunches.

School operating status and the pandemic response shifted across the year. To account for this, the updated method calculates the lunch value differently for three phases of 2020.[11] In simplified terms, the three phases and methods are as follows:

- For January to mid-March 2020, when schools were still operating as usual, the new method uses a simplified version of the "traditional" paid, free, and reduced price calculations multiplied by 46 school days.[12]
- For mid-March 2020 through the end of the 2019-2020 school year, when nearly all schools were closed, those receiving free or reduced lunches but who did not receive SNAP were assigned a P-EBT value of $313.50. Otherwise, they received a value of $0.
- For Fall 2020, when some schools were open, some were hybrid, and some were fully remote, the new method uses the simplified "traditional" calculations multiplied by the state average number of open school days.

The output from these phases is then combined to give a value for the year. The outputs for each phase are in Table 1 below.

Table 1. Updated School Lunch Values by Time Period, 2020

	SNAP Receipt	**January – Mid- March**	**Mid-March through End of School Year**	**Fall**
		*Reimbursement Rate * 46 Days*	*P-EBT Rate of $5.70 * 55 Days*	*Reimbursement Rate * Average State Attendance Days*
Paid	--	$26.10	$0	(0.58 * average state attendance days)
Reduced	Yes	$149.40	$0	(3.36*average state attendance days)
	No		$313.50	(3.36*average state attendance days)
Free	Yes	$167.80	$0	(3.76*average state attendance days)
	No		$313.50	(3.76*average state attendance days)

For the pre-pandemic period from January to mid-March, schools operated as usual and children received lunches in school. The traditional lunch programs were operating, so the traditional method of calculating school lunches applies. However, because this entire phase falls into a single school year, using the weighted average of the reimbursement rate is unnecessary. The method thus uses a simplified version of the traditional lunch value calculation, which simply takes the reimbursement rate

[11] Food provision during the summer months is never considered in the SPM, given difficulties in estimating its value. The coverage of the federal summer food programs is uneven, the frequency of food distribution varies by site, and there are no eligibility requirements for individual children because site eligibility is based on the local poverty rate. It would be difficult, if not impossible, to accurately estimate the value of these meals.

[12] Full school years have 179 days, with an average of 46 days from the beginning of January to mid-March, 55 days from mid-March through the end of the school year, and 78 days in the fall.

for the 2019-2020 school year plus the value of commodities, rather than the weighted average. We also exclude the value of bonus commodities from this calculation.[13]

After schools closed in mid-March, regular school lunch provision stopped. All 50 states and the District of Columbia established P-EBT programs and disbursed benefits to students who received free or reduced price lunches. At a rate of $5.70 for 55 days, each child would receive $313.50 in P-EBT benefits, either on their existing SNAP cards or on a separate P-EBT card. Because these P-EBT benefits were received at the same time that SNAP benefits were raised in response to the pandemic, it is likely that many recipients did not distinguish between sources when reporting their SNAP benefits in the CPS ASEC. Thus, to avoid double-counting P-EBT benefits for those with SNAP, this method does not assign the P-EBT value in the lunch value calculation for those who report SNAP receipt. Because children who bought lunches at the paid rate did not receive P-EBT cards, they also were not assigned a lunch value for the remainder of spring 2020.

In Fall 2020, responses to the pandemic varied across the country and within states. There is not a definitive federal data source on school operating status, and it is unclear how many schools were open, closed, or operating on hybrid schedules. It is also unclear whether schools were distributing grab-and-go lunches if they were closed; whether, where, when and how the P-EBT program was operating; and whether schools were distributing free lunches to all students or just those who would usually qualify for them. Due to these issues, the school lunch value in the fall is an approximation.

For the fall, the new method uses the simplified traditional method used in January-mid-March, but with the 2020-2021 per-meal reimbursement rates multiplied by the average number of days students were in school for each state. This method attempts to take into account state-to-state variations in school closures in the fall.

The average number of days students were in school was calculated using data from the U.S. School Closure and Distance Learning Database (Parolin and Lee 2020). This database uses mobile phone usage data from SafeGraph to compare cell phone traffic at schools in a given month to the same month in the prior year. If the number of visitors to a school fell substantially from one year to the next, it suggests that the school was closed or hybrid.

The updated school lunch value calculations use the county-level file of this database. The county-level file includes the estimates of the number of students in each county and the share of schools with at least a 25%, 50%, and 75% cell phone traffic reduction. Following Parolin and Lee (2020), we coded a 50% reduction in traffic as "closed." If the reduction was between 25% and 50%, it was coded as hybrid. If the reduction was less than 25%, it was considered open. These open, hybrid, and closed rates were then multiplied by the number of students in the county, and the weighted average number of days in school per student was calculated for each state.

[13] Bonus commodities are reported for fiscal years, so it is unclear how to divide them across months. However, including it adds little to the overall school lunch value. In 2019, the bonus commodities did not change the value of school lunches rounding to three decimal points. In 2020, it would have added $.01 per meal using the traditional yearly calculation.

Traditional Assignment

In the traditional method, paid, free, and reduced rates are assigned based on respondents' answers to two questions in the CPS ASEC, first asking if any children in the household normally eat hot lunches provided by the school, and then asking if any of those children receive free or reduced price lunches through the NSLP. Those who indicated that they did not receive school lunch were assigned no value. Those who indicated that they ate lunch at school but did not receive a free or reduced-price lunch were assigned the paid value. Those who indicated they received a lunch at school and that they received a free or reduced price lunch were given the free rate if they are in a family with income below 150% of the federal poverty line. If they were not in poverty, 50% were randomly assigned the free rate and 50% were randomly assigned the reduced rate.

Updated Assignment

The assignment in the updated method, presented in Figure 1, relies on lunch questions from the CPS ASEC, as well as questions about SNAP receipt and a new question added to capture lunch provisioning during the pandemic. The new question was asked to respondents who indicated that children in the house had received free or reduced price lunches. The question asks:

> *Did your children continue receiving free/reduced price meals through your school or school district if schools were closed during the pandemic?*

The possible responses were "Yes," "No," and "Schools did not close." Because the question does not distinguish between spring and fall and does not account for the shifting status of school operation, the only useful response obtained was the one indicating that schools were not closed. If respondents indicated that schools were not closed, they were assigned the traditional value following the traditional assignment rules described above. Only 2.21% of children who received free or reduced price lunches attended schools that were not closed and had values assigned this way.

All other children were then assigned to a pay status—paid, reduced rate, or free—based on the traditional method described above. If the child was assigned as "paid," they were given the adjusted paid rate. If they were assigned "reduced rate" or "free," their rate was assigned based on SNAP receipt. If they received SNAP, they were assigned the reduced price and free rates that exclude the value of spring P-EBT benefits. If they did not receive SNAP, they were given the reduced price and free rates that include spring P-EBT benefits.

Effect of New Input Values

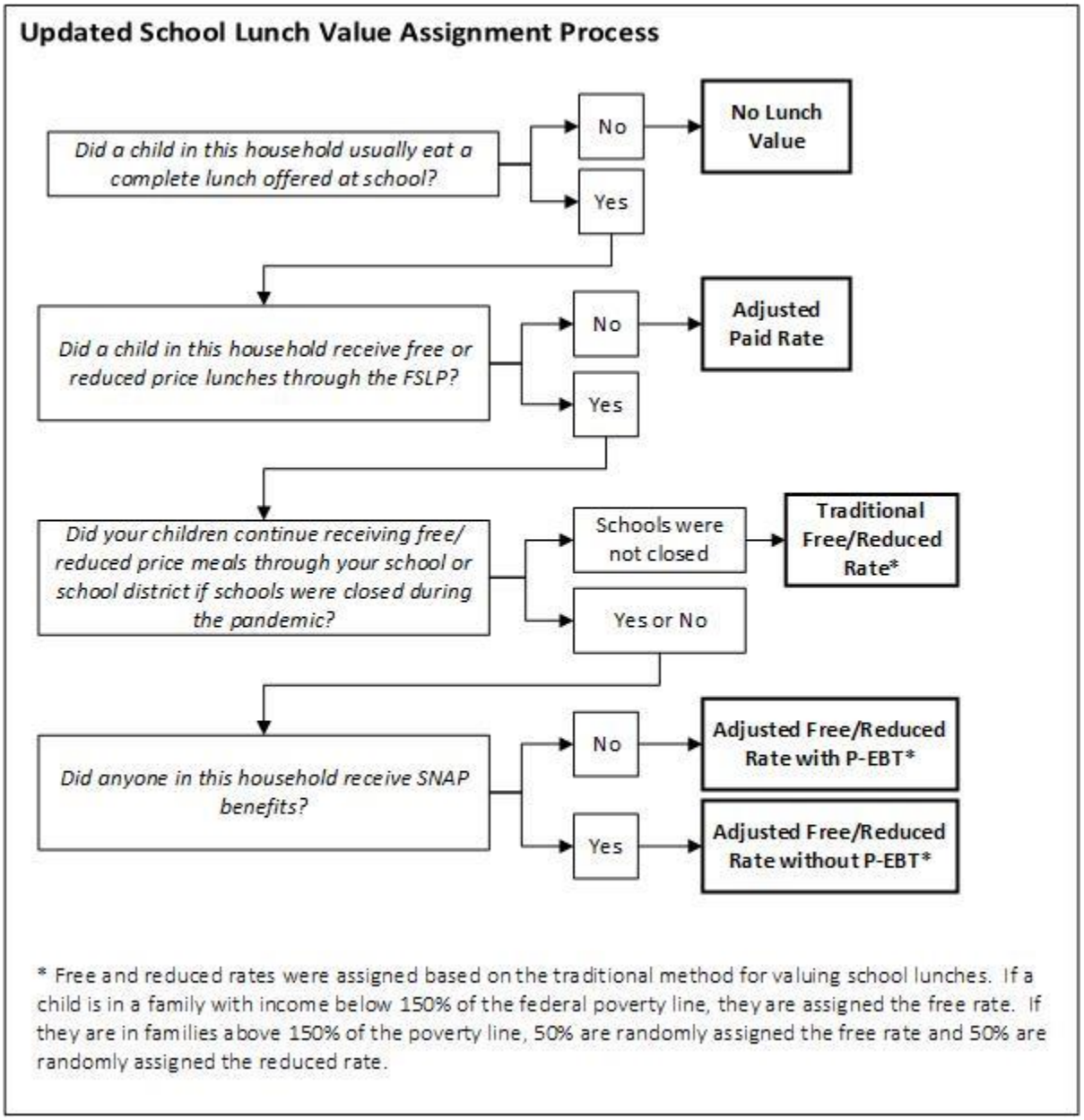
Using the traditional method, the SPM considers three lunch values—free, reduced price, and paid—that range from $104.50 to $663.00 per year (Table 2). Had the traditional method been used for 2020, the mean per student value for lunches would have been $433.90 for children who received lunches in schools.

Table 2. Summary Statistics, Traditional and Updated Methods, 2020

	Mean	Standard Error	Minimum Value	Maximum Value
Traditional Method	$433.90	2.06	$104.50	$663.00
Updated Method	$305.30	1.88	$32.30	$691.50

Source: U.S. Census Bureau, Current Population Survey, 2021 Annual Social and Economic Supplement

Figure 1. Updated School Lunch Value Assignment Process



The updated method contains 257 lunch values: the traditional free and reduced price rates,[14] as well as the updated paid, reduced-price with P-EBT, reduced price without P-EBT, free with P-EBT, and free without P-EBT, all multiplied by the state average number of days in schools. Using this method, the mean value for lunches was $305.30 for those receiving lunches in school, with a minimum of $32.30 and a maximum of $691.50. Given the lower minimum values and that no states had an average of 179

[14] The new school lunch question that allowed respondents to indicate that schools did not close was only asked to respondents who indicated that children in their house had received free or reduced price lunches. No one who paid for their lunches answered the question about school closures, so no one could be assigned the traditional paid rate.

days of attendance in the updated method, it is unsurprising that the mean for the updated method is lower than the mean for the traditional method.

Table 3 displays summary statistics on the difference between the updated values and the traditional values at the individual level. Overall, the mean difference between the updated values and the traditional values is -$128.60, with 93.05 percent of children who ate school lunches receiving a lower value under the new method. The differences vary by payment status, but in expected ways. Because all students at the paid rate were assumed to get no lunch benefits from mid-March until the end of the 2019-2020 school year, 100 percent of these students received a lower rate in the new method by design. Students assigned the reduced rate were the most likely to have a higher value—18.81 percent compared to 5.39 percent for those receiving free lunches—but these students also received a larger benefit than normal in the spring due to P-EBT. The changes in lunch values are thus consistent with expectations, given what is known about the pandemic response.

Table 3. Summary Statistics, Difference Between Updated Values and Traditional Values, 2020

	Mean Difference (Updated – Traditional)		With Lower Updated Value		With Higher Updated Value		No Value Change Between Methods	
	Estimate	Std. Error	Percent	Std. Error	Percent	Std. Error	Percent	Std. Error
Total	-$128.60	1.09	93.05	0.20	5.60	0.17	1.35	0.11
Paid	-$59.60	0.08	100	0.00	--	--	--	--
Reduced	-$95.40	2.58	79.17	0.80	18.81	0.75	2.02	0.32
Free	$-202.50	1.95	92.33	0.32	5.39	0.25	2.28	0.21

Source: U.S. Census Bureau, Current Population Survey, 2021 Annual Social and Economic Supplement

Limitations of New Method

While the school lunch values calculated by the updated method are likely more accurate than the traditional method given the pandemic, there are concerns and limitations. These fall into three categories: sources of over- and under-estimation, spatial autocorrelation, and data accuracy.

First, given the amount of uncertainty surrounding how and if children received school lunches and whether schools were open in the fall, it's likely that many individual's values have been over- or under-estimated. The method used likely over-estimates the values for two groups of people: anyone who attended school significantly less than average in the fall, and anyone who did not receive P-EBT in the spring but was assigned it in our method. The method likely under-estimates the value for anyone who attended school significantly more than average in the fall; people who received P-EBT and SNAP, but did not report the P-EBT value when reporting their SNAP value; and those who received the "paid" rate in a school that did not close in spring 2020. In addition, grab-and-go receipt in the spring and at closed schools in the fall introduces error across the board.

The patterns of those that are over- and under-estimated due to attending school significantly more or less than average are possibly geographically clustered. Many major metropolitan school districts remained closed through Fall 2020, while schools in less densely populated areas were more likely to be

fully open (Schwartz et al. 2021). It is thus possible that our method systematically over-estimates reimbursement rates in metropolitan areas and under-estimates them in non-metropolitan areas.

Finally, there are general data concerns. First, the fall school closure rates are based on a dataset that is in many ways experimental. Although the data has gone through rigorous testing and compares well to other experimental datasets (Parolin and Lee 2020), it is still a new dataset that makes many assumptions. Second, it is unclear how people reported their SNAP and P-EBT benefits. While it seems likely that respondents would not distinguish their P-EBT benefits from increased SNAP benefits, that is not a certainty. It is possible that respondents only reported SNAP benefits, in which case their overall food support values will be under-reported. Finally, the entire method is based on assumptions about how food was provided and whether schools were open or closed. Given these limitations, caution should be exercised when looking at school lunch values.

References

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