Appendices

7 Data Appendix

All Food and Breakfast or Lunch-Specific Food Spending

We first define total food purchases based on purchases of items that are categorized in Nielsen as grocery store purchases falling into any food product group. We are careful to exclude any grocery store purchases that are non-food items, such as cookware, pharmacy items, and household supplies. This leaves us with 1,448,469 unique UPC codes that make up food spending. We next define "breakfast" and "lunch" foods based on Nielsen's categories of product groups that are considered typical components for school breakfast or lunch, respectively. For breakfast these include items such as bagels, cereal, and pancake mix, and for lunch they include items like lunch meat, packaged deli meats, crackers, and yogurt. While we note that not all households feed their children the same type of food for these meals,[33] we argue that our measure captures a large portion of typical breakfast or lunch spending. We identified 466,745 UPC codes that met our inclusion criteria, which was about 32.2% of all food UPC codes. A full list of Nielsen product groups that fall into our definition of lunch and breakfast foods can be found in appendix tables A1 and A2, respectively. We chose not to make our breakfast and lunch categories mutually exclusive, as we note that many foods (e.g. fruit, milk) can be consumed for either meal. Thus, our main results present changes in monthly spending for breakfast and lunch combined (without double counting). When we consider changes in monthly spending on breakfast or lunch categories of food separately, they may add up to more than the total for the combined category.

Healthy and Unhealthy Food Spending

Next, we consider the healthiness of household food purchases. We start by categorizing food items as either healthy or unhealthy by matching them to USDA food groups (specifically, sub-categories of fruits, vegetables, grains, dairy, meats, etc.) and comparing those to USDA dietary guidelines. To do this, we utilize a cross-walk developed by the USDA (Todd et al., 2010), to match the Nielsen UPC codes to USDA food group sub-categories. This cross-walk matched about 50 percent of UPC codes in Nielsen. For the remaining UPC codes that were unmatched in this cross-walk, we assigned UPC codes to food group categories if there was an unambiguous way to do so based on the Nielsen product description.[34] For instance, we assigned "fresh fruit" as listed in Nielsen to USDA food group 1, "Fruits: Whole fresh/frozen". For many other categories, the group designation depended on information that was unavailable to us in the Nielsen description, such as whether it was low-fat versus regular fat cheese. For those food items, we left them unassigned. Finally, we define the individual UPC items as either healthy or unhealthy based on the USDA's categorization of the food group (Volpe et al., 2013). For instance, healthy foods include fruits and vegetables, whole-grain products, low-fat meats and dairy, fish, and nuts. Unhealthy foods include regular fat meats and dairy, fats and oils, carbonated sodas, and commercially prepared

[33] This may be especially true for households of different race and ethnic groups.

[34] Our results are robust to restricting our analysis to only the items matched in the cross-walk.

pre-packaged foods. The healthy and unhealthy assignments are mutually exclusive. Appendix table A3 lists the USDA food group categories and their designation as healthy or unhealthy. Our relevant outcomes here will be monthly spending on all food that falls into either the healthy or unhealthy food categories. We also consider spending on purchases of specific categories of food that are unambiguously healthy (vegetables), and unhealthy (commercially prepared pre-packaged food).

Healthiness of Individual Food Categories

We next explore the average quality of breakfast, lunch, and all other foods.[35] A number of papers document that many breakfast foods are not very healthy. For example, most ready-to-eat pop tarts and cereals are high in sugar content and are marketed towards children (Vaala and Ritter, 2020; Monique et al., 2017; Emond et al., 2019). In our healthy/unhealthy spending categories, these items are classified as commercially prepared foods and the USDA considers those to be unambiguously unhealthy. Additionally, prepackaged pancake mix is another example of a commercially prepared item that would also be considered unhealthy (Volpe et al., 2013).

We examine this relationship in more detail using our data directly. Our main results present an overall healthfulness "score" for all food purchases made by households, using data on the healthiness of individual food items obtained from Hut and Oster (2019). In fact, we can calculate the healthfulness "score" for different sub-sets of food purchases that are likely to be eaten for different meals (e.g. breakfast, lunch, dinner). For this analysis, we also extended these food group categories to consider what purchases might be contributing to dinner food. To do so, we first took all remaining food purchases that were not a part of breakfast or lunch. However, this still includes some unhealthy food items like desserts, making it an inaccurate picture of dinner healthiness. Thus, our measure of dinner foods excludes obvious candies, desserts, and beverages.[36] A limitation of this approach is that "dinner" foods end up as a "catch-all" for foods that are not easily classified as breakfast or lunch. Another limitation is that there is likely to be substantial overlap between meals, such that some foods might be eaten for breakfast, lunch, and dinner. We do our best to classify foods, but acknowledge that alternative classifications exist that would be reasonable. Nevertheless, we believe that this provides some interesting insights. Moreover, this allows us to look for heterogeneity in the effect of CEP on diet quality by meal type.

Table A4 reports the average healthiness of foods in our defined categories for breakfast, lunch, and dinner foods. Column (1) shows the number of UPC codes captured by each defined food category, column (2) shows the average healthiness of foods in each food category based on the health data from Hut and Oster (2019)[37], and column (3) weights those health points by the expenditure share on items in each food category to calculate the average health score for that food category (applying equation 1 to these individual food categories). The values of columns (2)-(3) are between -1 and 1 by construction, with more

[35] Thanks to an anonymous referee for a thoughtful question that led to this analysis.

[36] These food categories all face the same limitation we noted above, namely that not all households eat the same type of foods for these meals (and this might be especially true for households of different race and ethnic groups).

[37] Recall that these health points are based on a survey of doctors, with a range of [-1, 1]. They are described in more detail in section 3.2.

negative numbers indicating less healthy purchases, and more positive numbers indicating more healthy purchases.

The average healthiness for the food groups in column (2) implies that on average, breakfast food purchases are actually healthier than lunch food purchases. If we weight the health points by household spending on those items, the pattern continues to hold, as shown in column (3). Dinner foods appear to be less healthy than both lunch and breakfast, perhaps because they contain all other food items not already counted as breakfast or lunch (minus candies, desserts, and beverages). As a result, the dinner category contains things like frozen pizzas, pasta dinners, flour, potatoes, and rice that all have negative point values, for instance. Figure A1 shows the distribution of the average expenditure weighted healthiness of household level spending on foods classified as breakfast, lunch, or dinner. While breakfast foods are healthiest on average, there is a wide distribution. Some households consume mostly the unhealthy breakfast foods mentioned above (e.g. pop tarts, high-sugar cereals, pancakes), while other households consume relatively healthy breakfast foods (e.g. eggs, yogurt, fruit). The distributions shift to the left for lunch and dinner, suggesting foods purchased in these categories tend to be classified as less healthy on average.

Table A1: Categories in Authors Defined Lunch Groups

Nielsen Product Category	UPC Count
Bread And Baked Goods	72,099
Cheese	19,918
Cookies	26,190
Crackers	6,154
Dressings/Salads/Prep Foods-Deli	32,686
Eggs	2,932
Fresh Meat	2,349
Fresh Produce	22,317
Fruit - Canned	6,659
Fruit - Dried	6,770
Jams, Jellies, Spreads	9,551
Juice, Drinks - Canned, Bottled	23,040
Milk	11,851
Nuts	15,638
Packaged Meats-Deli	21,711
Packaged Milk And Modifiers	4,090
Prepared Food-Ready-To-Serve	10,748
Pudding, Desserts-Dairy	1,001
Snacks	45,952
Snacks, Spreads, Dips-Dairy	6,671
Soft Drinks-Non-Carbonated	13,048
Vegetables - Canned	14,603
Vegetables And Grains - Dried	4,703
Yogurt	8,802

Table A2: Categories in Authors Defined Breakfast Groups

Nielsen Product Category	UPC Count
Baked goods-frozen	933
Baking mixes	1,471
Bread and baked goods	15,774
Breakfast food	5,996
Breakfast foods-frozen	3,427
Cereal	11,084
Coffee	14,199
Cottage cheese, sour cream, toppings	1,459
Dough products	699
Eggs	2,932
Fresh produce	689
Jams, jellies, spreads	5,148
Juices, drinks-frozen	493
Milk	8,689
Packaged meats-deli	3,301
Packaged milk and modifiers	4,090
Table syrups, molasses	2,275
Yogurt	8,802

Table A3: USDA Health Categories

USDA Food Group #	Category	Subcategory	USDA Healthy
1	Fruits	Whole fresh/frozen	Yes
2	Fruits	Whole canned	Yes
3	Fruits	Fruit juice	Yes
4	Vegetables	Dark green fresh/frozen	Yes
5	Vegetables	Dark green canned	Yes
6	Vegetables	Orange fresh/frozen	Yes
7	Vegetables	Orange canned	Yes
8	Vegetables	Starchy fresh/frozen	Yes
9	Vegetables	Starchy canned	Yes
10	Vegetables	Other-nutrient dense fresh/frozen	Yes
11	Vegetables	Other-nutrient dense canned	Yes
12	Vegetables	Other-mostly water fresh/frozen	Yes
13	Vegetables	Other-mostly water canned	Yes
14	Vegetables	Legumes fresh/frozen/dried	Yes
15	Vegetables	Legumes canned/processed	Yes
16	Grains	Whole grain packaged (bread, rolls, pita, tortilla, rice, pasta, cereal)	Yes

Table A3 continued next page

Table A3 continued from previous page

USDA Food Group #	Category	Subcategory	USDA Healthful
17	Grains	Whole grain flour and mixes	Yes
18	Grains	Whole grain frozen/ready to cook	Yes
19	Grains	Refined packaged (bread, rolls, pita, tortilla, rice, pasta, cereal)	No
20	Grains	Refined flour and mixes	No
21	Grains	Refined frozen/ready to cook	No
22	Dairy	Low fat milk	Yes
23	Dairy	Low fat cheese	Yes
24	Dairy	Low fat yogurt & other	Yes
25	Dairy	Regular fat milk	No
26	Dairy	Regular fat cheese	No
27	Dairy	Regular fat yogurt & other	No
28	Meats	Low fat meat fresh/frozen	Yes
29	Meats	Regular meat fresh/frozen	No
30	Meats	Regular meat canned	No
31	Meats	Poultry fresh/frozen	Yes
32	Meats	Poultry canned	Yes
33	Meats	Fish fresh/frozen	Yes
34	Meats	Fish canned	Yes
35	Meats	Nuts and seeds raw	Yes
36	Meats	Nuts and seeds processed/ nut butters	Yes
37	Meats	Eggs	Yes
38	Fats and Oils	Oils	Yes
39	Fats and Oils	Solids	No
40	Sugar and Sweeteners	Raw	No
41	Beverages	Carbonated non alcoholic	No
42	Beverages	Fruit drinks and other non-carbonated sugary beverages	No
43	Beverages	Water	Yes
44	Commercially prepared items	Sweet frozen (ice cream, frozen desserts)	No
45	Commercially prepared items	Sweet mixes (pancake, muffin and cake mixes)	No

Table A3 continued next page

Table A3 continued from previous page

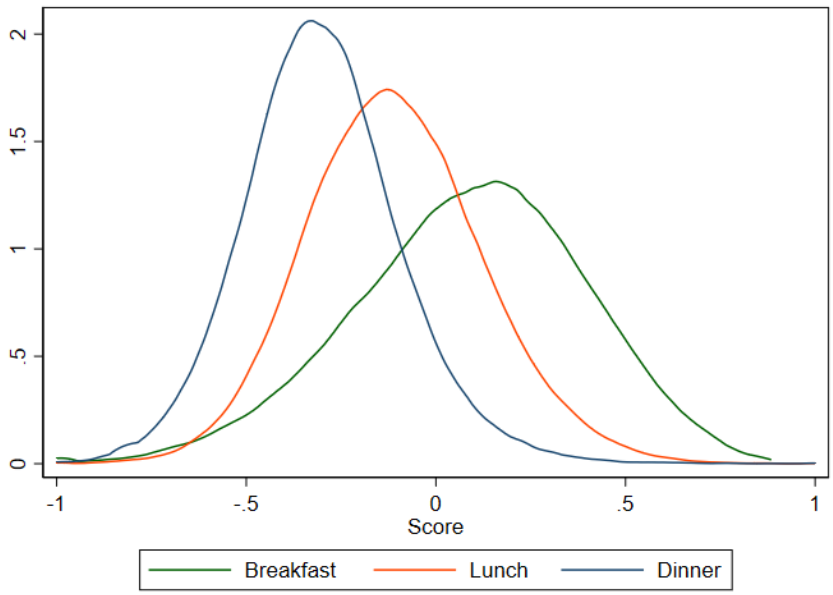
USDA Food Group #	Category	Subcategory	USDA Healthful
46	Commercially prepared items	Sweet packaged (cookies, candy bars, bars)	No
47	Commercially prepared items	Sweet ready-to-eat (bakery items)	No
48	Commercially prepared items	Not sweet frozen (pizzas,french fries, fish sticks and entrees)	No
49	Commercially prepared items	Not sweet canned (soups, sauces, etc)	No
50	Commercially prepared items	Not sweet packaged/Snacks	No
51	Commercially prepared items	Not sweet packaged/Meals and sides	No
52	Commercially prepared items	Not sweet ready-to-eat (hot and cold deli items)	No

*Source: Volpe et al. (2013)

Table A4: Average healthiness of specific food categories

Food Category	(1) Number of UPC Codes	(2) Average Health Points of Purchases (unweighted)	(3) Average Health Score of Purchases (weighted by spending)
Breakfast	97,821	-0.1497	0.1132
Lunch	389,483	-0.2713	-0.0888
Breakfast + Lunch combined	431,519	-0.2608	-0.0847
Dinner Proxy	867,818	-0.1994	-0.2878
All foods	1,447,835	-0.3844	-0.2625

Figure A1: **Distribution of average household healthiness by specific food categories**



Notes: This figure plots the kernel density of the health score of household purchases (weighted by spending using equation 1) for each food group category.

8 Appendix Figures & Tables

Figure A2: **State Rollout of CEP**

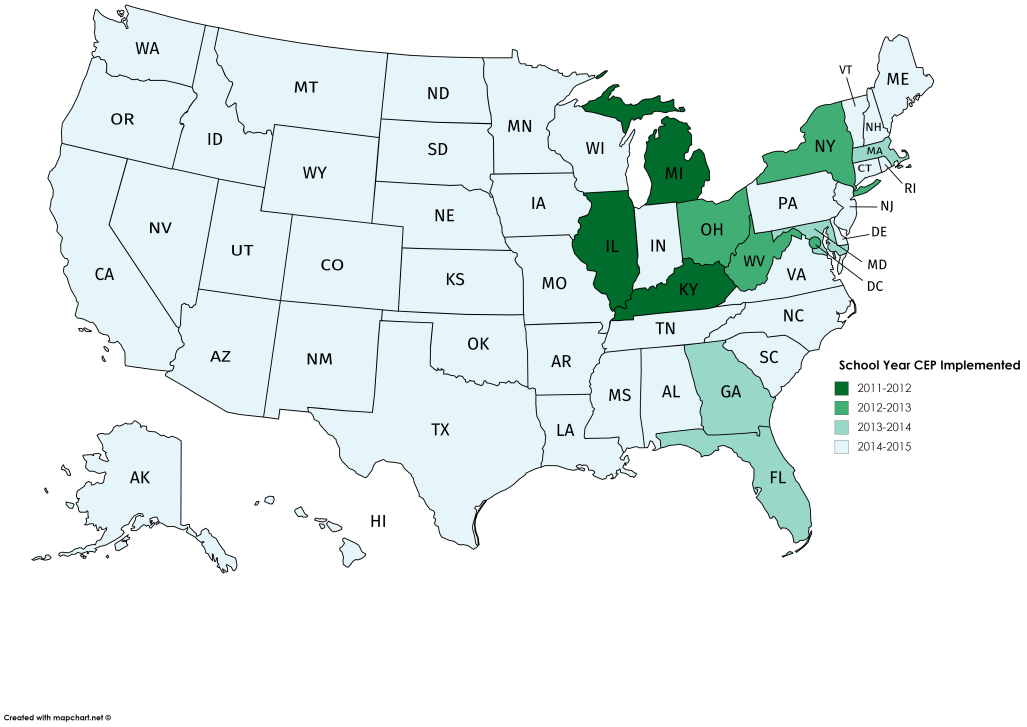
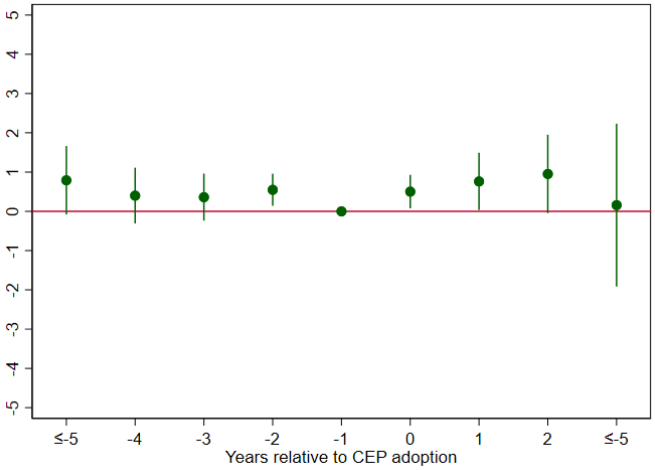
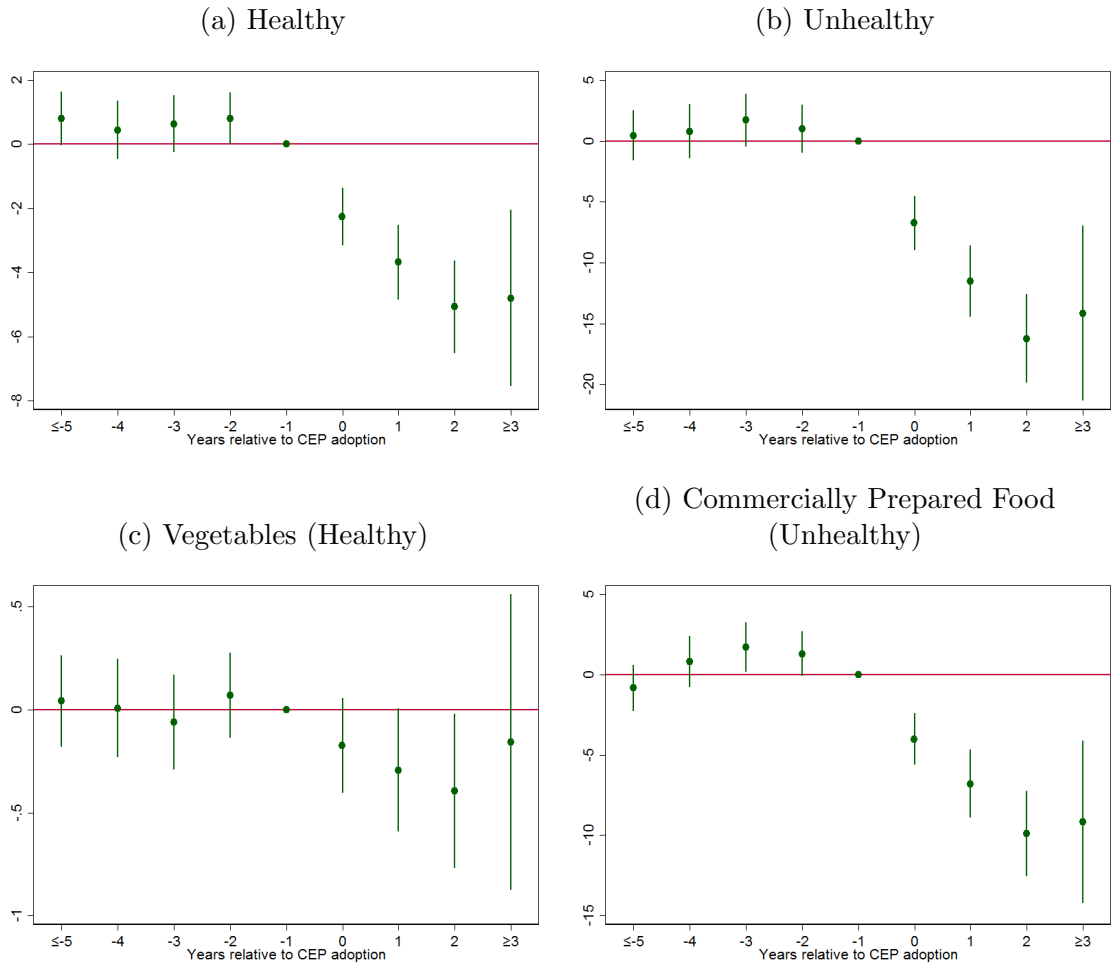


Figure A3: **CEP Exposure and Predicted Food Spending Based on Demographics**



Notes: Event time is relative to the first school year a zip code experiences any CEP exposure. The outcome is total food spending predicted based on demographic characteristics, including married, household size, income bins, lunch eligibility, WIC participation, maximum household education, and maximum household employment bins. The regression includes zip code and year-by-month fixed effects and standard errors are clustered at the zip code level.

Figure A4: **Effect of CEP on Healthy/Unhealthy Food Spending for Households with Kids**



Notes: Figures show the event study estimates from estimation of equation 4. The year prior to CEP adoption is omitted. Observations are at the household-year-month level. Regressions include household and year-by-month fixed effects and additional household controls, including married, kids, Hispanic, white, black, household size, household income categories, WIC participation, maximum household education level, and maximum hours of work for the head of household. Standard errors are clustered at the household level. Outcomes are the total dollars spent on food items classified as healthy in panel (a), total dollars spent on food items classified as unhealthy in panel (b), total dollars spent on vegetables in panel (c), and total dollars spent on commercially prepared foods in panel (d). See section 3 for additional data details. Coefficients are shown for years before and after CEP adoption, where time zero is the first year a zip code experienced any CEP adoption.

Table A5: Effect of School-Level CEP Exposure on Grocery Purchases, Additional Outcomes

	(1) Lunch Food Spending ($)	(2) Breakfast Food Spending ($)	(3) Healthy Food Spending ($)	(4) Unhealthy Food Spending ($)	(5) Vegetables Spending ($)	(6) Commercially Prepared Foods Spending ($)
Panel A: Elementary School CEP Exposure						
Kids x CEP Primary %	-17.16***	-7.456***	-10.91***	-30.52***	-1.336	-14.08**
	(4.228)	(1.820)	(3.373)	(9.486)	(0.942)	(6.911)
N	4,370,670	4,366,645	4,369,135	4,367,527	4,370,168	4,369,155
R-Squared	0.51	0.46	0.53	0.54	0.44	0.52
Mean of Dependent	55.02	21.77	56.66	143.19	12.54	90.33
Pct Change	-31.20	-34.24	-19.25	-21.31	-10.66	-15.58
Panel B: Middle School CEP Exposure						
Kids x CEP Middle %	-10.37***	-5.361***	-9.656***	-20.21***	-0.588	-8.706
	(3.614)	(1.425)	(2.780)	(7.229)	(0.713)	(5.329)
N	4,274,650	4,270,803	4,273,207	4,271,754	4,274,324	4,273,302
R-Squared	0.51	0.46	0.53	0.54	0.44	0.52
Mean of Dependent	55.03	21.77	56.69	143.13	12.54	90.33
Pct Change	-18.84	-24.62	-17.03	-14.12	-4.69	-9.64
Panel C: High School CEP Exposure						
Kids x CEP High %	-11.01***	-5.552***	-8.386***	-22.25***	-0.903	-11.25**
	(2.786)	(1.155)	(2.393)	(5.934)	(0.632)	(4.468)
N	4,340,915	4,337,118	4,339,529	4,337,905	4,340,540	4,339,478
R-Squared	0.51	0.46	0.52	0.54	0.44	0.52
Mean of Dependent	54.99	21.76	56.63	143.18	12.53	90.32
Pct Change	-20.01	-25.51	-14.81	-15.54	-7.21	-12.46

* p <0.10, ** p <0.05, *** p <0.01

Note: Each cell represents a separate regression. All regressions have household and year-month fixed effects and include additional household controls. SE are clustered at the household level. Household controls are measured at time of survey and consist of the following: married, kids, Hispanic, white, black, household size, household income categories, WIC participation, maximum household education level, and maximum hours of work for the head of household

Table A6: Robustness of Main Results to Alternative Specifications

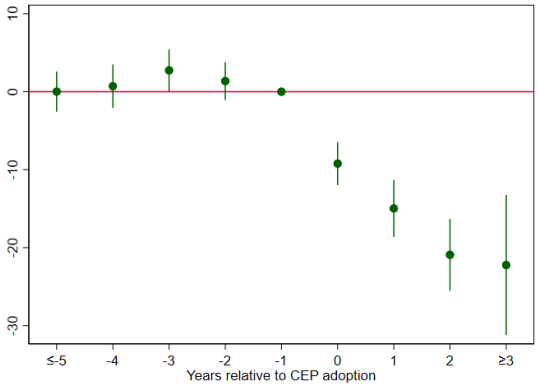
	(1) Main Specification	(2) Exclude household controls	(3) StateXyear and month FE	(4) SEs clustered by zip-code	(5) SEs clustered by state	(6) Include all states	(7) Include households that move
Panel A Outcome: Spending on Food good purchases							
Kids x Post CEP	-10.65***	-10.52***	-11.13***	-10.65***	-10.65***	-10.18***	-9.204***
	(1.458)	(1.352)	(1.455)	(1.450)	(1.517)	(1.341)	(1.320)
N	4,498,537	6,195,887	4,498,537	4,498,537	4,498,537	5,247,197	5,325,454
R-Squared	0.55	0.55	0.55	0.55	0.55	0.55	0.54
Mean of Dependent	206.07	198.64	206.07	206.07	206.07	206.42	204.40
Pct Change	-5.17	-5.29	-5.40	-5.17	-5.17	-4.93	-4.50
Panel B Outcome: Spending on Total lunch and breakfast category purchases							
Kids x Post CEP	-5.509***	-5.608***	-5.715***	-5.509***	-5.509***	-5.284***	-5.175***
	(0.571)	(0.522)	(0.568)	(0.561)	(0.617)	(0.526)	(0.513)
N	4,501,538	6,195,466	4,501,538	4,501,538	4,501,538	5,251,201	5,328,706
R-Squared	0.51	0.51	0.51	0.51	0.51	0.51	0.50
Mean of Dependent	63.82	61.62	63.82	63.82	63.82	63.92	63.30
Pct Change	-8.63	-9.10	-8.95	-8.63	-8.63	-8.27	-8.18
Panel C Outcome: Composite Diet Healthiness Score							
Kids x Post CEP	0.00168	0.00911***	0.00138	0.00168	0.00168	0.00317	0.000444
	(0.00259)	(0.00237)	(0.00259)	(0.00263)	(0.00250)	(0.00238)	(0.00236)
N	4,470,380	6,153,512	4,470,380	4,470,380	4,470,380	5,214,446	5,290,493
R-Squared	0.34	0.33	0.34	0.34	0.34	0.34	0.33
Mean of Dependent	-0.27	-0.27	-0.27	-0.27	-0.27	-0.27	-0.27
Pct Change	0.63	3.43	0.52	0.63	0.63	1.19	0.17

* p <0.10, ** p <0.05, *** p <0.01

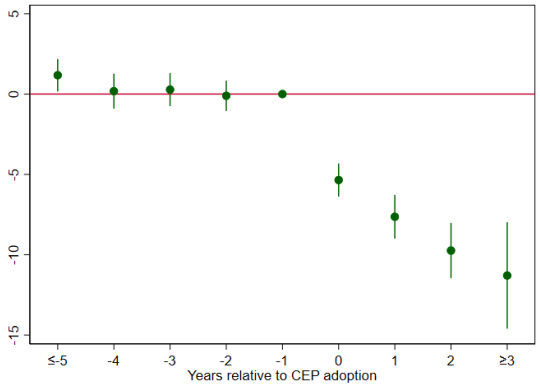
Note: Each cell represents a separate regression. Unless otherwise noted, all regressions have household and year-month fixed effects, include additional household controls, and cluster SE at the household level. Household controls are measured at time of survey and are the same as in table 3. Columns (1) replicates the main results. Column (2) excludes household controls. Column (3) includes state-by-year fixed effects. Columns (4) and (5) cluster standard errors at the zip code and state level, respectively. The main results exclude households in states with incomplete or missing CEP adoption data, and exclude households that ever moved zip codes. Column (6) includes households in all states; column (7) includes households that moved zip codes at some point during their participation in the Nielsen panel.

Figure A5: **Effect of CEP on Grocery Purchases for Households with Kids (No controls)**

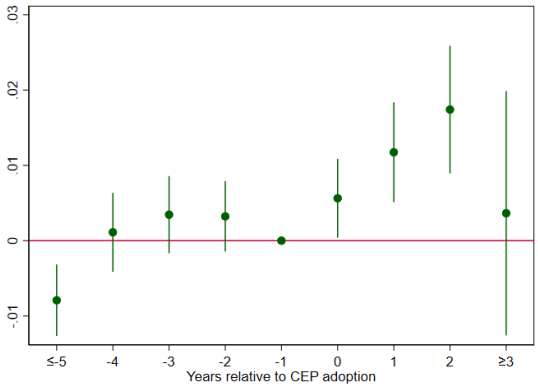
(a) All Food



(b) Lunch and Breakfast Food



(c) Composite Health Score



Notes: Figures show the event study estimates from estimation of equation 4. Observations are at the household-year-month level. Regressions include household and year-by-month fixed effects and do not include household controls. Standard errors are clustered at the household level. Outcomes are the total dollars spent on all food items in panel (a), total dollars spent on lunch and breakfast food items in panel (b), and the composite health score in panel (c). See section 3 for additional data details. Coefficients are shown for years before and after CEP adoption, where time zero is the first year a zip code experienced any CEP adoption.

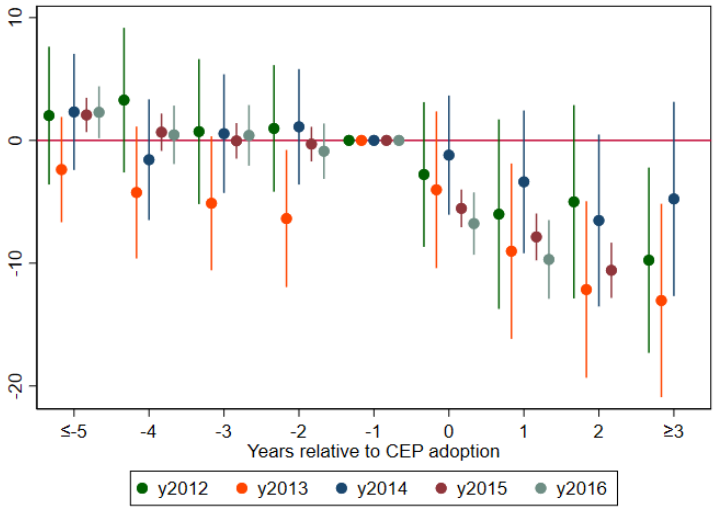
Table A7: Robustness of Main Results to Alternative Definitions of Kids

	(1) Main	(2) Main (6-17)	(3) Ever Kid	(4) Ever Kid (6-17)	(5) Always Kid	(6) Always Kid (6-17)	(7) Number Kids	(8) Number Kids (6-17)
Panel A Outcome: Spending on Food good purchases								
Kids x Post CEP	-10.65***	-10.86***	-11.93***	-12.79***	-15.63***	-18.03***	-4.979***	-5.678***
	(1.458)	(1.498)	(1.411)	(1.438)	(3.620)	(3.817)	(0.795)	(0.870)
N	4,498,536	4,498,536	4,498,536	4,498,536	1,869,717	1,874,684	4,498,536	4,498,536
R-Squared	0.55	0.55	0.55	0.55	0.58	0.58	0.55	0.55
Mean of Dependent	206.25	206.25	206.25	206.25	180.82	180.83	206.25	206.25
Pct Change	-5.16	-5.26	-5.79	-6.20	-8.64	-9.97	-2.41	-2.75
Panel B Outcome: Spending on Total lunch and breakfast category purchases								
Kids x Post CEP	-5.509***	-5.439***	-6.534***	-6.892***	-6.940***	-7.283***	-2.515***	-2.862***
	(0.571)	(0.584)	(0.566)	(0.575)	(1.548)	(1.502)	(0.308)	(0.338)
N	4,501,538	4,501,538	4,501,538	4,501,538	1,864,562	1,869,577	4,501,538	4,501,538
R-Squared	0.51	0.51	0.51	0.51	0.54	0.54	0.51	0.51
Mean of Dependent	63.82	63.82	63.82	63.82	55.88	55.93	63.82	63.82
Pct Change	-8.63	-8.52	-10.24	-10.80	-12.42	-13.02	-3.94	-4.48
Panel C Outcome: Composite Diet Health Score								
Kids x Post CEP	0.00168	0.000997	0.0111***	0.0118***	-0.0142*	-0.00687	-0.000463	-0.0000231
	(0.00259)	(0.00265)	(0.00284)	(0.00286)	(0.00731)	(0.00731)	(0.00124)	(0.00135)
N	4,470,380	4,470,380	4,470,380	4,470,380	1,842,979	1,847,649	4,470,380	4,470,380
R-Squared	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34
Mean of Dependent	-0.27	-0.27	-0.27	-0.27	-0.25	-0.25	-0.27	-0.27
Pct Change	0.63	0.37	4.16	4.42	-5.65	-2.73	-0.17	-0.01

* p <0.10, ** p <0.05, *** p <0.01

Note: Each cell represents a separate regression. All regressions have household and year-month fixed effects, include additional household controls, and cluster SE at the household level. Household controls are measured at time of survey and are the same as in table 3. Column (1) replicates the main results. Column (3) defines "Kids" as households that ever have a child under 18 in their household. Column (5) restricts to a sample that has no variation in kid presence or household composition over time, which includes married or single person households with either zero or one child under 18 for their entire duration in the sample, where there is also no variation in household size or household composition. Column (7) defines "Kids" as the number of children under 18 in the household. Columns (2), (4), (6), and (8) are analogous to previous definition but restricted to only children of school age, 6-17 years old.

Figure A6: **CEP Effect by Treatment Timing Cohort: Lunch and Breakfast Spending**



Notes: Figure shows the coefficients from estimating equation 4 separately for each of the five treatment timing cohorts. Each cohort is defined by the first year a household's zip code had any CEP exposure. For example, the regression for cohort 2012 includes only households with treatment beginning in 2011-12 and never-treated households. Not all post period indicators are estimated for cohorts 2015 and 2016 because the Nielsen data ends in 2016.

Table A8: Effect of CEP Exposure on Grocery Purchases by Treatment Timing Cohort

	(1) 2011-12	(2) 2012-13	(3) 2013-14	(4) 2014-15	(5) 2015-16
Panel A. All Food Spending ($)					
Kids × Post CEP	-4.057	-5.217	-3.426	-10.90***	-8.341***
	(3.535)	(3.446)	(3.369)	(1.845)	(2.555)
Observations	2,510,835	2,529,570	2,562,336	3,536,807	2,861,684
R-squared	0.54	0.54	0.54	0.55	0.55
Panel B. All Lunch Spending ($)					
Kids × Post CEP	-1.402	-1.504	-1.029	-4.360***	-3.061***
	(1.316)	(1.302)	(1.264)	(0.669)	(0.966)
Observations	2,513,755	2,532,424	2,565,036	3,539,969	2,864,960
R-squared	0.50	0.50	0.50	0.51	0.50
Panel C. Lunch and Breakfast Spending ($)					
Kids × Post CEP	-1.647	-1.794	-1.286	-5.589***	-3.562***
	(1.436)	(1.426)	(1.379)	(0.728)	(1.055)
Observations	2,513,248	2,531,923	2,564,544	3,539,474	2,864,415
R-squared	0.51	0.51	0.51	0.51	0.51

Notes: Each cell shows the coefficients from estimating equation 3 separately for each of the five treatment timing cohorts. Each cohort is defined by the first year a household's zip code had any CEP exposure.

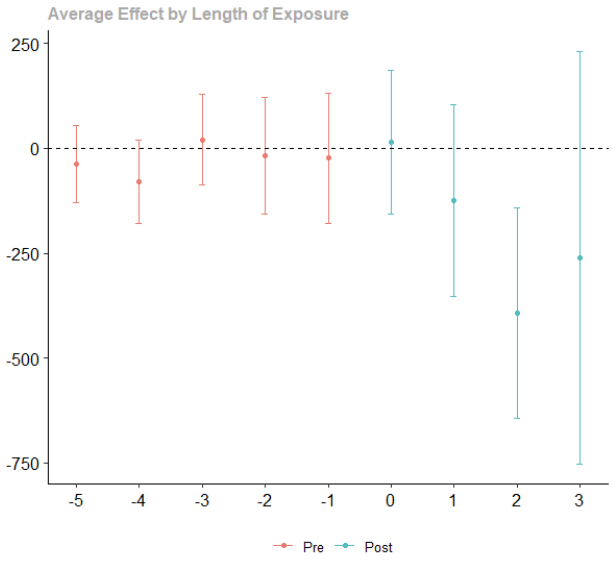
Table A9: **Callaway & Sant'Anna (2020) Estimates**

	(1) Food	(2) Lunch	(3) Breakfast	(4) Lunch & Breakfast
Post CEP	-190.99**	-64.77**	-42.52***	-87.82***
	(74.42)	(26.73)	(11.15)	(30.37)

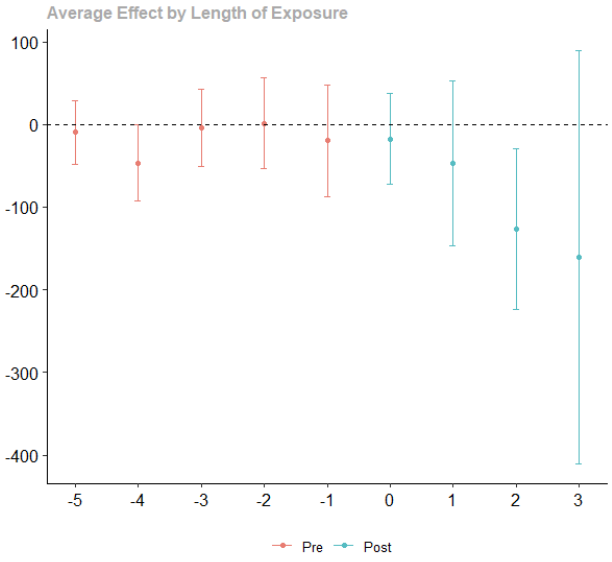
Notes: Estimates report the dynamic aggregation of the difference-in-difference coefficients using Callaway and SantAnna (2020) with the never-treated group as a counterfactual. The never-treated group includes households in zip codes that never experienced any CEP exposure and households without kids. To accommodate the estimation procedure of Callaway and SantAnna (2020), we collapse the data to the household-year level, rather than the household-year-month level used in the main results. So the magnitude of the coefficients are not directly comparable to the main estimates, as they are yearly rather than monthly estimates. Sample is restricted to a balanced panel. Covariates are not included. Standard errors are clustered at the household level with a multiplier bootstrap procedure (see Callaway and SantAnna (2020) for details).

Figure A7: **Callaway & Sant'Anna (2020) Event Study Estimates**

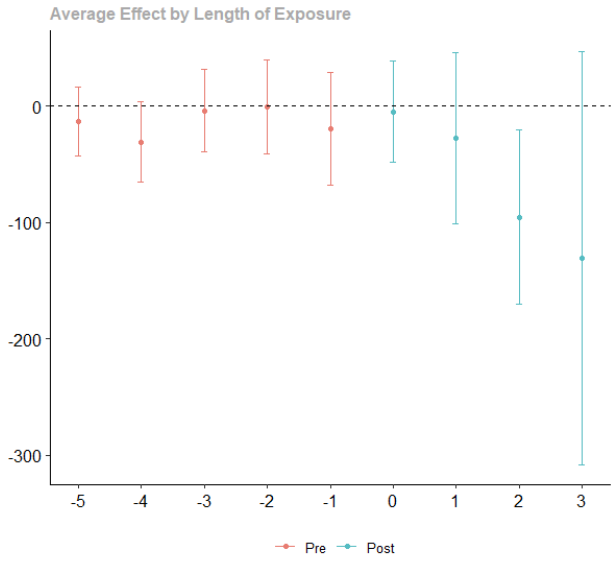
(a) Food ($)



(c) Lunch and Breakfast Spending ($)



(b) All Lunch Spending ($)



(d) Breakfast Spending ($)

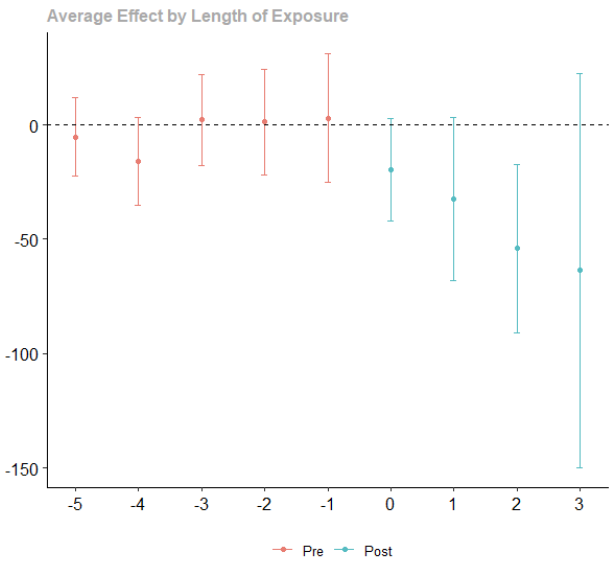


Table A10: Effect of Overall CEP Exposure on Grocery Purchases by Prior Lunch Eligibility, Additional Outcomes

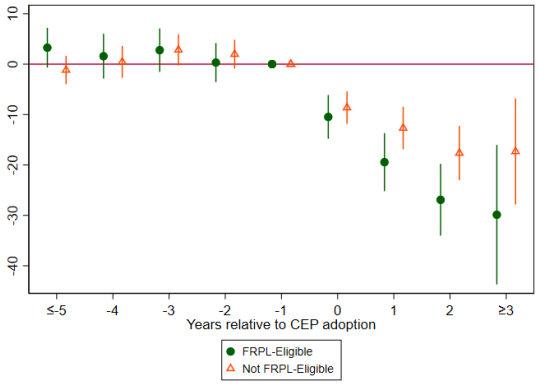
	(1) Lunch Food Spending ($)	(2) Breakfast Food Spending ($)	(3) Healthy Food Spending ($)	(4) Unhealthy Food Spending ($)	(5) Vegetables Spending ($)	(6) Commercially Prepared Foods Spending ($)
Panel A: Post CEP Exposure						
Kids x Post CEP x FRP Eligible	-3.153***	-1.693***	-1.488**	-7.985***	-0.218	-4.424***
	(0.903)	(0.346)	(0.726)	(1.930)	(0.192)	(1.397)
Kids x Post CEP x Non-FRP Eligible	-4.660***	-2.061***	-3.217***	-7.828***	-0.234*	-5.164***
	(0.586)	(0.229)	(0.485)	(1.195)	(0.122)	(0.860)
N	4,502,115	4,498,144	4,500,646	4,498,856	4,501,714	4,500,523
R-Squared	0.51	0.46	0.53	0.54	0.44	0.52
Pre CEP Mean for FRP Eligible	51.80	20.91	49.27	144.52	11.15	87.82
Pre CEP Mean for Non-FRP Eligible	54.88	21.97	57.96	141.30	12.85	89.45
Pct Change: FRP Eligible	-6.09	-8.10	-3.02	-5.53	-1.96	-5.04
Pct Change: Non-FRP Eligible	-8.49	-9.38	-5.55	-5.54	-1.82	-5.77
Prob (FRP = Non-FRP)	0.13	0.34	0.03	0.94	0.94	0.62
Panel B: CEP Exposure %						
Kids x CEP Overall % x FRP Eligible	-7.804	-5.567*	-9.247*	-21.71	-1.666	-10.03
	(6.747)	(3.240)	(5.109)	(14.85)	(1.330)	(11.44)
Kids x CEP Overall % x Non-FRP Eligible	-18.82***	-8.695***	-11.73***	-31.04***	-1.018	-16.03**
	(4.404)	(1.645)	(3.680)	(9.347)	(1.058)	(6.773)
N	4,372,759	4,368,758	4,371,256	4,369,627	4,372,292	4,371,279
R-Squared	0.51	0.46	0.53	0.54	0.44	0.52
Pre CEP Mean for FRP Eligible	51.83	20.91	49.27	144.55	11.15	87.83
Pre CEP Mean for Non-FRP Eligible	54.89	21.98	57.99	141.33	12.86	89.46
Pct Change: FRP Eligible	-15.06	-26.62	-18.77	-15.02	-14.94	-11.43
Pct Change: Non-FRP Eligible	-34.28	-39.55	-20.23	-21.96	-7.92	-17.92
Prob (FRP = Non-FRP)	0.15	0.37	0.67	0.56	0.68	0.63

* p <0.10, ** p <0.05, *** p <0.01

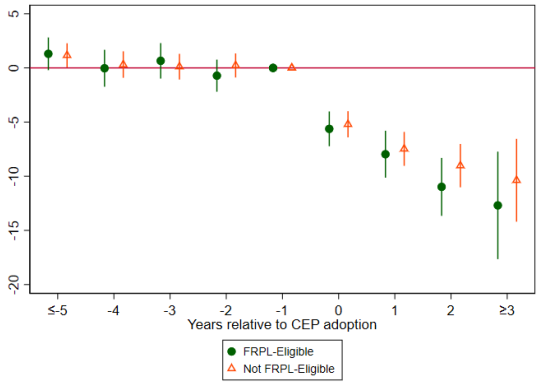
Note: Each cell represents a separate regression. All regressions have household and year-month fixed effects and include additional household controls. SE are clustered at the household level. Household controls are measured at time of survey and consist of the following: married, kids, Hispanic, white, black, household size, household income categories, WIC participation, maximum household education level, and maximum hours of work for the head of household. Free/Reduced Price (FRP) versus Non-FRP Eligible is defined by estimating whether the household is below versus above 185% of the federal poverty level, respectively, based on household size and income.

Figure A8: **Effect of CEP on Grocery Purchases for Households with Kids, by Lunch Eligibility (No controls)**

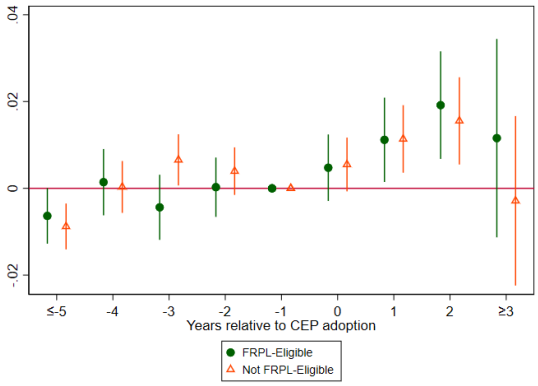
(a) All Food



(b) Lunch and Breakfast Food



(c) Composite Health Score



Notes: Figures show the event study estimates from building on equation 4 where the key variable is interacted with indicators for whether children are free or reduced price eligible and ineligible: $Y_{izt} = \sum_{j \neq -1} [\pi_j \mathbb{1}(y = j)_{tz} \times Kid_{it} \times eligible + \eta_j \mathbb{1}(y = j)_{tz} \times Kid_{it} \times ineligible + \delta_j \mathbb{1}(y = j)_{tz}] + \alpha_1 Kid_{it} + X_{izt} + \tau_t + \gamma_i + \varepsilon_{izt}$. Observations are at the household-year-month level. Regressions include household and year-by-month fixed effects and do not include household controls. Standard errors are clustered at the household level. Outcomes are the total dollars spent on all food items in panel (a), total dollars spent on lunch and breakfast food items in panel (b), and the composite health score in panel (c). See section 3 for additional data details. Coefficients are shown for years before and after CEP adoption, where time zero is the first year a zip code experienced any CEP adoption.

Table A11: Effect of CEP on Food Insecurity for Households with Kids, By Lunch Eligibility (CPS December Supplement)

	(1) Ran short of money, tried to make food or food money go further	(2) Food Insecure Household	(3) Food Security Rasch Scale Score	(4) Food Security Raw Score (Poisson)
Panel A: Post CEP Exposure				
Kids x Post CEP x FRP Eligible	-0.0384***	-0.0519***	-0.271***	-0.149***
	(0.0105)	(0.0137)	(0.0839)	(0.0364)
Kids x Post CEP x Non-FRP Eligible	-0.0182***	-0.00475	0.00136	-0.0697
	(0.00569)	(0.00436)	(0.0937)	(0.0542)
N	532,955	525,899	114,037	525,439
R-Squared	0.12	0.15	0.06	
Pre CEP Mean for FRP Eligible †	0.42	0.57	5.09	3.81
Pre CEP Mean for Non-FRP Eligible †	0.17	0.29	4.22	1.91
Pct Change: FRP Eligible †	-9.12	-9.05	-5.32	–13.82
Pct Change: Non-FRP Eligible †	-10.95	-1.61	0.03	-6.73
Prob(FRP = Non-FRP)	0.09	0.00	0.03	0.27
Panel B: CEP Exposure % of Schools				
Kids x % CEP Schools x FRP Eligible	-0.200***	-0.292***	-1.468***	-0.802***
	(0.0594)	(0.0668)	(0.423)	(0.226)
Kids x % CEP Schools x Non-FRP Eligible	-0.0736**	-0.0356*	-0.317	-0.438***
	(0.0326)	(0.0195)	(0.383)	(0.159)
N	532,955	525,894	114,037	525,434
R-Squared	0.12	0.15	0.06	
Pre CEP Mean for FRP Eligible †	0.42	0.57	5.09	3.81
Pre CEP Mean for Non-FRP Eligible †	0.17	0.29	4.22	1.91
Pct Change: FRP Eligible †	-47.45	-50.99	-28.82	-55.16
Pct Change: Non-FRP Eligible †	-44.22	-12.10	-7.52	-35.46
Prob(FRP = Non-FRP)	0.02	0.00	0.09	0.20

* p <0.10, ** p <0.05, *** p <0.01

Note: Each cell represents a separate regression. All regressions have state and year fixed effects and include additional household and state controls. Some states are excluded if there was incomplete CEP adoption data, see text for details. Household controls are measured at time of survey and consist of the following: married, kids, Hispanic, white, black, household size, household income categories, WIC participation, maximum household education level, and maximum hours of work for the head of household. Additional state controls include unemployment rates and demographic characteristics (fraction black, Hispanic, and other races, fraction of individuals with high school degree and with some college or more, and fraction below the federal poverty level). Standard errors are in parentheses and are clustered at the state level. Note that all of the CPS survey questions and outcome variables used reference the past 12 months. A household is designated as food insecure in column (2) if their 12 month food security score is ≥ 3. The outcome in column (4) is the count of all food insecurity questions that are answered affirmatively, between 0 and 18. Treatment is based on the overall percent of schools that have adopted CEP within the state, which proxies for probability of CEP Exposure. Treatment timing is lagged to account for the timeframe of the CPS survey questions.

† Note that the mean of the dependent variable and the percent change are calculated in columns (2)-(4) *conditional* on whether a household answers affirmatively to the question in column (1), as this is what flags them as potentially food insecure. The percent changes in columns(2)-(3) are also calculated with respect to this conditional mean. In column (4) the percent change is based on interpreting the log odds ratio from the estimated coefficient.